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Current and Future Development of National Space Law and Policy

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Current and Future Development of National Space Law and Policy
I. Introduction of ‘Policy’ and ‘Law’

In a highly political, highly visible area of society such as that of space activities, ‘law’ and ‘policy’ are not always clearly distinguishable – and more often that not, the ties between the two are very short and very direct. If a distinction would need to be made, certainly to the public eye ‘policy’ would focus more on the day-to-day handling of affairs with ‘flexibility’ as the key concept, whereas ‘law’ would be focusing more on long-range stability, with inherent ‘inflexibility’ almost inevitably following from that. Whatever the value of such evaluation, essentially the ties between the two are bi-directional.

From the one end, ‘law’ presents one of the major parameters – at least in law-abiding societies – for policy making, next to such less formal, more amorphous parameters as political, economic, social, moral, technical and scientific ones. Certain policy alternatives will be downright prohibited, others will be confronted with too many negative legal consequences to represent viable alternatives, still others will almost automatically follow from existing law and regulation.

From the other end, ‘law’ is one of the instruments through which actual policies – at least those of a more comprehensive, long-during and substantive character – can be implemented. Once a certain major policy shift has been decided upon at the relevant levels, almost inevitably the need and desirability arise to change relevant parts of the law as it stands. By adding to, or changing the existing legal regime, the new policies are given substance and at least some measure of stability.

When, therefore, the present paper seeks to discuss current and future development of national space law and policy, this is done keeping the closely intertwined role and character of ‘law’ and ‘policy’ as referred to above in mind. Since, to a certain extent, this makes the choice as to where to start – take law or policy as the point of departure? – of lesser importance, the current author hopes to be excused for taking, as a lawyer, the law as the point of departure, transiting whenever and wherever he feels necessary – and at least a bit confident! – into the territory of policy more properly speaking. Especially when looking towards the future of national space law and policy, the law as it is – for the reasons briefly indicated above – represent a helpful set of parameters in any case.

II. The Rationale of National Space Law: Private Involvement in Space Activities

Nowadays private entities have also become involved in carrying out activities in outer space to a great extent, even if States still comprise the major category of actors in space.
Obviously, however, the public interests in regulating security, safety, liability issues, and the use of outer space for peaceful purposes remain valid also in the context of privately conducted activities.

Since international space law has not dealt with the particularities of private participation as such, the commercialization and privatization of space present a clear challenge to these public interests involved in space activities, in policy terms as much as in legal terms. The present international rules concerning space activities are essentially directed at States, and will continue to be developed primarily at the public level for some time to come. The same normative system should of course also apply to private commercial space activities, though at present private enterprise is not directly bound by those rights and obligations. As a consequence, the issue of developing national space-dedicated legislation, the most comprehensive instrument available for that purpose, continues to be of the highest relevance and topicality in the area of space law.

There are, essentially, three reasons for that. Firstly, as mentioned international space law is largely of a public nature, hence national space legislation would provide the most comprehensive, transparent and effective instrument to implement on a domestic level vis-à-vis private entities the international legal obligations arising from the space treaties. This concerns in particular the 1967 Outer Space Treaty\(^1\), the 1972 Liability Convention\(^2\) and the 1975 Registration Convention\(^3\).

Following the discussions at the Second United Nations/Republic of Korea Workshop on Space Law\(^4\), it was concluded in these respects:

- That a fundamental duty exists under Article VI of the Outer Space Treaty to provide for authorization and continuing supervision of private space activities, the form of which was in principle left to the State concerned, and that a strong recommendation arose there from for such authorization and continuing supervision to be incorporated into a broader licensing regime as part of a national (framework) law in view of the comprehensiveness and transparency of such an approach;
- That a strong incentive arises from Article VII of the Outer Space Treaty and the Liability Convention to arrange domestically for liability arrangements as between the State and private entities concerned in order to deal with the possibility of States being held liable to pay compensation for damage caused by relevant categories of private space activities and to provide for a mechanism ensuring reimbursement up to the desired level, again, preferably by means of establishment of a national space law including a licensing system;
- That another strong incentive for the establishment of national space legislation arises under Article VIII of the Outer Space Treaty and the Registration Convention, as

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\(^1\) Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (hereafter Outer Space Treaty), London/Moscow/Washington, done 27 January 1967, entered into force 10 October 1967; 610 UNTS 205; TIAS 6347; 18 UST 2410; UKTS 1968 No. 10; Cmnd. 3198; ATS 1967 No. 24; 6 ILM 386 (1967).

\(^2\) Convention on International Liability for Damage Caused by Space Objects (hereafter Liability Convention), London/Moscow/Washington, done 29 March 1972, entered into force 1 September 1972; 961 UNTS 187; TIAS 7762; 24 UST 2389; UKTS 1974 No. 16; Cmnd. 5068; ATS 1975 No. 5; 10 ILM 965 (1971).

\(^3\) Convention on Registration of Objects Launched into Outer Space (hereafter Registration Convention), New York, done 14 January 1975, entered into force 15 September 1976; 1023 UNTS 15; TIAS 8480; 28 UST 695; UKTS 1978 No. 70; Cmnd. 6256; ATS 1986 No. 5; 14 ILM 43 (1975).

\(^4\) Second United Nations/Republic of Korea Workshop on Space Law, held in Daejon, Republic of Korea, 3-6 November 2003; for more information, see the website of the United Nations Office for Outer Space Affairs, at http://www.oosa.unvienna.org/index.html.
presenting the best way to establish a national registry for relevant space objects and thus further ensuring jurisdiction and control over such space objects and the operators thereof; and

- That finally especially from the liability requirements an indirect but nevertheless strong incentive arose to include in the licensing systems to be established by national space laws requirements for insurance to be taken by relevant licensees – since otherwise the reimbursement obligations suggested before might turn out to be rather hollow to the extent that licensees themselves would be unable to reimburse the State concerned.

Secondly, for reasons comparable to those arising from the international space treaties as discussed, States may be inclined or even strongly induced to develop national space legislation for the purpose of monitoring and controlling such activities as to their national effects. For obvious reasons the space treaties deal with legal effects of private space activities only if these have consequences beyond the borders of the State(s) under whose control the activities at issue fall. Once the underlying privatization of space and space-related activities is a fact of life within a certain country however, there are also certain elements of those activities that would call for regulation at the national level – sometimes simply because they are not dealt with, as such, at the international level.

A prominent example concerns liability. The Liability Convention only deals with cases of 'international' liability, that is liability for damage caused by the space object of a launching State or its citizens or entities to another State or its citizens or entities. Yet, such a space object may of course also cause damage to citizens and entities of the launching State itself, and since that is not covered by the Liability Convention, national law should step in to deal with those cases.

Thirdly, especially in those States that favour, in principle, private participation in economic and other activities, such legislation would represent the best vehicle for implementing policies of supporting private participation as part of more general national (space) policies. Thus, interesting incentives could be offered in such areas as research and development, financing, taxation and advantageous liability and/or insurance regimes, as an alternative to using other (existing, non-space-specific) law. Domestic legislation thus presents a possibility for States to harness private enterprise for the public cause by making it attractive for it to participate in space activities.

In the abstract, national space legislation thus represents the best way to establish legal effects of a system of public rights and obligations for private enterprise, and States can and should exercise their sovereignty to control in law the international effects of private space activities and preserve the relevant public interests in such activities.

The major reason for enacting any domestic space legislation would therefore lie most prominently in a comprehensive system of licensing such activities, thereby constituting the centrepiece of any national space law in the narrow sense of the word. Establishment of a framework law tying the relevant categories of private space actors into the legal system of rights and obligations provided by international space law should have priority, as the relevant State in turn will be held accountable for those activities internationally. This certainly is the best way to take into due account the public-private paradigm in international space law: ensuring that the public rules of international space law, intended to preserve the public interests in space, are also

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duly implemented vis-à-vis private enterprise and private involvement in space activities. In other words: to enforce the provisions of the Outer Space Treaty also in this context!

III. International Space Law and National Space Legislation

International space law itself then firstly calls for the establishment of national space legislation; secondly, it provides for the outlines of such legislation as to its scope; and thirdly it provides for a few broad rules as to its contents. In short, a State will have to exercise any available jurisdiction primarily vis-à-vis those particular categories of private activities in respect of which it can be held accountable internationally.

This accountability refers to the obligation resting upon a relevant entity to answer vis-à-vis other entities for certain activities or occurrences. Under space law it has a two-fold character: it comprises both a general accountability in the form of State responsibility, and the specific case of accountability for damage as presented by the concept of State liability. These two notions carry their own definitions regarding the entities for which a particular State might be held accountable.

On State responsibility, Article VI of the Outer Space Treaty provides that States are internationally responsible for “national activities in outer space”, including cases where these are “carried on (...) by non-governmental entities”. This responsibility pertains to “assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty”. States are thus responsible for activities undertaken in outer space in case these activities violate obligations under, essentially, international space law. Moreover, States are responsible to the same extent for private activities as they are for their own, public activities.

