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INTERNATIONAL COOPERATION IN THE PRIVATE SATELLITE COMMUNICATIONS SECTOR: ENHANCING COMMERCIAL EXPLOITATION OF OUTER SPACE

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ABSTRACT

Even though international cooperation traditionally is a concept encountered in public international law, it has an important role to play in the private satellite communications sector. Satellite communications being activities that intrinsically have a global outreach, *mutatis mutandis* they require legal rules that would not focus on purely regional or local interests. National and international space law have for the past decade encountered criticism with respect to obvious insufficiencies that in turn affected space activities. The first reaction of learned space lawyers was to call for some redrafting of international space law. A second thought about it had them take into account national legislation in this possible harmonization process, but in any case this was to primarily be of concern for States.

However, the new millennium has brought its share of intellectual renewal and in the field of space law it has been translated in the acknowledgement that the private sector would have an important role to play, on the international scene, for the improvement of space law. It is this new legal thinking that has been characterized as "international cooperation" as applied to the private sector, that is the subject of this study. Hence, what is looked at is the position of the satellite communications sector on the international scene and what expertise it has to share with public fora for the overall improvement of space law and space activities.

RESUME

Bien que la coopération internationale soit traditionnellement un concept de droit international public, elle a un rôle important à jouer dans le secteur privé des communications par satellite. Les communications par satellites sont des activités intrinsèquement portées vers la mondialisation, *mutatis mutandis,* elles requièrent donc des règles juridiques qui iraient au-delà de purs intérêts régionaux ou locaux.

Le droit international de l'espace ainsi que les législations nationales en ce domaine ont été – cette dernière décennie - l'objet de critiques portant sur leurs insuffisances affectant les activités spatiales.

La première réaction des juristes spécialisés en droit de l'espace a été de promouvoir une réévaluation du droit international de l'espace. Une seconde réflexion à ce sujet leur fit prendre en compte les législations nationales dans cet éventuel processus d'harmonisation ; dans tous les cas, ces questions devaient principalement être portées devant les Etats.

Cependant, le nouveau millénaire a entraîné un certain renouveau intellectuel et dans le domaine du droit de l'espace, ceci a été traduit dans la prise de conscience que le secteur privé avait, sur la scène internationale, un important rôle à jouer quant au raffinement du droit de l'espace. C'est ce nouveau mouvement de pensée juridique qui a été qualifié de « coopération internationale » telle qu'appliquée au secteur privé qui est l'objet de cette étude.

Aussi, est appréciée, la situation du secteur des communications par satellite sur la scène internationale et l'expertise que ce secteur aurait à partager dans des forums publics pour une amélioration générale du droit de l'espace et des activités spatiales.

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INTRODUCTION

High technology and high-risk industries often need- at their infancy stage at least- be supported by governmental funds, policy and regulations.
Space activities were, in the first years of the space age, public ventures; that is, high-risk and capital-intensive projects organized and managed by States themselves. This has progressively been changing in favour of growing private initiatives in space activities. As a parallel, market forces have come to govern these projects, as opposed to State privileges, extraordinary powers and financial capacity. This trend has been especially remarkable as far as the satellite communications sector is concerned and is now expanding to other categories of space activities.

Satellite communications have for long been the sole commercial and highly profitable activities to be offered by private entities and it is still today the most profitable sector of the space industry, even though it has recently experienced a down turn.
Satellite communications for that purpose are considered to include fixed communications (between two distant fixed points), mobile communications (between mobile end users of between a fixed station and mobile end users) and broadcasting (distribution of the signals over a region as opposed to specific locations). Their most common practical applications being voice telephony, data transmission, television and internet broadcasting.
One should take note that this definition does not include such activities as remote sensing or satellite positioning as being *per se* part of the satellite communications sector; the former activities being generally distinguished and dealt with separately as independent space applications. Hence, the observations made in this thesis are not meant to apply to these distinguished activities.

The satellite communications sector is therefore composed of owners or initiators of a given satellite system, manufacturers, operators and transponder or satellite capacity lessees.
This essentially private industry that provides it services on the global marketplace, happens to be highly competitive and concentrated both horizontally and vertically. It is suggested hereby that one growing challenge for the industry is to comply with anti-trust regulations,

would it be in the United States or in Europe.
In fact, the challenges that the industry has to face are often of a legal nature. They might be of relevance at the international or at the national levels but their consequences always generally affect the space industry on a global scale.

International space law has determined under which conditions private enterprises were to engage in space activities and has entrusted the States with the mission to ensure this will be done in compliance with the basic requirements international space law had established. Subsequently, private enterprises are to meet various and numerous conditions at the national level when they wish to engage in space activities. With respect to the satellite communications sector this mainly lies in the granting of national licenses without which carrying on a satellite system project would be impossible.
What appears as a problem at that point is the lack of coordination and harmonization between domestic laws. This is incurred by the private satellite communications sector, which consequently has to manage with the cumbersome paperwork it involves.
The other aspects of this lack of national legislation coordination concern *inter alia* liability, intellectual property protection and financing issues having a special bearing for satellite systems. These issues have recently proven to seriously affect the satellite communications sector in the realization of its satellite systems projects.

This observation should serve as an incentive for the private sector to work on the development, simplification and conciseness of space law; if not merely for the sake of space law, at least with a view to resolve the aforementioned business-affecting factors. This would best be done where the private satellite communications sector would pursue this goal in a cooperative mind-set as the challenge at stake is, for the private sector, to convince the States and their public authorities to adapt existing norms, or establish future ones while taking into account this industry's needs. When dealing with such an ambitious goal, the private sector can only combine efforts and forces at the international level, for this goal to be efficiently implemented.

With a view to establish under what conditions and constraints private enterprises are to carry on activities in the field of satellite communications, this thesis in its first chapter recounts what is the general legal framework private enterprises are to comply with when engaging in space activities . It then examines the market structure in order to consider the implications of

space law in the relevant context. For this purpose chapter 2 consists of a review of satellite communications technological specificities, the current market trends, and future prospects. Once having established what law entailed and what the market experienced, logical reasoning called for a further analysis as to what the interaction between chapter 1 and 2 revealed. Therefore, chapter 3 explains that market failures and legal inadequacies are closely interrelated, at least as far as space financing, risk management and intellectual property rights are concerned.

Finally, the forth and last chapter, deals with the practical implications and implementation of international cooperation. It examines how and to what extent, the private sector could interfere on the public scene as to share it views and propose solutions with respect to the improvement of space law. That is of course for the benefit of all parties having an interest in satellite communications; the States, the private enterprises and the customers/ end users.

CHAPTER ONE

How Space Law Considers Private Satellite Communications

Whether private space ventures are possible under international law has extensively been subject to analysis, criticism and commentaries. These observations have been made upon the construction of the main space law conventions and resolutions of the United Nations' General Assembly (UN GA) or subsidiary work of the United Nations Committee on the Peaceful Use of Outer Space (UNCOPUOS).

However broad or specific these norms and principles appear to be, it seems that all permit private space ventures and subsequent commercial exploitation of outer space.

It is also clearly stated in most of those legal instruments that international cooperation should be the primary objective of the space faring nations and other major actors in space programmes.

Whatever criticism has been endured by the *Corpus Juris Spatialis Internationalis*, about its anachronism regarding the type of " space actors " considered (mostly governments, their agencies or international organizations), it was still a successful draft in the sense that (i) it had left room for alternatives to strictly national space programmes by not restricting or prohibiting private space ventures expressively and (ii) it had provided the international community with major standard provisions such as the " common heritage of mankind " and the objective of " international cooperation ".

Conversely, the *Corpus Juris Spatialis Internationalis* entails some considerable weaknesses. Firstly, it is the product of its time and the political atmosphere then ruling. Space programmes were specifically national and the space-faring nations could be counted on one hand. Moreover, scientific knowledge, technical capacities and space applications, were on their way to experience exponential improvement and advancement, as the late 1960's were the early years of modern space science.

Secondly and as a cause of our first observation, all of these legal instruments lack accuracy. They do not provide much detail - if any - on the ways and means to implement the framework they constitute. At best States have become subject to a set of obligations but no guidelines are given as to *what extent* and *how to* respect these obligations.

Because of those weaknesses, the *Corpus Juris Spatialis Internationalis* was naturally prone to be completed by national laws and regulations that were specifically aimed at detailing what rights and obligations space activities were subject to and were to proceed. Indeed, if States had to comply with widely determined international obligations but that international law itself had not provided them with sufficient information as to how to do so nor specific rules for that purpose, States were then implicitly assigned with the task of establishing such rules on their own. If the major early space faring nations have done so, it is still for some others a work in progress.

As a matter of fact, what this original *lacuna* of the *Corpus Juris Spatialis Internationalis* resulted in is a compilation of complex government regulations often overlapping each other and always operating through national or administrative authorization and licensing procedures.

In other words, juggling with domestic regulations pertaining to space activities is a hassle. It, not only, supposes a thorough understanding of each domestic legal system that has a more or less close relationship with a given space venture but also the capacity to deal in a timely manner with all the paper work involved. However complicating a factor this last requirement can represent for the private sector, it is of course not one that cannot be overcome but certainly one that, all agree, could use some flexibility, notably through international cooperation.

The purpose of this chapter is therefore to determine through the examination of the provisions of international and national space law what is permitted, commanded or forbidden, and analyze how these set of rules interact, thus with respect to the general theories but also specifically with respect to the private enterprises' role in the communication satellite sector.

Section 1. The *Corpus Juris Internationalis Spatialis* - The International Component of Space Law

The *Corpus Juris Spatialis Internationalis* refers to international space law as a complex and diverse set of international conventions, resolutions and acts having a quasi-normative value issued international organizations involved with space activities in general and satellite communications in particular. Knowing what the law provides for is certainly one first and primary externality that is to be considered by the entities involved in space activities. It is therefore what should first be examined. Whereas, discussing the role of international organizations specialized in satellite communications will be the purpose of a second sub-section.

1. Origins and Meaning of Space Law

When trying to extract the essence of law one needs to look at it in its original context; then only can further technicalities be integrated in this general scheme.

A. The Background of the Law: History and Politics

As mentioned earlier, what was established under international space law, even with regards to international cooperation and participation of private enterprises into space programmes, was always closely intertwined with the political scene prevailing at the inception of the first space treaties (especially the Outer Space Treaty).

In fact, if political considerations have always lead international negotiations, this phenomenon has clearly influenced and been translated in the drafting of the *Corpus Juris Spatialis Internationalis.* Indeed, the evolution world politics have undergone since the 1960s with respect to space activities or considering the changing equilibrium of the international community throughout these years has resulted in a parallel evolution for space law.

To illustrate our point, one needs to pay attention to the negotiating history of the different *instrumentum* constituting space law and examine some specific provisions that particularly translate the political controversies, dominant views and compromises arising therefrom. Because the Outer Space Treaty represents the official cornerstone of the space law quest, it will be the first focal point for that purpose.

This treaty was negotiated and elaborated in the context of the cold war, specifically following the 1957 launching of the Sputnik artificial satellite political episode.
If the dominant characteristic of the cold war with respect to space was that the USA and USSR opposite super powers had decided to engage in a technology and arms race, this period can also be considered as one of strategic mutual restraints resulting from the serious threats these powers could then oppose to each other. One should add that in matters of space as in matters of disarmament only the USA and USSR were having a predominant role.[1]
Consequently the beginnings of space law and its elaboration process consisted in negotiations between the two super powers, through the coordination of the international community as it was represented in the UN General Assembly.[2]
The international community did not forget to put as the primary issue on the agenda the question of peace in outer space, not only for the sake of ones having access to it and being in covert conflict but also and mostly for the sake of all mankind.[3] This resulted notably in the creation of the Committee for the Peaceful Use of Outer Space (COPUOS).[4]

Overall, it seems that the USA and USSR agreed on major issues that the international community similarly regarded as being essential to establish space law as a new branch of international law. The general consensus included the fact that international cooperation should be a constant objective in the development of space law and that outer space should be free of access for all sovereign nations, could not be subject to any kind of appropriation and that for the interest and benefit of all should be used only for peaceful purposes. All were concurring for the assertion of these major principles and their incorporation in the definitive space treaties. However, where divergences occurred, they focused mainly on the interpretation and practical implications of these principles.
If the first collusions between the Russians and Americans were ones of law-making procedures,[5] they have been quickly resolved once COPUOS had been given the function to

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[1] See Dailler, P., & Pellet, A., *Droit international public*, 6th ed. (Paris : L.G.D.J., 1999) at 1206 and Roth, A. D., *La prohibition de l'appropriation et les régimes d'accès aux espace extra-terrestres*, (Paris : Presses universitaires de France, 1992.) at 48.
[2] See - Jasentuliyana, N., "The Role of Developing Countries in the Formulation of Space Law", (1995) XX-II Annals of Air and Space Law 95 and Jakhu, R., "Developing Countries and the Fundamental Principles of International Space Law" in Jakhu, R., Ed. *Space Law and Institutions - Documents and Materials,* vol. I, (Montreal: McGill University, september 2001) 165 at 167.
[3] See United Nations General Assembly Resolution. (UNGA Res.) 1149 (XII) of 14th november 1957 which focuses on the use of outer space for peaceful purposes
[4] See United Nations Resolution 1472 (XIV). Establishing the Committee on the Peaceful Uses of Outer Space. Adopted 12 December 1959.
[5] See Roth, A. D., La prohibition de l'appropriation et les régimes d'accès aux espace extra-terrestres, (Paris: Presses universitaires de France, 1992.) at 40 *et seq.*

act as the forum in charge with legal issues in space and that the Outer Space Treaty had been ratified. Yet, the peace concept could not be represented as absolute nor unanimously agreed upon as on some " peace-related " issues the Americans and Russians had obviously different views.

The remaining dissenting opinions between these two space powers were concentrating on what should be considered as the peaceful use of outer space and how that principle would limit military activities in space.

To understand what specific aspect of the " peaceful purposes " notion was then disputed two elements are to be taken into account. The first thing to notice is that space applications (satellites specifically) though they were not very developed nor quite diverse were yet considered as advanced or high technology, intrinsically encompassing a dual-use capacity (*i.e.* both civil and military uses), hence being considered as the primary and indispensable utilities for *military activities* in outer space.[6] The second element which limited this ideal of peace during the 1960's was the main concern of both super powers in the cold war era, *i.e.* the national security and related issues.

Therefore the American opinion was that the peaceful purposes obligation did not underlie a prohibition to develop military activities in outer space if these activities were *non-aggressive* whereas the Russian position was (officially at least) absolutely against military activities in outer space regardless of their justification as aggressive or non-aggressive; the Russians simply assimilated military with aggression while the USA were advocating for a *nuance* on that latter point.

Actually in the law-making history of space law, it is noticeable that the US have overall been more liberal for the development of space activities than the USSR certainly because the United States could foresee the potential in space activities and mostly because the USSR feared to see the United States rapidly develop more power and expertise in that field. As analyzed by Peter Jankowitsch, talking about space law development and the question of peaceful purposes as incorporated in the Outer Space Treaty:

"An early Soviet draft of the proposed treaty, drawn up at a time when the United States had a monopoly on observation satellites, contained a provision expressly forbidding their use. The United States and its allies opposed the provision. ... The Soviet Union eventually conceded on this point, but perhaps the change of position had as much to do with the

[6] See Vlasic, I. A., "Perspectives on International Law" in Jasentuliyana, N., Ed., *Perspectives on International Law*, (Boston : Kluwer Law International, 1995).

acquisition of the relevant technology as with the force of the US legal argument. In any case, it is clear from this history that reconnaissance and other "passive" military satellites are not prohibited by the Outer Space Treaty" [emphasis added]. [7]

It is really for more important military technology that the question gains consideration. If space law openly condemns weapons of mass destruction and that reconnaissance satellites are tolerated and regarded as a minor threat, could the same be said about other conventional weapons? At least when analyzing the Outer Space Treaty the answer is no, there is no prohibition to a growing militarization of outer space if peace is not at stake. The only space treaty where a prohibition of militarization of outer space can be detected is the Moon Agreement according to which article 3, nuclear weapons or weapons of mass destruction are prohibited on the moon and celestial bodies as much as in outer space (same provision as in the Outer Space Treaty) but militarization is overly prohibited on the moon and other celestial bodies. In other words according to the Moon Agreement the notion of peaceful use of outer space is unchanged with respect to outer space *per se* but is stricter when applied to the moon and other celestial bodies inasmuch it prohibits any type of militarization on these celestial bodies and does not limit the peaceful purposes concept to the distinction between aggressive and non-aggressive. Yet the Moon Agreement has been ratified only by a minority of nine States none of which being the USA or the USSR!
This latter observation purports that the application of this improved development of space law is simply ineffective and the only significant conception of peace in space as an environment is the one lying in the Outer Space Treaty.[8]

Examining the political impetus to the creation of space law helps to understand how space law was accepted by the international community and the militarization controversy is a relevant illustration for that purpose as it discloses what has been the substantial understanding of the peaceful purposes principle by States.
Besides that debated point space law has been uniformly accepted and welcomed by States for they –overall- have adopted similar interpretations of the space treaties

[7] See Jankowitsch, P., "The Role of the United Nations in Outer Space Law Development: Past Achievements and New Challenges", (1998), 26 No 2 Journal of Space Law 101 at 103-104.
[8] See Reynolds, G. H., « The Moon Treaty : Prospects for the Future", May 1995 Space Policy 115 at 116

B. The Leading Principles of Space law: Their Nature and Their Meaning

Because space is an independent and original environment it is governed by an independent and original set of rules. Its originality lies not only in the content of the law but also in its structure. With respect to the content, international space law entails its own spirit governed by such principles as the Common Heritage principle, the Freedom principle, the Peaceful Purposes principle and the International Cooperation principle. As for the structure the *Corpus Juris Spatialis Internationalis* is composed of five leading treaties[9] accompanied by UN resolutions and principles on chosen issues of space law[10] as much as the regulations of international organization which specific mission is to deal with space related matters and subsequently develop regulations accordingly.[11]

They altogether represent a fairly comprehensive framework etched by these fundamental principles that enterprises engaging in space activities have to comply with.

As space activities were emerging and developing quickly after the Sputnik experience in 1957, the need and concern for the creation or a set of rules governing outer space and space activities was prominent within the international community and in that sense, space law is one branch of international which is intrinsically driven by international cooperation.

The truth is that similarly to the disarmament negotiations, the emergence of space law was designed, through the coordination of the international community, to organize the activities

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[9] The five Space Treaties being the:
- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies (hereinafter the Outer Space Treaty) opened for signature 27 January 1967;
- Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer space (hereinafter the Rescue Agreement) opened for signature 22 April 1968;
-Convention for International Liability for Damage Caused by Space Objects (hereinafter the Liability Convention) opened for signature 29 March 1972;
- Convention on Registration of Objects Launched into Outer Space (hereinafter the Registration Convention) opened for signature 14 January 1975;
- Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (hereinafter the Moon Agreement) opened for signature 18 December 1979.

[10] the UN Resolutions and activity-specific principles are the following:
- Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, UNGA Res. 1962 (XVIII). (adopted 13 December 1963);
- United Nations Resolution 37/92. Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting (adopted 10 December 1982);
- United Nations Resolution 41/65. Principles Relating to Remote Sensing of the Earth from Outer Space (adopted without a vote 3 December 1986);
- United Nations Resolution 47/68. Principles Relevant to the Use of Nuclear Power Sources in Outer Space (adopted 14 December 1992) ;
- United Nations Resolution 51/122. Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries (adopted 13 December 1996).

See for the list of international agreements and other documents relevant to space law,UN Doc A/AC.105/C.2/2001/CRP.6 and web http://www.oosa.unvienna.org/Reports/intlagree2001.pdf .

[11] See ITU 1994 Covention and Constitution and Radio Regulations.

of the two super powers of the cold war: because the USA and the Soviet Union both gained capacity to interact in space, it was essential and urgent to set rules through which peace would be established and maintained.

With that respect, determining a legal status for outer space and celestial bodies was a first and major achievement for the creation of this new *corpus* of law since the normative approach towards the environment acts as the basis of the framework that would apply to space activities *per se*.[12] Hence, the Outer Space Treaty and its leading principles have the *extended effect* of not only applying to the environment but consequently, to encompass any possible human activity that at some point of its operation or process, requires the special resources and conditions that only outer space can offer. While space law, under this construction, is exclusive of any activity that would not comply with its principles, it refers for that matter to a material or functional distinction rather than a personal one; *i.e.* it is mostly in the nature and function of a given activity rather than the identity of its initiator that relevance can be found when trying to determine whether this activity is lawful or not.

This supposes that though international law naturally governs only subjects of international law (*viz* that have international personality) and that Conventions only bind the States parties to it, compliance with the principles incorporated in the Outer Space Treaty with respect to the legal status of space as an environment is of universal application and *erga omnes* value[13] and that practically all actors concerned with space should look into these principles as their primary guidelines to determine the lawfulness of their activities.

Notwithstanding that line of reasoning, technically speaking, the international space treaties only bind international legal persons (States and international organizations).

As for private entities, their implication in space activities is governed by article VI of the Outer Space Treaty, which provides that:

"States parties to the treaty shall bear international responsibility for national activities in Outer Space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities and for assuring that

[12] If outer space is NOT an environment free of law then neither can the activities taking place therein be. Said differently space activities will be tolerated under international law only if they comply with space law and while respecting the nature and the status of outer space and celestial bodies.

[13] The Vienna Convention on the law of Treaties (1969) and customary treaty law reveal that international agreements and the obligation lying terein only have a significant value for the States that have agreed to them – *pacta sunt servanda*. However some conventions have a "treaty-law" nature either because of the quasi-legislative law making process that is used by the international community when drafting the agreement or because of the nature of the rules incorporated in these instruments and the will of the States parties to it to extend the respect of such rules by non parties States.
See Dailler & Pellet at 248.

national activities are carried out in conformity with the provisions set forth in the present treaty (...)"[emphasis added].

The wording in article VI subsequently entails that any kind of non-governmental entity that is directly or indirectly involved in space activities is equally subject to the spirit and leading provisions of the Outer Space Treaty, even though this will practically be realized through the intermediary of the States.

In that respect the role of States is to establish adequate legislation for the obligation of this portion of article VI to be complied with and further to take the necessary and appropriate means enabling them to comply with the second obligation contained in article VI, *i.e.* exercise continuous authorization and supervision over non-governmental entities involved in space activities.[14]

If space law as a *corpus* does not provide expressively for a specific legal regime governing private activities in space, it does at least in its original primary source set a "default rule" for that matter. Given that this rule requires the pre-establishment of national legislation about and supervision over private space activities, it does at least allow such activities to take place and eventually develop once a proper and adequate framework would be set at the domestic level.

In a way even though the forefathers of the *Corpus Juris Spatialis Internationalis* have been extremely brief on that issue of a private industry involved in space-related activities they have envisaged such a possibility and left an open door for greater participation of private entities in space ventures. The fact that they tried to avoid a complete legal loophole with respect to such activities by referring to the States as the *responsible* subjects under international law, underlies the conception that all States – because they are bound by the international cooperation objective - have to take active participation in the protection of the common heritage of mankind that space as an environment represents, notably by passing specific legislation for that purpose.

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[14] See B. Cheng "Article VI of the Outer Space Treaty Revisited: "International Responsibility", "National Activities", and the "Appropriate State", (1998) 26 No. 1 Journal of Space Law 7 [hereinafter "Article VI"];and Frans G. Van der Dunk, "Public Space Law and Private Enterprises – The Fitness of International Space Law Instruments For Private Space Activities"; Project 2001, at 15-16 [hereinafter "Space Law and Private Enterprises"] (also in Jakhu, R.,ed. *Government Regulations of Space Activities - Documents and Materials* (Montreal: McGill University, september 2001) 20 at 27)for an analysis of the wording "national activities" and "appropriate State".

What space law represents is therefore a new system, which finds its essence in the leading principles incorporated in the five space treaties. Hence, the study and understanding of space law requires doing the same with the abovementioned principles beforehand.

The Common interest and common heritage of mankind principles

If the notion of common interest or common heritage of mankind[15] is one international lawyer are acquainted with as the expression derives from the law of the sea;[16] the common interest principle nevertheless, maintains its originality in the context of space law. This concept is both a result of the international cooperation spirit that animates the *Corpus Juris Spatialis Internationalis* and a corollary of the sovereignty issue in outer space. It appeared to the international community that not only should there be no sovereignty system in space but also that the originality of this environment commanded for further legal and physical protection. Inspired by the law of the sea with respect to the legal status of the high seas, the international community decided to introduce the notion of an environment that does not belong to anyone but that can be used by all in order to make it an essential characteristic of space. Being then defined as a *res communis*, outer space cannot be prone to any claim of sovereignty but as opposed to a res *nullius* is an environment governed by law[17]. Moreover, the purpose and nature of a *res communis* is that all can benefit from its existence and resources but no appropriation can derive therefrom. Being that outer space is considered in this context as existing for the benefit of mankind, one can notice that the common interest principle represents one of the benchmarks of the general international cooperation objective.

