

## LEGAL REQUIREMENTS CONSTITUTING A BASIC INCENTIVE FOR PRIVATE ENTERPRISE INVOLVEMENT IN THE COMMERCIALIZATION OF SPACE ACTIVITIES

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### Introduction

The commercialization of space activities represents a challenging business opportunity for private entrepreneurs and investors. Not only space system providers but also users will benefit from full commercialization of the space sector. Maximum commercialization, however, requires a legal framework conducive to encourage and increase private enterprise participation.

It is clear that the existing legal framework of international space law does permit commercial space activities<sup>1</sup>. Although the well-known international space law conventions are of a public law character with states as parties, they do not contain any prohibition for commercial uses. The basic principle is that the use and exploitation of outer space shall be free. Also the question of the applicability of space law and the subsequent definition/delimitation issue<sup>2</sup>, which was for a long time a hot item amongst space lawyers and politicians seems to be solved by the practice of states. The attitude of states during the long experience of spaceflight appears to have resulted into a right of passage through the airspace of the underlying state by spacecraft of foreign states, constituting an international right of customary law. It is evident that such a right only applies to spaceflight for peaceful purposes. Practical use of the spaceplane<sup>3</sup> might yield this question a new estimation.

### Transparency of risks and liabilities

Apart from the freedom principle<sup>4</sup>, states do bear international responsibility and liability<sup>5</sup> for national activities in outer space.

Responding to these aims and obligations of the space law conventions a number of states have implemented national space legislation<sup>6</sup>.

This is of particular importance when private parties play a role in space activities. Since the international space conventions only deal with the rights and obligations of states, parties, national space legislation offers states the opportunity to regulate internally the relationship between the state and private enterprise involved in space activities and proportionate liabilities between them. Hence liability claims on a launching state based on the Liability Convention<sup>7</sup> can be remedied by indemnification of the government, thus shifting the burden of compensation to the liable

private enterprise.

In connection herewith national legislation can also provide rules for mandatory insurance cover by private enterprise. Such an obligation can in its turn be combined with a limitation of liability for private enterprise and hence providing private enterprise involved in space activities with an instrument to calculate their risks. Only a reliable calculation of costs and a reasonable limitation of risks for private investors and entrepreneurs will create the conditions for a full-fledged commercialization of the space industry. In this respect regulation can be considered most advanced in the US.

The US Commercial Space Launch Act, as originally passed in 1984<sup>8</sup>, entrusted authority and duties to the Office of Commercial Space Transportation (OCST) which were rather broad in the area of insurance and financial responsibility for launch services.

The Commercial Space Launch Act Amendments of 1988<sup>9</sup> created an environment of risk sharing between industry and the government resulting in a more favourable climate for private participation and investment.

The Amendments require two types of insurance<sup>10</sup> on the part of the licensee. In the first place insurance against third party claims for death, bodily injury, loss or damage to property with a limitation set at \$500 million or the maximum liability insurance available on the world market<sup>11</sup>. Claims resulting from activities carried out pursuant to the license<sup>12</sup> and exceeding such insurance or financial responsibility will be paid by the Secretary of Transportation up to an amount of \$1.5 billion. Whilst this government indemnification is of great importance to the US launch and space transportation industry, the fact remains that the licensee must assume any loss in excess of that amount.

A second type of insurance is required to compensate the maximum probable loss for claims by the US government from loss for or damage to property of the US<sup>13</sup> with a limitation of \$100 million.

Important is also the provision which expressly forecloses the Secretary of Transportation from relieving the government of liability for loss or injury as a result of wilful misconduct of the US or its agents<sup>14</sup>.

Another section<sup>15</sup> of the Amendments establishes

reciprocal waivers of claims among participants in launching activities, serving as a fundamental basis for establishing levels of financial protection by risk allocation. The waiver requirement flows to each of the licensee's contractors, subcontractors and customers and is an express condition of the launch license. The OCST<sup>16</sup> has incorporated an Agreement for Waiver of Claims

and Assumption of Responsibility as part of its financial responsibility licensing order<sup>17</sup>. The Agreement is a three-party contract among the licensee, its customer and the US government<sup>18</sup>. Each party is responsible for losses sustained, resulting from licensed launch activities regardless of fault. The disadvantage of the reciprocal waiver is according to Nesgos<sup>19</sup> that, read literally, it would preclude the licensee from offering any form of launch risk guarantee and thus placing US commercial launch companies at a competition disadvantage with foreign counterparts. Participants concerned about possible loss have to rely on first party insurance to protect their property. However at the present time a contractual inter-party waiver of liability appears to have been adopted not only as a standard provision in the launch contracts of US launch service providers but also in the launch contracts used by Arianespace and the China Great Wall Industry Corporation.

### Liberalization

To reach its full commercial potential space endeavour requires not only proper risk allocation and limitation but needs moreover liberalization of the space market. Speaking of the space market there are mainly three segments which can be discerned being :

- remote sensing by satellite
- satellite communications
- space transportation

### Space transportation

Space transportation is needed to generate all other activities in outer space. Vital as it is for the expansion of all commercial space activities it has become an important sector of industry in a number of countries with launching capabilities.

After an initial domination by the US and the former USSR also France, within the ESA framework, has become an important provider of commercial launching services. Whilst China has joined these commercial ranks lately, a number of other countries, who have the technological know-how and capability, are in the process of developing their own launching systems to exploit these in the future in a commercial way. Consequently a whole range of existing and future space transportation providers will market their

capabilities in order to participate in a global market.

And it is this global market based on the principles of freedom and free competition that should be promoted by government policies to set the stage for a competitive environment where the natural market forces of a free economy prevail.

### US legislation and policy

In August 1994 the US government announced a space transportation policy<sup>20</sup> labelled to encourage a viable commercial space transportation industry. For this purpose the Departments of Transportation and Commerce suggested i.a. the promotion of innovative arrangement between the US government and the private sector.