Whilst Article VI then begs the question: for which categories of private space activities is which particular State to be held responsible on the international plane, it would be beyond the purpose of the present paper to deal with those issues. In any case, the answer to this question would lie in the interpretation of the key term “national activities”—but no authoritative definition of the (scope of) “national activities” of a State for which it is to be held responsible has been provided by the Outer Space Treaty or elsewhere. Consequently, no agreement exists as to the interpretation of this term. From this author’s perspective, the most effective and sound interpretation of private “national activities” would make States internationally responsible precisely for those activities over which they can exercise legal control. In other words: a State would be held responsible for those private activities undertaken somehow from within its jurisdiction.

As to State liability, Article VII of the Outer Space Treaty provides that States are “internationally liable for damage to another State (...) or its natural and juridical persons”, if such damage is caused by their space objects. This clause has been elaborated upon in some detail in the Liability Convention.

Which particular State or States are liable in respect of a specific space object causing damage is determined by a four-fold criterion. As States to be held liable qualify, in a cumulative manner, the State that “launches” the space object, the State that “proceeds the launching” of that space object, the State “from whose territory” the launching of that space object occurs, and the State from whose “facility” that space object is launched.6

This international liability by implication applies also to damage caused by space objects launched or operated with private involvement or even completely privately. A State is thus liable

6 Cf. also Art. 1(c), Liability Convention. Using the same four-fold criterion for determination of the “launching State(s)".
for a private space activity and the damage it causes, in case (A) that activity involves a space object and (B) the State concerned was involved in the launch of that space object in any of the four modes mentioned.

Thus, from a particular State’s perspective, it would be wise to include, as far as possible, launches with involvement by private entities in the scope of its national legislation wherever such launches would lead to that State’s international liability being invoked at the international level, i.e. under the terms of Article VII of the Outer Space Treaty and the Liability Convention. If the above, admittedly narrow, definition of national space law as focusing on a licensing system is followed, essentially nine-and-a-half examples of States having established such framework laws for private space activities can be found. The nine concern the United States, Norway, Sweden, the United Kingdom, the Russian Federation, South Africa, Ukraine, Australia and Brazil. In addition, Hong Kong may be referred to as a special case: its transfer back to the People’s Republic of China in 1997 resulted in the need to adapt the relevant UK act, hitherto applicable to Hong Kong, to the new political status by means of a special Ordinance.

States such as Japan, France, Canada and Argentina do also have both private companies involved in space activities operating within their jurisdiction, and substantial and quite general national legislation in place focused on space; yet the crucial element of a transparent and comprehensive governmental structure for authorization (‘licensing’) of private space activities seems to be missing.

For example, Argentina National Decree No. 995/91 created the National Commission on Space Activities, a hybrid public/private body according to the Decree, but without any clear-cut authority to license private space enterprise– let alone a system and legal parameters for doing so. A further National Decree, No. 125/95, established a national registry of space objects launched into outer space, but once more without any specific reference to privately-launched, -operated or- owned satellites. Apparently, satellite communication providers are subjected to an obligation to be licensed to provide their services, but this occurs under the applicable general telecommunications licensing regime without any specific implementation of either Article VI or Article VII of the Outer Space Treaty, or of the Liability Convention for that matter.

In such and similar cases the policy approach to fulfilling the obligations of “authorization and continuing supervision” of Article VI of the Outer Space Treaty has been that of, effectively, a spider in the web. Under this pragmatic policy, governmental space agencies just make sure to be so centrally involved in any relevant space activity with private involvement that control over that involvement can always be asserted through the particular structure of the project or programme at issue, and does not require a general or comprehensive law to achieve such a governmental control. For reasons of comprehensiveness and transparency however, this ‘spider-in-the-web’ approach may no longer suffice. Consequently, these States, joined by others such as India, China, Republic of Korea, Germany, Italy, Belgium and the Netherlands, are contemplating or already in the process of actually drafting a national framework law.

Without claiming in any respect to be comprehensive, this paper, in addition to indicating a few general characteristics will deal with the national space laws by focusing on two elements considered to be of major importance. The first one concerns the scope of the relevant legislation: what types of space activities are concerned, and to whom or what are the rules addressed,

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particularly in terms of the relevant licensing obligation. The second concerns the most directly quantifiable aspect of national implementation: how the potential international liability of the relevant State for licensed private space activities is dealt with in terms of obligations of reimbursement of that State on the part of the licensee.

1. The United States

The United States originally took the approach of establishing, in addition to a general space law (the National Aeronautics and Space Act of 1958\(^9\)), three specific sets of national laws for each of the three respective areas where private enterprise has become substantially involved in space activities: launching, satellite communications and satellite remote sensing. In the course of the 1990s, policy makers apparently and increasingly became aware of a number of overarching and transversal issues and problems amongst the various sectors. Also the growing private and commercial use of the Global Positioning System (GPS) signals and the impending prospect of partly commercial International Space Station (ISS) operations called for a more comprehensive approach to private and commercial involvement in US space activities.

Several efforts to achieve more coherence and comprehensiveness resulted. Most notably, in 1998 a Commercial Space Act\(^10\) was enunciated which, in addition to other ‘re-shuffling’ of acts, to some extent amended the three specific sets of space acts referred to as well as tying them into a somewhat more coherent framework. For the purpose of easy reference, however, the brief discussion hereunder refers to the original versions and formats. Before doing that, however, a final consequence—or perhaps ‘cause’ is a better word—of the above developments concerns security issues, which for obvious reasons have gained immensely in importance over the last three years. Security concerns touch upon all relevant fields or aspects of space activities, on the one hand no doubt stimulating the above efforts to tie all into one coherent whole, but on the other hand likely causing major policy and legislative initiatives to focus on security aspects—whether related to remote sensing, launching, satellite navigation or any other type of space activities. The discussions on, and intra-governmental fights for the driver’s seat regarding export control are poignant examples thereof, and may likely dominate the domestic legal and policy developments for some time to come.

**Launching Activities**

The Commercial Space Launch Act\(^11\) was enacted on 30 October 1984 specifically to deal with one of the three fields of interest to private enterprise: launching activities. It was directly aimed at inducing involvement of the United States private sector in such activities. Even more to the point, it was the absence of substantial success in the prodding of private enterprise to enter the business that led to the enactment of Amendments to the Launch Act\(^12\) in 1988. These Acts were later incorporated more formally into the US Codes, solidifying the relevant arrangements without fundamentally changing them.\(^13\)

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The scope of application of the Launch Act and its licensing system in terms of activities encompasses both the operation of launch vehicles and the operation of launch sites. The Act firstly applies to all persons undertaking these activities within the United States. Secondly, it applies to US citizens, meaning individual citizens, as well as juridical persons incorporated in the United States, which undertake these activities outside the United States. Thirdly, it applies in principle to non-US-incorporated legal persons subject to a controlling interest of any US national or US-incorporated legal person. This, provided the entity undertakes the activities in question outside the United States as well as outside any other State’s territory and unless, by agreement, the exercise of jurisdiction and control over the activities has been transferred to another State. Thus, only launches of US-registered launch vehicles outside US territory by non-US nationals are not covered by the Launch Act, but that may be a rather hypothetical construct anyway.

The Launch Act in its original version provided for every licensee to obtain obligatory liability insurance without limits, making the US Government the recipient of any insurance monies that would be paid. Because of the obligation for a licensee to obtain insurance without any ceiling on compensation, no private entity seriously considered applying for a license under the Launch Act. This was repaired in 1988, when Section 16 was amended. Licensees still are required to obtain third party liability insurance or to show financial responsibility, allowing the US Government to be reimbursed for any third party liability claim that arises as a consequence of the activities of the licensee. This time, however, the absolute maximum of the insurance coverage (alternatively financial responsibility) to be demonstrated is US$ 500 million. Furthermore, this ceiling will be lowered firstly if the maximum liability insurance available in the world market at reasonable cost is determined to be less than US$ 500 million. Secondly, it will also be lowered, if the maximum probable loss would be less than either US$ 500 million or the aforementioned maximum liability insurance coverage. As a result, the United States Government de facto acts as an insurer of private launches for the purpose of international third party liability for those parts of claims up to and above the amount of liability insurance required to be taken by the private entity.

In terms of domestic liability, that is, victims in a private capacity suing a licensee before a US court, a further provision of the 1988 Amendments is relevant, in that the US Government limits such involvement as partial compensator of damage caused by the licensee to US$ 1.5 billion per accident. In other words, victims of an accident under the Act suing before a US court will find their collective compensation capped at the total of the maximum imposed by means of the license upon the licensee plus the US$ 1.5 billion pledged by the US Government.

The liability arrangements relating to contractual liability, though not resulting from international obligations, in a practical and policy sense are more important for private enterprise. The absence until now of operational privately-owned and operated launch sites in the United States means that private launch providers will have to use the various US Governmental launch sites available. The contracts for such usage and the actual liability arrangements therefore become of crucial importance. In this respect, the Launch Act performs the function of a standard contract between the government and any private user. In its 1984-version, the Launch Act basically provided for full indemnification of the US Government for any damage suffered by it. Vice versa however the US Government refused to accept any liability for damage suffered by the licensee, except for cases of wilful misconduct or gross negligence – alternatively if either of a limited number of acts allowing for suits against the government is applicable, such as the Federal Tort Claims Act.