As opposed to traditional international law where States have established among themselves rules to avoid conflict, recognize and distribute rights and obligations or settle possible disputes, some branches of international law were created and developed through the primary

[15] The first expression being used in the Outer Space Treaty and the second one in the Moon Agreement, either shall be used to explain what is the essence of this actually single concept

[16] See Kopal, V., "International and National Space Law" in Project 2001 Needs and Prospects for National Space LegislationWorkshop on National Space Legislation (5/6 December 2000, Munich, Germany) 185 at 187.

[17] A *res nullius* in traditional international law, is a territory which, belonging to no one, is subject to anyone's action over it, this without any normative constraint protecting this territory's original integrity. Sovereignty claims can arise with respect to a res nullis but they are in any case unvalid when dealing with a res communis. At the same level, where there is a res communis there is a legal framework protecting it but the concept of a res nullius implies so much freedom and absence of constraint that this category of territory is not acquainted with the notion of law.
See Dailler & Pellet at 1143.

objective of international cooperation.[18] With that respect, the common interest principle is the one enunciating that space law is of a cooperative nature and that it is one of the States' obligation to implement that objective since it is not only introduced in the preamble of many treaties but it is also reiterated in the operative part of the Outer Space Treaty.[19] International cooperation is so present throughout space law that it cannot only be a good States should tend to but it is more of an organic requirement that needs to be complied with at every level. The significance of the common interest and common heritage of mankind principles lies in the assertion that outer space exists for all and for the benefit of all and that for that purpose, protective legal measures regarding its use are necessary for the common interest principle to be part of the status of outer space.[20] It also supposes that freedom of outer space is possible only in combination with the peaceful purposes principle as only this latter principle can encourage the establishment of international cooperation in this new field of activity.[21]

The freedom principle

As earlier mentioned, the designation of outer space as the common heritage of mankind implies that it has the qualities of a *res communis* and consequently is a legal "thing", *i.e.* governed by a legal order but simultaneously available for all, which excludes any kind of sovereignty claim or related issue. In other words, outer space is declared to be a "free" environment, one all can explore and use *"irrespective of their degree of economic or*

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[18] See Dailler & Pellet at 989 and Lachs, M., *The Law of Outer Space: an Experience in Contemporary Law-Making*, (Leiden: Sijthoff, 1972.) at 27.

[19] The Common interest principle is part of the Outer Space Treaty' Preamble and incorporated in it's article 1 under the wording: *"The exploration and use of outer space shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind"*. Similarly, the international cooperation principle is present in all five space treaties and is an essential component of the spirit of space law, *supra* 40.

[20] One should note that eventhough the common interest and common heritage of mankind principles overall refer to similar concepts underlining the speciality of outer space and its resources, the common heritage of mankind notion encompasses more obligations on the ones subject to it than the mere common interest notion. Indeed while the common interest only stresses the need for a protective legal framework adapted to outer space and its resources – without much more practical detail than merely promoting international cooperation, freedom, and non-appropriation of outer space and its resources – the common heritage of mankind (CMH) principle was inserted in the Moon Agreement with a desire of the States to develop the basic obligations of cooperation amongst nations in the Outer Space Treaty into a reinforced and distinguished obligation in which the sharing of benefits derived from exploration and exploitation of oputer space would be an integral part. See for that purpose Roth "conclusions" at 125 observing that the CMH was introduced to express the requests and needs of the developing countries and "conclusions générales" at 248 where the author explains how compliance with the CHM could be implemented and improved but also expresses reserves about the reality of such possibility in a growing commercialization sector.
See also Jasentuliyana, N., "The Role of Developing Countries in the Formulation of Space Law", (1995) XX-II Annals of Air and Space Law 95 at 100.

[21] See Chapter IV below for that purpose.

scientific development" and *"without discrimination of any kind"* [22]. However, when article I stresses the freedom characteristics of space as a *res communis*, it also reminds the international community as whole[23] that Outer Space and its resources remain subject to a certain degree and should not be considered, due to this originality, as a *"zone de non-droit"*[24]. Actually, in order to be comprehensive, the freedom principle cannot be summed up as a simple right to "free" or "unrestricted" access to outer space and its resources but should always be read and understood in relation with article I - as whole - which incorporates that principles. Article I might appear as a set of affirmation of the freedom principle without much detailed precisions about it; yet it does attach at least three majors conditions to its exercise. According to article I, there is freedom in outer space where: (i) discriminations are discarded, (ii) freedom is equally distributed, and (iii) the right to freedom is exercised in accordance with (general) international law.[25] Interpreted under these conditions, the freedom principle is in tune with the common interest and peaceful purposes equally representing the fundamentals of space law.

It is essential to underline that the scope and wording of article I can only apply to legal situations and that these conditions can only be of a legal nature and not societal standards. In other words, where article I mentions non-discrimination and equality it aims at *de jure* examination of these issues and not a *de facto* assessment of what equality should represent. Practically speaking, the application of the freedom principle might be minimized for States not having technical or financial capability to compete with space faring nations, due to this legal limitation attached to the construction and understanding of freedom as outlined in article I. It might very possibly be one additional rationale of the cooperation principle to back up the revealed inadequacies of the freedom principle. In any case, it technically could be used as a legitimate legal argument for that purpose.

To conclude on this principle, we would like to suggest that the concept of freedom as it is

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[22] See article 1 §1 & §2 of the Outer Space Treaty

[23] One should take note that not only the States parties to the Outer Space Treaty are subject to the freedom principle and its limitations but that this principle as most of the basic constituent principles of space law are of universal application as they have eventually gained the nature of customary law. This position is further explained while discussing the nature of the non-appropriation principle for which the space lawyers have generally agreed about the customary nature and that principle is the mere corollary of the freedom principle in the context of an international space law guided by a cooperative spirit.

[24] See Carbonnier, J. *Flexible droit- pour une sociologie du droit sans rigueur*, 7th ed. (Paris : L.G.D.J., 1992) defining the *"non-droit"* from a sociological standpoint as an abscence of law in human interactions where it should normally be present. This corresponds to what has otherwise been referred to as a "legal vaccum".

[25] See specifically §2 *"... shall be free for exploration and use by all States without descrimination of any kind, on a basis of equality and in accordance with international law ..."*

expressed in space law is not much different from the one known under general international law. It equally implies the existence of a system guaranteeing mutual self-restrictions to any abuse of right since the freedom of a sovereign State stops when it imparts on the one of any other sovereign State. This may be regarded as the true essence of *equality* and *non-discrimination* in article I of the Outer Space Treaty.

The non-appropriation principle

As has previously been discussed, outer space and celestial bodies – having the qualities of *res communis* – are both free of access (article I of the Outer Space Treaty) and not subject to any kind of appropriation, thus by any means (article II of the Outer Space Treaty). These characteristics equally have a customary value and their universal application derives thereof. Many scholars have set the customary value of these principles forth and the doctrine as much as the States have accepted it. However, it has also been contended that all fundamental and constituent principles of space law retain the same customary nature as much as the freedom and non-appropriation principles but that it appeared to be easier to demonstrate the customary value of these principles separately rather than including the whole set of principles representing the spirit of outer space. The specificity of the freedom and non-appropriation principles - as opposed to the international cooperation and common interest principles - is to be of a "negative" nature, *i.e.* to provide with conceivable limitations and prohibitions rather than merely indicating a code of conduct or the guidelines to follow when being involved into space activities. As such, the freedom and non-appropriation principles were better prone to undergo the traditional test that reveals the existence of customary law than the obligations of international cooperation and the respect of the common interest of mankind pertaining to space. This results from the conditions to comply with – also referred to as the "constituent elements" of custom – in order to determine the presence of customary norms. According to the objective conception of customary law (which is nowadays considered as the leading doctrine for that matter)[26] customary law is revealed through two main elements: (i) a continuous and consistent practice (ii) that is supported by a legal opinion recognizing the necessity of the given practice. These two components of custom are respectively characterized as a material one (*la consuetudo*) and psychological one (the *opinio juris sive necessitatis*). With respect to the determination of the customary nature of basic

[26] See Dailler et Pellet at 318-321 for a discussion about the subjective or objective conceptualization of customary law and Carreau, D., *Droit international*, 6th ed. (Paris : Ed. A. Pédone 1999) at 262-263 for a generalization of the objective approach.

principles of space law, the fundamental task to accomplish is to establish whether one can recognize consistent practices that are repeated on the temporal and spatial basis and what represents the general psychological element that legitimates and supports these practices. Undeniably the resolutions of the UN, while not endorsing any binding effect, do represent the will of the international community as the fruit of their concerted reflections and overall agreement. For some scholars who concur with the doctrine of "spontaneous customary law", (similar to the objective approach) this is one major cause of recognition of the customary nature of international space law as the Outer Space Treaty incorporates what had already substantially been dealt with in previous UN GA resolutions and the 1963 declaration of principles.[27] As explained by Dailler and Pellet, the theory of spontaneous customary law fully justifies the *erga omnes* value of custom as it emphasizes the consensus of the international community in that sense. Yet it does not betray factual and political realities at the time of the adoption of these norms, as it is compatible – being a consensus –with the notion of a "silent majority". The authors therefore underline that this approach is in osmosis with the general leading role of the USA and the USSR while developing space law within the UN. It also constitutes an application of what is *a contrario* referred to in the North Sea Continental Shelf Case where it is stated that:

*"Furthermore, while a very widespread and representative participation in a convention **might** show that a conventional rule had become a general rule of international law, in the present case the number of ratifications and accessions so far was hardly sufficient."*
[emphasis added].[28]

Even though, Judge Lachs had a dissenting opinion in that specific case, his ruling is at the source of the spontaneous theory as he asserts that:

"*For to become binding, a rule or principle of international law need not pass the test of universal acceptance. (...) The evidence should be sought in the behavior of a great number of States, possibly the majority of States, in any case the great majority of the interested States"*
[emphasis added].[29]

As regards the time frame in which a continuous and consistent practice may be identified Judge Lachs opens the door for very short time practices as he takes into account – as the

[27] See especially resolutions 1721 (XVI) adopted on 20 december 1961 and 1962 (XVIII) adopted on 13 december 1963.
[28] See North Sea Continental Shelf Cases, [1969] ICJ Rep 3. in Dixon, M., & McCorquodale R., eds., *Cases and Materials on International Law* 2nd ed. (London, UK: Blackstone Press Ltd, 1995) at 29.
[29] *Ibid.*

primary consideration – the needs deriving from societal evolution. Hence he contends: *"With regard to the time factor, the formation of law by State practice has in the past frequently been associated with the passage of a long period of time. (...) However, the great acceleration of social and economic change, combined with that of science and technology, have confronted law with a serious challenge: one it must meet, lest it lag even farther behind events that it has been wont to do..."* [emphasis added].[30]

Similarly M. Lachs had already applied this conception developed in the 1969 ICJ case to space law when declaring that the acceptance of the UN resolutions and 1963 Declaration of principles represent the will of the States to adopt these not yet conventional rules.[31]

According to A. Roth the formation of customary law is revealed by the attitude of the USA and Soviet Union mostly and he agrees with the possible legal effects of passiveness in the formative process of customary law.[32] However, this author also considers that the UN have given a major impetus to the creation and recognition of customary law as it has served as an international forum for the development and acceptance of the principles of international space law. In any case, whether there has been codification in 1967 or a simple reaffirmation through the articles of the Treaty, the end-result with respect to these principles is that they are now binding on all States as established custom.

As for the meaning and implications of the non-appropriation principle: if the principle is enunciated in the Outer Space Treaty, nowhere is it technically defined. The principle as applied to space law represents the negation of any sovereignty or property claims in that environment. Yet it seems that the purpose of that principle as referred to in the Outer Space Treaty and Moon Agreement lies beyond dealing with traditional property issues. The prohibition would also extend to claims over exclusive or preferred rights pertaining to the exploration and exploitation of outer space because such claims would be contradictory to the freedom principle and equality of all States to have access and use outer space and its

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[30] *Ibid.*

[31] See Roth note 75 citing :M. Lachs " The International Law of Outer Space " 1964-III vol 113 RCADI 97. and explaining that in that article already M. Lachs had considered the idea of establishing general rules of international law following the practice and declarations of leading States while focusing on the views of the USA and Soviet Union for that purpose.

[32] A.Roth does not fully agree with the tenets of the spontaneous theory – at least as it is presented by Cheng, B., "United Nations Resolutions on Outer Space: Instant International Customary Law?" 1965 IJIL vol V 36 - as he believes it reduces the finding of custom to its psychological component **only**, *i.e.* that it grants the *opinio juris* the value of the meeting of the minds that precedes the signature and ratification of an international agreement without introducing the material element that represents the practical application and recognition of the rule to comply with. In other words for the author the formative process of a norm under the spontaneous theory lies between the conventional and customary law-making schemes but is comparable to neither one.

resources. Therefore the real difficulty associated with the non-appropriation principle is to determine what constitutes appropriation (and is therefore forbidden) and what is mere use of outer space and its resources (and is allowed and encouraged).

Another major difficulty and controversial issue among space lawyers was to determine the true meaning of the criteria referred to in article II, *i.e.* "national appropriation by claim of sovereignty, by means of use or occupation, or by any other means". Should the word "national" be understood under its natural meaning, that is as an attribute of States or in connection with the spirit and drafting context of space law as pertaining to any type of activity in space?[33]

What is at stake in answering these terminology subtleties is determining whether private activities in space would overcome the non-appropriation principle where the prohibition of appropriation relies its "national" character.

Giving a positive answer to that view would represent a gold-mine for some private enterprises as much as it might ruin the entire purpose of space law *de lege lata*.

The real question might then be, is this debate as legitimate as some contend it is?[34]

There are for those who believe in the fundamental principles of space law serious contradictions in supporting such a view.

A first rebuttal would be to point out that it is very odd to assume that the drafters of the Outer Space Treaty would have accepted for the private enterprises a situation that was denied to the States.[35]

The second rejection lies in the traditional theory of law and the general impossibility for private enterprises to be recognized property rights apart from some allegiance to a State.

Finally, while the strength of this previous argument could be debated, the fundamental reason to refute the private appropriation proposition is that it would absolutely negate the intrinsic value of space law. Indeed granting property rights in outer space supposes introducing limitations on third parties freedom to explore and exploit outer space, hence being in immediate contradiction with the freedom principle[36] and potentially with the peaceful purposes principle.

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[33] Since only States were considered at the time as having the capacity to engage resources in such endeavors.

[34] See White, W. Jr., "Implications of a Proposal for Real Property Rights in Outer Space" (1999) Proceedings of the 42nd Colloquium on the Law of Outer Space of the IISL 366; *contra* PoP, V., "Appropriation in Outer Space: the Relationship between Land Ownership and sovereignty on the Celestial Bodies" (2000) 16 Space Policy 275.

[35] See Jakhu, R. "Acquisition and Retention of Property Rights in Outer Space" in Jakhu, R., Ed. *Space Law and Institutions - Documents and Materials,* vol. I, (Montreal: McGill University, september 2001) 296 at 301.

[36] *ibid.*

Therefore, pleading for property rights for private enterprises on the natural resources in outer space is a vain exercise if not a lost cause. The outcome of the broad application of the non-appropriation principle is that no State and no private entity shall claim any portion of outer space.

Whether this solution is *de lege lata* or *de lege feranda* is another question.

The international cooperation principle

International cooperation serves (i) as a conduit for the development of space law, (ii) as a necessary objective for the implementation of the substantial norms of the outer space treaties and (iii) as a substantial norm itself.

In its first capacity, international cooperation acts as the foundation of space law for it is through a cooperative attitude and spirit that this corpus of law has been drafted and accepted by the international community.[37] In its second and third capacity (generally intertwined in the texts), international cooperation is an essential tool for the implementation of all of the five space treaties,[38] probably with a particular emphasis for the Rescue Agreement because it is based on States mutual assistance.

Yet, international cooperation can only be achieved in a community governed by peaceful relations, which explains that this principle goes hand in hand with the peaceful purposes requirement and that they participate to their mutual promotion and development.

For these reasons, the international cooperation objective is of much avail to space law as it is called to intervene at all levels and States have generally integrated this objective in their domestic laws and space policies. International cooperation is therefore one essential principle of space law that would also serve as a basis for future harmonization of national legislation pertaining to space activities. Acknowledging that, the international community has subsequently drafted a declaration for that purpose.[39] International cooperation would also

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[37] See *Supra* 18

[38] The requirement of international cooperation can be found in all of the space treaties' preambles as well as in the operative part of most of them. *E.g.* article I, article III, article X and article XI of the Outer Space Treaty; in the Moon Agreement: article 2 and article 4; and implicitely in the liability and registration conventions when respectively detailing the behavior to be adopted by States when trying to settle a dispute or process information pertaining to registration.

[39] See United Nations Resolution 51/122. Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries (adopted 13 December 1996)

best serve the interests of the private sector in the development of their activities in outer space. Nevertheless, the international cooperation objective is of a voluntary nature and is subject to further negotiation between States as to its practical implications; it has not been accepted as an absolute obligation but only as one to be pursued for the benefit and in the interest of all States, that is under mutually accepted terms (see article II of the Outer Space Treaty).[40]

The direct application of these fundamental principles to private space activities should be regarded as a general rule because it is an international obligation pending upon States to incorporate these principles in their domestic space legislation (*lato sensu*).[41]
Indeed, if private activities in outer space are permitted under article VI of the Outer Space Treaty, this article draws some substantial legal consequences on the part of States as much as on the part of private enterprises.
First and foremost, according to article VI, States undergo a general responsibility to organize a legal framework within which space activities, whether private or not, are to take place. This obligation is imminent where a sufficient link is recognized between the States and the given activities, that is when a State can be identified as the "appropriate State". As pointed out by Cheng and others, it does not seem *"possible to point to any of the States that may be involved as being a priori the most appropriate State to carry out the function of authorization and supervision"*[42] and it is less the possibility of having several States corresponding to that criterion, than having none that should be of concern.[43]

Regardless of the specificities of their legal systems, States will generally take into account this international obligation as to incorporate the fundamental principles of space law into their domestic legislation. This in turn supposes that private enterprises are equally compelled to organize their activities as to respect the common heritage of mankind, freedom, non-appropriation, peaceful and international cooperation principles.
One practical outcome resulting from this situation is *e.g.* that private enterprises will be precluded from claiming any exclusive property right over space resources (celestial bodies or

[40] See B. Cheng, "The Outer Space Treaty : Thirtieth Anniversary" (1998) vol XXIII No. 4/5 Air and Space Law 156 at 163-164
[41] See Bourély, M., "The Institutional Framework of Space Activities in Outer Space", (1998) 26 No. 1 Journal of Space Law 2 at 2 and Cheng, B., *supra* note 14 at 9-10
[42] *Supra* note 40.
[43] *Ibid* at 28 and Kerrest, A., "Remarks on the Notion of Launchind State" (1999) Proceedings of the 41st Colloquium on the Law of Outer Space of the IISL 308 at 311-312.

orbits) but not to develop activities in outer space that would entail proprietary rights (*e.g.* space stations).[44] It also supposes that private enterprises are to comply with regulations that directly serve the "peaceful use" condition; that is export control legislation and other laws controlling the manufacturing of goods that potentially have a military application. Finally, this situation does not impose on private enterprises an absolute cooperation obligation as to deprive them from potential benefits; there is no coercive disclosure obligation for technological advances or direct sharing of benefits deriving from the exploration and exploitation of outer space.[45]

Still, the international cooperation objective could be followed by private enterprises as to strategically develop their activities in outer space or to support private initiatives that would try to develop harmonized domestic space legislation.

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[44] See Couston, M., Droit Spatial Economique – régimes applicables à l'espace, (Paris: SIDES, 1994.) chapter 2

[45] *ibid.* and Hobe, S., "The Common Heritage of Mankind – An Outdated Concept in International Space Law?" (1998) Proceedings of the 41st Colloquium on the Law of Outer Space of the IISL 271 at 281-282: *"one can say at this moment that the very rigid application of the idea of equitable sharing of resources and benefits derived from the exploitation of common spaces, has been completely abandoned".*

2. The International Organizations Having a Direct Interest in Satellite Communications Systems: the ITU and the International Satellite Organizations (ISOs).

International Organizations specialized in space activities are of two kinds: they were either set up to serve an intrinsic public service mission or specialized in commercial activities for the common benefit of their members.

While the first category of intergovernmental organization would necessarily keep this public international legal status, with its privileges and immunities in order to preserve its fundamental "seeking for the international common good" role; the second category has proven to be open to laid out privatization options as soon as the commercial benefits derived from the international network become interchangeable with the services offered by private corporations.

To this first set of organizations essentially corresponds the International Telecommunications Union (ITU). While Intelsat, Inmarsat and Eutelsat (a.k.a. the International Satellite Organizations – ISOs) were associated to the second category as privileged providers of commercial satellite communications services for their members.

The ITU is an essential body in the field of satellite communications as its primary function is to manage outer space resources that are of primary importance in the operation of a satellite system. It is therefor necessary to focus on its role, powers and functions while trying to understand and analyze the legal constraints the satellite communications sector is subject to.

It is not the kind of organization that is generally referred to under the term "ISO" but it is one that has an extensive say (*i.e.* of a global impact) on the technical norms satellite communications are to comply with.

As for Intelsat, Inmarsat and Eutelsat, their study is here to reveal what the international market for satellite communications current is and how the privatization of these ISOs has modeled it

A. A Fundamental Public Service Authority: The ITU

The ITU was born in 1865 when 20 States, wishing to develop transborder communications, felt the need for the harmonization of their telegraphic standards in order to interconnect their national networks. The ITU as an organization has progressively evolved and developed to encompass all scientific improvements in communications, whether using wire, radio, optical or other electromagnetic systems.

In 1947, the ITU became a specialized agency of the UN with its principal mission being to manage the frequency spectrum that was to be used and shared by various and increasingly numerous users for diverse purposes. The ITU had in this context to ensure that there would be no interference between potential users since it was endowed with a public service mission to provide for harmonization of technical norms for the safety of its members.
As much as the ITU has developed its scope of action along with the spreading of technical progress, the role and mission of the ITU has similarly been enlarged as to include frequency management for space activities[46]. Hence, the ITU has proven to play an essential role within the international community, *i.e.* the one of organizing and managing natural resources for earth-based and space-based communications.
However, it would be erroneous to contend that the ITU is an international independent regulatory authority since it is not a decision-making body *per se* but only a forum in which the international community assembles to adopt on a regular basis the appropriate legal regime that should regulate radiocommunications in general and satellite communications in particular. Intrinsically, the organization has to follow the emerging issues in the telecommunication industry such as growing privatization, globalization, deregulation and the competition and restructuring phenomena in that sector. If the ITU is not directly involved in the satellite communications industry, the regulations it issues have the power to influence (and perhaps command) the market structure and the relations private entities may develop among themselves.

Since its inception, the Union has been restructured and its membership has continuously been increasing. The current ITU is an intergovernmental organization composed of 192 States and governed by a Constitution and a Convention adopted in 1994 as amended by the 1998 Plenipotentiary Conference and which issues Radio Regulations that have the normative value of treaty law as they are annexed to the Constitution and Convention. As regards the ITU's internal structure one should first distinguish the Plenipotentiary Conference which decides on long term policy issues pertaining to the Union itself and the Council -which mainly determines the issues to be on the agenda for the following Plenipotentiary Conference- as major bodies on the one hand and the three sector of activities of the Union on

[46] An Extraordinary Administrative Conference for space Communications has first been established in 1963 for that pruprpose; *see.* "Telecommunication Regulatory Regime as Established by ITU" in Jakhu, R., Ed. *Space Law and Institutions – Documents and Materials*, vol I, (Montreal: McGill University, september 2001) 93 t 94.

the other hand. Two of these sectors correspond to the restructuring of previous ITU activities while one of them is more recent and original.[47]

The Development Sector is one in which the organization seeks to promote international cooperation for the development of telecommunications generally and in favor of developing countries. This sector is the least powerful within the Union, as it cannot adopt any legally binding decision. The Standardization Sector sets the standards for telecommunication systems which of course is of highly political and economical interest as standards represent a given technology which itself supposes the development of a given market. Finally the Radiocommunication Sector is the one with the greatest powers because it establishes and proposes what will be adopted as radio regulations at the world radio-communication conference (WRC).

To be brief and specific, the leading role of the ITU lies in the task of managing limited natural resources that are essential to satellite-based communications and propose and adopt regulations that represent the accepted "distribution" rules of these resources. As stated in article 44 §2 of the 1994 Convention as amended by the 1998 Plenipotentiary Conference:

"In using frequency bands for radio services, Member States shall bear in mind that radio frequencies and any associated orbits, including the geostationary-satellite orbit, are limited natural resources and that they must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to those orbits and frequencies, taking into account the special needs of the developing countries and the geographical situation of particular countries".