Apart from the government objective to involve the private sector in the design and development of space transportation capabilities and to encourage private sector financing, US government agencies will follow procurement strategies based on the exclusive use of US space transportation capabilities and services. This emphasis on the exclusive use of national resources might in my opinion jeopardize the establishment of a global space market.

According to the policy statement the Department of Transportation will "licence<sup>21</sup>, facilitate and promote" commercial launch operations as set forth in the Commercial Space Launch Act, the amendments of 1988<sup>22</sup>, the Executive Order 12465. There will be coordination with the Department of Commerce where appropriate.

The licensing of commercial space transportation as indicated earlier is an area of national space law that has evolved considerably in the US in the last decade. The Commercial Space Launch Act of 1984, as amended in 1988, the Licence Policy Statement of 1985, the Launch Policy of 1986 and the Licence Regulations of 1988 have facilitated commercial space launches. Starting in February 1991 the OCST has begun issuing program licenses<sup>23</sup>. Present regulations<sup>24</sup> have established licensing procedures for space launch activities conducted from the US or by US citizens including the requirement of approval and supervision by the government. This as a consequence of the international responsibility and supervision by the "appropriate state" also for national space activities by non-governmental entities<sup>25</sup>. The wide coverage of the Commercial Space Launch Act, possibly leading to - extra-territorial application of national space law for US citizens, can in combination with the application of the launching state criterion<sup>26</sup> to determine the liable state according to international space law, lead to a situation of a potential conflict of jurisdiction or of

more than one liable state. In such a case private enterprise could be subjected to the law systems of various countries<sup>27</sup>. In order to minimize conflict of law situations and to improve legal security states should harmonize their national space legislation and their conflict of law rules. Returning to the licensing requirements it appears that these do not leave room for US licensing of space transportation systems conducted from the US by foreign private enterprise. This seems reasonable from the point of view of the government in connection with its liability as launching state. However doing justice to the requirement of liberalization, states should coordinate their national law systems and cooperate to facilitate an international legal environment with equal opportunities for all.

Dealing with trade in commercial space launch services the US national space transportation policy of 1994<sup>28</sup> expressed as its long-term goal to achieve free and fair trade. In pursuing this goal " the US government will seek to negotiate and implement agreements with other nations that define principles of free and fair trade, limit certain government support and unfair practices in the international market and establish criteria regarding participation by space industries in countries in transition from a non-market to a market-economy ". The present US experience in international space launch agreements, however, shows a practice in which quota limitations for foreign trade partners play an important role in the conclusion of agreements.

With reference to free and fair trade practices and the objective to establish a true international market responding to the forces of a free market economy it is my conviction that not only government support should be limited, but that also preference by government agencies for national products and capabilities based on criteria other than price and quality should be abandoned.

#### Satellite communications

This sector of the space market represents the most profitable branch of space activity and constitutes a firmly established international market with private investors and entrepreneurs as important players. Private and government users and service providers form the other constituent of the market. Also for this market segment transparency of risks and liabilities and full liberalization of the space communications sector is required to obtain full commercialization with private enterprise participation as the driving force.

#### International regulation

As far as international regulation is concerned there are the provisions of the international body of space law,

mentioned before, as well as the regulation through international telecommunication law, in particular in the area of communication via satellite<sup>29</sup>. These are of a public law character with states, parties being the signatories to the conventions.

Within the framework of telecommunications law the ITU has three major functions with regard to satellite communications i.e. radio frequency management for using the radio spectrum; rate setting for telecommunications and the setting of international equipment standards; and the use of the Geostationary Satellite Orbit. The main framework of the ITU consists of the ITU Constitution and Convention, and the Administration Regulations of which the Radio Regulations are a part.

The radio frequency management has as its purpose to provide protection against harmful interference. The regulatory system is based on recognition and protection under authority of the International Frequency Registration Board through notification and registration of radio frequencies assigned by states to users of particular stations .

The use of the GSO, which has been of specific concern to the ITU<sup>30</sup> since the seventieth, has been regulated by the World Administrative Radio Conferences on the Use of the GSO and the Planning of the Space Services Utilizing it, putting into place a multi-administrative system. Referring to the just mentioned functions of the ITU it should be stressed that the public law character might challenge the interests of private enterprise. This will be the case not only for independent service providers and entrepreneurs, but even for international organizations such as INTELSAT, INMARSAT and EUTELSAT, which although based on public international law are more and more inclined to commercialize their systems, leaving room for private enterprise involvement. These organization have already set the stage for such a development since their creation by providing for operating agreements to be signed by states or signatories designated by respective states, parties to the basic agreements<sup>31</sup>.

Presently INTELSAT<sup>32</sup>, INMARSAT<sup>33</sup> and EUTELSAT<sup>34</sup> are in the process of finding strategies to adapt to the commercialization trend whilst at the same time maintaining their responsibilities as international intergovernmental organizations with due regard to the interests of the general public. One of the instruments to speed up commercialization and to facilitate competition is the relaxation of the relating provisions regarding the coordination of competing space systems.

EUTELSAT<sup>35</sup> appears to be a protagonist in this

process of changes as instigated by the European Commission, which plays a decisive role in the evolutionary role of the European communication sector as an important factor to establish a single market as will be discussed later.

In view of the political changes and the new market orientation of the member states of INTERSPUTNIK, also this international organization has taken steps to amend the basic agreement with such an operating agreement<sup>36</sup>. Moreover the basic agreement of INTERSPUTNIK is revised in order to respond to the political and economical changes of the founders and member states leading towards a new market orientation of the organization.

Having noticed the above trends it is evident that full commercialization of the space communications sector requires not only liberalization by deregulation, but also securing the interests of private enterprise participation by regulation on a national as well an international level. Another means to secure the interests of private parties is the instrument of dispute resolution in cases where private interests are in conflict with interests of states or international organizations.