The Amendments of 1988 changed these provisions in favour of potential licensees as well. Now, licensees have to demonstrate insurance coverage or other financial resources up to a
maximum of US$ 100 million per launch, or so much less as is warranted by ‘maximum probable loss’ or ‘maximum insurance available at reasonable rates’ calculations. Furthermore, to the extent that the United States or any of its agencies is involved in a particular launch under a contract, a reciprocal waiver of claims is to be applied. In principle it applies to amounts (as to damage on the governmental side) greater than the aforementioned maximum, determined under the applicable provisions. Moreover, it may be noted that in the relationship between licensees and any of their contractors, subcontractors or customers, a reciprocal waiver is obligatory.

The newest developments in law-making focus on dealing with new developments in space activities – obviously. Thus, the Commercial Space Act of 1998 included in the scope of the licensing obligations under the Launch Act the re-entry of space vehicles, in view of arising plans to return private spacecraft to Earth (for example with valuable mineral resources).

Similarly, the latest spectacular success of SpaceShipOne, as the first fully private vehicle with sub-orbital capacity unhinges the door to space for private tourists, and will (have to) lead to further amendments of the Commercial Space Launch Act\(^\text{14}\) as currently under discussion, in order to clear the way for a viable space tourism industry. The bill will probably not be enacted as quickly as hoped for by many, but with the plans of Mr. Richard Branson and others to capitalize on the success of SpaceShipOne, there is little doubt that, somehow, such legislation will soon be enacted. In conclusion, the focus of the international liability regime on launching is mirrored by the extensive care taken by the Launch Act to deal with liability. In this regard, the Launch Act deals not only with third party liability but also with an important category of inter party liability issues. Imposing relevant uniform ceilings on inter party liability in the case of the United States was prompted by the desire to promote a level playing field at least within the United States.

Satellite Communication Activities

In 1934, the Communications Act\(^\text{15}\) was enunciated in the United States, in order to deal with communications on the federal level. The Federal Communications Commission (FCC) declared in 1970 that the Communications Act applied to space telecommunications as well.\(^\text{16}\) Meanwhile, the Communications Act has been partially overtaken by the 1996 Telecommunications Act\(^\text{17}\) and the 2000 ORBIT Act\(^\text{18}\); such changes however did not fundamentally impinge upon the system of licensing private entities for relevant activities.

The licensing obligations under the Communications Act apply to any person using or operating “any apparatus for the transmission of (...) communications or signals by radio (...) from [a] place in (..) the United States”. Thus, it seems, only the territorial jurisdiction of the United States is exercised. Potential international responsibility of the United States is not covered in the case where a US company operates completely outside US territory, especially if it does not also operate with a US-registered space object.

Liability, as far as it is regulated by the Liability Convention, depends upon involvement of a State in the launch of the communications satellite and not on that satellite’s operations \textit{per se}. Therefore, the United States can incur liability for any damage caused by such operations only to

\(^{17}\) Telecommunications Act, Public Law 104-104, 104th Congress, 3 January 1996, signed into law 8 February 1996; 110 Stat. 56.  
the extent that it qualifies as a launching State. As a result, any domestic obligation of indemnification of the government by private entities of such liability also depends upon the Launch Act. Thus, the Communications Act essentially ignores international space law liability. The Act only applies on the basis of nationality, not on that of territory. At the same time, potential applicability of Article VI of the Outer Space Treaty is also ignored thereby.

As active US involvement in the context of the World Trade Organization to enhance global liberalization and privatization of satellite communications and the ORBIT Act in particular have shown, US policy over the last years has largely focused on international aspects of the sector. In many ways, the US market is considered mature enough not to require fundamental or even revolutionary domestic legislative activities; the focus is rather on making existing procedures (even) more flexible and business-friendly. The major legal issue involved in this context is that concerning the possible auctioning and ownership of frequency assignments, which is why one might expect the major national policy and legislative developments to arise in that area.

Satellite Remote Sensing Activities

In 1984, the Land Remote Sensing Commercialization Act\(^\text{19}\) was enacted to stimulate the commercial development of space remote sensing especially by the private sector. Involvement of the US Government in the development, construction, launch and operation of the Landsat remote sensing satellites increasingly should be taken over by private enterprise; however, the cost of operating comprehensive space remote sensing systems, ‘from the cradle to the grave’ as it were, remained far above what could be reasonably recovered in any commercial market. The only company at the time actually involved in commercial remote sensing in the United States, Eosat, confined its activities to the marketing and sale of remote sensing data from the Landsat satellites. In order to remedy this situation, in 1992 the Land Remote Sensing Policy Act\(^\text{20}\) was enacted, repealing the first Remote Sensing Act. Both Acts can be taken together for the purpose of analysis. The scope of the Acts and the licensing systems provided is rather broader – and hence from a government perspective more satisfactory – than that of the Communications Act, as the former cover all entities falling under the jurisdiction of the United States (personal as well as territorial) as opposed to those merely having US nationality. Minor issues relate to the uncertainties regarding the use of the term “control” by the Acts, and how much wider it should be interpreted than that of “jurisdiction”, and the consequences of registration by the United States of a satellite that is under its control, but not under its jurisdiction formally speaking.

Under the 1992 Act, the license operates as a form of authorization and supervision. By virtue of such a license, the United States transforms the activities concerned into “national activities” as relevant under Article VI of the Outer Space Treaty. Hence, it also assumes international responsibility for them. Such responsibility would attach not on the basis of territory or nationality, but on the basis of the legal document(s) formalizing the control and the accompanying registration. Similar to the case of satellite communications, liability as an issue has not really been dealt with at all in the remote sensing acts: since the international space law liability regime is focused so much on launching, after-launch operations like remote sensing are hardly relevant for the purpose of international liability as such.

With the recent provisional successes of private Very High Resolution (VHR) remote sensing satellite operators, however, we may find ourselves on the threshold of a new phase. If these


private operations would show commercial promise and sustainability in the coming years, the existing domestic regimes may need to be revisited. From the contemporary perspective, the most important legal questions would arise in the areas of intellectual property rights, privacy and data protection, as well as (obviously) security, both civil and military. In turn, these may lead to policy initiatives not so much in the form of establishing or amending domestic space law, but (to the extent such initiatives would be of a legislative nature in the first place) through other legal regimes – namely, by intellectual property rights, privacy and data protection, and security-related legislation and regulation.

2. Norway

The 1969 Norwegian act on space activities is the most concise of all national space laws, consisting of only three paragraphs – but at the same time, at least under the narrow definition of ‘national space law’ used in the present paper, also the oldest. No matter how concise, however, the magic words are there: anyone launching an object into outer space from Norwegian territory or facilities requires permission from the Minister of Trade and Industry.

It should be noted that when the law was enacted neither the Liability Convention nor the Registration Convention had yet been concluded. Norway ratified the Outer Space Treaty on 1 July 1969 – two weeks after entry into force of the Norwegian Act. Consequently, Norway is also the only State so far whose enactment of a national space law even precedes its becoming party to the Outer Space Treaty, which the former supposedly provides for implementation of. During the process of ratification of the Outer Space Treaty the Ministry of Justice and the Ministry of Trade and Industry realized that further national implementing legislation had to be enacted: already seven years before ratification, launching activities from Andøya had started. However, the drafting fathers of the Act were of the opinion that it was not necessary to establish an elaborate law to satisfy the requirements of the Outer Space Treaty; a summary act would suffice.

The essence of the Norwegian Act is that permission is required to launch objects into outer space from Norwegian territory (including Svalbard and Jan Mayen) or anything that may be considered as such. Under the last category, the Norwegian Act understands Norwegian “outposts” (i.e. including Norwegian bases on Antarctica!), Norwegian vessels, Norwegian aircraft and the like. Finally, if any Norwegian citizen or permanent resident undertakes a launch falling within the material scope of the Act, when this occurs from outside any State’s territorial sovereignty he or she also requires permission. Consequently, in terms of Article VI of the Outer Space Treaty, the authorization- and continuous supervision-requirement is applied both to Norwegian territory and to Norwegian nationals where no other State’s territorial sovereignty applies: a rather comprehensive scope of the Act ratione personae is the result.

The Act itself does not specify the requirements or conditions for obtaining permission. Certain terms might be established for such permission, further to which the Ministry is provided with the competence to actually issue regulations on control of the activities concerned. Apparently, in the absence of any detailed regulation as to which terms should or might be imposed, the Ministry retains full discretion in every case to require that certain conditions be fulfilled or not. This, of course, includes any elaboration on liability, e.g. as to a possible duty for

22 With the US FCC in 1970 declaring the 1934 Communications Act including its licensing system for private communication system operators to be applicable also to space communications, the United States could probably be said to have a national space law under the narrower definition used here from that moment onwards only.
any licensee to reimburse the Norwegian Government for international claims, which is therefore neither unequivocally established nor excluded at the outset.