This article clearly reveals the public service mission of the Union since one of the purposes of the Radio Regulations it proposes and that are adopted through the ITU is to allow for equitable sharing and use of the limited natural resources that frequencies and geostationary orbital slots represent. However, because the ITU is not a resource dispenser it can only organize the use of frequencies and orbital positions in order to avoid interference between services and users while sovereign States will decide how to organize their telecommunications services and to whom they actually whish to grant these resources[48]. This

[47] See Jakhu, R., & Rodriguez Serrano, "International Regulation of Radio Frequencies for Space Services" 4 at 16.

[48] See Preamble of ITU Constitution stating: *"While fully recognizing the sovereign right of each State to regulate its telecommunication ..."*.

is the fundamental distinction of article 5 of the Radio Regulations between "allocation", "allotment", and "assignment" of frequencies. The ITU is in charge of the allocation and allotment of frequencies, that is the determination of the possible frequencies to be used for specific services in the first case or by regional areas in the second case. Within this distributional system, States have the freedom to determine what frequencies to assign to which station or system.

It appears that the level playing field private and public entities are interested in is of course the regional and world conferences specifically in a context where doing business as much as making profits have become transnational activities. Hence, lobbying has become an increasing activity within the Union especially at WRCs and in the standardization sector. Being that the ITU integrated the notion of sector members (*i.e.* the industry) that have no voting rights but a great deal of technical expertise and interested opinions about the Union's decisions, it is widely known and accepted by the voting members (the States) that sector members are always very present at any ITU regional or world conference and can often as observers and participants in the study groups within ITU sectors, play a decisive role in developing regulations that primarily serve the ("their" – sic) market's needs.

Besides that phenomenon of "strategic observers", the ITU faces other issues that require more imminent practical solutions. The more noticeable issues being mostly the problem of registration for frequency and geostationary (GSO) orbital slots known as the paper satellite phenomenon and the backlog within ITU for the examination of applications and issuing of a decisions pertaining to said applications.

To simply describe the paper satellite phenomenon one should first understand that the ITU in its managing mission must "distribute" frequencies and orbital slots as to avoid interference and collisions between satellites.[49] When private enterprises wish to develop and operate a satellite system they need to apply, via their state, to the ITU in order to be granted the proper frequencies and orbital positions for the realization of their venture. This application process is in itself very lengthy and complicated, it follows the "first come, first serve" rule and is in most cases a pre-requisite for the venture to be considered by the potential financiers, insurers and other contracting party interested in that project. In order to carry on their projects the initiators need to be ensured that they will be granted with the adequate frequencies and orbital slots in a timely manner and without encountering rejections of their applications that would be fatal for that matter. Due to this type of red tape constraints, the private enterprises

[49] See Article 45 of the ITU Constitution

have developed the practice of applying and registering "imaginary" satellite systems with the ITU and reserve "spots" for future satellite systems.

This conduct has been criticized for it is definitely contrary to article 44 § 2 of the ITU Convention and that it is of a free-riding nature.[50] Yet it is merely an application of the *tragedy of the commons* [51]to outer space resources. The perverse effect of this practice lies in the increasing number of applications before the ITU and the resulting backlog in their processing.[52]

B. Commercial ISOs That Turn Private: Intelsat, Inmarsat, Eutelsat

If the most popular ISOs appear to have a same destiny (privatization) it is because they have been established and operating under one same model would it be with respect to their organizational structure or their role and functions.

These organizations have been inducted by the common interest motive and for the benefit of their members' and their primary purpose was to operate and manage the members' satellite

[50] Due to the frist compe first serve mechanism, the first to apply and file will be the first served even though they do not have an immediate plan to put satellite on the allocated orbits or use the frequencies. Thus, the ones developing the paper satellite phenomenon are simply abusing their rights at the detriment of their counterparts.

[51] See Garrett Hardin, "The Tradgedy of the Commons" (1968) 162 Science 1243.
"The tragedy of the commons develops in this way. Picture a pasture open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons. Such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the long-desired goal of social stability becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy.
As a rational being, each herdsman seeks to maximize his gain. Explicitly or implicitly, more or less consciously, he asks, "What is the utility to me of adding one more animal to my herd?" This utility has one negative and one positive component.

1. The positive component is a function of the increment of one animal. Since the herdsman receives all the proceeds from the sale of the additional animal, the positive utility is nearly + 1.
2. The negative component is a function of the additional overgrazing created by one more animal. Since, however, the effects of overgrazing are shared by all the herdsmen, the negative utility for any particular decisionmaking herdsman is only a fraction of - 1.

Adding together the component partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another.... But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit -- in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all ».

[52] To these issues is also closely connected the one of government lobbying before the ITU for the benefit of a national entity proposing a satellite system. See Moore, Capt. R. M., « Business-Driven Negotiations for Satellite System Coordination: Reforming the International Telecommunication Union to Increase Commercially Oriented Negotiations over Scarce Frequency Spectrum", (1999) 65 J. Air L. & Com.51 at 67-68.

networks. For that matter the ISOs were granted preferential rights for the use of orbital slots and frequencies. As much as they were regarded as beneficial and offering a necessary public, these ISOs were criticized for their monopolistic position that was inherent to their purpose and structure but that was considered less justifiable as the telecommunication industry was growingly privatizing.

Indeed all of the ISOs not only enjoyed the common privileges of international organizations such as an international personality independent from their members and general exemption and immunities[53] but also were established and operated under very similar models. The creation of these ISOs legally refers to a treaty signed by their member States (the "Parties") and an Operative Agreement signed by national telecommunication operators (being either public or private entities – the "Signatories"). The powers within these organizations are distributed between (i) an Assembly of Parties who decide about the general and long term political actions of the ISOs[54], (ii) a reunion of Signatories (the Board of Governors for Intelsat, the Council for Inmarsat and the Board of Signatories for Eutelsat) that define the commercial and financial strategies for the organization and manage the satellite network[55] and (iii) an Executive organ headed by a Director General who is the legal representative of the Organization and is essentially responsible before the "reunion of Signatories".
Under the establishing international agreements, the Signatories play a major active role in the commercial operation and management of the ISOs as they make decisive and final decisions on issues that have been contemplated by the Parties but for which final decisions have been delegated to them. Moreover, the Signatories' voting rights are closely related to their investment shares. This latter phenomenon reveals the growing power and influence of operators within the ISOs and explain why these organization have eventually followed the same privatization trend as their dominant participants previously had.

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[53] See The immunities are detailed in the 1976 Headquarter Agreement signed with the US Government and correspond to most of diplomatic privileges for all Parties and Signatories representatives without them personally acquiring that status. This entails *inter alia* tax exemptions, custom duties waivers, judicial immunity for acts performed or falling under theri functions.

[54] More accurately, the Assembly of Parties undertakes to consider aspects that are primarily of interest to the Parties as sovereign States or to deal with any aspects that affects the intesrest of the Parties.

[55] The Signatories are considered in the Intelsat Agreement as the ones having as prime responsibilities the design, development, construction, establishment, operation and maintenance of the space segment owned by Intelsat (article X of the Agreement) and for Inmarsat having the prime responsibility for providing the space segmant necessary for the carrying out of the purposes of the organization in the most economic, effective and efficient manner (article 15 of the Convention). As for Eutelsat, the Signatories the wording is very similar to the one used in the Intelsat Agreement, see article (X, XI, XII of the Eutelsat Convention)

In every case of privatization it seems that the stakes are the same, *i.e.* successfully transforming these intergovernmental organizations into profitable private commercial enterprises while ensuring to a certain degree that these new or at least restructured entities still meet up with their original core obligations (the ones for which compliance with they had been created).

For all ISOs the privatization process has consisted in gradually opening the way to competition as the industry was becoming largely competitive. This first started with the minimization of the effects and further abolition of "monopoly-promoting" clauses (justified by the common interest of the member States and generally called inter-system coordination procedure) such as article XIV of the Intelsat Agreement, article 8 of the Inmarsat Convention and article XVI of the Eutelsat Convention[56].
These clauses provide that in case a Party or private entity under the responsibility of a member state wishes to resort to a separate satellite system they must provide the ISOs with all the relevant information pertaining to the use of that separate system which must then be coordinated with the ISO's network and must pass the test of not causing "significant economic harm" to the organization. In other words these articles[57] require both technical and operational compatibility between the proposed separate system and that of Intelsat's and limitation of economic competitivity.

As suggested by P. Salin, these provisions represent a paradox that has probably contributed to the ISOs' privatization phenomenon: *"Like for Inteslat there is a paradox here. It seems that the redactors of these provisions, by mentioning a "significant economic harm", presumably to protect Inmarsat, actually opened the door to effective competition, so that separate systems may and are developing themselves, even though they are now in a position to cause a "significant" economic harm to Inmarsat, which is justified by the credo of global competition and free access to market."*[58] Additionally, it seems that the privatization process followed by the ISOs was inherent to their structural pattern, as most of their members

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[56] See Roisse, C., "The Roles of International Organizations in Privatization and Commercial Use of Outer Space", Session Five Discussion paper, Third United Nations Conference on the Peaceful Use of Outer Space (UNISPACE III, july 1999)., explaining that while Intelsat and Inmarsat first decided to increase the ceiling of traffic provided by separate satellite systems that served as a primary criterion for the economic harm test, the strategy of Eutelsat had been, since 1992, to *de facto* abolish of this procedure
[57] Art XIV of the Intelsat Agreement, article 8 and article XVI of the Eutelsat Convention
[58] See Salin, P. A., *Satellite Communications Regulations in the Early 21st Century-Changes for a New Era* (The Hague ; Boston : M. Nijhoff, 2000) at 124 [hereinafter "Satellite Communications Regulations"].

became their direct competitors. Indeed, the major Signatories to the Operational Agreements, which according to the decision-making procedures were *de facto* the most powerful members of the ISOs, were also the incumbent actors of the telecommunications market. Incidentally, while they were themselves experiencing privatization in the 1980s and developing their services, they have inspired the ISOs on how to permit greater market access in the satellite telecommunications sector[59]. At the same time and as this relaxation of the ISOs pre-eminence promoted more competition on the market, the competitors seriously started to criticize the privileges and immunities of these organizations as market distorting advantages that negated or at least reduced the benefits of competition.

Most agree that the incentives to privatize were of an economic nature[60], however political concerns and pressures have also been set forth as privatization motives. For example F. Lyall adds as external reasons the "ego" of entrepreneurs and deregulation promoters who advocated the privatization of the ISOs not simply for the sake of the "interplay of market forces" but mostly for the sake of "commercial empires and alliances"; and the enactment/ implementation of the ORBIT Act which represents the lobbying action of the industry towards the ISOs' privatization[61].

Political and regulatory demands were also incentives for the ISOs restructuring and privatization, *e.g.* within the European Union (EU), the Commission and Council – in order to ensure fair competition in the growing telecommunication market – required wider access to space segment capacity and subsequently the removal of privileges detained by the ISOs[62].

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[59] This is what F. Lyall includes under the expression "Trojan Horse" when examining the privatization process and prospects about the Intelsat privatization. See Lyall, F., "On the Privatization of Intelsat", (2000) 28 Journal of Space Law 101 [hereinafter "Intelsat privatization"]

[60] P.A. Salin considers 4 reasons for that : (1) the decline of the natural monopoly aspect of satelite telecommunications as the know how has been spread and this technology acquired and developped by others; (2) the unvalidity of the "public good arguemnt" in a society were similar services can be offered -at the same conditions- by private companies; (3) the coordinationation procedure for inter-system connection represented artificial barriers to competition with Intelsat; (4) immunities and privileges constituted economic barriers to competition with Intelsat. – See. "Satellite Communications Regulations" *supra* note 58 at 115.

[61] See . Lyall,F., "Intelsat privatization" *supra* note 59 at 6.

[62] See . David Sagar " Restructuring of Inmarsat " - Commentary paper, UNISPACE III Session Five, in Jakhu, R., Ed. *Law of Space Applications - Documents and Materials,* vol. I, (Montreal: McGill University, september 2001) at 425 (point 4) and *see* Council Resolution of 22 July 1993 on the review of the situation in the telecommunications sector and the need for further development in that market / Communication from the Commission to the European Parliament and the Council on Satellite Personal Communications, COM(93) 171 final, 27.4.1993; Council Resolution of 7December 1993 on the introduction of satellite personal communications services in theCommunity, OJ 93/C 339/01; Council Resolution of 22 December 1994 on the furtherdevelopment of the Community's satellite communications policy, especially with regard to theprovision of, and access to, space segment capacity, (94/C 379/04, OJ C 379/5, 31.12.94). TheEuropean Parliament and Council Decision 710/97/EC of 24 March 1997 on a co-ordinated authorisation approach in the field of satellite personal-communication services in the Community OJ 97/L105/4.

All in all, increased commercialization through privatization was the general trend to follow, even for some regional ISOs such as Intersputnik (operating a satellite network for eastern Europe countries and operators) and Arabsat (having its members and operators located in the Mediterranean region and the middle east). These two organizations differ from Intelsat, Inmarsat and Eutelsat in that their member States are responsible for taking all decisions; therefore, in their evolution they both tend towards more enhanced commercial prospects and contracts rather than immediately towards privatization (though they have lately envisioned that possibility).

In any ISO privatization case, one of the main concerns was to coordinate the actions of these new private companies – driven by market forces – with their core obligations or "Lifeline Connectivity Obligations" (as named for Intelsat) which represents their former actions that were of a public service nature, that justified the ISO's advantages and that still being objectives of public interest need as such to be maintained.

All the ISOs have guaranteed that their transformation into profit-making entities would not prejudice their original *raison d'être* and obligations. Therefore, along with privatization, basic commitments were taken by the ISOs in order to ensure that the privatization process will not affect and relinquish the fundamental principles of the general common interest for which they were originally established.

For that purpose, their restructuring plan always seem to include a distinguished entity of a public law nature which primary purpose is to ensure that the newly privatized organizations continue to meet the basic principles which guided their original activities.

For Intelsat, Inmarsat and Eutelsat, this resulted in the consecration of a residual intergovernmental organization known as:

- For Intelsat: the International Telecommunications Satellite Organization ("ITSO")[63];
- For Inmarsat: the International Maritime Satellite Organization ("IMSO")[64];
- For Eutelsat: the residual IGO takes the name of Eutelsat whereas the commercial entity is designated as Eutelsat S.A.[65]

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[63] See Comments of Intelsat before the National Telecommunications and Information Administration, web: http://www.ntia.doc.gov/ntiahome/occ/comments/intelsat.htm - *"New INTELSAT would initially have a residual IGO, and then transition to a corporation without an IGO, with the obligation to serve the lifeline connectivities preserved in the corporate documents. Under any of these approaches, the privatized INTELSAT would be established under national law, subject to national taxation and competition law, with no privileges, immunities, or special treatment of any kind. ».*

[64] The IMSO continues to exist as a separate legal entity, responsible for ensuring that Inmarsat fulfills its public service obligations, with its main focus on the company's role in the Global Maritime Distress and Safety System ("GMDSS"), see also web:. http://www.imo.org/Conventions/mainframe.asp?topic_id=257&doc_id=674#2 .

The substantial role of these public service organizations is to control the activities of the new private satellite networks and ensure that generally speaking the objective of providing non-discriminatory access to service or service to all geographical areas where it is needed (regardless of their remoteness and of the unprofitable characteristic of these routes since there should not either be any financial discrimination) and in the case of Inmarsat to assure the continuity of the Global Maritime Distress and Safety System activities ("GMDSS").

If some may be skeptical about the relative existence and functions of these residual controlling intergovernmental organization *vs.* the market forces and the globalization phenomenon within the satellite communications sector, it is worth underlining that at least for a certain period of time, the new private Intelsat, Inmarsat and Eutelsat will have to comply with these obligations of a public service nature, which are mere applications of the basic principles commanded by general international space law, by which only States are directly bound. However, by complying with these basic principles or "Lifeline Connectivity Obligations" these private entities tend to establish a relevant business practice within the satellite communications industry.

Indeed, since their privatization, the new entities became subject of the law of their state of *situ,* incorporation or of registration (according to the applicable legal system) and as any other private entity their status under international law is the one described by article VI of the Outer Space Treaty. In other words, the sole direct obligations these private corporations are bound by are the national regulations and law for which compliance with they qualify. Nevertheless, by autonomously undertaking common interest obligations and following the doctrine of transnational law and the *lex mercatoria*, [66] there may be creation of business practices (or commercial usages) by these representative corporations which could later take on a normative nature and be regarded as law when dealing with conflict resolution and commercial dispute settlement.

The validation of such an analysis would consolidate the value of the fundamental principles of space law at the private international law level. On the other hand, where the generalization

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[65] See Eutelsat convention as amended in cardiff – 20 may 1999 (article II & III) and web: http://www.eutelsat.com/news/pdf/2001/SA%20day%20one.pdf : "*A separate intergovernmental organisation headed by an Executive Secretary,Birgitta Naeslund of Sweden, will continue to exist in order to monitor that the newcompany respects basic principles of pan-European coverage, non-discrimination,fair competition and universal service*"

[66] See Goldman, B., "La *lex mercatoria* dans les contrats et l'arbitrage internationaux, rélités et perspectives", (1979) Journal du droit International 475; *contra* Lagarde, P., "Approche critique de la *lex mercatoria*," (1983) Etudes offertes à B. Goldman 125 and Mousseron, J-M, "La *lex mercatoria*, bonne mauvaise idée ou mauvaise bonne idée" (1996) Mélanges Boyer 469.

of a business practice could create a stable rule of law, it has to be recognized as such by its pears or by those that are the relevant actors in a business sector.[67] Whether the new ISOs can be characterized as "relevant" actors for that purpose is still something to be ascertained.[68]

The fact that the commercial organizations have become private entities suggests that reliance on national space legislation is growing, as the ex-ISOs are now, like many other private space venture, entities that are subject to domestic law and sovereign jurisdiction of the States they can be associated with (a.k.a. the "appropriate state" under the Liability Convention and also the state of incorporation or of *situ* according to general private corporate law). As a parallel to legislation, one can also foresee that national "space-oriented" regulations and politics are developing factors over the space industry's growth that are gaining importance and influencing the market forces in that industry. For these reasons it is certainly at the national level that the expansion of commercial space activities is at stake. For that matter, the adequacy of national legislation and harmonization between the various national legislation is one critical step that should be of general focus for the Sates and the industry.

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[67] See Ph. Kahn's observations in an oral discussion on that subject in Loquin, E., & Kessedjian, C.eds., « La Mondialisation du Droit » (Paris : Litec, 2000) at 174 :
« pour en revenir à la question du critère de la mondialisation, il n'existe pas pour le moment de critère très ferme. Si on se réfère à la lex mercatoria, il ne suffit pas qu'une entreprise déclare unilatéralement qu'elle établit dans son contrat une norme qu'elle va appliquer dans le monde entier. Encore faut-ilque le système soit reconnu par le groupement professionnel dont elle relève. » [emphasis added].

[68] On the other hand, it might well appear, during the following decades that the public service remains of these ex-ISOs might itself be considered as obsolete and in contradiction with the viability of these entities within a competitive and deregulated market. In that is to be what the long-term trends of privatization were to be endowed with, then Lyall would be right: "World Loss". See. Lyall "Intelsat Privatization" *supra* note 59 at 7.

Section 2: The Domestic Component of Space Law, What It Allows for and Commands

The International component of space law is probably the most essential one as it gives the primary guidance for space law to become a comprehensive set of rules. International space law is naturally directed to States and to intergovernmental organizations and governs these subjects' space activities as much as it has established a legal regime for outer space. Following its drafting and content, international space law evidently calls for complements at the domestic level, through national legislation and regulation pertaining to space activities. This can clearly be drawn from the wording of article VI of the Outer Space Treaty and from current experience as the growing involvement of private commercial ventures in space has demonstrated that the *Corpus Juris Internationalis Spatialis* did not provide with any satisfactory or adequate solution for this new situation, *i.e.* growing privatization of space activities. This observation is also supported by the textual analysis of any space treaty which reports that not one component of international space law provides for detailed provisions, that is provisions that would inform the States on how to implement the general obligations that they only care to state.

Nations have at first decided to consider space law as a cooperative system of law but through their drafting they have also implied that should space law be completed with domestic legislation and regulation, the national legislators would retain freedom and sovereignty in their elaboration of a set of rules applying to space activities.

It is worth noting that the lack of details in international space law subsequently results in less detailed limitations for space activities and more creativity for the national legislators when implementing their general obligation of designing and establishing a national framework for space activities. This also implies, as a parallel, more freedom for States to unilaterally interpret international space law and develop their domestic legislation accordingly.

It appears that all space faring nations, or nations that have taken action to develop legislation for space activities, have followed similar patterns: they have empowered the administration to deal with specific space related issues and have structured their space legislation in comparable fashions. Where there are noticeable differences between the various space legislation, they lie in the degree of accuracy, number and length of the accompanying regulations.

1. The Governments and Space: Administrations, Agencies and Departments

If not all space faring nation has passed a special act for outer space activities (a "space act"), they all have used their executive power to comply with their obligations of authorization and supervision under international law. These administrative agencies for most are pure regulatory agencies. However it sometimes so happens that the same administration will regulate space activities as much as be actors and initiator of space projects on behalf of the State.

A. National Space Agencies

At a time where space could only be the States' concern, the primary objective of the space faring nations was to create national space agencies that would represent the States' space efforts by pursuing Research and Development (R&D) and develop national space programmes[69]. While these agencies no more have the monopoly in space activities, they still represent major players in the satellite and launching industry and–for most – benefit as independent agencies of advantages derived from their public entity status and regulatory powers.

Space Agencies, however, act as national scientific departments for the development of space endeavors, programmes, knowledge and exploration.[70] They can pursue commercial activities in space but it is always for or within the limits of their general public service mission. Space Agencies can have both horizontal and vertical relationships with private commercial enterprises and when they act as regulators it is mostly with respect to space programmes both parties are involved in; *e.g.* the NASA regulates the use of its assets and expertise by private enterprises such as the space shuttle flights and private cargo aboard the space shuttle or the space station.[71]

The Agencies also represent a valid option for private enterprises wishing to expand their commercial contracts *per se* (as direct contractors for the Agencies) or wishing to enter partnerships or other types of contractual alliances in order to find proper financing for their

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[69] See the National Aeronautics Space Act (1958) according to which, NASA's mission was also to assure and organize US pre-eminence in space

[70] The most active space agencies being: the National Aeronautics and Space Administration (NASA -USA), British National Space Center (BNSC), Canadian Space Agency (CSA), Centre National d'Etudes Spatiales (CNES-France), Deutsche Agentur für Raumfahrtangelegenheiten (DARA), Indian Space Research Organization (ISRO), Israel Space Agency (ISA),National Space Development Agency (NASDA-Japan), and Russian Aviation and Space Agency (RASA).

[71] See Goldman, N. C., *American Space Law : International and Domestic* – 2nd ed. (San Diego, Calif. : Univelt, 1996) at 153.

projects since the Agencies are granted an adequate budget for their activities[72]. Hence, most Agencies have developed the practice of concluding agreements with the industry for the benefit of both parties. This is a sort of strategic alliance between the public and private entities that correspond to various legal cooperative options. The NASA, for example, has developed Cooperative Agreements, Industrial Guest Investigation Agreements (IGIAs), Technical Exchange Agreements (TEAs) and Joint Endeavor Agreements (JEAs)[73]. This type of cooperation is better known as Public Private Partnership (PPP) , and the private sector is quite fond of it as it reduces, on the side of the private sector, financial risk. Nevertheless, the benefits of such partnerships might *de facto* be limited to the promotion of the national or regional industry and private enterprises, which might also be looked at as a practice limiting trade and that would be contrary to the globalization guidelines elaborated and promoted by the WTO[74].

With respect to national space agencies, a rationalization trend is emerging. If space activities have up to recently been a prerogative of States, this appears to be changing at least within the European community. By deciding to cooperate on the regional level through ESA, European States have entered an international process which would grant this agency growing powers for the implementation of space programmes. Following this trend the national space agencies may still have a bright future as scientific R&D centers while this is less certain with respect to their function of independent programme initiators. To date, ESA is fundamentally an agency turned towards R&D and its commercial applications are transferred to other entities - such as the Ariane project which was transferred to Arianespace which is now a majorly privately owned entity.

These agencies represent the power and capacity of space faring nations to be involved in, organize and develop national space activities and applications but the central obligation of authorization and supervision of non-governmental entities' space activities is exercised by

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[72] See for example, within NASA the Office for Commercial Space Programmes and the Centers fror Commercial Development of Space.