This issue of dispute settlement, which bears specific importance for the space communications sector, since this sector is dominated by public law, is also important for any area of space activity and will therefore be dealt with later in his paper.

Returning to the structure of the ITU and its authority as a regulatory body to deal with frequencies and orbits with a view to their efficient and equitable use, it is sad to confirm that the organization lacks decision making and enforcement powers<sup>37</sup>. Its disability to cope with requirements of globalized communications and the pace of technological changes led to a large scale revision in 1992<sup>38</sup>. The substantive work of the ITU is now organized in three sectors corresponding with its three major functions being : the Telecommunications Development Sector, the Telecommunications Standardization Sector and the Radiocommunications Sector. However the same revision brought also a negative point the downgrading of the International Frequency Registration Board to a part-time Radio Regulations Board.

The actual status of the ITU as described above appears in my opinion to be in contrast with the need for a more active and decisive role in matters of frequency and satellite orbit management in order to deal with the rational and equitable use of the natural resources necessary to respond effectively to the globalization of satellite communications.

Three recent cases<sup>39</sup> related to the operation of the rules

relating to the GSO illustrate the difficulties to be expected in the future. Moreover the proliferation of satellite systems planned in low orbits combined with the fact that in such cases the ITU Convention does not even apply gives substantial reason for concern. Not only governments but even more private entrepreneurs and financiers ask for a more effective regulation of their rights and obligations when important financial decisions are to be taken. The creation of a World Communications Commission with a more decisive role in space matters, in particular in the area of radio frequencies and orbits as contemplated by a number of experts<sup>40</sup> might be a solution to the problems.

#### Regulation in Europe

The Conference Europeenne des Administrations des Postes et des Telecommunications (CEPT), consisting only of states, makes decisions and recommendations for its members in the field of telecommunications. It coordinates European standpoints and requirements, thus functioning as a kind of subsidiary of the ITU. Frequency coordination activities are carried out by the European Radiocommunications Committee (ERC) and its permanent body the European Radiocommunications Office (ERO). Their basic occupation is the harmonization of frequency policies in the European states. Although their decisions and recommendations are not binding, member states tend to effect CEPT decisions for commercial reasons and it reinforces their common position in the ITU<sup>41</sup>.

Harmonization of the use of frequencies for trans-European services such as GSM, ERMES and DECT<sup>42</sup> is one of the purposes of the European Union. In contrast with the CEPT, the European Union, successor of the European Economic Community (EEC), can define binding rules and decisions for its member states. Although actual frequency assignments remain a responsibility of member states, liberalization requires that the procedures must be "objective, transparent and non-discriminatory" to ensure that competition is not impeded and market power is not abused.

#### Deregulation in Europe

Deregulation as an instrument of liberalization signifies a subject brought forward most often in connection with the communications sector.

After the example of the US, Europe within the framework of the European Economic Community<sup>43</sup> and subsequently the European Union, is working hard to deregulate the communications sector within its aim of a single market. Facing an increasing private sector competition in the European Union, the Telecommunications Organizations are undergoing a necessary process of adaption. The European

Commission's Green Paper on Telecommunications of 1987<sup>44</sup> aimed at harmonization of legislation in the Member States, and liberalization of the market. The subsequent Open Network Provision Directive<sup>45</sup> resulted in 1993 in data communication and voice communication services for closed user groups to be provided in competition<sup>46</sup>. The Commission's Services Directive<sup>47</sup> aims at the creation of independent regulatory authorities of the telecommunications sector. Furthermore, the Commission's policy plans to liberalize voice telephony by 1998 and to progressively introduce infrastructure to competition whilst ensuring that universal service obligations are well defined. Whilst both Directives did not apply to satellite communications, in 1990 a Green Paper on Satellite Communications<sup>48</sup> made proposals for extending telecommunications policy into the satellite sector by liberalizing the earth segment, granting access to the space segment and providing commercial freedom for space segment providers. The measures proposed have been translated in a Terminal Directive<sup>49</sup> (introducing mutual recognition of type approval for satellite earth-station equipment), a Liberalization Directive (Draft) (on opening the market for the provision of satellite services) and a Licensing Directive (Draft) (for the mutual recognition of satellite services licences), leading to the establishment of a regime for satellite communications in general, including mobile satellite communications. In 1994 the Commission published a Green Paper on Mobile Communications dealing with liberalization<sup>50</sup>. Although this Green Paper does not deal with mobile satellite communications it provides an indication of how policies for mobile communications are thought about<sup>51</sup>. Effectuation can eventually lead to the integration of satellite and terrestrial mobile communications. In several member states deregulation in the field of mobile communications has progressed. For instance the Netherlands has adopted a law on Mobile Communication<sup>52</sup> which provides for the licensing of a second GSM operator. In spite of the liberalization efforts just mentioned concern has been raised on specific aspects for instance the fact that it has been left to the discretion of national regulatory authorities to determine licensing conditions. This could eventually hamper the creation of a single European market by partitioning national markets<sup>53</sup>.

#### Remote sensing by satellite

Remote sensing from outer space is an other important sector of space activity where private investment and interests might be a driving force towards full commercialization. Not only private investors and service providers but in particular users of remote

sensing services will finally benefit from a global competitive market.

As is the case with space transportation and space communication systems, remote sensing activities will need licensing by the responsible state through national legislation dealing with technical directions and liability issues.

#### US legislation and policy

In 1992 the original Land Remote Sensing Commercialization Act of 1984<sup>54</sup> was repealed by the Land Remote Sensing Policy Act<sup>55</sup>. The Act provides for commercial licenses of private remote sensing systems to be reviewed on a case by case basis by the Secretary of Commerce. This would include operating licenses granted under the Land Remote Sensing Policy Act and export licenses for items controlled on the US Munitions List (USML). Restrictions can also be based on the Commerce Control List (CCL). Licensing and operation conditions are subjected to requirements dictated by national security, international obligations and foreign policies.