In practice, as long as the semi-governmental operations at Andoya remain the only ones requiring application of the Norwegian Act, we are probably unlikely to see any developments or further elaboration in this regard soon. At least, there seem to be few signs currently of any policy bent upon using the assets for attracting new space activities to Norway.

3. Sweden

On 18 November 1982 a national space act was promulgated in Sweden, followed by an implementing decree.23 National implementation of obligations for Sweden deriving from the corpus juris spatialis internationalis relating for example to the implementation vis-à-vis private enterprise of relevant international rules provided the dominant motive here. The Swedish Act applies to space activities defined as including “activities carried on entirely in outer space” as well as “the launching of objects into outer space and all measures to manoeuvre or in any other way affect objects launched into outer space”. This definition includes launching, satellite communications and satellite remote sensing activities, with the exception of the launch of sounding rockets, which is excluded even if they might reach outer space. Procurement of launches is excluded, as it does not constitute a space activity.

As to its scope (and that of its licensing obligations) in terms of jurisdiction, the Swedish Act firstly applies to all activities undertaken from Swedish soil, and secondly to all activities undertaken by Swedish natural or juridical persons “anywhere else”. In this sense, the Swedish Act and Decree are rather comprehensive, and reflect an interpretation of the term of art “national activities” of Article VI of the Outer Space Treaty, which in this case encompasses both activities from a State’s territory and activities conducted by a State’s nationals.

Any claim against the Swedish Government as a consequence of licensed activities entailing its international third party liability will need to be fully reimbursed by the licensee. Only if “special reasons tell against this”, the Swedish Government, read the National Board on Space Activities (NBSA), may, ex ante or ex post, decide to waive this right to unlimited recourse. Finally, it may be noted that there is no provision on (mandatory) insurance for any such activities, which might call into question in appropriate cases the possibility for the Swedish Government to be actually reimbursed as intended.

Whilst the location and facilities of Esrange at Kiruna would seem to provide interesting options for certain categories of private and/or commercial space launches, so far the current global slump in the launch markets has caused any such interests to remain hidden at best. Any policy actions in the area of privatization would therefore be likely to concentrate more on satellite communications, remote sensing and satellite navigation applications, including ground support for the satellite operations involved.

4. The United Kingdom

On 18 July 1986, the United Kingdom promulgated its Outer Space Act, which entered into force in 1989. The major reason for such legislative action was the growing need to implement domestically the relevant rules of international space law vis-à-vis private enterprise. The Act itself repeatedly refers to the international obligations of the United Kingdom in this respect. The Act in practical terms applies to the launching, or procuring of launching, of a space object, the operation thereof, or “any activity in outer space”. Especially the inclusion of procurement should be noted. It is relevant, as a non-space activity, in terms of international space law liability. Even more sweepingly, carrying on an activity in outer space is defined as “causing it to occur or [being] responsible for its continuing”. An individual involved anywhere down the chain of causation or responsibility could thus find himself included in the scope of the Act. As a consequence, he might be obliged to refund the government for any international liability claims awarded – this, moreover, without a right to participate in the proceedings itself.

As to space activities proper, the Act encompasses inter alia launching, satellite communication and remote sensing activities. Satellite communication activities include uplink and downlink activities, which were already undertaken by British Telecom and Mercury Communications. Depending on whether DBS or other telecommunication activities were concerned, additional licenses under other Acts were required. In terms of the legal scope of the Act as well as its licensing regime, it applies to “United Kingdom nationals, Scottish firms, and bodies incorporated under the law of any part of the United Kingdom”. In view of the exclusive reliance on personal jurisdiction, activities undertaken by non-UK nationals from British soil do not fall within the scope of the Act.

One important requirement for licensees that will likely, though not automatically, be imposed is to take out insurance as a substantiation of the obligation to provide full indemnification for the UK Government once the latter is confronted with international third party liability claims. Whilst no reference is made to the possibility of providing a ceiling for such indemnification, the insurance obligation was capped at GBP 100 million at the time.

Finally, in the cases of AsiaSat-2 and the two Apstar satellites, spacecraft owned by Hong Kong legal entities, hence until 1997 of UK nationality, but launched from the territory of and by the People’s Republic of China, special arrangements were made to deal with the liability issue. Under a June 1994 agreement, any compensation claims against the United Kingdom for damage arising from the launch phase would be indemnified by China.

Within the United Kingdom for some time a debate has been raging in particular as to whether the liability and insurance obligations are still in line with overall UK policies vis-à-vis private activities. One might expect activities such as those envisaged by Mr. Branson (a UK citizen) in setting up Virgin Galactic to raise the stakes in this debate even further. In particular issues of safety and liability, both third party and contractual vis-à-vis the passengers, would have to be dealt with. No doubt the debate will make reference one way or another to similar contexts in civil aviation, whether or not it will in the end find its way into the UK Outer Space Act.

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5. The Russian Federation

On 20 August 1993, the President of the Russian Federation signed the Russian law regarding space activities, thus bringing it into force.25 Included within the aims of the Law is the regulation of any potential private involvement in the activities under consideration. While it should be noted that many issues are explicitly deferred to further future legislation, at this point from the perspective of private enterprise the following picture arises.

The scope of the Russian Law in practical terms – as does the license obligation – comprises all activities “immediately connected with operations to explore and use outer space”. Space communications and space remote sensing are expressly enumerated as examples, while launch activities undoubtedly fall within the general circumscription as provided. Also included, however, by the relevant term “space activities” are the creation, use and transfer of “space techniques, space technology, and other products and services necessary for carrying out” space activities. Thus, the construction of spacecraft or financial arrangements relating to space activities such as loans and leases would also fall within the scope of the Russian Law. Hence, the Russian Law’s provisions in this regard go much further than even the procurement included in the 1986 UK Space Act.

As to the scope of the Russian Law, it applies to “space activities under the jurisdiction of the Russian Federation”. As becomes clear from closer analysis of relevant clauses seen together, this jurisdiction includes both territorial and personal jurisdiction with respect to the licensing regime. The exercise of the Russian Federation’s jurisdiction is even expressly extended to include Russian-registered space objects. Finally, to the extent that Russian private entities are de facto involved in international space activities, the Russian Federation provides for the need to conclude additional agreements, allowing the authorities to cover any potential international responsibility arising with respect thereto.

From the requirements related to the safety of space activities as provided in the Law, a general duty for the licensees of arranging for insurance coverage inter alia covering third party property damage may be deduced. As is the case with other rules, however, this leaves much leeway for discretion, even arbitrariness of the governmental authorities– resulting in uncertainty on the side of private enterprise. Furthermore, the role of the Russian Aviation and Space Agency (Rosaviakosmos)– the central licensing authority– can be circumscribed on many, ill-defined occasions by the competencies of the Ministry of Defence, which is perhaps not a good sign for the transparency and uniformity of the legal practice that should arise eventually.

Certainly for someone not reading or speaking Russian, it is very difficult to foresee with any degree of confidence what may happen in the near future in the Russian Federation’s space endeavours, including the legal and regulatory aspects thereof. It is clear on the one hand that the Russian Federation, both for reasons of a prestige and military nature and for cashing in on its tremendous achievements, experience and industrial capabilities, places an extra-ordinarily high value on space. The Russian commitments to the ISS and to re-boosting the GLONASS satellite navigation system to its original capabilities are clear proof thereof. In that context it is also clear that, ever since the end of the Soviet Union, hopes are that private enterprise would contribute to that, and to that extent future Russian space policies and legislation will likely work towards enhancing possible participation and contributions.

On the other hand, the general political and economic nature of Russian society today calls for considerable care. ‘Private enterprise’ and ‘commercial markets’ take on quite different meanings in that context, as do the possibilities and impossibilities to arrange for them by purely legal means. Whilst the general trend towards accommodating private enterprise as possible licensees will therefore certainly continue, at the individual level we can expect to see a lot of differentiation, ad hoc-deviation and complicated negotiation with prospective licensees – to the extent of course that we will actually see something in the first place.

6. South Africa

On 6 September 1993, the Space Affairs Act of the Republic of South Africa entered into force. The Act largely was a response to the growing interest of South African industrial and service sectors in space. The Act deals with “space activities”, defined as “activities directly contributing to the launching of spacecraft and the operation of such craft in outer space”. Launching operations, satellite communications and remote sensing activities are therefore clearly included in the relevant licensing obligations. Furthermore, “space-related activities”, defined as “all activities supporting, or sharing mutual technologies with, space activities”, also fall within the scope of the Act. South Africa’s territorial jurisdiction has only been asserted with respect to the activities of launching itself and – presumably – operating a launch facility. The assertion of personal jurisdiction on the other hand is comprehensive, and applies to all space activities entailing obligations for South Africa under applicable international treaties.