[73] For further detail on the content of each type of agreement *see.* Goldman, N. C., *American Space Law : International and Domestic* – 2nd ed. (San Diego, Calif. : Univelt, 1996) at 163

[74] NASA has always palyed an active role in the pre-eminence of US in space by involving the US industry in its programmes. The same could be said of Europe and ESA as politics remain an essential component in space activities worldwide. National security issues and space technology are too closely entwined for space activities to become a fully liberalized business with very few barriers to it. By opposing that aspect of the question to competition issues, the industry wishes to gain more market access but it is unlikely that even for trade liberalization purposes States would give up their pre-eminence in space and consequently in world politics.

another category of administrative agencies and departments whose central mission are to regulate these private activities.

B. Regulatory Agencies and Related Departments

There is not necessarily one single regulatory agency in charge of supervising and authorizing private satellite commmunications projects. Usually, the private enterprises will also have to coordinate their applications before a primarily concerned administrative agency and others that only have a secondary interest in a given venture.

This is particularly salient in the United States where the Federal Communications Commission (FCC) is followed by a plethora of agency that are either interested in general aspects of space activities but that are not private satellite communications systems[75] or only indirectly involved with space activities (*e.g.* the Food and Drug Administration (FDA) with respect to drugs that are to be tested or elaborated in outer space.

The FCC's primary mission is to organize and manage the communications originating from , received or transferred through the US by wire or radio for the benefit of the people of America and while controlling that such management conforms with the public interest, convenience and necessity test.[76] It is therefore concerned with the ground segment as much as the space segment of communications satellites: it requires applications and grants licenses at both levels.[77] It will examine the type of ground terminals and other technology to be used[78] and mostly will distribute and manage frequencies and orbital slots to be used for US communications systems.[79]

Examining the FCC from a political standpoint, it is an agency that has great powers and influence both over the American communications satellite market as much as on the international scene. For example the FCC has been the initiator in the degree spacing reduction between satellites (from 4 degrees required to 2 only).[80] and it has also licensed global communications systems and has been criticized for the ostensible "*extra-territorial*

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[75] *Inter alia* the Department of State (DoS) for export control of space technology, the Department of Transportation (DoT) and the Federal Aviation Administration (FAA) and Office for Commercial Space Transport (OCST)for all that pertains to launching, the Department of Commerce (DoC) for licensing of private space remote sensing systems ...etc.

[76] Goldman, N. C., *American Space Law : International and Domestic* – 2nd ed. (San Diego, Calif. : Univelt, 1996) at 177.

[77] See generally 47 C.F.R. §25 (1997)

[78] See 47 C.F.R. § 25.130 – 25.136 (1997) ["Earth Stations"]

[79] See 47 C.F.R. § 25. 140 – 25.144 (1997) ["Space Stations"]

[80] See Goldman *supra* note 75 at 180.

implications" of this type of licensing (the "Big LEOs"- Low Earth Orbit satellite constellations- having been granted licenses since 1995).[81] Finally, the FCC has a market regulation role in that it also supervises the transfer of licenses it has granted and hears the Mergers and Acquisition (M&A) plans of operators in the communications sector. This role might be looked at as secondary yet it is of primary importance for it completes the aforementioned licensing and regulatory mission and contributes to the FCC's glow.

For the other States, the regulatory entities are for most, departments, bureaus, or divisions of Ministries if not the National Space Agencies that have also taken over that regulatory function.

This is the case respectively in the United Kingdom, Russia and Japan where the BNSC, the RASA and NASDA all act as regulatory agencies while in Australia, Sweden, and France, Ministries and their departments will arrange for the examination and granting of licenses pertaining to space activities.[82]

It has already been mentioned that the licenses to be granted are of different natures but the main distinction to make at this point is the one between launching licenses and licenses for the distribution and management of frequencies. Except for the United States where this distinction is clear-cut as to the specific functions of the administrative agencies involved, all other States seem to have merged these issues which are under the general scope of their regulatory agencies.[83]

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[81] See Salin, P. A., "Non-Trade Globalization issues and Space Communications" - Project 2001, (Berlin 8-9 June 2000) Workshop on Telecommunications 176 at 179. [hereinafter "Non-Trade Issues"].

[82] In France because there is no specific space legislation, this comes under the general mission of the Autorité de Régulation des Télécommunications (ART) who grants to types of licenses. A public network license (L. 33-1) and a public Service license (L. 34-1). There is no specificity as regards satellite communications in this system . See Sennequier, N. *Les satellite des télécommunication*, (Paris : Presse Universitaire de France, Que sais-je, 2000) at 71-72.

[83] For further details on the role and missions of these agencies *see* "Review of existing national space legislation illustrating how States are implementing, as appropriate, their responsibilities to authorize and provide continuing supervision of non-governmental entities in outer space"
UNCOPUOS Legal Sub-Committee (Vienna, 2-12 April 2001)
UN Doc. A/AC.105/C.2/L.224
Web : http://www.oosa.unvienna.org/Reports/AC105_C2_L224E.pdf [hereinafter "Review of National Space Laws"].

2. Domestic Space Legislation *Per Se*

As analyzed earlier, States' responsibility referred to under article VI represents their general obligation to legislate upon space activities and related matters.

The space faring nations have developed legal frameworks for that purpose but not all have a specific space legislation or a "space act".

Two trends have been developed with respect to domestic space legislation. On the first hand we find " space acts " or legislation of general scope and on the other hand we find multiple and specific space legislation whether these instruments endorse the normativitiy of acts or regulation.

The first category is illustrated *e.g.* by the 1958 US National Aeronautics Space Act, the UK 1986 Outer Space Act , the 1998 Australia Space Activities Act or the 1993 Russian Federation Law on Space Activities...*inter alia*.

Whereas, the second type of legislation targets specific space activities (remote sensing or direct broadcasting) or specifies which and to what extent administrative agencies or other public authorities are in charge of the implementation of the continuous authorization and supervision obligations States are bound by (*e.g.* US Commercial Space Act 1998 or the US Land Remote Sensing Commercialization Act a.k.a. "the Landsat Act" 1984.)[84]

When examining these laws, if a structured model is more or less apparent, it is not refined nor very elaborate. The first category of space legislation does not provide for a determined scope of application, it can be broad or narrow, sufficiently detailing its application criteria or leaving this task for further regulation. For instance, while it sometimes only focuses on launching, in other cases it encompasses all kind of space activities. It might provide for detailed procedures for licensing applications and further recourses or distinguish the procedural aspects from the substantive provisions and decide that such a matter should be referred to in secondary legislation.[85]

The common core between these various national instruments probably remains in what international law has commanded to States. That is, in the implementation of their policy towards space activities, all States have to comply with the basic principles set out in the Outer Space Treaty;[86] and with respect to their general authorization and supervision

[84] See Landsat Act 15 U.S.C. §4201 and Commercial Space Act, Pub. L. No. 105-303.
[85] See generally "Review of National Space Laws" *supra* note 83
[86] See *e.g.* Australia Space Activity Act , Part I § 3 and Russian Federation Law on space Activities, Section I article 4,

obligations, they have for that purpose adopted the licensing process as a fundamental tool. Similar (though not "standard") practices have been adopted for the assignments of frequencies to private satellite systems (as the assignment of frequencies is a State prerogative) that is through a distribution of the frequencies following an application detailing the technological and marketing characteristics of a satellite system.
Yet, the most developed common features to all space acts it are the licensing requirements and conditions pertaining to launching activities.
These common requirements derives from the liability scheme imposed on States through article VII of the Outer Space Treaty and the Liability Convention;[87] as it is the best method to identify and inform the private entities wishing to engage in space activities of their *in fine* liability. Similarly most space acts require private entities to be financially sound and covered by adequate insurance as a condition to their granting of licenses.[88]

On the other hand, specific regulations, either completing the space acts or acting as space-related legislation (for those nations who do not have expressly adopted acts for compliance with article VI of the OST), precisely determine the procedures to be followed and the requirements to meet on the part of private enterprises in order to be granted authorization to pursue space activities. These regulations also have the function to organize supervision over these entities. The US legislation is certainly the most comprehensive framework of this type as it considers space activities per category and lays out all the administrative agencies that might have a say on their realization. In other countries, this type of legislation is not as well structured nor detailed, it is mostly limited to the determination of the regulatory authorities in charge altogether of registration, licensing, or assignment of frequencies for private space ventures.

With this respect, Europe represents a paradox. While States are jealous of their national prerogatives as signatories to the space treaties, the fact that they have engaged into extensive regional collaboration within the ESA structure has subsequently diminished their interest for the development of national space legislation. Nevertheless, Europe is becoming an important

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[87] See "Space Law and Private Enterprises" *supra* note 14 at 12-13, 16-17.
[88] See *e.g.* Russian Federation Space Act together Section V, article 25 ("Insurance of Space Activities") and Section VII, article 30 § 2 ("Liability"); UK Outer Space Act § 5 (f) *"requiring the licensee to ensure himself... "*, Australian Space Act Part III Section 48 ("Insurance Requirements") and US Commercial Space Act, 14 C.F.R. § 440 ("Financial Responsibility") especially §440.13 ("Standard Conditions of Insurance Coverage")

marketplace for private enterprises involved in space activities and the lack of adequate space legislation is being noticed by the industry as much as the governments.

This has affected two major space powers in Europe: France and Germany. These States have therefore decided to enter a legislating process which is currently only at the drafting stage.

In any case what is being sensed as a need both on the part of the industry as by the officials of these governments is the establishment of a flexible and reliable framework.

Clerc, who has directed a study for the French Government on that matter has recognized that *"assessing the opportunity to enact a Space legislation in France should lead us to go beyond space law matters (application of UN space treaties, responsibility, liability, registration, properties regimes, EC and domestic law ...) to address economical, social and political issues. In particular space legislation has to combine support to private activities and fair competition ... "*.

Concurrently, the industry calls for the establishment of a broader framework, not only focusing on licensing and responsibility issues but also on tax regulations, custom duties, export control, financing and intellectual property questions for which the existing legislation seems insufficient and inadequate.[89] A second type of criticism raised by the industry is the general administrative burden and cost that the current licensing procedures represent. For this reason too, the industry wishes to get involved in public fora for the harmonization and simplification of national space legislation.

[89] Ersfeld, H., "Industry views on National Space Legislation", Needs and Prospects for National Space Legislation, Workshop on National Space Legislation (5/6 December 2000, Munich, Germany) 39 at 46, 48

CHAPTER 2

THE MARKET

Private Satellite Communications: Which Actors, What Market Share?

As mentioned earlier, the satellite communications market has evolved from a sector governed by national activities and public entities towards an increasing commercial and private industry driven by market forces and profit-making priorities. The former public service monopolies represented by Intelsat, Inmarsat and Eutelsat have gradually left room for private competitors, to the point these entities were obliged to themselves experience privatization for their survival in the new market economy ruling in the satellite communications sector.

Nowadays, satellite communications is the most profitable space business and the most developed one. It has successively encountered commercialization, privatization and globalization. If these first two stages correspond to a traditional capitalistic market approach, the globalization phenomenon is of another nature and more extensive in its effects.

No official definition of the term "globalization" has been agreed upon amongst lawyers nor economists but for most, globalization seems to be understood as a "process of denationalization of markets, politics, and law on the international as well as the national levels"[90] or as the "denationalization of markets, laws and politics, in the sense of interlacing peoples and individuals for the sake of the common good."[91]

With that respect globalization is to be distinguished from internationalization. In the latter case States remain the leading actors and are required to cooperate with one another therefore retaining their sovereign prerogatives and putting forward their national interests to some extent; while globalization points out to a world structure that get rids of these national and sovereign interests and prerogatives in order to favor the "global public interest" that

[90] See Delbruck, J., "Prospects for a "World (Internal) Law?": Legal Developments in a Changing International System", (2002) 9 Ind. J. Global Leg. Stud. 401, and for a further detailed definition by the same author- focusing on the processes leading to globalization see Delbruck, J., "Globalization of Law, Politics, and Markets-Implications for Domestic Law-A European Perspective", (1993) 1 Ind. J. Global Legal Stud. 9 at 10-11

[91] See Jayakar,K., "Globalization and the Legitimacy of International Telecommunications Standard-Setting Organizations", (1998) 5 Ind. J. Global Leg. Stud. 711

generally coincides with transnational interests of groups that do not define themselves (primarily) through a national affiliation.

Globalization is thus analyzed as being both an economic and legal evolution of the 20th century social order as it shifts the power from nation States to private and semi-private entities for the creation of norms. It also radically transforms the local market focus and hierarchical organizational structures that prevailed in the multinationalization era (1950-1980) respectively into an awareness of the possibility to develop capturable markets on the global scale and to organize businesses under network models.[92]

This network type structure, as much as the extension of the market on a global scale, is today easily recognizable in the satellite communications sector (amongst other sectors of the space industry) hence revealing the globalization phenomenon in that sector.

Another phenomenon specific to the satellite communications industry having been predicted since the early 1990's is intensive restructuring resulting in high concentration[93].

Concentration happens to be in that sector both an economic and political problem. The traditional approach to concentration reveals the economics-related issues, such as monopoly, oligopoly or general market dominance questions that interfere on the type of services and price of the services to be offered.

As a political problem, it is less the absence of effective public policy and public action to ensure fair competition in that sector than the military interest in satellite communications (and space applications in general) that is central. As mentioned by P. A. Salin, increased concentration in that sector might not be in phase with the " peaceful use of outer space ".[94]

In order to weigh all the political and economic impediments for the private satellite communications industry, one needs to define and examine this industry's market. This includes focusing on the technical constraints directly related to satellite communications activities in order to identify and reveal issues pertaining to, and prospects for, its development.

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[92] See Cohendet, P., "Trends in Space Markets", in Houston, A., & Roycroft , M., *Keys to Space* , (New York :McGraw-Hill, 1999) cited in Peteers, W. A. R., *Space Marketing, A European Perspective*, (Dordrecht, The Netherlands: Kluwer Academic Publishers, Space Technology Library, 2000) at 43.

[93] See Turck, F., « L'évolution des obligations contractuelles du constructeur vis-à-vis de son client » in Kahn, Ph., Ed., *L'exploitation commerciale de l'espace – droit positif, droit prospectif*, (Paris : Litec, 1992) 203 at 211 [hereinafter « l'exploitation commerciale de l'espace »].

[94] See chapter IV below *infr* 230

Section 1: Identifying the Market – Technological and Economical Considerations

The space business and application of focus is –in this thesis- obviously satellites. The basic functional scheme of this technology reveals that all satellites have minimal similar need to be operational; that is a location in Outer Space - the orbit - and a communication electromagnetic support, the frequencies.

Satellites represent a high and rapidly improving technology. The new generations are smaller, lighter and more powerful in capacity.[95] Moreover, their uses, as systems and the services they provide have evolved from basic fixed telecommunications towards increasing mobile satellite services and constellations of non-geostationary satellite systems with multiple/ diverse applications opportunities. If the new satellite projects are promising they they are also complex structures to set up for their realization depends not only on a traditional business plan approach but also upon regulatory coordination at the national and international level - would it be for the determination of frequencies and orbits to be used or with respect to the specific activities and services these systems are to perform. With this in mind, one understands that the technology both has a legal relevance and an economic value.

1. Satellites: the General Scheme

A satellite is a body orbiting around a planet and communications satellite add to that basic definition the capacity to transmit electromagnetic signals through the use of certain frequency bands. Therefore a satellite system is necessarily composed of a space segment (the satellite itself and the ground station used for its tracking telemetry and control) transmitting signals to or/and receiving signals from the earth segment (earth stations in direct connection with the satellite).

In any case the operation of a satellite system includes the use of limited natural resources, *i.e.* frequencies and orbits. Frequencies can only be of a limited use since they are subject to interference (they cannot simultaneously carry different signals) and that only part of the spectrum is suitable for satellite communications. In this context, it rapidly appeared that

[95] The new generation of satellites are referred to as "nanosatellites" and their sophistication is translated in their very light weight (less than 20 kg) *see.* For further details Caceres, M., "The emerging nanosatellite market" web: http://www.aiaa.org/market/index.hfm?mar=61&issuetocid=54 [also published in Aerospace America February 2001]

these resources, as part of the common heritage of mankind, had to be used equitably and efficiently and therefore managed at the international level, through the ITU.[96]
Similarly, the geostationary orbit is regarded as a scarce resource as it can only support so many satellites while trying to avoid interference or collisions between them.
As economic theory explains, what is rare is valuable and even though the international community and the law wishes to allow for equitable sharing of resources, a market approach towards the latter is becoming very popular.

The normal process for resource management within the ITU consists in frequency allocation (that is the determination of frequency bands for uplinks and downlinks according to the service), allotment plans,[97] and on behalf of States to coordinate frequencies through registration of satellites. Nevertheless this process is being criticized for two reasons.
Firstly, the " first come first served " principle used for the assignment of frequencies and orbital slots is prone to be affected by lobbying practices and eventually grants the registered system's owner a quasi-perpetual right to use these resources; this could be assimilated to a type of ownership right (in civil law: " *usus* "). Secondly an auctioning phenomenon (for frequencies and orbits) has lately been developed at the domestic level and it negates the purpose of the ITU resource management system.
Indeed, the mission of the ITU with respect to satellite communications lies in the premise that outer space resources are of potential access to all. The auctioning process is not in phase with that idealistic view for an equitable distribution of benefits but reintroduces, in the sphere for the management of common goods, a market approach that ultimately says: "give the resources to those who value them most, those who have the money!"
Nevertheless the ITU has a public mission to pursue and it is determined to do so regardless of the market's growing pressure. For that purpose it must also distribute frequencies and orbital slots to small countries, not well known by the general public, but that experience their hour of fame through the ITU's "generosity", *e.g.* Tonga.
The case of Tonga is not one to reveal a malfunctioning of the system but on the contrary its to great adaptation capacity to the industry's needs.

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[96] See Chapter 1, Section 1, B above for the function of the ITU and the problems associated with the management mechanisms used for that purpose.
[97] See Jakhu, R., & Rodriguez Serrano, "International Regulation of Radio Frequencies for Space Services" Legal Framework for Commercial Satellite Telecommunications, Workshop on Telecommunications (8/9 June 2000, Berlin, Germany) at 19, up to now only BSS has been subject to it.

Tonga is a small nation in the Pacific Rim that proceeded applications before the ITU for the benefit of a company established under its laws, *i.e.* Tongasat. Tongasat in the end happened to lease it slots to American companies instead of using them itself. The founder of Tongasat, Nilson (an American citizen), had experienced the difficulties of establishing successful satellite systems because of red tape constraints and he clearly understood that the ITU would grant slots to such a small country because of the equitable underpinnings of its mission.[98] Some have strongly criticized[99] this situation and have contended it was a perversion of the system. Yet others have underlined it was a mere application of the system as Tonga's applications were not factitious and did serve this country' benefits.[100]

This example not only reveals that there is a high economic value associated with outer space resources and especially the geostationary orbit (GSO) but also explains why future satellite communications systems have preferred the moving constellation model (in LEO and Medium Erath Orbit -MEO) to the traditional fixed orbit system (GSO).

Also deriving from the type of technology used for space activities is the risk involved in the satellite communications business which impacts on the cost of given programmes. Like any other technology, satellite can be subject to failures. However their particularity is to be located in outer space and their fixation is barely possible. Their market value therefore, essentially depends on their functionality, which is eventually determined once having complied with in-orbit testing. This technology-derived risk's repercussions are the general awareness of the existence of risk for the main actors in the space business and specifically complex mechanisms for risk management and financing.

This technology also has political implications. Because it is considered as a dual-use good, it is predisposed to always be under governmental control, for national security purposes. The potential military-oriented utilization limits free trade objectives in that sector and justifies regulatory constraints pending over the private sector's activities and the satellite communications market generally.

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[98] See Ezor, J. I., "Costs Overhead: Tonga's Claiming of Sixteen Geostationary Orbital Sites and The Implications for U.S. Space Policy", (1993) 24 Law & Policy in International Business 915 at920.
[99] Lyall, F. "Expanding Global communications Services", Session Three Discussion paper, Third United Nations Conference on the Peaceful Use of Outer Space (UNISPACE III, July 1999) 213
[100] *Ibid.* Jakhu, R., Commentary Paper to Lyall's Discussion Paper: *" Tonga played according to the rules that were initiated, devised and strongly supported by those States that object to Tonga's initiative. Under the ITU rules, each State has been and is allowed to secure radio frequencies and orbital positions to meet its needs. Who determines a State's needs? No one but the concerned State."* [emphasis added].

Finally, being capital-intensive and always subject to advances, the satellite system technology and business is governed by general technical and standardization regulations. On the one hand, the private interests in that business are growing and because standards represent capturable markets, the private sector seeks to influence (and should be better considered and involved in) the international standardization fora. On the other hand, a common standard is like a common language; such uniformity would serve the international community by providing uniform communications free of technical barriers.[101] In other words betterment of the technology and globalization are also reasons to promote private international cooperation.

2. Emerging new satellite communications applications : exaggerated and overoptimistic prospects?

Apart from traditional GSO satellite systems, whether providing Fixed Satellite Services (FSS), Mobile Satellite Services (MSS) or Broadcasting satellite service (BSS) as defined by the ITU[102], non-GSO satellites systems are being developed by the industry. These systems present technical, economical and regulatory advantages in comparison with GSO systems. It seems that the ITU distinction between FSS, MSS, BSS, is losing relevance[103] and that the GSO and non-GSO distinction is becoming the cornerstone of many economic and regulatory issues relating the satellite communication.

The distinction between these types of systems is primarily technical. Whereas the GSO satellites have the advantages to reproduce the Earthly revolution and stick to their orbital position, inasmuch as not more than 3 GSO satellites are needed to provide for global coverage, the non-GSO satellites do not benefit from these physical conditions derived from the geosynchronous orbit. As a parallel, where the GSO systems have proven to be very convenient for FSS or simple one-way streams of data, the non-GSO systems promise to be more suitable for mobile or two way connections. Indeed, any lower orbit than the geosynchronous orbit does not permit for attraction forces and the speed of a satellite's

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[101] See ITU World Telecommunication Policy Forum, "Policy and Regulatory Issues Raised by the Introduction of Global Mobile Personal Communications by Satellite (GMPCS) - Opinion No.2", (Geneva, 21-23 October 1996) 250 at 253.

[102] See Art S1.21 ITU Radio Regulations (RRs) for the definition of FSS, Art S1.25 RRs for the definition of MSS and Art S1.39 RRs for the definition of BSS.

[103] The blurring of the ITU technical distinction has occurred as GSO satellite technology was developing. See Jakhu & Rodriguez Serrano *supra* note 97 at 4 footnote 9 and 10.

rotation to compensate in such a way the satellite would follow the Earth revolution. The celerity a satellite will acquire depends on its orbital location, the physical rule being: the closer to Earth, the faster. When referring to non-GSO satellites it is implicit that the later are placed on lower orbits, *i.e.* closer to earth. These orbits, due to extra-atmospheric physical conditions are limited and are represented by rings. The Low Earth Orbit is located between 700-1500 km above the Earth's surface and the MEO between 5000-15000 km above the Earth's surface[104].

The practical implications deriving from these physical conditions are that as the satellites move faster than Earth and at high speed, LEO and MEO systems will consist of several satellites forming a constellation that clearly corresponds to a network structure. The attenuation a signal is generally subject to being less important in Lower orbits, this results in less intensive receivers, lighter satellites, less expenses on launching services and the possibility to have small mobile ground terminals receiving the signals from these constantly moving constellations.
All in all, this explains why the LEO and MEO satellite systems are best suited for mobile/ two-way communications or even broadband communications capacity on demand (Teledesic project)[105] which are considered as the future market trends.

The proposed systems using that basic new technological scheme were applauded and rapidly acquired popularity but have their designers and initiators really succeeded in their endeavors?
In order to answer that question one needs to make a review of these systems and see where they are at as of today in comparison to where they planned to be.
- Iridium that was to be composed of 66 LEO satellites is not to be taken into account as it went bankrupt,
- ICO that was only constituted of 10 MEO satellites will not either be realized for it filed chapter 11 of the Federal Bankruptcy Code (quasi-bankrupt),

[104] See Sennequier, N. *Les satellite des télécommunication*, (Paris : Presse Universitaire de France, Que sais-je, 2000) at 10
[105] See Rupp, B., "Options for Future Non-Geostationary Satellite Spectrum Assignments" (1998) 5 Telecommunications and Space Journal 241 at 243-246.

- Globalstar composed of 48 satellites to provide its users with low cost mobile communications while using earth gateway stations (hence combining conventional cellular telephony with satellite service) will not either have a bright future as it –too- filed chapter 11;
- Orbcomm, would have used a similar technology as Globalstar for fixed-site broadband services if it had not also filed chapter 11
- Alcatel's Skybridge, the LEO broadband system would probably have been a successful European venture if it had managed to raise the capital needed for its venture, which has not yet at this time been done;
- if Hughes Spaceway project is not doomed as the previous ones, it is at least on hold. This is also probably due to the fact it is composed of 9 GSO satellites and that the FCC has already provided Hughes with the necessary licenses for that matter;
- as for Teledesic, the project started with a constellation of 924 satellites and then was officially reduced to 324. Up to date nothing has yet been launched and it has been foreseen that if something is ever set in outer space it will not be more than a low double digit number. Where Space Analyst M. Caceres says that his company still considers the Teledesic project in its forecast it is because its supporters are known to hold major fortunes (Bill Gates and Boeing amongst others).[106]

Why is it that this promising technology is not being recognized as such? Many reasons connected with the complexity of these projects would serve as answers to this question but what certainly appear to be primary hurdles for the realization of these projects is their cost and the organizational difficulties they are subject to, notably licensing problems.