#### Commercialization and foreign access

The new policy covers foreign access to remote sensing space systems, technology, products and data<sup>56</sup>. In formulating its new policy the Act places emphasis on foreign access to US remote sensing capabilities by the proliferation of space borne remote sensing technologies and the spread of satellite imagery. The rationale behind this policy was to increase competitiveness of the US industry by allowing private satellite industry and service providers to engage in full competition with foreign entities by using for civilian purposes sophisticated technology developed by the US government, creating effectively an advantageous position in the international market<sup>57</sup>. This technological edge is increased by the fact that the policy refrains from a restriction on the spatial solution of privately operated remote sensing systems.

Successful commercialization is being projected, however, as a long term goal<sup>58</sup> in which private sector involvement is being discerned in the promotion and development of the commercial market for value-added services and other service<sup>59</sup> including operating remote sensing groundstations<sup>60</sup> and other means for direct access<sup>61</sup> to un-enhanced data from government satellites, and utilizing government satellites on a space available basis<sup>62</sup>. Also the funding and managing of a Landsat 7 follow-on system is adopted as a long term objective<sup>63</sup>.

In the short term preference is expressed in performing value-added activities by the private sector<sup>64</sup>. For the marketing of enhanced data, which are the domain of the value-added industry, a licensing system will be

worked out to protect the interests of all parties with the restriction of existing US legislation on the protection of proprietary rights.

The granting of a commercial remote sensing license by the Commercial Department to the World View Imaging Corporation challenges the above mentioned long term objective as declared in the Policy Act in relation to space based private remote sensing systems and seems to show a shift towards a realization on a much shorter term. The fact that currently a number of private companies are in the process of obtaining similar licenses seems to strengthen this opinion. The Policy Act contains moreover the provision that private companies are not longer obliged to make raw data available to "all potential users on the same terms" but that they merely are required .....to make un-enhanced data available "to the governments of sensed states". This offers private enterprise more room for a commercial approach according to US analysts<sup>65</sup>.

The non-discriminatory distribution policy is being preserved by conceding that raw (unenhanced) data from government systems (Landsat 4-6 and 7) will be made available to all users at cost<sup>66</sup> defines cost, maintaining thus the universal public goods aspect of data obtained by remote sensing whilst at the same time committing the US to the foreign policy aspect of non-discriminatory access. The US government financially supported scientific community will be served first. Furthermore a National Satellite and Remote Sensing Data Archive will be established by the Department of Interior. However there still appears to be a need for exact formulation of the exact policy to strike a balance between the obligation to maintain non-discriminatory access on the one hand and the interests of the private sector on the other.

The Policy Act recognizes the particular importance of Landsat data for national security purposes and global environment change research.

According to the Landsat Program Management provisions the Secretary of Defense and the NASA Administrator are jointly responsible for the Landsat Management Program funded equally by NASA and the DoD. Its fundamental goal is unclassified data continuity. Moreover the Policy Act authorizes the US president to declassify intelligence satellite technology for the Landsat Demonstration Program.

It should however be conceded that the hybrid characteristics of the Landsat Program by the above mentioned joint responsibility of NASA and DoD might pose problems when there will be conflicting interests.

Transfer of advanced remote sensing systems and sensitive technology

As a result of the new policy on foreign access the administration has communicated recently its policy regarding the transfer of advanced remote sensing systems. Export applications will be considered on a case by case basis, taking into account the proposed foreign recipient's willingness and capability to accept US government commitments concerning sharing, protection and denial of products and data as well as constraints on resolution, geographic coverage, timeliness, spectral coverage, data processing and exploitation techniques etc.

Applications to export sensitive components, subsystems and information concerning remote sensing space capabilities will be considered on a restrictive basis. Sensitive technology consisting of items or technology on the US Munitions List, which are uniquely available in the US shall only be made available to foreign entities on the basis of a government-to-government agreement<sup>67</sup>.

#### International Principles on remote sensing by satellites

Another implication of the US Policy act of 1992 on international relations is to be expected, since this act addresses issues, dealt with by provisions of the UN Principles on remote sensing<sup>68</sup> such as the obligation to protect the earth environment, the needs and interests of developing countries and the role of the private sector in carrying out the remote sensing principles. Regarding the protection of the earth environment the Policy Act was in fact instigated by the lack of attention of the former Landsat Act for the environmental value of remote sensing. Therefore the Policy Act now recognizes the value of remote sensing technology to the quality of life on earth. The revision has been brought in line with the provisions of article X and XI of the Principles on remote sensing. Principle X provides for disclosure by states, parties of any information by remote sensing activities capable of averting any phenomenon harmful to the earth's natural environment. Principle XI obliges the same states to protect mankind from natural disaster by transmitting as promptly as possible processed data and analyzed information in their possession that may be useful to states affected by natural disaster or likely to be affected by impending natural disaster.

Article XII of the remote sensing Principles covering the dissemination statute provides in the first part non-discriminatory access of primary and processed data for the sensed states concerning territory under their jurisdiction against reasonable costs. In the second part it provides that, as soon as they are produced, available analyzed information should be accessible for the sensed state concerning the territory under jurisdiction

on the same terms. It further emphasizes the particular needs and interests of developing countries in the execution of this provision.

The Policy Act is in line with these provisions. In relation herewith mention should also be made of the Landsat management responsibility "to ensure system operation responsive to the broad interests..... of foreign users " as well as the fact that Landsat-7 data policy requires "timely and dependable delivery of un-enhanced data .... to foreign users". Furthermore the Policy Act encourages US government agencies to provide remote sensing data, technology and training to developing nations. A question remains however in respect of the obligation to provide analyzed data as described by the second sentence of Principle XII.

Article XIII of the remote sensing Principles deals with promotion and international cooperation especially with regard to the needs of developing countries, providing for consultation upon request of the sensed state. According to the Policy Act Federal Agencies have to continue remote sensing research and development which can extend to cooperation with foreign governments and international organizations. Thus this authority might be exercised to develop into the obligation as set out by the principle on cooperation.