The licensee may be required to reimburse the South African Government for any international third party liability claim to the full. At the same time, the governmental discretion seems to allow for only partial reimbursement or non-reimbursement, if the South African interest would so require. Next to this international third party liability that would ensue from the Liability Convention, in principle all other liability issues could be dealt with under the Act. Conditions may be inserted into the license as to the licensee’s domestic liability for any damages occurring, and the financial security to be provided with respect thereto.

How this will work out in practice remains to be seen; however, it seems that few activities have been undertaken in that respect. Presumably, this has to do with other, more urgent political and socio-economic issues confronting the post-Apartheid governments. Still, it might be a valuable approach for South Africa to more actively develop its own involvement in private space activities: considerable benefits could be derived both from a regional-political and from a development perspective.

7. Ukraine

Ukraine established its national law on space activities in 1996, adopted to regulate national activities in accordance with international obligations. It is stressed that Ukraine provides for the fulfilment of international obligations in the field of space activities and is responsible in accordance with universally recognized principles of international law and provisions of international agreements to which Ukraine is a party.

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The National Space Agency of Ukraine (NSAU) is the central governmental body, responsible for realisation of the State’s policy in the field of space activities. NSAU was established in 1992 according to Presidential Decree No. 117. It has, most prominently, the authority to administer licenses, subject to further elaboration of the activities that may be licensed in the first place, and of the procedures of licensing, to be developed by the government. Both licensing and certification are important components of the State’s regulation of space activities, especially when it comes to private entities – both domestic and foreign. Any subject, willing to provide space activities in Ukraine, or if outside of Ukraine, under its jurisdiction, must obtain a license from NSAU. In other words: this concerns all activities undertaken from Ukrainian territory or by Ukrainian nationals.

The liability ensuing from international space law is covered quite well by these provisions, allowing for legal control over space activities possibly leading to claims for compensation against Ukraine. Apart from the Law of 1996, provisions regarding the necessity of space activities licensing arise from the Law on Entrepreneurial Activities of 1991 and the Law on Licensing of Certain Types of Commercial Activities of 2000. Finally, the future arrangement of obligations for licensees to insure their activities is provided for, giving substance to any reimbursement obligation to be included in future licenses. It may be noted here also, that the Law delegates to future legislation the issue of whether any limit would be imposed upon the possibility for the Ukrainian government to be reimbursed by a licensee in appropriate cases.

It is obvious that Ukraine, just like Russian Federation, previously part of the Soviet Union, in many respects finds itself in the same position as the Russian Federation, and has in its legislation effectively chosen very much the same approach. The main difference therefore is one of nuance: Ukraine more than its large neighbour has focused on international cooperative ventures, ranging from cooperation at an essentially private level (Sea Launch!) to cooperation on a, for the time being, fundamentally intergovernmental level, as with Brazil. The Ukrainian Law is but one element of that policy, and as long as the internal politico-economic situation in Ukraine continues to resemble that in the Russian Federation, the focus of policy and legislative initiatives will likely continue to lie elsewhere – namely at the international level.

8. The Hong Kong Special Administrative Region of China

In 1997, the current version of Hong Kong’s Outer Space Ordinance\textsuperscript{28} was enunciated. The obvious backdrop to this was the return of the Hong Kong territories to the People’s Republic of China after having been part of the United Kingdom for many decades. With the United Kingdom having in place its Outer Space Act since 1986/89, with Hong Kong being a major focal point for (in particular) satellite communications activities and with the People’s Republic of China recognizing this, as well as granting Hong Kong a special status from a legal and administrative point of view, the 1997 Ordinance was essentially targeted to deal with the legal consequences of Hong Kong henceforth constituting a Special Administrative Region within the People’s Republic of China.

On the one hand, this concerned ensuring continuation of the possibilities for private parties to become involved in space activities in roughly the same fashion, as had been the case

\textsuperscript{28} Outer Space Ordinance, An Ordinance to confer licensing and other powers on the Chief Executive to secure compliance with the international obligations of the People’s Republic of China with respect to the launching and operation of space objects and the carrying on of other activities in outer space, 13 June 1997, as amended 1999, Chapter 523; National Space Legislation of the World, Vol. II (2002), at 403; 51 Zeitschrift für Luft- und Weltraumrecht (2002), at 50.
before. On the other hand, the People’s Republic of China would now become the potentially responsible and liable State under international law for such activities. As a result of the latter, the Ordinance ensured compliance of any licensed activities with the People’s Republic of China’s international obligations; as a result of the former the Ordinance continued to be based very much on the British Act.

Thus, the licensing process in general terms is also provided for in similar general terms, and when it comes to liability, full indemnification of the People’s Republic of China for any international liability claims is due. Insurance, as is the case under the UK Act, is a likely requirement to be included in the list of requirements to be fulfilled by any prospective licensee, even if once more it is not automatically included.

The major non-procedural differentiator with the UK Act would lie in the scope of activities included in the licensing requirement. Formally the Ordinance provides for any activities carried on from Hong Kong regardless of the nationality of the relevant actors to require a license (in addition to activities of Hong Kong ‘nationals’ elsewhere), whereas in the British case this was only mandatory for British citizens and entities undertaking such activities. In other words: foreign entities or persons undertaking such space activities from Hong Kong do require a license, whereas in the case of the United Kingdom such was not the case. In this sense, the Ordinance may be considered more comprehensive than the UK Act.

Hong Kong, representing the ‘half’ in the ‘nine-and-a-half States with national space laws’ referred to before, is a very interesting policy case though difficult to analyze for the same reason. Hong Kong, one of the areas in the world that boasts considerable expertise with space activity licenses, continues to be an attractive place for all kinds of business even as the People’s Republic of China tries to slowly tighten the reins. Since the People’s Republic of China at the same time is bent upon increasing its role in outer space as well as carefully feeling its way into the world markets at various levels and in various fields, Hong Kong may either serve as a testing ground or act as a competitor with other ambitious areas within the People’s Republic of China (or more likely both at the same time). Which way the balance will tilt will have a major impact on further policy, legislative and regulatory development in this area – but cannot be predicted easily.

9. Australia

On 21 December 1998, the Australian parliament assented to the Space Activities Act. The objectives of the Act were mentioned as regulating space activities either from Australia or by Australian nationals from outside Australia, as well as to implement the United Nations treaties on space. Upon closer look, however, the Act deals solely with launching and related activities (return of space objects to the Earth), in order especially to deal with the possibility of international liability arising for Australia as a consequence of such activities. For example, satellite communication activities are not covered in and of themselves by the Act. Also, undertaking space activities with space objects registered with Australia under the Act do not lead to triggering any licensing obligation.

Depending upon the type of licenses – of which there are essentially four – either the territorial criterion or the nationality criterion or both are used to define the scope of the relevant requirement. Launches from Australia require a launch permit or exemption certificate; an overseas launch requires an overseas launch certificate. In addition, space licenses are required for the operation of launch sites in Australia. Whilst the launch permit involves the need to fulfil requirements related to

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third party liability under Article VII of the Outer Space Treaty and the Liability Convention, this need is absent in the case of a space license.

The relevant clauses of the Liability Convention are duly incorporated into the liability-related provisions of the Act. They give rise to insurance obligations (or in the alternative the duty to provide proof of sufficient financial responsibility) to cover, in principle, the maximum probable loss – largely along the lines of the 1988 US Commercial Space Launch Act. The Act was expanded upon in this respect in 2001 by Space Activities Regulations (Statutory Rules No. 186), which elaborate on and clarify the licensing process and requirements, most notably confirming the use, and detailing the calculation of ‘maximum probable loss’ for purposes of determining the relevant reimbursement obligations. The Commonwealth is explicitly mentioned as the insured entity.

The focus of the Australian Act on launching is obvious, in light of the direct connections between launching and liability; however, it may not be sufficient in the light of the uncertainties surrounding especially the practical implications of State responsibility. Its novelty in dealing with the return of space objects on the other hand is interesting in view of the specific Australian situation – large deserts offering themselves as landing spots for returning spacecraft.

The Act was established at the time as a rather unequivocal effort to stimulate private activities in the launch sector, in particular the hoped-for establishment of a few private spaceports. Due to a combination of economic (the general slump in the launch business) and political (post 9/11 security and Iraq-related) reasons, however, nothing much has happened so far. While having a detailed legal and regulatory regime readily available for anyone who is interested, Australia starts to look like a sleeping beauty. Any space-related focus is shifting to security-induced support of, especially, US activities in this field, and if any legislative action will result, it will likely be to serve those causes, rather than those of private enterprise that anyway seemed to have hedged its interests for the time being.

10. Brazil

The most recent addition to the list of States with a proper national space law is Brazil, where in 2001 an Administrative Edict was issued dealing with the most prominent aspects of private participation in outer space activities.30 In doing so, Brazil became not only the first Latin American but also the first developing nation with proper national space legislation, which causes it to be of special interest from the perspective of globalization and ‘normalization’ of space activities.