This kind of observation should only be one more incentive giving impetus for further industry-initiated actions to develop simpler and better domestic and international laws for that purpose. This would best be done if the principal market players gave the lead.

[106] See Caceres, "Broadband Satellites Fail to Materialize" Industry Insight (March 2002) web: http://www.aiaa.org/market/index.hfm?mar=61&issuetocid=183

Section 2: The Market Examined Through Its Key Players

The purpose of this section is to describe the general scheme applicable to the satellite communications sector, that is determine who are the actors, what products and services they wish to develop and what market share they potentially may pretend to, in order to come up with the general trends in that economical sector and subsequently distinguish the sensitive forthcoming legal issues to tackle.

1. The Market Structure

Satellite communications can be designated as an overall global private commercial activity. The global aspect of that characterization is attached to the transnational qualities of satellite communications. The particularity of these communications is its capacity to function independently from any ground infrastructure. Given that one major competing telecommunication option with satellites is fiber optic cable, it has been determined that high potential addressable markets for satellite communications were to be found among those regions lacking of ground infrastructure[107].

Therefore, the current trends in the satellite communications industry are about the development of greater independent satellite systems that can provide the end users with multiple services, would it be for broadband applications or general mobile telephony enhancements. In any case it appears that technically and economically, non-GSO systems are more popular than GSO systems for global coverage satellite systems.

Commercialization and privatization are also general characteristics of that sector. Nevertheless further liberalization is needed in some region for privatization to fully take over[108]. In any case the new satellite constellations are all the fruit of private initiatives and follow different economical and regulatory schemes than " traditional " satellite systems[109]

The industry being examined here is essentially composed of satellite manufacturers and subcontractors manufacturing components for use in satellites, satellite system owners or/and operators, ground station operators[110]. The distribution of market share in that industry reveals

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[107] Adamson, S., *Advanced Satellite Communications: Potential Markets*, (Park Ridge, N.J., U.S.A.: Noyes Data Corp., 1995)

[108] *E.g.* Chinasat and Intersputnik that develop their commercial activities but are not yet eager to be privatized

[109] Opina, S., " International Satellite Service Providers " - Project 2001, (Berlin 8-9 June 2000) Workshop on Telecommunications 140.

[110] The focus of this thesis being the space segment only it shall not therefore include the ground segment operators, nor the various companies who lease satellite capacity to provide their services

clear market dominance by incumbent manufacturers and operators. Even though constantly evolving, due to the numerous restructuring patterns affecting that sector, a quasi-oligopolistic structure can be recognized. This is the case in the USA but the trend has also affected Europe and will certainly develop on a global scale along with the spreading of satellite communications networks.

For some this state of the market derives from the general deregulation and privatization of telecommunication services and the equipment market in the 1980s in the US which was followed a decade later by Europe in that sense (though the equipment market is for most countries still subject to governmental control and regulation)[111]. While for others it is the gradual decline of States' interest and public investment in space activities that justifies such an evolution as it pushed private entities to turn towards profitable and self-sustainable activities such as telecommunications and remote sensing[112]. Pasco and Malavialle agree in the end to say that the industry structure is controlled by public authorities. Whether in the US or in Europe, the satellite communications actors seek and need public support and their market dominance is closely controlled by the relevant regulatory agencies and anti-trust authorities. This explains why Salin attributes to the FCC an international governance competence[113] and that Pasco underlines the strategic constitution of an European aerospace group resulting from successive mergers and acquisitions (M&As) between the various European manufacturers and network operators.[114]

Regardless of the process followed, the bottom line lies in the general restructuring and concentration of the satellite communications industry, would it be satellite manufacturers or service providers.

In the US the origins of concentration within the satellite manufacturing industry started with the arrival of the Clinton government and the downsizing of the defense industry. The satellite industry had then been encouraged to develop its own consolidation strategy which has led to mergers and acquisitions. Among the most noticeable were at first the acquisitions by Lockheed Corp. and Martin Marietta respectively of the space activities of General Dynamics and General Electric. At that period also started to be contemplated the " mergers of equals "

[111] See "Non-Trade Issues" *supra* note 80 at 177.
[112] See Pasco, X., "La Transformation des Activités Spatiales"(2001-2002) 20 Géoéconomie 27 and Malavialle, A-M., " Les réorganisations industrielles et commerciales dans le secteur des télécommunications spatiales: l'interaction des enjeux politiques et économiques " (2001-2002) 20 Géoéconomie 165.
[113] See Salin "Non-Trade Issues" at 179
[114] See Pasco at 43.

(also known as the " marriage made in heaven ") [115] between Lockheed and Martin Marietta and the merger was officially realized on the 16th May 1995. Boeing for its part had acquired McDonald Douglas as of July 1997.

More precisely, with respect to satellite manufacturing market participants (and not only general aerospace and defense industries), Lockheed Martin now mainly competes with Boeing Satellite Systems (the new Boeing division that exists since January 2000 as Boeing acquired Hughes Space and Communications) and Space Systems Loral on the US market place.

Similarly, restructuring plans and subsequent concentration have taken place at the European level as Sates were cutting off their space budgets and that the European firms were now facing a new and stronger American manufacturing industry. Concentration for European firms was a matter of survival as they would otherwise have themselves been acquired by the US players or become their sub-contractors in limited activities, hence making limited profits[116].

The scene in the early 1990s in Europe was composed of 5 major players, none of which had the capacities of their US competitors: MMS - Matra Marconi Space , DASA ,Aérospatiale, Alenia Spazio; and Alcatel Espace[117]. In December 1999, after much reorganization within the industry, EADS was created as a joint European effort to compete with the US industry. However, the real European leader with respect to satellite activities is Alcatel Space which has for that matter inherited from the satellite activities previously undertaken by Aerospatiale. Alactel Space is directly followed by Astrium (owned 75% by EADS and 25% by BAE) for satellite manufacturing.[118].

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[115] See Boyne, W., *Beyond Horizons : the Lockheed Story*, (Thomas Dune Books, 1998) at 474.

[116] See COM(97) 466 final, Brussels 24 September 1997 " The European Aerospace Industry - Meeting the Global Challenge " EU Commission Communication

[117] Aerospatiale, originally a French state owned company as much as Thomson-CSF were later privatized in order to merge with other entities. MMS was created in 1989 as the merger of Matra Espace and Marconi Space. Also in 1989 was the consolidation of MBB, ENRO, Dornier, MTU and Telefunken Systemtechnik GmbH into DASA. The Italian leader Alenia Aerospazia is the fruit of the reunion between Selenia Spazio and Aeritalia Space Division. Finally Alcatel Space is a holding company of Alcatel and Thales (the privatized Thomson-CSF) see for further details Lardier, C. " A Decade of Aerospace Industry Restructuring" in News from Prospace June 2001 No. 47 ; web: [published also in Air & Cosmos]

[118] See Prospace report June 2001 " A Decade of Aerospace Restructuring " Web: http://www.prospace-fr.com/public/pp.asp?brub=3 ; and Space News top 50 listing of space companies; web: www.space.com/spacenews/top50_2002.html the list ranks companies based on their 2001 space-related revenues and coordinates revenues for firms that have merged. According to this ranking EADS and Alcatel Space are respectively positioned as the 6th and 9th most prosperous space companies while the first second and third spots are respectively reserved for Lockheed Martin, Boeing Co. and Hughes Electronic Corp.

Manufacturing groups have not been the only ones subject to M&As, the service providers too have followed that process as the growing commercialization and privatization trends within the satellite telecommunications service branch have also introduced reorganizations though mergers. As earlier developed, the privatization of national telecommunications operators and the pressure exercised by the industry (especially Panamsat) for the privatization of the ISOs by the enactment of he Orbit Act have resulted in the liberalization of communications services and introduced competition within that sector.

In the US, that has led to a vertical integration pattern and influenced satellite manufacturers to take on ownership, capacity management and operation of satellite systems as their activities. This had been Loral and Lockheed Martin's policies.[119] . Hughes option differed in that it wished to fully and strongly penetrate the service providing market and for that purpose decided to transfer its defense and satellite division to Boeing.

In Europe, coverage had been provided by both Intelsat and Eutelsat as ISOs taking advantage of their quasi-monopolistic position on the service market, leaving little room for competition. Nevertheless some managed to prepare and assure themselves greater market shares and profits for satellite operation once the ISOs would be privatized. This has been the case for SES and Alcatel SpaceCom which is involved in the development and operation of such systems as Globalstar, Skybridge and Europe*star (a 51% Alcatel and 49% Loral joint venture).

These restructuring episodes inform us that the wealth and growth of the satellite communications industry as a whole was highly dependent over public and defense budgets and that the reduction of public money injections in that market revealed the level of private commercial profits was not sufficient to sustain the industry. In other words there was a serious imbalance between supply and demand and the distribution of wealth among the industry would not satisfy everyone's appetite. Therefore, concentration was a matter of survival.

Being that economics and politics are often connected, one can also recognize in this restructuring process a fair deal of political incentives. In the US this was initiated by the

[119] As Loral bought AT&T's Skynet system and integrated Orion Network Systems Lockheed Martin took over Comsat in 2000. However in mid-october 2002 LM has entered a contract with Comsat International Holdings, a privately owned company based in Washington DC for the sale of 81% of its stakes in Comsat. See for this purpose Business Wire, October 17th 2002 *" Comsat International Holdings completes acquisition from Lockheed Martin "* online: Lexis and Business News Americas, October 21st 2002, *" Lockheed sells 81% of Comsat "*, online: Lexis.

Clinton's Government liberal commercial-oriented policy for space activities generally[120] and in Europe it was simultaneously the need to compete with these more powerful US players as much as the want of European Governments (with the ESA) to establish a common space policy[121].

The present level playing field is a global marketplace where few entities compete. If one wished to be provided with a brief overview of which private company designs and operates what system, the above mentioned companies would be on top of the list and many of the ones following would be joint venture and holding companies of these dominant players.

As for many of the 1990s applauded LEO and broadcasting satellite systems, it seems that they are not likely to be carried out or achieved. In this sense, the year 2002 has been one of most space analysts' disbelief denuncing that eventually the number of payload announced to be launched in the early 2000 was from far exaggerated. [122] Being that most of these systems are put on hold, if not abandoned, by the time they should actually be further carried out and operational, they might appear " obsolete " or technically inadequate to their designers and operators. Insofar as it is towards the newly announced projects that consultants should look in order to establish the future market trends and not indefinitely take into account unrealized projects in their commercial application prospects. What this recent market review[123] about the failure of LEO and broadcasting systems tells us is that, for most, this situation is directly related with trade barriers existing in the satellite communications sector since for most of them this is due to licensing incoordination and proper financing inability. Hence, it is essential that the ones concerned with these technical and political barriers take a pro-active position in order to avoid further similar outcomes; it is by far time that the industry thoroughly informs and works out with public authorities about these issues for the satellite communications market to remain self-sustainable[124].

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[120] To illustrate this government's approach towards space activities, one can notice that since 1992 the licensing required by the Export Control legislation was under the responsibility of the department of commerce while it traditionally was of the competence of the DoS or DoD, hence putting emphasis on the commercial prospects attached to space activities rather than keeping a protective attitude and favor national security concerns.
[121] See 2035th EU Council, Council Resolution 16 November 2000, " European Strategy for Space "
[122] See Caceres *supra* note 106.
[123] *Ibid.* Caceres, M., "Broadband satellites fail to materialize", (2002) Industry Insights, web: http://www.aiaa.org/market/index.hfm?mar=61&issuetocid=183 [also published in Aerospace America March 2002].
[124] See Section II-B below.

Another essential observation to make about the satellite communications industry is that, even though it is less leaning towards government funds and has accepted to develop its activities with a view to expand private commercial prospects, there is still a close connection between the industry and governments. Not only is this connection of a political (*e.g.* through national or regional efforts to develop strong economies) but also of a legal nature, notably through competition regulation.

The anti-trust authorities for the space sector is in the US, the FCC while in Europe it is under the general authority of the European Commission even though space activities and satellite communications have not yet been the object of a set European policy Would it be on one side or another of the Atlantic Ocean, it seems pretty unlikely that greater concentration plans would be accepted by these regulatory authorities. Actually, anti-trust control and injunctions have started to actively restrain further restructuring within the industry as shown by the rejection of the GE-Honeywell merger by the Commission or the more recent review by the FCC of the Echostar and DirectTV merger plan.[125]

Ultimately the industry has to be innovative by developing cost efficient technology that would meet customers' needs in order to keep up with profitability as States and defense orders have dramatically reduced (this being foreseen as an ongoing trend) and that an end is being put to further concentration. This context is one for the industry's introspection and reality-check and for the realization that its future lies in international cooperation. Though it is specifically inter-enterprise cooperation that is promoted here, this international cooperation mission should be lead on a global scale and encompassing all areas of interest for satellite communications, whether market-oriented, financial, technological or legal nature. If the

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[125] Commissioner Abernathy's following reproduced position reveals the immediate concerns of antitrust authorities in a clear and overt way:
"I am unable to find, based on the record before me, that the proposed transaction serves the public interest, convenience, and necessity and I therefore support designating this application for hearing.(...) The record developed thus far demonstrates that this proposed merger will likely harm consumers by eliminating a viable competitor in every market, driving up prices, and decreasing innovation and quality of service. The Applicants have not demonstrated any merger- specific public interest benefits that outweigh these harms. More specifically, the proposed merger will substantially increase the level of concentration in an already highly concentrated market. It would at best be a merger to duopoly in markets where cable is available, and at worst a merger to monopoly in markets where there are no other competitive multichannel video programming providers". See for that matter: http://www.fcc.gov/Daily_Releases/Daily_Business/2002/db1010/DOC-227263A3.pdf Commissioner's Abernathy's full press release and web: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-02-284A1.pdf for the EchoStar-DirecTV Merger Application Hearing Designation Order before the FCC adopted on October 9th 2002 and released on October 18th 2002.

realization of this objective would evidently be beneficial to the industry itself, it would also be an illustration of direct compliance with the provisions of the Outer Space Treaty in a realistic manner[126].

2. Private International Cooperation Within the Satellite Communications Sector: What Incentives, What Advantages?

As rational entities evolving in a capitalistic economy, private entities are generally motivated with profit and growth. When mere competition does not represent the most appropriate tool to pursue these objectives, these entities, as business organizations, should consider international cooperation. This option is particularly justified for space activities in general and specifically for the communications by satellite business as socioeconomic, technological, legal and political complexities interfere to model that industry and its market. Reversing that proposition, it would be in the best interest of all private actors to combine forces and seek to develop a task force, find action figures and adopt a common view as to what are the laws and regulation to be adopted as to serve the industry's interest while respecting international concerns and national legislative public policies.

This is not to say that the industry has not yet adopted this approach towards legislation and regulation, for it has been acknowledged that private entities are trying to become increasingly involved in public fora or at least trying to plead their cause before the public entities having a say in international fora.[127] The general aim should be to develop that kind of interventions before the organizations that have legislative and ultimately economic power and also to plead for more inter-enterprise cooperation through strategic alliances such as project cooperation for the harmonization of existing technology (and standards specifically) or joint ventures for the design, development and operation of new products and services in order to capture new markets.

Several reasons can justify this need for private international cooperation as being the future trend. They all correspond to the roots of revealed market failures.

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[126] For instance such cooperation would promote technological advance, as encouraged under article X and XI of the Outer Space Treaty, without encountering the ferocious reactions expressed by space faring nations when the developing countered promoted the disclosure of technological improvements as being in the interest of all countries and counter balancing their lack of expertise and incapacity to develop space activities on their own.

[127] *E.g.* the ITU section member category – see chapter 1 above

First, private entities are best placed to rapidly analyze and determine why they are experiencing a downturn when that occurs. Thus they should be able to make the information deriving from such analysis available to the public in order to avoid generalization of market failures and to encourage the industry as much as public authorities to take measures that would avoid the spreading of the damaging effects deriving from market failures.
The second thing private entities know of is the general inadequacy of space law with respect to their ongoing activities (or the ones they wish to develop) due to the numerous constraints it imposes upon them. These constraints are unsuitable -if not unrealistic- in a market driven economy, as they tend to limit the enterprises possible profits. Said otherwise, the regulatory framework private enterprises have to comply with is very cumbersome and certainly not in phase with the pace at which business has to be done. Moreover, these enterprises, as actors in a global market for communication services are subject to various and independent regulatory constraints as they develop and expand their satellite or satellite services networks. This introduces a further need for harmonization between the various overlapping laws and regulations required by public authorities.
What is specifically targeted at this level are the national licensing procedures, would they be for frequency assignment, liability or registration purposes, which would need harmonization as to simplify compliance with these requirements on the part of the private enterprises. Similarly, while revising the liability regime under international and national space law, the private sector would permit a readjustment and improvement of the space insurance market which tends to become overly expensive.[128]

Another legal aspect for proper development and management of the space business is the establishment of norms that would secure the enterprises' businesses from a private law standpoint. This issue represents organizational and internal concerns directly linked with the value of the private enterprise as a business organization and which influences its position as a potential contractual party. The concern lies on legislation pertaining to assets and intellectual property rights in the space business as both these elements have a monetary equivalent and are intrinsically part of the evaluating factors of a company's value and position on the market. In this category also, one can introduce the need to organize adequate investment and

[128] See chapter 3 section 2 below

financing techniques for private space ventures, since the lack of funds has in many cases been the primary reason for projects not being carried out.[129]

Finally, private enterprises should agree upon and plead for, before national and international fora, harmonized technological advances and standards in order to eliminate as much as possible the technical barriers existing in the satellite communications sector; would it be for the manufacture of payloads and ground terminals or for the communications services *per se*.

As pointed out by the American Astronautical Society's (AAS) in its Workshop on International Legal Regimes Governing Space Activities (4th Working Group): *" This [the private sector's] role extends to informing and educating States about developments in technology, the market and in the industry, and in highlighting the impact of these developments on matters being directly considered by government on the longer-term implications for the legal regimes ".*[130]

Nonetheless, the private enterprises' action should also focus on intra-industry cooperation for it is essential that the industry carries a single and consistent speech before the various public authorities concerned with space activities and for this industry to develop strategies that would guarantee its profitability and independency from governmental (financial) support. Efficient international private cooperation would be provided through strategic alliances since it is a flexible cooperative method that does not necessarily generate further concentration.

Strategic Alliances are cooperative agreements (*lato sensu*) for the sharing of prospected benefits between two entities, that neither one would otherwise possibly (or at least that easily) have access to.[131] They are used to develop technology, spread or mitigate risk, enter new markets, share complementary expertise and knowledge ...etc.[132]

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[129] See e.g. Alcatel's-to date- incapacity to gather the $ 6 billion capital required for the set up of it's Skybridge system or the Astrolink system from which Lockheed Martin and TRW have stepped back. See. Caceres, M., "Drop in Planned Payloads reflects Stagnant Market" Industry Insight
web: http://www.aiaa.org/market/index.hfm?mar=61&issuetocid=230 [also published in Aerospace America July 2002]

[130] See AAS Final Report - American Astronautical Society International Programmes Committee Workshop on International Legal Regimes Governing Space Activities; December 2-6, 2001 - Doubletree Hotel Paradise Valley, Scottsdale, Arizona. [hereinafter "Scottsdale Report"]

[131] See Routledge Encyclopedia of International Political Economy, under "Alliances (inter-firm)" and web: http://www.alliancestrategy.com/MainPages/PDFs/AlliancesDefinition129.PDF providing with the following definition by Benjamin Gomes-Casseres:
"An inter-firm alliance is an organizational structure to govern an incomplete contract between separate firms and in which each firm has limited control. Because the partners remain separate firms, there is no automatic

The main characteristic of strategic alliances is to fundamentally be incomplete or open-ended contracts that are used as alternatives to the traditional business organizational structures, for the benefit of all partners and that allow for flexibility in the conduct of future operations, transactions and evolution of the scope of the alliance as to adapt to the needs of the partners and the market. [133]

They would serve the space industry for R&D and marketing purposes as much as enhancing transatlantic competition and market access while acting as a substitute to further concentration (to which anti-trust authorities would be opposed to) and PPPs that are not quite popular in the satellite communications sector.

The reason why this mode of cooperation is particularly relevant to the satellite communications business, is that it best serves corporations that have and need to preserve a global outreach.[134]

The future of the industry lies in the adoption of this type of concerted actions, here again for " the benefit and in the interest of all " parties concerned with space activities. With this respect, private international cooperation should intervene on all legal aspects pertaining to the satellite communications business, would it be at the domestic or international level.

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convergence in their interests and actions. As a result, to deal with unforeseen contingencies inherent in the incomplete contract, the partners need to make decisions jointly."

[132] The most common types of strategic alliances are : Marketing Agreements, Distribution Agreements, License Agreements, R&D Agreements, Manufacturing/Supply Agreements, Outsourcing Agreements, Facilities Management Personal and Corporate Guarantees, Letters of Credit, Proprietary Rights Agreements, Non-competition Agreements

[133] Yet, strategic alliances are also subjects to the flaws directly attached to their advantages in that, *e.g.* the incomplete nature of the contracts supposes a joint-decision making process for unforeseen situations, eventual imbalance between partners and limitation of other types of alliances that can be entered into with third parties. See . Wei, C-L., *Cross-border Strategic Alliances in the Transition of Regulated Telecommunication*, (Montreal: McGill University Thesis, Institute of Air and Space Law, 2000) at 21-22.

[134] *Ibid.*

CHAPTER 3

Specific Issues of Concern for Private Space Ventures as Practical Incentives for International Cooperation

Space law has been denounced for not being in phase with the current space business and activities by too many, and all have advocated for some updating of the international treaties as much as working for further uniformity *re* national requirements with respects to recurring topics such as, licensing, liability, dispute settlement and private associated rights, would it be from a substantive of procedural standpoint.[135]

If the natural tendency of legal scholars is to turn to international legal fora for this purpose, it seems that they also have come to the realization that traditional organizations were either of slow motion or even stagnant to provide private enterprises with appropriate solutions. For instance, the UNCOPUOS, once a vital center for the development of space law is overlooked in favor of private initiatives such as the private UNIDROIT organization, located in Italy, and whose purpose is to meet the needs of private actors for international private rules on specific topics, which is with respect to this subject matter the draft Space Protocol.

Hence, for financing issues that are of a great impact to the development of commercial space activities, the private sector has demonstrated its ability to convene, discuss, analyze and consequently draft an essential document that proposes solutions for adequate and predictable law for the taking of security in and financing of space property.

Similar actions should be, and are likely to be, taken in a near future with respect to liability and dispute settlement issues.[136] In these domains too, the growing private approach to these legal questions is becoming predominant and a reevaluation of the current schemes is pressing.

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[135] See generally Nesgos, P., "Recent Developments in Commercial Space Law" (1997) XXII-I Annals of Air and Space Law 433.

[136] See Final Draft of the Revised Convention on the Settlement of Disputes Related to Space Activities, as adopted by the ILA 68th Conference in 1998 in Taipei. Web : http://www.uni-koeln.de/jur-fak/instluft/draft4.html

Section 1: Financing Space Ventures

Whereas space activities have for long been directed by governments and therefore financed with public moneys, the commercialization and privatization processes have affected space ventures financing methods by diminishing governments support, especially within the satellite communications sector where subsidies and PPPs are quasi non-existent.
The industry faces a situation where risks attributable to space ventures and financial needs for the development of satellite systems are high while creditors guarantee mechanisms are uncertain. This context reveals that the financiers' investment decisions will be pending on the risk/ return on investment ratio as much as other negotiating elements offering them as much security as possible in an uncertain financial and legal system. For this purpose, the industry has been working,since 1997, on a Space Protocol for the taking of securities and collateral in space property which would both provide for an international framework on that matter and would give impetus for cheaper, reliable and diverse financing solutions for space ventures.