The next important issue dealt with by the Policy Act and which can have important consequences on international relations is the role of private enterprise within the framework of the dissemination statute. Prior to the Policy Act the US position on dissemination laid down by the provisions of Principle XI was that the concept only applied to remote sensing data from states, leaving the dissemination policy of private enterprise under the national jurisdiction of the private entity concerned. Presently the Policy Act requires as indicated before timely access by any sensed state of (all) primary data. Moreover the same regulation provides for access "as soon as such data are available". As a result of the importance the Policy Act places on the promotion of widespread access to remote sensing of US and foreign systems, the provision may require private operators to make un-enhanced data available on a case by case basis on terms similar to those applied to the Landsat system or other government systems. This in turn would allow the application of the international Principles of remote sensing to private entities in situations like protecting the earth's environment, protecting humanity from natural disasters and meeting the needs and interests of developing countries<sup>69</sup>.

#### The European standpoint

The European remote sensing satellite ERS-1 has now

been operating for more than 4 years and vast quantities of SAR scenes and global LBR data have been processed and distributed by ESA to various user communities. ESA's mandate entrusted by European governments to manage ERS activities has led to the creation of a complex system dealing with processing, archiving and distribution to users. Arrangements have been made to safeguard the interests of all parties concerned and allowing the maximum results. Since the ERS-1 objectives are both of a scientific and economic nature there was a need for a flexible use of capabilities to balance scientific as well as commercial interests.

The ERS-1 spacecraft is owned by ESA in the name of and on behalf of the European states including Canada, participating in the optional programme.

So far in Europe there does not exist national or international regulation to guarantee the legal basis and protection of remote sensing data. To fulfil its specific mandate ESA had to provide for protection against unauthorized reproduction or copying of the data covering the whole range of ERS-1 primary data, processed data and derived products. This has been established through direct agreements with partners requiring access to the data<sup>70</sup>. ESA's data policy is based on two basic legal principles.

The first principle being of public interest emanates from availability to all interested users on an open and non-discriminatory basis. This is in line with the UN International Principles of remote sensing of the earth. The second principle is rather of a private legal nature based on the concept of ownership of remote sensing data as a result of the sensors on board the satellite together with its processed and derived products. A policy of retaining full title and ownership is pursued by ESA as the holder of intellectual property rights over the by satellite produced data. The broadest possible protection is guaranteed by the application of copyright on ERS-1 data and the terms of the agreements between ESA and its counterparts in the ERS data distribution system. Thus in spite of the fact that Europe lacks a legal system for the recognition of ownership of remote sensing data, this contractual approach has established the application of copyright on raw data based on the relating agreements. As a consequence of the concept of ownership the user must obtain authorization to receive use and reproduce the data through a license granted by the owner. Such a license is granted directly by ESA (for uses by the scientific community or so called Principal Investigators), by a consortium designated by ESA as distributor or by agreement with international entities capable to receive ERS-1 data directly from the

satellite with the aim to receive, archive, use and reproduce the data.

The just mentioned agreements and licences are non-exclusive in order to facilitate the widest possible access and use. Since ESA does not provide value-added services, but supports the emergence of a value-added industry it uses the principle of non-exclusivity of licences in order to facilitate reproduction, distribution and sale of value-added and derived products as widely as possible.

All request for data so far has been honoured, whilst the scientific community has been supplied with a large amount of data on a cost-free basis as a result of ESA's scientific programme.

Apart from the ESA ground stations and the Processing and Archiving Facilities (PAFs), ESA has agreements with non-ESA ground receiving station operators. These operators have been granted a non-exclusive license for the reproduction, distribution and sale of the data to the users being residents of the country where the station is located.

Ownership and copyright of ESA does not prevent the recognition of copyright on the part of ground station operators or third parties as a result of value added or analyzed information of the data by these parties.

ESA's pricing policy<sup>71</sup> is based on the concept of royalty. However states participating in the ERS-1 Program are not charged for a royalty on the price of an ERS-1 standard product as a consequence of their financial contribution of the Program. Foreign station operators are charged with a royalty fee for each copy of an ERS-1 product distributed or sold to a user from a non-participating state.

The holder of an ERS-1 primary or processed product wanting to grant a license of use to a third party has to pay a royalty fee to ESA for the standard product. This royalty is only half if the product preserves the original pattern, but has been further processed using non ERS information. When ERS data cannot longer be identified an ESA royalty is not indebted<sup>72</sup>.

The Spot Image organization, which operates as a private commercial marketing organization for the Spot remote sensing system, operated and financed by the French government, conducts a policy directed towards open and non-discriminatory dissemination of data<sup>73</sup>. Considering the various methods for data protection, the organization decided to base protection on copyright by establishing such a right in the hands of the French space agency CNES being the responsible government organization for initial funding, launch and operation of the remote sensing system.

Spot data is being offered for sale as both basic data

and derived products. When work is performed by the distributor in the event of a derived product, the copyright is shared by both the distributor and CNES. In the past Spot's commercial approach and data acquisition policy has given rise for concern as to the availability of remote sensing data for prospective users lacking financial resources. But at the present time the proliferation of competing systems in particular in the US and Europe as discussed above has diminished the reason for such concern strengthened by the dissemination policies carried out by these regions. Furthermore this proliferation in combination with commercialization tendencies will finely maximize the exploitation of remote sensing technology to the advantage of all users.