The Edict, which was issued by the Brazilian Space Agency (AEB) under the authority of the Ministry of Science and Technology, actually consists of two parts. The Edict is a binding piece of law under the Brazilian legal system, and may be directly invoked before a court of law. The Edict proper contains four operative Articles, the first of which is the most important. It provides for approval of the Regulation that is attached and that in turn deals with the substance of private involvement in space activities.31

Further to the Edict, the Office for Standards and Licensing may enact implementing regulation on technical and administrative actions related to the licensing procedures. The Edict

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31 Regulation on Procedures and on Definition of Necessary Requirements for the Request, Evaluation, Issuance, Follow-up and Supervision of License for Carrying out Space Launching Activities on Brazilian Territory (hereafter Regulation).
itself revokes a previous Administrative Edict that dealt with AEB’s role vis-à-vis possible private participation in space activities\textsuperscript{32}, whilst the Regulation entered into force upon publication in the Brazilian Union’s Official Gazette. Now, the AEB has the competence to issue such licenses, as well as controlling and supervising them, and if necessary, taking enforcement action with respect to them.

The Regulation focuses exclusively on launching activities to begin with. It may be noted that as far as satellite communications are concerned, in general terms it would fall within the scope of the authority of the Brazilian Ministry of Communications, and within the scope of applicable Brazilian legislation on telecommunications.\textsuperscript{33} The intention of the Edict and Regulation clearly however is to focus on the possibilities offered by Brazil’s operating launch site at Alcantara, in Maranhão (and possibly also the launch site at Barreira do Inferno in Natal) to attract and generate interesting economic activities and the related economic development. The scope of the Edict plus Regulation and the ensuing licensing obligations are obviously confined to launching activities from Brazilian territory.

The Regulation furthermore explicitly focuses on private participation in such launch activities: it does not apply “to space launching activities that could be carried out by Brazilian governmental organizations or bodies”. Whilst of course this means that foreign governmental launch activities from Alcantara, in Maranhão (and possibly also the launch site at Barreira do Inferno in Natal) to attract and generate interesting economic activities and the related economic development. The scope of the Edict plus Regulation and the ensuing licensing obligations are obviously confined to launching activities from Brazilian territory.

It may be noted further in this regard that licenses shall “only be granted to juridical persons, single as well as associations or consortia, having headquarters or a representation in Brazil”. The first category — having headquarters in Brazil — actually reflects the traditional general international law-criterion for the nationality of a private legal entity. In other words: the Regulation refers here to Brazilian private entities recognized as such under international law. The second category — having a representation in Brazil — refers consequently and by contrast to non-Brazilian private companies, which are thus offered an interesting opportunity to join in activities involving Alcantara.

Under the Liability Convention, Brazil qualifies as a “launching State” — and hence a liable State — in respect of every space object launched from Brazilian territory. The consequences of Brazil’s international liability for every launch, including every private one, from Alcantara is obvious: for damage caused to another space object thus launched Brazil would be held liable to the extent the claimant could prove fault on the part of Brazil (or of the entity actually in charge);\textsuperscript{34} whereas if the damage were caused by such space object would have been inflicted upon the Earth’s surface (or to aircraft in flight), Brazil would not even be allowed to plead absence of fault, since absolute liability applies in such cases.\textsuperscript{35} It may be noted that the Regulation defines relevant cases of damage closely following the terms of the Liability Convention. Once liability has been established, moreover, the compensation that Brazil would have to provide to the claimant would be in principle without limit, since it has to result effectively in restitutio in integrum.\textsuperscript{36}

\textsuperscript{32} Administrative Edict No. 8, AEB, of 14 February 2001.
\textsuperscript{33} General Law on Telecommunications No. 9.472, of 16 July 1997, in particular Chapter III on the organization of telecommunications services, including those provided by satellite.
\textsuperscript{34} Cf. Art. III, Liability Convention.
\textsuperscript{35} Cf. Art. II, Liability Convention.
\textsuperscript{36} Cf. Art. XII, Liability Convention.
It is obvious – as is clear also from the other existing national space laws to the extent that they deal with launches – that in any given case the license offers an excellent option to deal with these issues. In the case of Brazil, there seems to be room for granting a cap to the reimbursement obligation in a given case: the AEB may “assess liabilities” in case of an application for a license. Also, the “economic and financial qualification” of a particular license applicant will be considered in the licensing process. In this context finally the “purchase of insurance to cover possible damages to third parties, according to the degree of risk of the activities to be carried out by the applicant, where appropriate, in the value previously established by the AEB” has to be proven.

Whilst nowhere a direct provision may be found in the Regulation that such insurance coverage includes the reimbursement of possible claims that the Brazilian Government may face under the Liability Convention as a consequence of the licensee’s activities, it may be assumed that in the license proper such reference will be included. Following from this, then, the phrasing of “in the value previously established by the AEB” indicates that somehow such liability, respectively reimbursement obligation, will, or at least in individual cases may, be subjected to an – as of yet unspecified – maximum. For proper legal certainty, however, one would have to wait for a new and broader law currently under discussion, where the tendency seems to be towards adopting the ‘maximum probable loss’ approach found in the national space legislations of the United States and Australia.

Finally, coming back to the issue of foreign private participation in launching activities involving Brazilian territory, read launch sites, in particular for a developing country like Brazil, in order to develop the economy in such a highly technological and expensive sector as the space industry, notwithstanding the impressive home-grown capabilities in this area substantial participation in one way or another of foreign capital – in particular of a private nature – and know-how is evidently desirable, if not plainly necessary.

Developing countries in such a situation are always confronted with a dilemma, however. The best way to attract foreign capital and foreign participants is to allow them a large measure of freedom and discretion in handling their business affairs; yet the larger such freedom and discretion is, the more the country concerned runs the risk of losing not only control over, but also major benefits from the economic activities thus generated. Moreover, usually also wider issues of sovereignty, e.g. as to national security, are at stake.

How this balance is going to be achieved in the case of Brazil is not yet fully elaborated. The Regulation provides the first general parameters: for a start, in principle it allows – as mentioned – foreign legal entities to be granted a license in the case of representation of such an entity in Brazil. ‘Representation’ in this context refers to physical presence through a local office; by contrast, e.g. the presence of a person empowered to represent a company in contractual negotiations or of a bank account of the company with a Brazilian bank is not sufficient. This provision is further elaborated in that, alongside other relevant documentation, a decree of authorization has to be shown in order for a license application to be successful, and even more concretely, “documentary evidence that the applicant has legal representation in Brazil with express powers to be subpoenaed and to answer both at administrative and court levels”.

Additional particular controls in regard of foreign applicants to protect Brazilian sovereign interests are also to be found. The applicant has to confirm being informed about “local conditions, including the Security Regulations and Procedures established by the AEB or by the Launch Centre”. He has to commit himself to safeguarding applicable technology transfer regulations, “as determined by the pertinent authority of the Brazilian Government”. The AEB
reserves its right to consult in the course of the licensing process *inter alia* with Brazilian governmental bodies on security and foreign policy interests of Brazil, and how these should be reflected in a particular license.

Article 14 of the Regulation furthermore is exclusively dedicated to foreign licensing applicants. It obliges such entities to present proper documents from their respective home States “as to their being licensed to perform the launching activities intended.” An interesting issue would arise wherever such home State does not itself have a relevant licensing system in place, but apparently such cases are for the time being left to be dealt with in a pragmatic *ad hoc* manner.

Also, the AEB is expressly authorized to make grant of a license dependent upon the existence of safeguard agreements relating to technology transfer between the home State of the foreign enterprise and the Brazilian Government, which amongst others fulfils Brazilian obligations under international law to ensure non-proliferation of particular military or dual-use goods for example under the Missile Technology Control Regime (MTCR).

Thus, the Regulation seems to provide in particular the AEB with sufficient competencies and instruments to ensure that Brazil’s interests – not just of an economic nature, but certainly including those – can be duly protected in the course of licensing foreign launch service providers interested in Alcantara. Whilst these provisions seem fair and reasonable – for example, no specific economic or financial restraints in terms of capital transfers are provided for by the regulation – the proof of the pudding is in the eating: whether foreign entities involved in launch service provision will come to a similar conclusion will probably depend on the way the first few licenses will turn out to deal in detail with these issues.

In this respect, the recent tragedy at Alcantara, of necessity causing authorities to revisit some of the salient aspects of existing Brazilian policy and law, will likely result in considerable delays. Fortunately, however, at the same time the Brazilian government has unequivocally made clear it is intent on pursuing the goals and objectives behind the Edict and Regulation with the appropriate involvement of both domestic and foreign private enterprise, and ensuring that in spite of the enormous costs and huge risks associated therewith, benefits from using space will also sufficiently accrue to Brazil.

11. The special case of France

France may be considered the most important European State in terms of space activities; in politico-philosophical terms moreover it is a liberal capitalist State. It therefore would seem to provide a clear-cut case for the need to regulate private space activities domestically. Peculiarly, however, so far France by way of fundamental policy choice has not established a national space law of comprehensive scope and *a priori* operation to deal with such activities. Rather, as far as legal activities went, it has dealt with one particular private entity of French nationality, Arianespace. It has done so moreover by means of complex legal and almost *ad hoc*-arrangements, of necessity involving the European Space Agency (ESA), (many of) its Member States and France’s own Centre National d’Etudes Spatiales (CNES). This is a result also of the situation concerning Kourou in French Guyana.