1. Space Financing Traditional Sources and Modes

Considering that space ventures are both capital-intensive and of an overall high risk whether of a technological, financial, investment, market/ competition, management or political nature, such ventures require strong financial and risk management solutions to counter-balance these activities specific constraints, reassure potential financiers with respect to the viability of theses project and convince them to invest trustfully.
Practically this is realized when presenting financiers with a business plan that concurrently includes appealing profits for reasonable risk taking, as it might appear acceptable for each type of investor.
With that respect, the business plan's main function is to provide investors with essential technological, financial and risk information, such as determining what is the type of technology being developed and the cost associated to such development, what the schedule of the setting up and operation of a system is estimated to be (and where there is likelihood for delays what contingency plans exist), what the main characteristics of the market are (size, trends in the past years, expectations for the following years and the relationship between expected market share and return on investment) what are the competitive risks and prospects

(market leaders, entrants, competitive advantages if any ...) how to evaluate political and regulatory risks (licensing with all possible governments and administrative agencies concerned with a given space venture) ...etc. All of this being of course translated in understandable terms for the financiers, *i.e.* with the help of figures representing planned profits, cash flow, payback period, return on investment and other operations of high value for the investors.

All in all, financing space ventures is a game of subtlety, which requires great negotiation skills and persuasion abilities. Once these first conditions are verified then four traditional modes of financing are available to the audacious private enterprises. The characteristic difference between each mode is the degree of involvement they suppose, that is the scope of the risk-taking on the part of the investors. These modes are: Equity Financing, Debt & Capital Markets Financing, Project or Hybrid Financing, and Governmental Aid.[137]

Equity Financing

Equity financing can be considered as the primary source of financing as it is present since the inception of a space venture since it represents those funds injected by the individuals or entities that are eager to believe in the project and invest in it; *i.e.* the initiators and supporters of the space venture. Moreover, the creditors for this mode of financing are the ones considered as having the greatest interest in the success of the project since they will generally own the equipment or facilities developed and either directly operate it or lease it to final operators.

Equity financing for a space venture can be provided either directly (an existing entity makes the given venture one of its projects amongst others) or indirectly, via the creation of an entity, corporation or subsidy for that specific purpose. The creditors' choice of using the direct or indirect mode is notably made upon risk and liability considerations. (Creation of a limited liability corporation is often more convenient).[138]

In brief equity financing generally includes the founders seed capital investments in the private enterprise, private placements by investors seeking ownership interests in a company/ venture, venture capital looking for high return on investment and certain forms of strategic-alliances (sales of part of a business interest or joint-venture type). However, this source of

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[137] See For a general discussion of space financing Bunker *infra* 141 and Hermida *infra* 140.

[138] See - Hermida, J. E., "Space Financing", The Air and Space Lawyer, (1998) 15 also in Jakhu, R., Ed. *Law of Space Applications - Documents and Materials,* vol. II, (Montreal: McGill University, September 2001) 533.

financing is never self-sufficient and the other sources of financing earlier mentioned act as complements to it.

Debt and Capital Markets Financing

Since equity financing is insufficient, one further needs to convince financial institutions to support the venture.

Under "capital markets financing", one generally refers to the financing provided by different types of financial institutions, whether traditional or specialized banks, trust companies, pension funds, insurance companies, venture capital and general public either through private placements or public offerings. However, for simplification purposes the term financial institutions is generally used to refer to any of these different actors.

When considering investment in a space venture, financial institutions focus on two essential issues, *i.e.* assessing the potential profits to proceed from the projected space venture and accumulating detailed information pertaining to those they will be lending their precious money to (relevant information includes credit history, business worthiness, letters of intent ...etc).[139]

One should note that while lenders will generally require a well structured and economically sound project that assure them profits in return, they will also examine the type and scope of risk they could be subject to and will look forward to mitigating the risks to the highest extent possible before asking for guarantees assuring them they will be paid back. In any case, because debt financing in its various forms always, directly or indirectly, involves interest charges; the project manager of any space venture must imperatively take into account this cost of money.

Another means of borrowing is through the issuance of securities, whether privately or publicly.[140] As analyzed by J. Hermida, *" many forms of securities are suitable for a space project "*, and this author for this purpose lists long term bonds or debentures, convertible obligations, zero-coupon bonds, junk bonds or bull float bonds as adequate instruments among others.[141]

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[139] See Bunker, D. H., *the Law of Aerospace Finance in Canada* (Montreal, Quebec: McGill University, Institute of Air and Space Law, 1988) at 80-82.

[140] But with extra responsibility of the brokers association of the stock exchange on which it will be issued in the latter case. See Bunker at 86.

[141] See Hermida at 534.

Finally, while debt financing can generally be secured or unsecured, it happens that with respect to space ventures it is the latter form that prevails since security taking in space mobile equipment has been a uncertain legal issue for the past years and is under work with the Unidroit Space Protocol. However as Hermida outlines it, lenders will always (whether secured or not) require that there be three safety nets for their investments and which correspond to (i) certainty of payment following a low level of business risk that might affect the project (ii) steady operational profits through a visible cash flow and (iii) a repayment method backing up the principal one (*e.g.* sale of assets or securities).[142]

Project or Hybrid Financing

Project financing constitutes a mixture between equity and debt financing in that though its operational mode is similar to the former (borrowing), it entails partaking in higher business risk, that can in some cases be comparable to the one sustained by shareholders in the latter kind of financing.

Project financing is a method for extending funds or providing credit support to a special purpose entity where lenders and equity sponsors look specifically to the cash flow and earnings of that entity as the principal source of capital return and to its assets as collaterals. This type of financing differs from traditional financing in that credit and investment decision is based on a review of: (i) an economic projection rather than historical financial performance; and (ii) an assessment of contractual obligations that bind third parties to support specific aspects of the project.

In project financing, credit support varies completely from nonrecourse to limited recourse. Lenders involved in nonrecourse financing are generally sophisticated commercial or investment banks that have experience in handling financing not based on historical performance but solely on contractual obligations and their projected cash flow. However, an important part of the decision-making at this level is the determination and distribution of risks, making sure they all have been identified, their adverse effect analyzed and delegated to institutions that would have the capacity to fulfill the obligations contained in the project contracts. Lenders will require that all risk be mitigated and will weigh the probability of realization of a risk against its economic effects in order to determine what type of risk can be

[142] ibid.

regarded as acceptable. However, lenders also take into account any possibility of simultaneous occurrence of different sorts of risk.
Establishing a well-structured business plan is critical for this type of financing but will be rewarding in the end because it is one of the cheapest financing modes.

Governmental Aid

Governments and their specialized agencies have long almost exclusively directed space projects and the banks provided the agencies with sufficient funds through a loan to sovereign creditors. Along with the success of commercialization of space applications, wealthy companies instead of Governments have become involved in that business and have sought some support on behalf of the latter.
Convinced that the space business entails major benefits and is in the public interest, Governments have developed the general practice of granting funds through various ways; either directly through grants or investment or indirectly, as they often do when promoting a given business activity, by establishing a favorable legislation for the development of this particular activity, notably through financial (state guarantees, special loans...) and fiscal legislation (tax deduction, abatement, exemptions).
Yet, in some cases, Governments find some peculiar interest in the development of a given space project, to the extent that their role switches from simple sponsors to quasi-partners (PPPs being one possible form). For instance, an agency will often act as a project user, hence sustaining the project utilization risk while ensuring a cash flow stream, which will be regarded as an incentive for all types of financiers. However, Governments being sovereign, they also have exceptional prerogatives, such as fiscal constraints or special contracting policies that tend to be highly favorable for the Governments and often detrimental to other financiers (e.g. termination clauses for convenience and with little compensation).[143]

Through such a review of the space ventures financing sources and modes, one easily notices that while these modes complete each other, none of them is self-sufficient or even largely predominant. If this is to some extent a matter of spreading risk by not putting all of one's eggs in the same basket (here through diversity in financial sources) it is because space financing does not offer security options as other businesses, even when dealing with mobile equipment. In fact, with respect to the private commercial satellite communications market,

[143] See Bunker at 87

direct governmental aids are quite a rare financing source, at best this aid is indirect and is represented by soft credits; and there can only be so much equity financing by the founders and owners of a satellite system. The same can be said with regards to project financing, as parties willing to greatly be exposed to risk are not the mass of investors. Finally, while debt financing represents an extremely resourceful mode of financing in other domains, it hasn't proven to be so for space financing as there isn't in this domain any proper mechanism providing investors with collaterals to secure their investments and mitigate the associated risk.

It is specifically because the industry was aware that it was lacking appeal for the numerous investors eager to provide the industry with debt financing solutions, that it decided to combine efforts for the development of a Space Protocol that would eventually meet the needs of this type of financiers in order to be, in turn, provided with financing solutions that would match the industry's needs.

2. Problems Attached to Private Transnational Financing and the Unidroit Solution

The relative complexity to find adequate financing for space ventures derives from its overall unsecured nature. As put by Larsen and Heilbrock: *" [However] one of the reasons that financing problems exist is the difficulty for lenders to efficiently record any security interest in satellites in an appropriate registry and the lack of mutual recognition of security interests in other jurisdictions. "*.[144]

Because the actors involved in space activities and financiers were well aware of this issue, they have taken action through the International Institute for the Unification of Private Law (UNIDROIT), which primary mission is to harmonize private law by preparing draft conventions and laws that should inspire States on complex or undecided questions that are both of a private nature and global impact.[145]

At first, the organization's mission was not restricted to space assets *per se* since it focused on the broader question of harmonizing concepts and procedures pertaining to personal property

[144] See Heilbrock, J.A., & Larsen, P.B., "Unidroit Project on Security Interests: How the Project Affects Space Objects", (1999) 64 J. Air L. & Com. 705 at 721.

[145] UNIDROIT is a private organization to which States are parties and that is established under a charter. Article 1 of the Unidroit charter States the mission and purpose of the organization: " The purpose of the International Institute for the Unification of Private Law is to examine ways of harmonizing and coordinating the private law of States and groups of States, and to prepare gradually for the adoption by various States of uniform legislation in the field of private law. ". Web: http://www.unidroit.org/ .

security for mobile equipment and the intent was to include space property as an integral part of that "general" draft convention. However, the work in progress that convention represented was being slowed down by the space industry which had not reached a proper level of consensus for these rules to be adopted. Therefore, in 1997, the study group on the security taking in mobile equipment realized the best option as for reasons of timing and consistency was to design a base convention of a general application to all mobile equipment and work on further "equipment specific Protocols" according to the concerned industries' specificities.[146]

Briefly and very substantially, what has been pointed out following these lengthy studies is that security interest in movable property had been regulated under national law and that these national laws expressed many differences if not oppositions. In general, for there to be a unification of security interest in movable property the working group would have to find common grounds for the definition of ownership/ property, the definition of security interests and in the determination of a commonly recognized registration system for security to be validly taken. As for space equipment specifically, additional problems directly relating to that type of equipment and the environment in which it is movable, are to be considered and solved.

Hence, it is the purpose of the Convention to find common grounds on these issues and to provide for a registration regime and process in order to effectively assure the protection of the *international interests*.[147]

As for the Draft Space Protocol, it's function is to adapt the Convention to the specifities of space equipment. For that matter, the relationship between the Convention and the Protocol is the one of a general regime followed by special provisions and the guidelines for their interaction is provided with by the Convention.[148] According to this latter provision, where a contradiction would arise between the Convention and the Protocol, *"the Protocol shall prevail"* as it represents the special rules which primary purpose is to circumvent the proper application of the general rule.[149]

Therefore, the Protocol was to take into account the peculiar characteristics of space assets and draw a distinction between tangible and intangible property, which are in that field of activity both of considerable economic value. For that matter the Protocol had to consider

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[146] See UN Report of the Secretariat and the Secretariat of the International Institute for the Unification of Private Law –item 8 on the UNCOPOUS Legal Subcommittee 40th session agenda; UN Document : A/ AC.105/C.2/L.225 [hereinafter "UN Report"]

[147] As defined under article II of the Convention.

[148] See Unidroit Convention Chapter I, article 6 and Protocol Chapter V article XXI.

[149] See. Convention Chapter I article 6 para 2

frequencies, transponder technological and operating capacities, governmental licenses, contractual agreements determining the output of a given satellite system and subsequent revenues ...etc, all of these elements being referred to, in the Protocol jargon as "associated rights". This supposed that a common definition of "space property" be adopted and be broad enough as to include all elements having a substantial economic value and introduce flexibility within the Convention in order to allow for future adjustments where necessary. However, States parties to the Convention and the Protocol needed to consent on the extent of such definitions' broadness. A consensus was reached on the premise that tangible as much as intangible property was *"of importance for a financier's ability to obtain constructive repossession of a satellite of his having access to the various rights associated with the operation of that satellite ..."*[150] and also because such associated rights are regarded as being inextricably linked to a satellite as an integral part of its commercial value.
One should take note that the Protocol also includes categories of available remedies and conditions for the exercise of space asset possession or control.[151]

Finally, the Protocol provides for a uniform registration system which not only constitutes one of its major innovations but also reveals that the drafter's intention was not to establish a structure for the mutual recognition of various national registrations (which would have been a convention for the establishment of common conflict of law rules for the determination of space property) but rather to establish a central supervising authority answerable to the contracting States that will manage that international registry (which corresponds to a convention for the adoption of common substantial law). For this system to be efficient, such answerability will be extended with direct liability of the registrar (whose mission is to manage the registry) for compensatory damages for loss in cases of misadministration imputable to the registrar.[152]

The results and benefits deriving from this new international security taking system is to give faith to the potential creditors in the soundness of their investments; that is to provide them with more appealing guarantees than mere profits and return on investment considerations by also offering return on assets and mitigation of loss.[153] This system would also, consequently,

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[150] See "UN Report" at 6 n° 20.
[151] See "UN Report" at 6, n° 22, 23.
[152] See Space Protocol, Chapter III article XVII but only with respect to the establishment of that Registration Authority.
[153] See Unidroit Convention Preamble, Protocol Preamble and Introductory note in the Preliminary Draft

reduce all transaction costs involved in the setting up of satellite systems (whether of a financial or insurance essence).

All in all, this system would provide the private sector with a back-up solution in cases of bankruptcy, default, fraudulent sales of property, acquisition by other creditors ... etc.[154] Thus, introducing a stable "legal security"[155] mechanism in the overall interest of the industry and the space business.

The Unidroit Convention and Space Protocol experience have illustrated how the industry can convene and reach a workable consensus on matters of common interest. This should serve as an example for other fields where international cooperation is needed, such as liability and property rights regimes.

Protocol. Web: http://www.unidroit.org/english/internationalinterests/draftspaceprotocol/draftspaceprotocol.pdf .

[154] See Heilbrock & Larsen *supra* note 146at 747.

[155] The word "security" is here used as a generic term encompassing certainty and predictability of the law as opposed to loopholes.

Section 2: Liability and Risk Management

The liability regime applicable to space activities is probably one of the most traditional as much as disputed themes discussed by space lawyers and learned authors. It is a difficult and delicate issue as international law partly deals with liability in the Liability Convention and for what it has not developed, States have partly provided for and the industry has taken action to fill up the gaps.

While the Liability Convention ensures that a legal framework will resolve mishaps deriving from space activities and resulting in a damage for victims through inter-state claims and compensation, it only deals with third-party liability, *i.e.* liability of a non-contractual or tortious nature and imposes on States the obligation to ensure that these provisions be respected at the national level.[156]

This international requirement together with States' general obligation to supervise and authorize non-governmental space activities has been translated in a general prerequisite for private enterprises to demonstrate their capacity to compensate victims of their wrongdoings by contracting adequate insurance.[157] Yet, besides third-party liability, private enterprises have to ensure themselves against technical failures that would not only correspond to direct loss but would also affect most of their contractual relationships and represent enormous amounts of loss. [158]

With respect to this civil liability aspect of the private entities' risk, the private sector will recourse both to insurance and to contractual mechanisms in order to mitigate the risks. If this attitude seems natural in private actors interactions, it has in the space sector adverse, if not perverse effects since it does not provide insurers with sufficient predictability and imposes an unduly high risk charge upon them, which eventually results in relatively costly insurance premiums and an instability of the insurance market.

This is due, notably, to the predominant risk mitigating mechanism within the private sector *viz.* the existence of a chain transfer of risk to the insurance market that has been analyzed as a

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[156] See Von der Dunk, F. G., "The 1972 Liability Convention", (1998) Proceedings of the 41st Colloquium on the Law of Outer Space of the IISL 366.

[157] This results from the distinction between States responsibility under article VI of the Outer Space Treaty and in the distinction between space responsibility to establish a legal framework and actual final liability that will lie on the private enterprises as provided under the national law. See B. Cheng *supra* note 14 .

[158] See Van Traa-Engelman, H.L., *Commercial Utilization of Outer Space*, (Dordrecht ; Boston : M. Nijhoff, 1993) at 329 [hereinafter "Commercial Utilization"].

phenomenon revealing a no-liability regime for contractual relations.[159] Indeed, inter-party liability waivers or liability disclaimers have become a general practice in the space industry and are even referred to as being one of the main characteristics of contracts concluded in the space industry and at any stage of the setting or operation of a satellite system.[160]

With respect to contracts for the sales of satellite (1st stage of a satellite system project), the manufacturer does not ensure the purchaser of the perfect functioning of the satellite and is therefore not liable for technical failures occurring once in orbit if the buyer did accept the satellite in the state it was delivered to him. This implicit liability waiver mechanism is compensated by the incentive payments clauses inserted in satellite sales contracts and which command that the manufacturer's profits will vary according to the satellite's performance. Whether the "incentive payments" are analyzed as a profit-sharing scheme or more of a contractual liquidated or punitive damages nature, that would be proportional in the first case to the good performance of the satellite or in the second case to the seriousness of its defects and failures, these clauses effects are not only sustained by the manufacturer but also very often carried on by the manufacturer's sub-contractors when the latter are to provide the former with a substantial component or device to be integrated in the satellite. Still, there is no *per se* liability provision at that level of the satellite communications industry.

The second stage of the implementation of a satellite system project consists in the launching of payloads. It is specifically at this level that "no liability" contracts[161] are the most noticeable as express cross-waivers of liability provisions are included in these contracts, regardless of the nature and type of damages involved.[162] This no-liability relationship between the parties is not limited to the launching company and the private enterprises procuring the launch of the satellites but has expandable effects as to equally apply to any of these parties' sub-contractors (or other related parties).[163] The abundance of cross waiver clauses greatly justifies the need for proper insurance at the launching stage.

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[159] See " Loquin and Veil in « L'exploitation commerciale de l'espace » *supra* note 98 at 167
[160] *Ibid.* at 166.
[161] *Supra.* Note 138
[162] *Ibid.* at 173 : the only consequence of a launch failure when imputable to the launch provider is the possibility of having another privileged launch scheduled.
[163] *Ibid.* .Loquin and Veil precise that : *"La clause exonératoire de responsabilité est accompagnée d'une clause de garantie contre les actions des tiers. Les tiers peuvent être tout d'abord les " collaborateurs " de chacune des parties définis comme les salariés, mais également comme les founisseurs et les sous-traitants des parties ".*

Being that liability distribution among contracting parties is non existent at the first and second stages, the same holds true for the third stage, *i.e.* the operating of the satellites. This also explains that liability waiver clauses are included in contracts between the satellite operator and his customers.

Ultimately, the validity of all these liability limitation or exclusion clauses depends on the law applicable to the contract or the law of the State having a substantial connection with a given transaction. Therefore, even though broad liability disclaimers are accepted by the industry, their enforceability might be precluded and it is mostly a matter of public policy as to know whether these clauses will be regarded as valid or not.[164]

One can understand that for an industry where "non-liability" is a generalized phenomenon, coverage through adequate insurance is not only of utmost importance but also very costly. Indeed, the private legal regime for liability claims, not assigning any type of risk and subsequent liability on the private enterprises involved in space activities, necessarily transfers the entire burden on the insurers. It is about that issue that H.L. van Traa-Engelman has said:

"The pressure on the insurance market, largely generated by the proliferation of space activities in general and through a number of consecutive property insurance claims in particular, has already shown uncertain about the cost level of future premiums and the availability of insurance cover as such.".[165]

While the purpose of this study is not to proceed to a review of past space insurance claims,[166] it will examine the (contractual) mechanisms commonly used by insurers in order to understand how risk is mitigated and liability absorbed by the insurance market and what this represents for the private satellite communications sector.

As earlier mentioned, any party involved with the setting and operating of a satellite system – whether it is the manufacturer, the operator or the service customer (*e.g. lessee*) – all are

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[164] See Salin, F. A., in "l'exploitation commerciale de l'espace" *supra* note 98 at 234 (" choice of law analysis ") and at 241 the author cites a case between Martin Marietta actin in its launch service provider capacity and Intelsat as its client (launching a satellite). Intelsat says there was a *gross negligence* in which case most jurisdiction refuse to enforce liability disclaimers. As explained by the author *"In this case, however, the court enforced the disclaimer as to the gross negligence claim based upon the court's belief that the United States Congress had annunciated specific public policy which favored limiting the civil liability of those who provide launch services".*
See *Martin Marietta Corp. v. International Telecommunication Satellite Organization* – (INTELSAT) No. MJG-90-1840 (D.C. Md. 1991)

[165] See "Commercial Utilization" *supra* 137 at 329

[166] *Ibid.* at 330-334 and Salin, F. A., in "l'exploitation commerciale de l'espace" *supra* note 98 at 237-239.

exposed to quasi-absolute risks because of the generalized business practice of limitations, disclaimers and waivers of liability. Therefore, this same list of actors will enter insurance contracts with insurance brokers in order to be provided with an insurance policy that would best cover the specific risk they are subject to.

Actually the insurance market is constituted by a three-fold level of actors consisting of the insurance brokers; the insurers *per se* and the re-insurers. The private enterprises involved in space activities directly deal with the brokers which are their agents and have as their main mission to look for the "ideal" policy that would cover it's clients needs under specified terms and conditions which are detailed in an underwriting brief.[167] Once the private enterprise has accepted the propositions made by the broker as to the identity and conditions proposed by the actual insurer, it will through its agent conclude a contract with the insurer on these accepted coverage terms. The insurer faces high risks due to the nature of the activities he accepts to cover and to the no-liability contracts characteristic of the space business. Thus, the insurer must very well be informed about the kind of activities he's indirectly supporting, the face value and market value of the devices and of all the previously mentioned associated rights that grant to a satellite system its relevant commercial value. However, this is not easily possible on the part of the insurers and the latter have too often been denounced for their inability to assess risk *"due to inadequate technological expertise and information asymmetry between client and insurer"*.[168] As a parallel and supporting that last observation, the insurers are equally criticized for not implementing any price discrimination and personalizing the service they provide to the actual financial and technological situations of their clients.

One could argue that the market has been scared by the numerous claims for compensation they eventually had to provide for in the past decades. Nevertheless, these market failures remain and are translated into higher premiums for the insurers' contractors as much as in highly complex coverage mechanisms which depend on the stage at which the damage occurs (whether during the pre-launch phase, the launch phase or the in-orbit phase) and are function of the seriousness of the damage suffered. Therefore, when setting a satellite communications system, one must take into account these variables and the overall complexity of these operations that ultimately represent high transaction costs.

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[167] See Fabre, H., "Risques spatiaux et stratégies de couverture du risque par les mécanismes de l'assurance" (2001-2002) 20 Géoéconomie 183 at 185.

[168] See "Commercial Utilization" *supra* 137 at 334

The pre-launch insurance policy covers damages that might occur while manufacturing the satellite, transporting it to the launch site, stocking it for later launching, placing it on the launch vehicle and during vehicle ignition. The launch insurance policy then takes over and covers damages occurring during the launch and while taking the satellite to its transfer orbit. It is maybe the most essential policy as the launch provider contractually discharged himself from any liability deriving from a launch default, hence transferring the risk on the satellite owner. Finally, in-orbit insurance, which starts as soon as the launch insurance effects end, covers damages resulting from the satellite partial inability to function properly and its possible replacement by another satellite if damages are of a more serious nature.[169]
As for the cost of the premiums with respect to each type of space insurance, they are relatively high in the two last cases. The pre-launch insurance can be considered as a quasi-invisible cost as it is generally included in the manufacturing contract, hence the price indicated in that contract represents both the premiums and the actual manufacturing cost. The launch insurance premiums revolved around a 20% margin of the value of the insured good in the 1990s and seem to have stabilized since then and for in-orbit insurance premiums represent about 5% of the value of the insured good. While launch insurance premiums have progressively decreased as launch failures became less frequent in the 1990s than in the 1980S, in-orbit satellite premiums have become more expensive due to the increase of satellite technical failures.[170]

One should note that additional coverage not necessarily specific to space activities can always be undersigned by the private enterprise as to cover secondary risks, *e.g.* political risk due to the impossibility to be granted the required licenses for the satellite system to be operational (or on the part of the manufacturer, coverage for the implementation of incentive payments clauses in case of defective functioning of the satellite).[171]

The insurance market's main characteristic is uncertainty, that is lack of capacity to predict for the reliability of the objects it has to ensure. On the other hand, it is not substantially concerned with moral hazard, where the insured party would be careless as to increase the

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[169] Nesgos, P.D., "Lectures on Commercial Space Activities: Issues of Procurement, Insurance and Finance", March 11th 2002 [lectures given at the Institute of Air and Space Law, unpublished]
[170] For further details about the scope of cover, the criteria for the fixation of the cost of insurance and typical clauses inserted in these contracts, *see* Ravillon, L., *Les télécommunications par satellite – aspects juridiques*, (Paris: Litec, 1997).
[171] *Ibid.* at 432.

cost of insurance over the estimated premium value as the industry has introduce many incentive mechanisms in their contractual relations.
In this context what should maybe be worked upon is a structured but flexible dispute settlement mechanism for insurance-related claims in order to introduce some predictability at this level.