### **The Moon Agreement**

An issue I did not mention before, but which cannot be neglected in our analysis on the legal requirements constituting a basic incentive for private enterprise involvement in the commercialization of space endeavour, is the use and exploitation of the moon and its natural resources. Since this issue is a comprehensive one and should rather be dealt with in a separate paper, I will only highlight a tiny part of the complicated matter and limit myself to a few aspects in relation to our subject. The current interest for the moon as a region for research and human exploitation directly on the surface or by robots directed from the earth can become an important factor in the further commercialization of space activities and the role of private enterprise therein. Therefore the existing provisions of the Moon Agreement<sup>74</sup> should be reassessed against the background of present technology as well as financial potential. Only a whole picture taking into account the interests not only of states but also of private entrepreneurs and investors must provide the basis for reassessment. Particular attention should be given to the provisions relating to the Common Heritage of Mankind concept (CHM) as expressed in article X, and the provisions of article XI concerning the establishment of an international regime to exploit the natural resources of the moon. It is evident that these very provisions are the basic reason that many countries hesitated<sup>75</sup> to ratify the Agreement with the result that the practical use of it is very limited. Experience with the UN Conference on the Law of the Sea and the attitude of many industrialized countries vis-a-vis the new international regime of the seabed only strengthen this opinion. Therefore the CHM concept, which could ban property rights, and the creation of an international regime to exploit the resources of the moon, which could impede



private participation and investment, should be reassessed against present technological and political realities.

### **Dispute settlement**

Effective dispute resolution will stimulate private enterprise participation in space activities as it does in any business sector. Added to the earlier discussed requirements of transparency of risks and liberalization, appropriate dispute settlement procedures are vital for maximum commercialization of the space sector. Although the existing framework of the law of outer space, especially the Outer Space Treaty and the Liability Convention provide a system of dispute settlement, this system is only applicable to disputes between states or international intergovernmental organizations. It does not cover disputes arising from space activities between private parties or between private parties and states or international organizations. Since the likelihood of disputes to arise in space matters will increase with the growth of private enterprise interests and private interests in its turn will be determined by reliable and effective dispute resolution the subject should be given due attention.

#### **Disputes between private parties**

Since private enterprise takes over more and more the role of governments as producer and prime contractor of high and complex space projects, with other private parties as subcontractors, the chance of disputes arising based on such contracts between private parties will increase. Moreover with the growth of space services and the increase of competing space services by private enterprise, disputes between suppliers and customers are likely to rise considerably. Furthermore the opposing interests between service provider and customer regarding for instance liability will not only ask for a contract in which the interests of all parties are balanced, but will need an instrument for dispute settlement in case of controversy.

There exists of course the system of adjudication by the national courts. However in most countries this means of dispute resolution is often a long and expensive one, in particular in relation to complex space law issues and high value contracts.

Therefore one should consider also other means to resolve disputes, which could be collected under the term Alternative Dispute Resolution procedures (ADR). This phenomenon of alternative means of dispute resolution has grown significantly particularly in the US in recent times.

ADR methodology and procedures include i.a. arbitration, mediation, conciliation, negotiation, dispute prevention, mini trials, neutral experts and

private judges. Bostwick<sup>76</sup> recently gave an excellent review of ADR procedures to resolve commercial space disputes. He discussed extensively negotiation, mediation and arbitration, placing emphasis on the arbitration procedure when the two former instruments fail to resolve the disputes and parties prefer binding arbitration rather than litigation by the court. Reference should be made to the American Arbitration Association for arbitration following Commercial Arbitration Rules. Supplementation of these rules has taken place in 1993 with the AAA's Supplementary Procedures for Large Complex Disputes. A Standard Arbitration Clause can be inserted in contracts when parties are intend to solve disputes through arbitration administered by the AAA. Such arbitration administration takes place without costs.

Recently the Centre for Public Resources (CPR) has established procedures and rules for use in arbitration, mediation and other ADR procedures.

Arbitration administered by the International Chamber of Commerce in Paris (ICC) is an option often chosen by parties to international contracts. Being a European institution the procedures are largely influenced by European traditions relying for the greater part on written testimony and expert reports. Moreover the costs are high since the arbitrators' fees are based on a percentage of the amount in dispute. Recently in Europe a new International Court of Aviation and Space Arbitration has been created exclusively aiming to settle private disputes. This Court provides for a binding, non-appealable award to be rendered by the arbitrators within one year within the commencement of the arbitration. Fees for arbitrators are set on the basis of a per diem lump sum. An important aspect is that the Court guarantees confidentiality, including the reward.

Apart from the possibility for contract partners to draft their own arbitration rules, parties can refer to established arbitration rules and standard clauses such as the Arbitration Rules of the above mentioned ICC and the UN Commission on International Trade Law (UNCITRAL).

#### **Disputes between private parties and states**

Recent conflicts between the interests of states on the one hand and the interests of private parties on the other in particular in the field of space communications demonstrate the need for dispute resolution between private parties and state authorities.

These conflicts can according to Boeckstiegel<sup>77</sup> be divided into two major kinds. In the first place those as a result of a coincidental involvement of private parties for example when a private entity suffers damage from space activities. In such cases in which the Liability

Convention is applicable there is no direct action possible by the private party against the liable entity even in case of a liable state. Only the state to which the damaged party belongs can invoke liability against the state who is liable as the launching state. Hence the damaged party is totally dependant on the action taken by the state to whom it belongs to start proceedings based on the Liability Convention. The private claimant can of course directly sue the liable state, but this has to be done for the national court of the liable state. When the claimant chooses this option he loses moreover the possibility of an indirect claim via his home state under the Liability Convention.

The second category of conflicts will be based on a contractual relationship between a private party on the one hand and a state or state authorities on the other. Unless regulated otherwise the dispute will be governed by the law of the relating state and dealt with by its national court. In most countries states are widely exempted from law suits on the part of private parties. Furthermore most launching states include far-reaching liability waivers in their contracts offering private enterprise little chance to recover damages<sup>78</sup>.

The present disadvantageous position of private enterprise in conflict with states calls for an alternative dispute resolution mechanism.

In this respect the International Centre for the Settlement of Investment Disputes (ICSID) may be mentioned as a suitable instrument to resolve disputes by arbitration<sup>79</sup>. Also the above indicated ICC should be mentioned including some negative points. However its experience in dispute settlement between state authorities and private enterprise should be noticed as positive.