The legal framework dealing with the various international legal accountabilities for Arianespace’s activities consists of a number of documents. Firstly, there is the Arianespace

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37 Brazil became a member of the MTCR in 1995.
Declaration of 1980, which is renewed basically every ten years. Under this Declaration, the Member States of ESA, participating in the commercialization of Ariane by means of Arianespace, amongst others undertake to support Arianespace in many ways. Furthermore, a Convention was signed between ESA and Arianespace providing for more details regarding inter alia the obligations of ESA in respect of Arianespace and vice versa. Finally, an agreement was concluded by means of a continuing series of protocols between France and ESA concerning the use of the Centre Spatial Guyanais (CSG).

By definition, the structural aspects of the legal framework elaborated above are confined to one case, that of Arianespace. Arianespace's activities concern launching and launch-related activities only. Other space activities such as satellite communications and remote sensing at the outset are therefore not at all covered by this legal framework. As a consequence, in first instance it is the liability of France as a launching State which is taken care of. The international responsibility of France for any of Arianespace's activities, however, obviously also exists. Arianespace is a French company, and operates from French territory - at least until now. In the case where Arianespace violates any obligations of international space law France will be held internationally responsible on both counts.

The conclusion that the Arianespace Declaration, the Arianespace Convention and the CSG Agreement taken together essentially perform the function of a license for Arianespace is reinforced by taking a closer look at their contents. The most salient aspects of licensing systems for private entities, the substantive aspects of liability, are dealt with in relatively considerable detail by these documents.

First, the relationship between France and ESA with regard to international third party liability claims draws attention. France and ESA both qualify as launching States under the definition of Article VII of the Outer Space Treaty and Article I(c) of the Liability Convention. The former at least because its territory is used for all of Arianespace's launching activities, the latter in view of the use of its facilities and, in many cases, its procurement of the launch contract.

In the CSG Agreement on the use of the Centre Spatial Guyanais, France legally protects ESA and its Member States against claims arising from launch activities undertaken by Arianespace. This presents a reversal of the arrangement applicable between France and ESA with respect to the Ariane development programme.

Secondly, cases between Arianespace and France where the activities of Arianespace would lead to international third party liability claims against France were provided for. Arianespace

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41 Alternatively ESA, as an international organization which has declared its acceptance of the rights and obligations under the Liability Convention, also qualifies as 'launching state'; cf. Art. XXII, Liability Convention, and ESA's Declaration of the acceptance of rights and obligations under the Liability Convention.
42 In the case of ESA, it is ESA's Declaration under the Liability Convention that allows for this conclusion in legal terms.
43 ESA and the Member States could in the end also qualify individually as launching States; cf. Artt. V, XXII in toto, Liability Convention, and ESA's relevant Declaration.
would be required to reimburse the French government up to a maximum amount of FF 400 million, which now equates to €60 million. Hence, France effectively acts as an insurance provider for Arianespace for any amount of damage occurring in a single accident that exceeds €60 million.

On inter party liability, ESA agrees to waive all claims for compensation against France, in as far as these claims result from launch operations at the Centre Spatial Guyanais. The exception provided here pertains to damage caused by "faute lourde; (...) acte ou (...) omission délibérés" on the French side. This phrase should probably be translated as 'wilful misconduct' or 'gross negligence', but it is apparently for French courts to interpret when legal disputes arise on the matter.

The solution of implementation of international space law on the private level in the case of France is particularly interesting. Aspects of potential French State responsibility are dealt with, at best, in an even more summary fashion than in the other cases discussed. On the other hand, the core issue of liability is dealt with by this de facto license for Arianespace. This even includes, as the only case apart from the US Launch Act, both an unequivocally limited derogation of compensation and the issue of inter party liability. Therefore, in a way the French case provides the best example of focusing on the pars pro parte pro toto of national implementation: documents constituting little more than a license, dealing mainly but rather in detail with liability questions.

From that perspective, CNES could be viewed as a licensing agency exercising its competencies in a very informal but absolute fashion – as a majority shareholder. The lack of formal clarity, as well as the intricate relationship between Arianespace, CNES, the French government, ESA and its Member States may reflect the complex nature of the European space arena in a very illustrative manner. Whether such a structure might be feasible from the point of view of a level playing field for (future) competition, and for a uniform and transparent legal protection of the public interest, should however be seriously doubted – and indeed France has now taken the fundamental decision to go about establishing a proper national framework space law.

12. Future developments – the example of the Netherlands

As indicated already, there are a number of other States seriously contemplating the establishment of national space legislation in the fashion discussed above. Each of them, no doubt, in addition to feeling the need or desire to implement international space treaties and to address some generally applicable types of domestic legal concerns, has its own policy approach to inject into such legislation. No doubt, on many counts those projects to establish national space laws will differ considerably. Rather then dealing with them all therefore, the author takes the liberty of highlighting the Dutch example, since from a policy perspective it may serve to illustrate at least some of the major processes behind any State’s activities in the area of establishing a (new) national space law.

Until fairly recently in the Netherlands the opinion prevailed that, at least from the perspective of implementing international space law and providing for national law, no necessity existed to take general and comprehensive action in this area by means of establishing a national space law.

This was due to the fact that those private space-related activities taking place under the influence of the Dutch government amounted to the following:

- Industrial activities as sub-contractors to ESA-led projects, the legal aspects of which were taken care of within the ESA legal framework;
Industrial activities in any case not as such amounting to private “activities in outer space” as Article VI of the Outer Space Treaty would hold those to be “national” activities of the Netherlands (such as the establishment of the European Aeronautic Defence and Space consortium (EADS) in Amsterdam, producing hardware for space purposes but not itself operating any space objects, or any entity’s role as contractor or subcontractor to foreign entities);

Activities which were dealt with in an ad hoc-manner, as originating from a previous situation, where regulation properly speaking was not even necessary to comply with Article VI of the Outer Space Treaty [notably this concerned the activities of the former Dutch signatory to the International Telecommunication Satellite Organization (INTELSAT, now ITSO), International Mobile Satellite Organization (INMARSAT, now IMSO), European Telecommunications Satellite Organization (EUTELSAT), the Dutch state-owned post and telecommunications company (PTT), later KPN, which was a public entity before being privatized in recent years]; or

Activities where, from a liability perspective, no domestic legislative action was considered necessary since the launching State(s) with respect to the space objects involved in those activities did not include the Netherlands (notably this concerned the case of New Skies Satellites (NSS), which had inherited five satellites from INTELSAT that had been in orbit already for a number of years, hence did not involve the Netherlands or NSS as crucially involved in the launch with a view to the criteria for becoming a “launching State” under the Liability Convention).

Over the past few years however, this paradigm changed fundamentally for the Netherlands. Firstly, the ongoing privatization taking place within the European Union, in particular in the satellite communications field, made clear that a former public telecommunications operator could no longer rely on its former rather exclusive status with the government for being allowed to undertake space activities properly speaking. Special rights, let alone monopoly rights, in terms of access to space segment capacity for instance, in principle were to be abrogated, and only to be maintained under stringent conditions – a set of requirements as to need, proportionality, transparency and like would have to be complied with. The markets also for satellite communications were to be liberalized, and basically telecommunications including satellite communications was now a matter for private entities to conduct in the framework of a level playing field. In other words: instead of an ad hoc relation or special arrangement taking care of Dutch duties under international space law, an open and transparent legal system would be obligatory– read: a licensing system not principally excluding anyone.

Secondly, the ongoing concentration and diversification taking place in the European space industry opened perspectives for a consortium like EADS and its constituent companies to extend their activities from terrestrial industrial activities to also include proper space activities, e.g. by means of turn-key delivery of satellites in orbit. If such a development were to materialize, in view of the Dutch nationality of EADS as a consortium (as opposed to the nationalities of its

individual constituent member companies) would then directly trigger application to the Netherlands of such rules of international space law as concerning responsibility and liability.

Thirdly, there were some new activities with at least one foot in the Netherlands, which might engage Dutch international responsibility and/or liability under space law. Notably this concerned MirCorp, the US-funded private entity that was key to sending the first tourists into outer space – and officially located in the Netherlands. (Since then, however, it has been renamed and relocated to the United States, likely at least partially because the Netherlands was seen to be moving into the direction of a proper national space law-cum-licensing regime.)

Fourthly, NSS started to procure the launch of its own new satellites, which – in contrast to the satellites inherited from INTELSAT – did immediately lead to the question whether the Netherlands would not be held to qualify as a launching State for these new satellites in case of relevant accidents. This, of course relates to the discussion as to the precise scope and meaning of the “launching State”, as defined by Article I(c) of the Liability Convention: would the Netherlands constitute a ‘State procuring a launch’ in the meaning of that definition by virtue of a Dutch private company NSS doing the actual procurement?