Section 3: Intellectual Property Rights: What Regime in Space and for Space Applications?

When discussing about Intellectual Property Rights ("IPR") we shall refer to the general acceptation of that term as defined under article 2 of the World Intellectual Property Organization (WIPO) Convention. This article adopts a broad approach with respect to intellectual property and its relevance to space activities has been reinforced by the reproduction of that definition in the Inter-Governmental Agreement determining the rights and obligations of the participating States to the International Space Station project.[172]
IPRs being of a proprietary nature represent the conceptualization of exclusivity rights on the use of the object (either material or immaterial - *e.g.* a formula) subject to their protection. For instance, patents are a tool for the inventor to protect his invention from free use by third parties. The invention being the fruit of the inventors mind and having been created through efforts and reflection, the inventor is entitled to have this situation recognized and respected; this is in brief the philosophy of any IPR legislation and its implementation through the mechanism of patents. Therefore patents are the materialization of the inventor's right, recognized by States, to oppose his exclusive rights over his invention to others.
Yet, as mentioned, this right being practically granted by States (or enforceable only once recognized by some national authority), it is subject to a territorial limitation, which happens to be completed by scope and time limitations.
Basically there are two systems for being granted a patent, these are the "first-to-file" or the "first-to-invent" procedures. While the first procedure is used by the majority of the international community, the second one is specific to the USA, Canada and the Philippines.

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[172] See Convention establishing the WIPO article 2 (viii) : (viii) "intellectual property" shall include the rights relating to: literary, artistic and scientific works; performances of performing artists, phonograms, and broadcasts; inventions in all fields of human endeavor; scientific discoveries; industrial designs; trademarks, service marks, and commercial names and designations; protection against unfair competition, and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields. Web: http://www.wipo.int/clea/docs/en/wo/wo029en.htm .

This last distinction is essential as it constitutes along with the territorial nature of IPR protection one of the most common legal issues giving rise to patent-related claims before courts. The reason why territoriality and filing systems are important for that matter is that they serve as primary criteria to determine how the balance between the proprietary exclusive rights and the use by third parties is to occur and be accepted. Indeed, what is relevant with respect to patents and IPR in general, is on the one hand the opportunity it reserves for the inventor (or the "initiator" in general) to subject the disclosure of his invention (or work of the mind) to the conditions he wishes to set and on the other hand the existence of limitations, as far as third parties are concerned, pertaining to the use of a given invention, which is the reciprocate of the first effect of the filing of a patent.

If one asks what are the advantages of establishing and securing IPR, the first answer would be that it is an (economic) incentive to the development and sharing of human knowledge and that the existence of proprietary rights in the realm of ideas is a means to favor human exchanges in that same sphere.[173] In other words, far from being a obstacle to international cooperation, reaching general agreements on IPR is a way to promote further international cooperation.[174]

With respect to outer space activities, IPR are influential factors at many levels. First, they can apply with respect to the earth-based part of these activities, in which case the peculiarities of space activities might not be relevant and these issues would be treated according to the applicable legislation and jurisprudence for "similar earthly" cases.
The second option is that of IPR issues that have been revealed only with regards to specific satellite activities. In this respect, broadcasting, remote sensing and material processing in outer space have raised copyright and patent concerns.[175]
The third case in which IPR are an issue at stake is when the implementation of a given space project could constitute an infringement of these protected rights. In these cases the concerned

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[173] See Leibovitz J. S., "Inventing a Nonexclusive Patent System "(2002) 111 Yale L.J. 2251 and Wallerstein, M. B., Mogee, M. E., Schoen R. A., Eds. *Global Dimensions of Intellectual Property Rights in Science and Technology*, (Washington D.C.: National academy Press, National Research Council, 1993).
[174] See also – for a statement of the advantages derived from the protection and recognition of IPR - Article 7 of the WTO Trade-Related Aspects of Intellectual Property Rights (TRIPs) Agreement: *"The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations."*
[175] See "Commercial Utilization" *supra* 137 at. 257 *et seq.*

private enterprises should envisage to what extent their activities would infringe these rights and how to prevent such infringements as to avoid the subsequent sanctions.
As for the IPR applicable regime to outer space activities, it is the same as the one applicable to earth-based activities, that is a compilation of regularly amended international Conventions completed by the Trade-Related Aspects of Intellectual Property Rights (TRIPs) Agreement agreed upon under the auspices of the World Trade Organization (WTO).[176]

Whereas the first situation described above is out of our field of study and therefore will not be developed, the second and third situations described have direct implications as far as space communications are concerned and will be further analyzed.[177]

1. Copyrights and Satellite Communications

"Do copyrights affect satellite communications and if so to what extent?" is still a quite unresolved question which offers at best a vague solution.
Copyrights have become a concern in connection with space activities in the 1960s as the international community had become aware of the transmitting capacity and function of artificial satellites. This acknowledgment resulted in the drafting and adoption of an international convention "Relating to the Distribution of Programme Carrying Signals Transmitted by Satellites", *i.e.* the 1974 Brussels Satellite Convention.
While this Convention was drafted having in mind the *"protection of copyrighted work transmitted by satellite from unauthorized interception and use"*,[178] using a little hindsight, one would admit it has not succeeded in that task. The reason for that is though the Convention tried to organize measures at the international level for the prevention of infringement of copyright law, the scope and means it had envisioned as being adapted for that purpose have not proven to be.
With this respect, article 2 (1) of Brussels Satellite Convention stipulates: *"Each Contracting State undertakes to take adequate measures to prevent the distribution on, or from its territory, of any programme-carrying signal by any distributor for whom the signal emitted to or passing through the satellite, is not intended."*

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[176]Paris Convention for the Protection of Industrial Property (1883); Berne Convention for the Protection of Literary and Artistic Works (1886); Brussels Convention - Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite(Done at Brussels on May 21, 1974), For the texts of these conventions, web: http://www.wipo.org/treaties/ip/berne/index.html .
[177] Inventions in outer space as much as remote sensing are not directly relevant to satellite commuiniations and will therefore not be developed under this section.
[178] See "Commercial Utilization" *supra* 137.

This article resembles article VI of the Outer Space Treaty in that it establishes a mandatory obligation to organize a framework for the prevention of unauthorized transmissions but that practically the nature and scope of these measures are left to the States to decide for. Accordingly, no uniformity is provided for through this Convention. This is not the sole cause of inefficiency of this Convention and a second principal drawback appears in the title of this Convention. That is, the word "signal" as opposed to "content" which consequently undermines the scope of the Convention since copyrights are more attached to the substance rather than to its vehicles. Moreover this Convention lacked comprehensiveness as it excluded Direct Broadcasting from it scope of application.[179]

If the practical applications of this Convention are very limited and certainly not in phase with the needs for the protection of copyrighted work in connection with satellite communications, the Brussels Convention –at least- reveals the existence of an international common effort for this matter.
Consequently, learned authors wishing to further analyze the legal regime applicable to direct and indirect broadcasting, have rather referred to a more general text, *i.e.* article 11 of the Bern Convention. Even in these cases they have concluded that no uniform system has been established besides that of traditional individual licensing.[180]

The only harmonization trend that has been observed on that question occurred in Europe, where a directive on the coordination of certain rules concerning copyright and rights related to copyright applicable to satellite broadcasting and cable retransmission has been adopted in 1993.[181] The purpose of this directive is to provide with a simple solution to the copyright protection questions within the Union while referring to the injection theory. According to the latter, the satellite is simply regarded as a communications tool, a conduit in which the signal

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[179] *Ibid.* at 262-263

[180] *Ibid.*at 263-264. The author mentions that although the Bern Convention along with the ITU's radio regulations seem to *" protect the interests of the author in the event of direct satellite broadcasting practice, the effective realization of its protection needs extensive amplification through international cooperation."* And as even when envisaging non-voluntary licensing for direct broadcasting while considering the application of the national treatment principle, the author contends that the simplification derived from the introduction of non-voluntary licenses would be *"frustrated by the limitation of its effect to the territory of the country that granted such license, leaving territories of third States reached by the broadcasts beyond its scope of application".*

[181] See Council Directive 93/83/EEC of 27 September 1993 on the coordination of certain rules concerning copyright and rights related to copyright applicable to satellite broadcasting and cable retransmission Official Journal L 248 , 06/10/1993 P. 0015 – 0021.

(carrying copyrighted work) are injected, therefore the law applicable to the communication is the one of the country from which the injection is originating. [182]

Yet besides this European solution it is only the general convention for copyrights (Bern Convention) that is applicable; the problem being it's just not of much help.

2. Existing IPR and Satellite Communications, Avoiding Infringements

As regards the second question, that is determining to what extent IPR should be an issue of concern when setting up and operating a satellite communications system, one should mostly focus on the risk of infringing existing IPR in the course of this kind of space activity.

As mentioned when discussing who where the actors and what was the economical situation of the space industry (see chapter 2 above), governments have, in a general move, stepped back from satellite communications, insomuch that space activities in that field are essentially managed and funded by private actors. This supposes that what was previously government-funded technology, has *de facto* been transferred to the private enterprises that acted as sub-contractors or subsidiaries for these governments but it does not necessarily imply that these transfer are of a gratuitous nature. This is one reason why licensing should seriously be considered by private enterprises that wish to avoid litigation over such matters. What is true in the case of government procurement *a fortiori* also holds true where private third parties are entitled with IPR.

Two elements should guide the system provider (who eventually bears the risk of patent and IPR infringement), when weighting the risk and considering how to evacuate it: (i) what is the geographical extension of IPR for a given component or sub-system of the satellite system and (ii) how to negotiate licenses as to avoid full-cash payment since private system operators are generally deprived of cash until they start operating successfully and –then only- generate a revenue stream.[183].

As explained by B. Smith, it is for that purpose *"important to compare the geographical patent coverage to the geographical areas where the system builder will make, use, sell or offer, or import technologies patented by a third party".*[184]

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[182] See Gavalda, C.,& Parleani, G., *Droit des Affaires de l'Union Européenne*, 3rd ed. (Paris : Litec, 1999) at 201.

[183] See Smith, B. L., "Licensing Issues on the National Level – Patent & IPR Issues"", Project 2001 Legal Framework for Privatizing Space Activities at 29.

[184] *Ibid.*

This supposes that the task of the system operator is to make sure that the technology incorporated and represented by his satellite system does not infringe third party IPR, only *where* this system operator is to provide his services since the protection is associated with a territory. In other words, *"no license would be required outside of protected territories"*.[185] One should note that since the US patent legislation has been amended in 1990 and its provisions' application has been extended to outer space. Thereupon, *"Any invention made, used or sold in outer space on a space object or component thereof under the jurisdiction or control of the United States shall be considered to be made, used or sold within the United States for the purpose of this title.*[186]

Where third party patent liability cannot be avoided *rationae loci*, this author suggests that it be avoided *rationae materiae* through pertinent distinguishing as to the scope of the patent.[187]. In any case if this type of research on the part of the system operator is unworthy in terms of transaction costs and time consuming, a better solution might lie in the direct negotiations for licenses.[188]

The reason why a system operator should go through such calculations is that research for pre-existent IPR, licenses and law suits in that domain can be very expensive; and that it is not certain whether the disputes arising from infringement claims are worth undergoing before the courts as they can ruin a satellite project or expand so much in time, the disputed satellite system would since long no more be operating.[189]

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[185] *Ibid.*
[186] 35 U.S.C. § 105.
[187] What is generally referred to as being the scope of the patent is a fairly detailed description of the object of the patent and of its foreseeable protected use.
[188] *ibid* at 31: either through direct contracting and supply of equipment by the patentee, finding another provider for that same technology therefore transferring the risk on the latter or using cross license agreements where the patentee and the system provider have similar fields of activity. See also Wallerstein, M. B., Mogee, M. E., Schoen R. A., Eds. *Global Dimensions of Intellectual Property Rights in Science and Technology*, (Washington D.C.: National academy Press, National Research Council, 1993) at 228 quoting a Director of NEC, representing the industry's view for that matter: *"We welcome cross-licensing agreements because they allow us to communicate freely and to concentrate fully on engineering efforts for better public services. When we transfer technology to other companies, we select our partners and set the royalties in such a way that they are strongly motivated to apply the patent in marketable products and to secure reasonable projects. Technology and patents are mere knowledge. They cannot contribute to the advancement of the public welfare unless they are applied, manufactured and marketed as practical products"*.
[189] See Smith *supra* note 161

These observations strongly call for harmonization of IPR on a global scale. It is interesting to note that even though the European patent system[190] along with the extension of the US patent law constitute two major legal patenting systems that might serve as the main references for the highly concentrated industry on the European and American continents, this does not resolve the still conflicting opposed filing systems nor does it encompass other types of IPR. Similarly, the TRIPs Agreement which would advocate for a global IPR regime -while determining the minimum protection standards to comply with, detailing the efficient enforcement procedures to follow and establishing a dispute settlement mechanism via the WTO- does not provide for a uniform or harmonized protection system since *'members are left free to determine the appropriate method of implementing the provisions of the Agreement within their own legal system and practice".*[191]

Therefore, the industry along with the legal scholars believe that international cooperation would be the most appropriate means to resolve the singularities of IPR with respect to outer space activities. Finding common grounds for harmonization of the existing IPR regimes should be, as in the case of the Unidroit Convention, a joint endeavor between the private sector and public authorities and States, which would best be organized and structured under international fora specialized in IPR and international trade such as the WIPO, WTO and maybe the Unidroit Organization for the drafting of potential conventions on that matter.

Having described the legal framework and the market structure through which private enterprises are to operate, it is at this point interesting to examine what options are left for private enterprises for the development of their activities for their own benefit and for the overall benefit of mankind.

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[190] Holoyak & Torremans explain that *"The advantage of the [European patent] system is that on top of the harmonization of national patent laws, a single application now also leads to a single examinations procedure. The downside of the system is though that at the end of the day no single European patent is delivered. The applicant instead receives a bundle of national patents, on in each of the members States covered by his application."* See Holyoak & Torremans *Intellectual Property Law*, 3rd Ed. (Butterworths, 2001) at 44

[191] See "Overview: the TRIPS Agreement", Web :. http://www.wto.org/english/tratop_e/trips_e/intel2_e.htm .

CHAPTER 4

Enhancing Commercial Exploitation of Outer Space: To What Extent is it Feasible and By Which Means?

In order to enhance commercial exploitation of outer space, the private satellite communications sector seriously needs to focus on the shortcomings of the current legal framework as much as market structure and socioeconomic trends driving this industry.
If the goal to promote among the private enterprises is pro-active participation for the common benefit of the industry and its customers, one first needs to determine what the hurdles limiting more advances in the satellite communications sector are, whether they can be overcome, and -where this is possible- through which means ?

As presented in chapter 1, space law is a compound of international and national legislation through which private enterprises need to learn how to subtly navigate and find their marks in order to pursue their endeavors successfully. Yet, this is not the only and major legal obstacle that private enterprises have to face as legal uncertainty also applies to financial and contractual issues.
For this purpose, legal uncertainty appears to be the first and foremost issue to tackle and overcome.
Another question on the legal plane is how to organize and implement harmless and effective globalization as applied to space activities in general and to the satellite communications sector in particular. In other words what should be considered as an adequate balance between national interests *vs.* global concerns and trade promotion as regards satellite communications?

As for the means to adopt in order for the private sector to develop and implement a pro-active attitude for the "common good", which are they and what are the success prospects that can be derived thereof?

When trying to answer these questions and adopt the appropriate measures for the "enhancement of commercial exploitation of outer space", one should keep in mind that the industry will still for long have to cope with certain limitations while working on potential improvements.

Section 1: Limitations to cope with – questions of national interest and security

The promotion and development of space endeavors is generally encouraged by space law, through the international cooperation mantra incorporated in all space treaties and national legislation; but it is not an absolute principle. This is to say that national interests can be in contradiction with international cooperation insofar as the former will prevail over the latter as to reduce, for instance, transfer of technologies.

Actually, the main limitations to globalization are represented by national interest whether pertaining to space policy where States enter into contractual relationships with the private sector (as in they case of Public Private Partnerships or subsidies contracts)[192] or due to national security issues as in the case of export control legislation.

Finally, another type of national control over space enterprises when considered as transnational groups should be of concern since the recent ENRON and WORLDCOM scandals have been very hot topics for western country governments.

1. The Export Control Legislation or "How to Limit Commercial Promotion for the Sake of National Security"

International cooperation and promotion of outer space exploitation has been accepted by the international community under general terms, keeping in mind that peace and the benefit of all are equivalent if not superseding principles to comply with as well. This implies that the ongoing globalization trend that continuously insists on promotion of free trade, free movement of goods and capital cannot alter the States vital rights such as organizing legal barriers to activities potentially detrimental to national security.

This is what export control legislation is all about. Whether at the international or national level, these types of barriers exist and focus on the restriction to the trade and transfer of armaments and dual-use goods.

If this protection of peace *vs.* cooperation issue is always accepted as a valid one, it is the political objections against the appropriateness of the provisions restricting trade and transfer

[192] This mostly hold true for non fully commercial space activities or activities for which States and their Defense Departments happen to be major customers/ users; *i.e.* it is therefore, generally not the case for satellite communications activities as detailed in chapter 2 above, when discussing the market structure and States unwillingness to prepare budgets from that type of activities.

of technology that are debated and subject to controversies between governments among themselves as partners in a global economy and between governments and the industry. When the dual-use capacity of space technology weighs more on the military side, legal barriers to the transfer of this technology are widely accepted; but when this is less obvious, the criticism towards such restrictions gains legitimacy

This type of concerns has lead to the adoption of national as well as international legislation imposing that kind of limitation on commercialization of space activities.
On the international scene there are *informal voluntary accords* amongst the participating States, that are not internationally-binding agreements but rather arrangements of a diplomatic nature. They all target armaments and dual-use goods that are understood to be sensitive technology goods that can serve civilian as much as military uses. The dual-use goods definition includes satellite technology (whether remote sensing or traditional communications) and these arrangements are for the most important ones, the COMCOM, the MTCR and the Wassenaar Arrangement.[193]
The pattern adopted by these instruments, is to practically exercise control over the transfer of sensitive technology items through each of the participating countries' laws and regulations, which generally occurs at the licensing stage. Hence it is once again the domestic legislation which appears to be a legal barrier to trade.

The US export control legislation is certainly the most comprehensive set of laws and regulations to have been established with respect to dual-use goods control. . Even though it comprises three key sets of *laws* (*lato sensu*), *i.e.* the 1979 Export Administration Act and complementary Export Administration Regulations, the main piece of that legislation is the Arms Export Control Act (AECA - 1976), which also includes space devices and components as well as communication satellites and technical data.
In the 1979 Acts and Regulations, the purpose was to justify the export control measures and establish the appropriate mode of implementation[194]. Yet, the AECA had very strong rational and consequently important legal implications. Because it was dedicated to "world peace and

[193] See generally Jakhu, R., & Wilson, J., "The United States Export Control Regime: Its impacts on the Communications Satellite Industry", (2000) XXV Annals of Air and Space Law 157
[194] The Export Administration Act authorizes the use of export control measures while considering their impact on the US economy and where necessary, that is for the protection of national security interests, for the compliance with US' international obligations and for the protection of the Us domestic economy. The Export Administration Act represents the necessary complement for the implementation of the "declarations" made under the EAA. For that purpose, it has originally assigned the Department of Commerce's Bureau of Export Administration to issue and administer regulations that would serve the control of dual-use items.

the security and foreign policy of the US" the AECA establishes a set of control measures and grants authority to the highest level of the executive branch, the President, "to control the import and export of defense articles and defense services".

Technically speaking the export control legislation involves many governmental agencies at different stages[195] but mostly uses licensing requirements as controlling tools. The licensing and control mechanisms are generally centralized in the hands of the Department of State for all ostensibly harmful goods or items ("hard core armaments"). However, since the export control legislation also includes dual-use or sometimes solely civilian- or commercial-use items, the burdensome but primordial licensing task had been transferred to the Department of Commerce essentially for communication satellites[196], in order to favor the commercialization and cooperation aspects of transferring technology rather that restricting such transfer in cases where national and international security concerns are not *prima facie* at stake.

The US example is a very clear illustration of how political considerations can govern profitability and competitiveness within the space industry. Especially, the US-China 1998 scandal revealed how this assertion could hold true. [197]The controversy at the time was to know whether the "liberal" use of Chinese launching services by American companies had resulted in transfer of missile technology or critical know-how on that matter to China. Practically speaking, the ease of the export control regime towards China was induced by the very cheap service they offered and that was viewed as an overall benefit to the US space industry[198]. The growth in commercial demand for Chinese launches had coincided with the Clinton Administration decision to promote commercialization through DoC's licensing; this was a political decision that gave rise to lengthy political controversies and a debate between national security vs. profitability of the industry concerns. Whatever the outcome of the studies on the gaining of know-how by the Chinese authorities and the threat that it involved, the result of this ill-managed affair was the exaggerated impact it had on the "space technology" industry. The maybe legitimate suspicions the US Government had against China

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[195] Besides the DoC Bureau of Industry and Security the following agencies are also at some point involved with export control:. the DoS Office of Defense Trade Controls, Office of Foreign Assets Controls within the Department of Treasury, Department of Energy's Office of Arms Control and non-proliferation and the Office of fuels Programmes... etc

[196] This transfer occurred in 1992 following a 1990 veto from P. Bush on a new version of the AECA that would have concentrated all licensing and control at large within the DoS and has been further enhanced by P. Clinton who gave the DoC primary licensing authority for satellite launches in 1996.

[197] See about this affair Fisher, Richard D. Jr., "Commercial Space Cooperation Should Not Harm National Security", *Heritage Foundation Backgrounder* (June 26, 1998), No. 1198; web : www.heritage.org .

[198] To make a simple comparison, the price of a US-provided launch varies in a range of $50 million to $100 million, while the price of a similar launch provided by the Chinese ran between $12 million to $70 million.

were translated into very strict control, back in the hands of the State Department[199], applied to any other country and resulting in the slow down of the business and market growth of that industry in and outside the USA ![200]

The substantial conclusion to draw from export control legislation, technology transfer for the benefit of nation States vital interests and the like is their overall legitimacy, recognized throughout the international community as a predominant concern and incorporated in international trade agreements as serious exceptions to the liberalization and globalization processes that should otherwise constantly be pursued.
Thus, when liberalization is promoted and requires the annihilation of market access barriers, these should not be understood as including export control legislation.

This is the first " fixed limitation " private enterprises active in the satellite communications sector will certainly always have to cope with, even when further trade liberalization should and would be implemented. The second obstacle the private sector will have to face is another type of long term constraints when dealing with anti-trust authorities and other controlling public bodies.

2. Regulation, Regulation Again and Still a Little More Regulation ... What Deregulation Has Left Us in Heritage.

If the 1980s and early 1990s have been a praised episode of the telecommunications history as it carried along commercialization, privatization and deregulation, it is now a matter of general consensus that they also have introduced major changes with respect to the interactions and relationship between private enterprises and the public bodies still concerned with the satellite communications sector.
The best expression to sum up this situation would be, quoting Pr. Jakhu, to say
" deregulation simply means more regulation ".[201]

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[199] See the Strom-Thrumond National Defense Authorization Act for Fiscal Year 1999 (105th Congress).Public Law 105-261.
[200] Amongst the criticism brought about in connection with the US export control regime, the fact that it implies lengthy paper work that eventually is translated in terms of cost for the industry is a classic but it certainly isn't specific to the United States and in terms of efficiency/ cumbersome ratio, one could argue that the US actually do very well; contra see European Directive on arms control which is so lose one can doubt of its efficiency in its practical serving of its purpose.
[201] Expression used during Prof. Jakhu's oral lectures at the McGill Institute of Air and Space Law (2001-2002).

A striking and clear illustration of that phenomenon is given by the European Community's (and later Union) legislative action -principally using secondary legislation, *i.e.* directives for that purpose- which resulted in the adoption of about 40 instruments for the introduction of liberalization and free trade objectives within the single market in the sector of telecommunications.[202].

Of course what seemed so obvious in Europe had also happened earlier in the US though it might not have represented that big an institutional change since US government agencies have always played a very active role in the controlling and regulating of telecommunications and satellite communications.