#### Disputes between private enterprise and international organizations

The situation for dispute settlement between private parties and international organizations is even worse than the last mentioned. Most international organizations dealing with space activities enjoy immunity from jurisdiction and execution according to the relevant agreements. Additionally, when a settlement seems to be solvable between a private party and the international organization, opposing interests of states members to the organization may block such a settlement. When dispute settlement is possible between private enterprise and an international organization on the basis of a contract, the contract usually refers to arbitration clauses such as for ESA contracts. Hence arbitration appears to become a common instrument of dispute resolution between private enterprise and international organizations. This tendency will become even stronger with the

proliferation of space activities by private enterprise resulting from liberalization of the space sector leading to a balancing of interests between private enterprise on the one hand and states or international organization on the other.

#### The Draft Convention on the Settlement of Space Law Disputes

In 1984 the International Law Association has put forward a Draft Convention on the Settlement of Space Law Disputes<sup>80</sup>, which has been presented in 1992 to the UN Committee on the Peaceful Uses of Outer Space. The dispute settlement procedures mentioned in this Convention shall not only be open to the High Contracting Parties to the Convention, but also to other entities, unless settlement is submitted to the International Court of Justice. This offers private parties the possibility for dispute settlement under the Convention. The Draft Convention provides for arbitration as the preferred method of dispute settlement. The creation of an International Tribunal for Space Law is mentioned as another option.

Whilst binding arbitration may be in the interest of private parties, states still seem to be reluctant to commit themselves to such an instrument. The increasing role of private enterprise in space activities and the growing commercialization of the space sector might shift the interests of states towards a more competitive role for private enterprise not only for doing business in space but also for the solution of disputes as a result thereof.

#### Conclusion

After the above comprehensive treatise of the subject my conclusion can be short. I am convinced that present developments of liberalization, deregulation and the gradual balancing of public and private interests in all sectors of space activities implemented by national and international legislation will stimulate private involvement leading to a market situation where full commercialization and competition will benefit mankind at large.

#### Notes

- (1) See H.L. van Traa-Engelman, *Commercial Utilization of Outer Space - Law and Practice*, Chapter II, Kluwer Academic Publishers, 1993.
- (2) *Ibidem*, Chapter III, 6.1.
- (3) *Ibidem*, Chapter III, 10.
- (4) See Art. I of the *Treaty on Principles governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies*, Jan. 27, 1967 (entered into force October 10, 1967) TIAS 6347, 610 UNTS 205, hereinafter referred to as *Outer Space Treaty*.

- (5) Outer Space Treaty, Art. VI and VII, and the Convention on International Liability for Damage caused by Space Objects, March 29, 1972 (entered into force October 9, 1993) TIAS 7762, 24 UST 2389, hereinafter referred to as Liability Convention.
- (6) See note 1, Chapter IX, 6.7. Also Russia, Indonesia and South-Africa are working on national space legislation.
- (7) See Supra note 5.
- (8) Publ.L.98-575, 49 U.S.C.2601 (October 30, 1984)
- (9) The Commercial Space Law Act Amendments of 1989, Publ.L. 10657, (designated H.R. 4399) was passed in October 1988 and signed into law on November 1988.
- (10) Sec.16(a)(1)(A)and(B)
- (11) Ibid.
- (12) Sec.16(b)1
- (13) Sec.16(a)(1)(B)
- (14) Sec.(15)(c)
- (15) Sec.(16)(a)(1)(C)and(D)
- (16) See infra note 20
- (17) See P.D. Nesgos, Commercial Space Transportation: A new industry emerges, p.393-421, Annals of Air and Space Law, Vol.XVI,esp.p.410.
- (18) The licensee and the customer waive and release claims either may have against the other, the US government and the contractors and subcontractors of the foregoing, for losses resulting from licensed launch activities. The US government also agrees to waive and release claims in access of the insurance or demonstrated financial responsibility.
- (19) See supra note 16
- (20) The White House Office of Science and Technology Policy, Washington, D.C.,5 August 1994; see Space Policy, February 1995, Butterworth-Heinemann Ltd., p.77-80
- (21) The Secretary of Transportation has delegated this authority to the Office Of Commercial Space Transportation (OCSP).
- (22) See supra note 9
- (23) See note 19, p.400-401
- (24) Licensing Regulations, 53 Fed.Reg.11004 (4 April 1988) Final Rule. Specific regulations and licensing requirements in 14 C.F.R. Part 404 and Review Procedures (safety and mission review) in 14 C.F.R.Part 411
- (25) See supra note 5, Art.VI
- (26) See note 5, Liability Convention, Art.I
- (27) See also V. Kayser, Private Involvement in Commercial Space Activities, Proceedings of the 37th Colloquium on the Law of Outer Space, IISL, IAF, Jeruzalem, 1994, AIAA, Washington D.C.,1995, p.315-329.
- (28) See supra note 20
- (29) See i.a. F. Lyall, Law and Space Communications, Aldershot, Hants: Dartmouth, 1989; R.L. and H. White, The Law and Regulation of International Space Communication, Artech House, Boston, 1988; H.L. van Traa-Engelman, Commercial Utilization of Outer Space- Law and Practice, Martinus Nijhoff Publishers, Dordrecht/Boston/London, 1993, Chapter IV.
- (30) The ITU deals with the GSO under Arts. 1.2.b and 44.2 of the ITU Constitution and Art. 12.4 of the Convention.
- (31) See for text of the INTELSAT and INMARSAT Agreements i.a. Manual on Space Law, Vol.II, Jasentuliyana and Lee, 1979, Oceana Publications Inc./Dobbs Ferry, New York, Sijthoff and Noordhoff, Alphen a/d Rijn.
- (32) See supra note 1, Chapter V, Part A, 5.2.; D.M. Leive, INTELSAT in a changing global environment, paper presented at the 1987 UNCOPUOS, Legal Subcommittee Session, published by the AIAA, 1989.
- (33) See supra note 1, Chapter V, Part C, 8; W.D. von Noorden and P.J. Dann, Public and Private Enterprise in Satellite Telecommunications: Example of INMARSAT, Proceedings of the 29th Colloquium on the Law of Outer Space, IISL, IAF, Innsbruck, October 1986, AIAA, 1887, p.193-197
- (34) See supra note 1, Chapter V, Part D, 5.2
- (35) Ibid.
- (36) See G.P. Zhukov and V.S. Veshchunov, INTERPUTNIK: Developing legal basis of activity, Proceedings of the 37th Colloquium on the Law of Outer Space, IISL, IAF, Jeruzalem, October 1994, AIAA, Washington D.C., 1995, p.63-74.
- (37) See F. Lyall, The International Telecommunication Union: A World Communications Commission?, Proceedings of the 37th Colloquium on the Law of Outer Space, see supra note 36, p.42-47.
- (38) See F. Lyall, The International Telecommunication Union Reconstructed, Proceedings of the 36th Colloquium on the Law of Outer Space, IISL, IAF, Graz, AIAA, Washington D.C., 1994, p.78-88.
- (39) Tonga, Indonesia and China; see supra note 37.
- (40) i.a. F. Lyall, see supra note 37.
- (41) See Commercial opportunities and legal constraints for mobile satellite communications, Paper presented by the Working Group Satellite Communications, Subgroup of the Working Group on Space Law of the Dutch Association for International Law, for the ICCC Regional Meeting on WCN, the Hague, September 19-23, 1994.
- (42) Ibid.; see also P. Malanczuk, Ten years of European telecommunications law and policy - A review of the past and of recent developments, Telecommunications and Space Journal, Vol.1, 1994, p.27-52, esp.p.42-43.
- (43) See supra note 1, Chapter V, Part G.
- (44) Towards a Dynamic Economy - Green Paper on the Development of the Common Market for Telecommunications Services and Equipment, Doc. Com(87)290 final, 30.06.1987.
- (45) Council Directive on the establishment of the international market for telecommunications services through the implementation of open network provision, 90/388/EEC; OJL 192/1, 24.07.90.
- (46) See supra note 41.
- (47) 90/388/EEC, OJL 192/10, 24.07.90.
- (48) Towards European wide systems and services - Green Paper on a common Approach in the field of satellite communications in the European Community, COM(90) 490 final, 20.22.2991, Brussels, endorsed by Council Resolution of 19 december 1991.
- (49) Council Directive 93/97/EEC, 29.10.1993, implementing Directive 91/263/EEC in respect of satellite earth station equipment.
- (50) European Commission Green Paper on a common approach in the field of mobile and personal communications in the European Union, COM (94) 145, 27.04.1994.
- (51) See supra note 41.
- (52) See I.M. Rahman, Telecommunication Services and Competition Law, International Business Lawyer,