With liberalization of the telecommunications market, the new challenge for nation States was to ensure that the transition between the former quasi-monopolistic markets (or at least limited competition markets towards) the new era of open market would occur smoothly. In a context where Governments were willing to move forward towards more liberalization for the benefit of globalization, their general aim was (or in some cases should have been) to intervene only as far as the industry needed guidance as to how to develop and grow surely and safely. Whether law making authorities are so " legal-vacuum phobic " they cannot refrain from constantly creating new law, even in cases where a " free hand " incentive approach had been favored, is probably a legal-philosophical question that deserves interest. Yet, this is to stress that besides being a possible pattern, it has been the practical result of the telecommunications deregulation process and licensing requirements have been a singular means for this increased public intervention within the private market.

Another characteristic of that public intervention phenomenon is that it has increasingly shifted towards competition and anti-trust regulation. The FCC as much as the European Commission have notoriously been criticized about their expansion policy both *materiae rationae* and *materiae loci*. The progressive evolution of the Single Market policy as to provide for guidelines for trade in general and with respect to its peculiarities in certain distinguished sectors has, as a parallel, granted greater powers and strength to the Commission's opinion on diverse issues that would not otherwise have been of its primary

[202] The developed legislation encompasses diverse aspects of telecommunications among which many that are directy relevant to satellite communications; the most famous provisions being rules governing interconnection or the open network provision (OPN), coordination of frequencies, tariffs, taxes, mutual recognition of license for telecommunications services ...etc. See. *supra* 50 for a sample of instruments for that purpose. See also, Heilbrock, J., "European Regulator for Telecommunications: the Need for a Change" (2001) Proceedings of the 44th Colloquium on the Law of Outer Space of the IISL 202.

interest. Such intervention was considered justified as long as a tenuous connection between the latter and the implementation of the Single Market could be acknowledged. Of course, this has led to numerous debates over the distribution of powers between the member States of the Union and the Commission[203] and what the true value of the subsidiarity principle should be.[204]

In any case, it is a matter of consensus, that the Commission has gained reach on more subjects it was assigned through its competition law-regulating mission.

The same can be said about the FCC which apart from granting licenses for the realization of space ventures also carries on the mission to keep an eye over the structure and evolution of the market and the industry.

Hence on both continents, where the key market players in the satellite communications sector are located, anti-trust authorities have adopted similar strategies; *i.e.* to ensure that their competition laws be complied with as to respect the *equilibrium* they wish to establish under their jurisdiction.[205] Because economies and markets are undergoing a globalization process, the practical implementation of the goals these authorities have set for themselves suggests that their decisions have an extra-territorial reach and application.

The most recent examples of these transatlantic hurdles to further concentration are the rejection of the GE-Honeywell merger by the European Commission,[206] while it had been accepted by the Department of Justice (DoJ) and the very recent merger application between Hughes DIRECTV and Echostar.[207]

In the first case, the European commission had rejected the GE Honeywell merger that involved only American firms and had previously been approved by the US regulatory authorities. This has not only led to hot political debates[208] supposing an opposition between

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[203] See EJC Decision AETR v. Commission c/ Conseil, 1971 expanding the powers of the Commission on matters that when dealt at the national level might affect the single market (even though they originally are under the jurisdiction of the member States).

[204] According to this principle, the issues not specifically assigned to the Union are left to the States, unless the it can show that a centralized action would better serve the common interests of all member States

[205] See " Satellite Communications Regulations" *supra* note 58 at 358 *et seq* and 517 *et seq* for a review of the Community's decisions relative to competition between satellite operators.

[206] See Dimitri Giotakos,Laurent Petit, Gaelle Garnier and Peter De Luyck, Directorate-General Competition, Directorate B, "General Electric/Honeywell — An insight into the Commission's investigation and decision"; Competition Policy Newsletter, Web: http://europa.eu.int/comm/competition/speeches/text/sp2001_037_en.pdf .

[207] See http://www.spacedaily.com/news/satellite-biz-02zx.html, for a brief outlook of the applicants and the FCC's respective positions for that case.

[208] See http://www.eurunion.org/news/press/2001/2001047.htm, quoting Mario Monti when expressing his disappointment about the politicization of the GE-Honeywell merger and stressing that the role of the Commission was to analyze the proposed merger under objective terms, as to how such merger would affect competition within the Union, and that this was what the Commission had done. Monti said: *"This is a matter of*

US and European markets but has mostly marked the international scene with the determination of the Commission in its securing the Single Market mission. This first case clearly reveals the extra-territorial effect of the European Commission's decisions.
The second example is a mere illustration of the FCC's reviewing role over proposed mergers in the sector of communications, while the official anti-trust authority remains the DoJ. In any case the fact that the FCC does not have a favorable opinion about the proposed merger (to say the least) is not encouraging for the applicants and it is very likely that the DoJ will draw similar conclusions for that matter.
It is noteworthy with that respect that anti-trust authorities are engaging into international cooperation on the merger review through the International Cooperation Network (ICN) established on October 2001. The ICN is described, as a *"consensus-based informal network of anti-trust agencies from developed and developing countries"*[209] and its mission will be to share expertise and concerns on potential mergers as well as aligning policies where feasible. Its purpose is to *"promote best practices through concrete, non-binding recommendations"*.[210]This new mode of inter-agency cooperation is complementary to the already existent practice of intervention within public international fora such as the WTO and OECD.

Finally the ENRON[211] and Worldcom[212] scandals in the US and the Vivendi Scandal in Europe certainly have reinforced this public intervention insofar more transparency and accountability will be required from private enterprises. These scandals overtly revealed the lack of transparency in the management of these corporations, their subsequent *de facto* unaccountability towards their shareholders and the shallowness of public financial authorities and market regulators' control over these corporations.[213] All these factors have the very

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law and economics, not politics... The nationality of the companies and political considerations have played and will play no role in the examination of mergers, in this case as in all others."
[209] See European Union XXXIst Report on Competition Policy (2001),
web: http://europa.eu.int/comm/competition/annual_reports/2001/competition_policy/en.pdf ., explicating that the ICN will focus on "merger control process in the multi-jurisdictional context and the competition role advocacy of antitrust agencies".
[210] See "Merger Enforcement at the FTC",
web: http://www.ftc.gov/speeches/other/021024mergeenforcement.htm,
[211] For a thorough understanding of the Enron Scandal see the Time's Brief - "Behind the Enron Scandal" web: http://www.time.com/time/2002/enron/. And the BBC news report, "the Enron Scandal at a glance"
web: http://news.bbc.co.uk/1/hi/business/1780075.stm .
[212] "FCC/CAPITOL HILL", August 5, 2002 Satellite Week, online: Lexis

[213] See "Lerach finding no lack of targets in new age of corporate scandals",
web: http://story.news.yahoo.com/news?tmpl=story&u=/021018/31/2gufc.html , describing the criticism over these scandals, "William Lerach, the lead counsel in the shareholder class action lawsuits against Enron and Worldcom, doesn't mince words or waste time when lambasting his favorite targets -- unscrupulous accountants,

damaging effect of affecting the global economy (as the shareholders are a world-wide dispersed population) and to develop cynicism of the public about the advantages of capitalistic economies and the *laissez faire* approach as applied to market forces.
These scandals probably are a mark of a perversion of the management of business organizations and a shortage in legislative and regulatory measures relevant for public markets transparency.

The control over private enterprises as organizations and groups is another form of legitimate governmental interference with market forces and it should be regarded as a favorable option especially in highly competitive and concentrated markets. Indeed, in such a context the collapse of global firms has an overall damaging effect on the global economy. Trying to avoid this kind of mishap is a laudable activity but it also requires that the public authorities have an extensive outreach over the industry's actions.
As a logical outcome, these scandals have resulted in a growing awareness of all commercial as much as regulatory actors that these overall detrimental deficiencies need be mastered through renewed concerted global action for the betterment of, and trust in, the global market. For this purpose, the International and American accounting regulators made commitments in late October 2002, to adopt international accounting standards as to preclude more ENRON-like scandals from developing and by 2005 there would be two set of coherent and mutually understandable accounting standards in Europe and the USA.[214] One can foresee that given the respective powers of the EU and the US on the global market place, their international standards will be adopted by "foreign" corporations wishing to (directly or indirectly) penetrate these markets.

While lawyers will contend that law's primary function is to organize social interactions and provide for solutions where market failures exist, the economists will refer to Coase[215] and argue that it is because we do not live in an ideal world, free of transaction costs that law is a necessity. This results in a general agreement for a certain level of regulation and above that level, the private actors should undertake transnational actions to establish a "new global governance". [216]

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deceitful executives, their investment bankers, and, of course, Republican lawmakers."

[214] See "Accounting Regulators Thinking Globally" (Reuters) October 29th 2002, http://story.news.yahoo.com/news?tmpl=story&u=/nm/20021029/bs_nm/financial_accounting_dc_1 .
[215] See Coase, R. H.,"The Problem of Social Cost" (1960) 3 No 17 Journal of Law and Economics 1.
[216] See. P.A. Salin "The New Global Governance Dialogue on International Communications and Outer Space" (2001) Proceedings of the 44th Colloquium on the Law of Outer Space of the IISL. [hereinafter "New Global Governance"]

Section 2: Improvements to Work For – WTO Trade Liberalization, Unidroit Type of Initiatives and Strategic Alliances

One of the paradigms of globalization lies in the re-identification of social actors beyond the traditional national link and the restructuring of groups according to these newly transborder common interest. As a result, we are brought to rethink the concept of communities on a worldwide basis and adopt new strategies for law-making and enforcement processes. Consequently, the globalization process does not merely constitute a shift from the States' central power to a networking structure between diverse interest groups but also, on the international scene, introduces a transfer of powers from intergovernmental organizations to non-governmental organizations. *Mutatis mutandis*, UN organizations, once looked at as supreme institutions have found new rivals in international fora integrating both public and private interests.

As applied to the satellite communications sector, a second aspect of globalization lies in the direct cooperation between private enterprises. Such coordination of capacities and efforts seems to be an essential complement to the industry's joint-action in the development of more adequate international and national space legislation.

1.Fora for International Cooperation

During the workshop on International Legal Regimes Governing Space Activities organized by the AAS, the 4th working group –especially- has found that the private sector should participate in future developments in international and domestic legal regimes[217]. For that purpose it has recommended that *"governments, UNCOPUOS and other international government bodies addressing space-related matters [be] encouraged to invite members of the private sector to make informal presentations to their meetings"*[218].

The Scottsdale committee has expressed a fair recognition of the importance of involving the private sector in the development of space law but has not been prolific as to how and in which fora specifically, organize such private participation.

It is therefore relevant to ask, which would be the best option between intervening at the WTO, WIPO, ITU or UNCOPUOS reunions? And why would it be so?

[217] See Scottsdale Report *supra* note 110
[218] *Ibid.* 4th WG, recommendation 2

A. The WTO Option

The World Trade Organization, established in 1995 following the Uruguay round (1986-1994) is the international organization providing for rules for the implementation of free trade among nations, gradual liberalization and organizing a dispute settlement for that matter. In some way, the WTO is the perfected version of the original GATT, but it is also a more comprehensive framework consisting of the General Agreement on Tariffs and Trade (GATT Agreement as amended), the General Agreement on Trade in Services (GATS) the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and of a Dispute Settlement Unit. This is a simplistic presentation of the WTO Agreements as it practically represents about 40.000 pages of literature. Yet, it is possible, to undergo a systematic analysis of these agreements and conclude that the most relevant ones with respect to satellite communications services are the GATS, the Annex on Telecommunications Services and the TRIPs.

While the GATS is a framework agreement that is to apply to any kind of service, regardless of the specificities of the sector, the Annex organizes the adjustment of the GATS goals and requirements to the telecommunications sector. Hence, the general guidelines incorporated in the GATS are to be followed by telecommunications sector as to *inter alia*, equally implement the liberalization, transparency, most-favored nation and national treatments rules.
The specificity of the Telecommunications Annex is to focus on market access and use of infrastructure. [219]
With respect with the satellite communications sector, the GATS and the TRIPs represent another advantage, *i.e.* by submitting potential litigation to the Dispute Settlement organ of the WTO. Indeed the Dispute Settlement Understanding of the WTO is an efficient and adapted means for the resolution of business disputes and it would best serve the interests transnational service providers in the resolution of their disputes on matters such as market access, non-discrimination, transparency, inter-operability and the exceptions of national security as provided for under the WTO agreements (instead of a worldwide spreading of litigation before domestic courts or regulatory agencies).[220]

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[219] However, one shortcoming of Annex and commitments made in 1997 States is the lack of uniformity within liberalization process since this depends on what States have agreed to liberalize –whether basic only or value-added services also - and what is accordingly included in their schedule. See for a review of the commitments made, "The WTO Negotiations on Basic Telecommunications: Informal Summary of Commitments on MFN Exemptions". WTO 6 march 1997; cited by Salin, "Satellite Communications Regulations" *supra* note at 83 note 24,and accompanying text.

[220] See *supra* 115 the proposed Draft Dispute Settlement still being at the conception/ adoption phase, the WTO appears to be for that purpose also the best fora for the moment.

The Originality of the WTO is that it does not estimate the States' sovereign prerogatives as more valuable than the liberalization of the world economy. In that respect it differs from UN organizations and represents a *"governance structure of the international trading system".*[221] For this reason, the WTO definitely is an appropriate forum for private enterprises to express their global business concerns and they should try to engage in further participation within that framework as to address financial and licensing issues that have led to deleterious effects *e.g.* in the Iridium and ICO cases and in the foreseeable non-concretization of many GMPCS and LEO satellite systems.

This would be plausible because the WTO is concerned with global market efficiency (whether we like it or not) and that it has more freedom in the exercise of its powers than the traditional UN-type of intergovernmental organizations. Most importantly: this is exactly the kind of interlocutor the satellite communications industry needs to deal with!

B. Cooperation with WIPO

With respect to IPR issues, it has recurrently been proposed to develop space-adapted IPR legislation via private sector and WIPO cooperation because it would serve as a general incentive to develop new technology and increase the stock of knowledge *inter alia.* However, IPR and patent rights also come with their drawbacks such as cost for the patent holder (in the registration process) and social cost for third parties. Indeed patents, if they "legitimately" grant the inventor exclusive rights on his invention and the possibility to reap enormous profit margins on the use and selling of a given technology can also have the adverse effect of granting the inventor to much pricing power and creating market monopolies where the technology is not interchangeable or easily prone to being substituted.[222]The market dominance phenomenon deriving from IPR protection is certainly a serious issue of concern for the WIPO, the WTO and the space industry as it would both constitute barriers to liberalized trade, affect competition in the market (where licenses would be too costly) and eventually result in increasing by-passing methods as to avoid positions where a company would infringe the patent holder's rights. This suggests that where the private sector would not find cross-license agreements (and other market incentives) sufficient to secure their IPR interests (with contractual partners and third parties) it should look forward to being pro-

[221] See "New Global Governance" *supra* note 192
[222] See Leibovitz *supra* note 151.

active on the drafting of uniform IPR regimes and this would require close cooperation between the industry, the WIPO and the WTO.

C. The ITU experience

As for the growing participation of private enterprises in ITU conferences and working groups, both positive and negative criticism has been expressed.

The positive outlook stresses that the industry as drivers in the development of the satellite communications technology would direct the Union on sensitive issues while providing necessary expertise for that purpose, thus efficiently contributing to the work to be done by the ITU. However, the negative criticism also points to a realistic outcome of this participation, in that it represents for the "bigger players" a strategic advantage in the development and access to new markets.

The question of whether the ITU is a proper forum for private enterprise participation is critical since the ITU is the body that practically (although not *de jure*) decides how to distribute limited natural resources, that officially belong to no one, but that will be used by some only. While examining the ITU mechanism, economists would very likely reject the thesis of there being of absolute commons in the management of outer space resources and this is also very likely to be the industry's view.[223]

When looking back at the true incentives for the creation of the sector member category one would easily point to strong lobbying pressure initiated by the private sector over the governments and their representatives at the ITU. From this standpoint, introducing sector members in the ITU was an opportunistic measure and not necessarily one that would substantially enhance the quality and speed of the work to be completed by the Union. This certainly doesn't help countering arguments against the supposed "capitalistic favoritism" within the ITU (*e.g.* as it is embedded in the "first come, first serve" principle).

Keeping this in mind, the proposition of greater participation of private enterprise within the ITU might turn into a catastrophe if the private actors were, indirectly at least, granted the opportunity to get a say on the management of outer space resources and probably associate private concepts to frequencies and orbital slots. This would in turn ruin the wording, the

[223] Indeed the auctioning procedures prove that there is an underlying property rights approach with regards frequencies and orbital positions.

meaning, and the purpose of the space treaties which incorporate the *res communis* concept and non-appropriation principle.

D. A rebirth for the UNCOPUOS ?

What about the sometimes left aside – when dealing with commercial aspect of space activities- UNCOPUOS? Would this organization offer a suitable environment for private participation in legal space affairs or is this simply an eccentric idea as there would be intrinsic incompatibilities that can be opposed to such a union?

One reason for the UNCOPUOS not to naturally be associated with the evolution of the industry and the progress in commercialization of space activities does not lie in the fact the organization is not interested in the commercial prospects and benefits that can be derived thereof but rather in the fact that UNCOPUOS is essentially attached to the promotion of its member States' interests. When analyzing the reports of the legal sub-committee of UNCOPUOS, one would certainly find evidence that the organization would be happy to participate to the enhancement of the commercial exploitation of outer space as long as these activities comply with the principles embodied in the space treaties. Yet, skeptics would certainly contend that the UNCOPUOS, as an international forum, is congested. That it only managed to focus on a few issues within the past decades without yet having the merits of resolving these recurring questions.[224] And that –ultimately- the meticulous approach the UNCOPUOS adopts in its analysis of issues at stake and the very slow pace this results in, will never manage to satisfy nor accommodated the industry.

All this might very well be true yet not sufficient to avoid participation and the presentation of reports initiated by the industry before the States' representatives at the UNCOPUOS. This is not to say that having the industry make its cause heard at this level will have a substantial influence in the dealing with issues such as national regulatory and licensing burdens but that it might, in addition to more intervention in other types of fora, plead and justify the industry's interests while not represent an undue cost for the latter.

Still, it should be acknowledge that this would imply a change in mentalities within the UNCOPUOS, which might after all be the biggest challenge to overcome for that matter.

[224] See *e.g.* UNCOPUOS legal sub-committee discussions always raising the unresolved questions of the delimitation of outer space

2. Purely Private Cohesion: the Pushing Through Via Strategic Alliances

If intervention in public fora is an interesting means for the resolution of legal issues that require some revision of existing space law, cooperation strictly within the private sector is another way to develop commercial applications in the field of satellite communications. This type of cooperation is a step further into globalization as it reinforces the common interests of transnational actors and tends to restrict the gap between these private actors and public bodies (as long as an acceptable social order is maintained). As explained earlier,[225] more takeovers, mergers and concentration means for the restructuring of the industry are not (and will not be) considered as valid options by anti-trust, financial and market regulating authorities. In this context, strategic alliances appear to be the best alternative for the private enterprises interested in developing new technology and increasing their market shares. The future trend to promote as far as strategic alliances are concerned are alliances between actors of competing geographical markets as it would for instance be the case in transatlantic cooperative methods.

When entering strategic alliances, it might seem trivial to add that a strategy must lie behind the alliance. Yet if that element is not predominant, the alliance might be doomed. For the satellite communications sector, the strategy to be adopted is one where partners will seek to overcome the shortcomings of the satellite communications business, would it be to develop new technology, find sufficient financing for a space venture of gain market access on other geographical markets.

All strategic alliances seem valuable in reach of this goal but need, when being adopted, to be thought as serving different specific strategies, as valuable for the parties.

For example, joint-ventures might serve enterprises wishing to engage into the development of a project that is to some extent exterior to the core line of business of the partners and also because it is in terms of fiscal and liability considerations more advantageous to adopt that specific form. Another type of alliance, *viz.* licensing arrangements and joint R&D programmes might serve as a solution to the IPR issues that were raised earlier while co-marketing arrangements would help entering new or previously inaccessible markets and partial equity investments fill in the credit side of some space ventures balance sheets (generally start-ups or small and medium enterprises – SMEs).

The success of an alliance resides in the strategy adopted by both parties. It is one thing for leading corporations to ally for their common benefit, yet it is another to efficiently carry out

[225] See chapter 2 above and chapter 4 section 1

their project; this suggests that the strategy must be the foreword and the alliance only its material realization.[226]

Strategic Alliances have largely been undertaken in the satellite communications sector but mostly on a regional basis (Pan-European or Pan-American).[227] The future of the alliances lies more strictly in widely transnational types of alliances.

This approach would foster globalization process of the industry's profit and annihilate political market barriers (*e.g.* as derived from the wont of the EU to develop a strong European industry competing with its American counterparts).

Another advantage deriving from cross-border alliances is that, while promoting global competition it would also restrict the converse phenomenon of growing militarization of space activities and space applications.[228]

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[226] See Elizabeth More and Michael McGrath "Strategic Alliances as Collaborative Strategy or a Method of Implementing Strategy: A Case Study in Australia's Communications Sector" (2001) p.3; web: http://www.dcita.gov.au/crf/papers2001/more.pdf
In determining what kind of alliance is most convenient, the enterprises should *inter alia* look at criteria such as time (duration of the alliance), , choice of the partner as regards the size of the alliance and original business core, horizontal or vertical collaboration/ integration, capturable markets, the degree of risk-taking...

[227] Even in the case of the Orion Satellite Corporations which developed the IPSP joint venture with European and other partners (France, UK, Italy, Japan and Canada), this was only a "US-lead international venture", see. "Satellite Communications Regulations" *supra* note 58 at129-130

[228] See Ibid p 514-515 and P.A.Salin "Pirvatization and militarization in the space business environment" Space Policy, vol 17, Fsebruary 2001 pp. 19-26.

CONCLUSION

The overall purpose of this study is to reinforce - while examining many ("hot") topics of interest to commercial space ventures - the importance of international cooperation with regards to space law and satellite communications. Indeed, it appears that international cooperation still has a bright future in promoting the development of space activities, even those that are commercially viable or prosperous and for which, international cooperation is traditionally not considered to be a primary focus.
For that purpose, what has also been demonstrated is that commercial satellite communications have not yet reached the apex of their prosperity and that the current trends experienced by this business may be explained through several legal, regulatory, and economic factors.

The interaction between the observation of a stagnant satellite communications market, the relevant legal issues, and international cooperation is very simple to point to, yet not so easy to work out. It generally implies that international cooperation should be the tool for a comprehensive improvement of space law, *.i.e.* through harmonization of domestic requirements and completion of international ones, which in turn would prove to be favorable for satellite communications as a business.

It is important to keep in mind that international cooperation was one essential ingredient for the drafting and development of space law as much as for the supporting of the infant space industry. Later, international cooperation has served these sectors of space activities that were publicly funded or projects that governments considered to be in the public interest -having or not future commercial applications. With this respect, international cooperation, as it is expressed in the space treaties, has been complied with but mostly at the State level. That is, States were its true initiators and where private enterprises participated in that joint effort, it was always on behalf of the States (*e.g.* as contractors).
In other words, it seems that international cooperation has been limited to the international public scene and has not as other global issues, fully managed to transcend national or regional boundaries as to also benefit of a global outreach.

Actually, one could contend that cooperation among private enterprises exists and is currently

being pursued. This argument would generally be accepted as exerting an international cooperative effort in the private sector if it did not only represent scattered cases of concerted actions for the benefit of small groups of industrials.
One cannot be satisfied with this type of cooperation when considering "international cooperation".

What then is proposed as being international cooperation in the private sector is concerted action on the international scene both for the betterment of the private sector's doing-business (which in the end should benefit the end users) and for legal predictability and flexibility where needed. This concerted action should consist in the private sector's growing intervention in public fora as to provoke the awareness of States and public authorities on the delicate issues faced by the industry and which result in downturns if not failures of their projects.The Unidroit project is a perfect illustration of that type of cooperation. Pursuing comparable collaboration for matters pertaining to intellectual property rights or to establish an adequate dispute settlement mechanism would definitely be in the advantage of all parties intrested with the becoming of the satellite communications sector. The private enterprises would know they would then dispose of legal rules and tools they would themselves have consented to abide with, and therefore consider as legitimate and adequate. The public authorities, being the private sector's partner in that type of international cooperation, would have ensured the legal norms agreed upon would also respect and serve their interests.
This is exactly what should be understood as international cooperation in the private sector: a method to find the best possible compromise between public/ private and private/ private conflicting interests.
Being that satellite communications is a global market as much as a global technology, regional cooperation will not suffice. Yet, it would also be improper to characterize cooperation as being "global". Globalization reflects a transnational action that does not, or only at a minimal level, involve States. When considering cooperation in the satellite communications sector, it is important to have in States fully committed partners for the realization of the aforementioned objectives. Consequently, it is important to use the wording "international" as it does not exclude States' intervention in the cooperative process.

International cooperation in the satellite communications sector lies beyond mere market liberalization it should be a process looked at and envisioned as benefiting the private sector, the States and the end users.

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