- July/August 1994, p.330-331.
- (53) Ibid.
- (54) Publ.Law 98-365 (H.R.) 515, July 17, 1984; 15 U.S.C.4201 et seq.
- (55) H.R. 6113, 102nd Congress, 2nd session, October 5, 1992; 15 U.S.C. 5602 et seq.(1992). See also I. Gabrynowicz, *The Promise and Problems of the Land Remote Sensing Policy Act*, Space Policy, November 1993, Butterworth-Heinemann Ltd., p.319-328.
- (56) See supra note 55, Sec. 5601 (6)
- (57) See W. von Kries, *Some Comments on the U.S. Foreign Access to Remote Sensing Capabilities*, ZLW 43 .Jg. 3/1994, p.261-267.
- (58) See supra note 55, Sec. 5601 (6)
- (59) Ibid. Sec. 5615 (a)(7)
- (60) Ibid. Sec. 5615 (b)(1)
- (61) Ibid. Sec. 5615 (b)(2)
- (62) Ibid. Sec. 5625 (a)
- (63) Ibid. Sec. 5641 (c)
- (64) Ibid. Sec. 5601 (14)(15)
- (65) See supra note 55, Gabrynowicz, p.321.
- (66) See supra note 55, Sec. 5601 (a), Sec. 5602 (2)
- (67) See p. 242, *Space Policy*, August 1994, Butterworth-Heinemann Ltd.; source: Office of the Press Secretary, The White House, Washington D.C., 10 March 1994.
- (68) *Principles Relating to Remote Sensing of the Earth from Outer Space*, Unanimously adopted by UN General Assembly, A/RES/46/65, 22.01.1987.
- (69) See supra note 55, Gabrynowicz, p.325.
- (70) See M. Ferazzani, *Remote Sensing : General legal principles and ESA Policy*, Proceedings of the 3d ECESL/Dutch NPOC Workshop "Recent developments in the field of protection and distribution of remote sensing data", ESTEC, Noordwijk, April 15, 1994. .
- (71) Ibid.
- (72) Ibid.
- (73) See supra note 1, Chapter VIII, 4.
- (74) *Agreement Governing the Activities of States on the Moon and other Celestial Bodies*, July 3, 1979 (entered into force July 11, 1994) U.N. Doc. A/RES/34/68, 18 ILM 1434 (1979), hereinafter referred to as the Moon Agreement.
- (75) See G.A. Reynolds, *The Moontreaty: prospects for the future*, *Space Policy*, May 1995, Butterworth-Heinemann Ltd, p.115-120.
- (76) P. H. Bostwick, *Going private with the judicial system: Making creative use of ADR Procedures to resolve commercial space disputes*, *Journal of Space Law*, Vol.23, Number 1, p.19-42.
- (77) K.- H. Boeckstiegel and W. Stoffel, *Private Outer Space Activities and Dispute Settlement*, *Telecommunications & Space Journal*, Vol. 1, 1994, p.327-337.
- (78) See supra note 17 and 18
- (78) See supra note 1, Chapter XI, 5
- (80) See supra note 1, Chapter XI, 4