These developments, which may be considered illustrative for the changing situation and paradigm in many respects at least in Europe, triggered the Dutch government into action, and in 2001 it started a serious investigation into the need or desirability for a Dutch national space law. Two reports by persons active in the field were solicited, one focusing on the narrower legal issues and aspects as inter alia arising from the space treaties, the other dealing with the broader setting and including economic and policy issues and aspects.

Both efforts came to the same conclusion: national Dutch legislative action was indeed considered necessary on a number of counts, and desirable on a few more. The sole question remaining was, whether such legislative action could be confined to additions here and there to existing legislation, or whether it would require a new (framework) law.

After internal consultations between the various relevant ministries, Economic Affairs being the leading Dutch Ministry in space and others – notably Foreign Affairs, Justice, Transport and Waterways – providing the relevant input from their own perspectives, it was decided that the former option would not suffice. Too wide-spread, too varied were the legal issues to be dealt with, with a view to private space activities taking place under the jurisdiction of the Netherlands; too specific also were the outer space-aspects of the envisaged activities, to be appropriately dealt with by means merely of extending an existing licensing system and adding some scattered provisions e.g. to existing intellectual property rights- or securities-related national legislation.

Consequently, in September 2003, the Council of Ministers of the Dutch Government gave the green light for drafting a proper national Dutch framework space law. Following the major recommendations from the reports, as further elaborated in the intra-Ministerial consultation and co-ordination process, such a law was notably to provide for:

- A licensing system with respect to any private entities interested in undertaking space activities;
- The accompanying general requirements that would be imposed upon any licensee in order to strike a fair balance between his bona fide interests in undertaking space activities and the duty of the Dutch government to protect the public interests, both national and international;
• An arrangement of liability issues in the context also of the international treaties including further mandatory insurance or other financial guarantees as appropriate; and
• An arrangement for registration by the Dutch government in a national register of all relevant space objects (to the extent that an interim measure establishing such a register on a stand-alone basis would not suffice or would need to be incorporated in the national law).

The roadmap, pushed in particular by the ambitious new Minister of Economic Affairs, Mr. Laurens-Jan Brinkhorst, now foresees a first draft law for parliamentary discussion in the course of the current year, and a specific senior official was tasked within the Ministry to direct the drafting of such a law.

Conclusions: towards a Latin-American perspective?

The aforementioned, extremely brief analyzes of the few pieces of national space legislation existing around the world and some of the policies behind them point out the major issues to be solved by national space legislation as much as the main justifications for establishing such legislation.

At the same time, it is clear that at the international level a number of important uncertainties arise as to the principles and concepts crucial for domestic implementation. Such uncertainties pertain for example to the definition and scope of the phrase “national activities in outer space” (do they encompass only activities by a State’s nationals, only activities conducted from a State’s territory, or both, or is there yet another scope to this?) or of the concept of the “launching State” (does the launching or procurement of a launch by a private entity cause the State of nationality of that entity ipso facto to be a “launching State” for the purpose of Liability and Registration Conventions?). This has in practice indeed led to a number of varying solutions on the national level.

From a policy perspective, an increasing number of States are confronted with the reality of private involvement in space activities under their sway and simply need to act. In doing so, these States have to make a choice – their own choice – in the absence of much international authoritative guidance on proper interpretation and implementation of some of the relevant key principles and concepts. Such choices are, to a considerable extent, unavoidable, for reasons of different national socio-economic, political, technological and other capabilities – but also for strictly legal reasons. With space increasingly coming down to Earth, thereby attracting the attention of private entrepreneurs, which was seen as the major development behind national space laws, also many other legal regimes become involved – since space results in a specific input into practical and terrestrial applications that, normally, have existed for a number of years.

Individual States’ legislation on telecommunications or intellectual property rights may show vast differences, and these do not go away merely because telecommunications now are using satellites as part of the network or because also remote sensing data now need to be protected by means of intellectual property rights. Any new national space law to be established will obviously need to fit harmoniously with such national laws, before any international ‘harmonization’ can be tackled.

The resulting diversification is to be lamented on a number of counts, which would call for international efforts to try and harmonize – as far as, indeed, necessary or desirable – such interpretations and the consequent implementation. If these developments are perhaps ultimately to be carried and sanctioned by the Legal Subcommittee of COPUOS, the International Institute of Space Law (IISL) of the International Astronautical Federation (IAF) could maybe provide some guidance
as to where such harmonization could and should go. It may be an interesting option therefore, for the IISL to draft a Statement\footnote{The IISL has thus recently published on its website the first IISL Statement on legal matters of current importance for space activities; see Statement by the Board of Directors Of the International Institute of Space Law (IISL) On Claims to Property Rights Regarding The Moon and Other Celestial Bodies; at http://www.iafastro-iisl.com/; under “Important Events”} for publication on its website elucidating the theoretical sides to the debate and the optimum solution from that perspective, to guide any further discussions on these issues in COPUOS.

Any such exercise to harmonize at least the scope and implementation of the basic concepts need not be as politically far-fetched as it sometimes seems. Within Europe, a major impetus is certainly provided by the existence of ESA as the long-time harbinger of European (as opposed to French, British or German) presence in space as well as the recent and rapidly growing interest and involvement of the European Union in matters of space policy and law. The licensing of satellite communications providers for example is harmonized within the European Internal Market to a considerable extent at least in theory – it will take some years for practice to follow, but it will come. Also outside the specific European context, there is more room for such efforts than perhaps meets the eye. Australia has chosen to follow the US approach to calculate maximum liability reimbursement by licensees on the basis of ‘maximum probable loss’ – in an area where experience is so scarcely available yet so necessary to calculate risks and ultimate costs with any precision, States still try to look at, and learn from each other. Furthermore, there are a number of regional initiatives to achieve closer coherence and co-operation of national economies – not least here in Latin America, with Mercosur and the Andean Pact – which may serve as a starting point for developing coherence of policy and co-ordination of laws in matters of space as well.

One of the few common features already preponderant in all cases of national space law, both existing and prospective, concerns the central role played by the licensing system in dealing with liability, especially third party liability. Effectively, liability is probably the only international space law concept sufficiently concrete and directly relevant, for private enterprise as well as the public at large, to warrant extensive elaboration in a national space law. On most other issues, the mechanism of national space agencies monitoring at any moment in time the status quo of the actual rights and obligations to be discerned under international space law, seems to be the most effective and reasonable one to deal with domestic implementation. The need for domestic implementation as such, however, is beyond any doubt.

Most importantly, a derogation clause may be inserted in the license, essentially obliging the licensee in applicable cases to reimburse any international third party liability claim that the government concerned would be obliged to honour under the Liability Convention. So far, two general approaches to the derogation issue can be distilled from the existing examples of States that have established some form of national space legislation.

Either reimbursement is statutorily comprehensive, allowing at best for the option on the part of the government to \textit{ad hoc} desist from claiming full reimbursement, or a statutory or regulatory limit to compensation is provided for. In the latter case, the clear intention of the governments is to stimulate private launch activities by offering launch service providers a realistic possibility to either self-insure or obtain commercial insurance, and consequently accepting that in catastrophic cases the national treasury will have to be called upon to bear the part of the claim over and above the maximum.

Secondly, the license may provide for obligatory insurance – usually up to a maximum amount – in order to ensure that in any real-life case the financial resources would be there to
actually reimburse the government – at least to the extent of the maximum insurance. This approach is followed by some if not all of the national space laws so far enacted.

In most cases, finally, one should note the general level of discretion with the responsible governmental authorities as to imposing actual and detailed conditions upon (prospective) licensees. On the one hand, this obviously stems from the desire or even need to judge each request for a license on its own, usually rather individual merits. In other words, much will depend upon further practice. On the other hand, however, it is likely also the result of some prevailing uncertainties at the international level as to such key concepts as “national activities” and the “launching State”.

In conclusion, for the purpose of heeding the public-private paradigm in space law, national implementation by means of a national law with a licensing system at its core presents the most feasible and comprehensive option. It would, indeed, tie private space entrepreneurs and their activities to the international space law framework in a bona fide and mutually advantageous manner. It would offer such private entrepreneurs a fundamental level of legal certainty and transparency and a general commitment of the public authorities to the interests of private enterprise, and in a number of cases additional incentives to join the human space endeavour – and lessen financial governmental burdens in that respect. Last but not least, it represents the most comprehensive implementation of the obligation under Article VI of the Outer Space Treaty of “authorization and continuing supervision” of private “national activities in outer space”.

It may be pointed out, finally, that discussions within the ongoing Futures Projects on the Commercialization of Space undertaken by the Organization for Economic Co-operation and Development (OECD) tend to look favourably upon such roles for national space legislation. For the purposes of stimulating involvement of private enterprise in space activities in a beneficial manner, national space laws would seem to be desirable or even necessary where not yet established, in a number of cases would need to become more business-friendly (obviously as long as justified public interests are or remain duly protected) where existing, and would as a consequence need to deal with such issues as private involvement in activities of a public good or public service nature as well as space infrastructure building and operation through means of carefully devised Public-Private Partnerships (PPPs).

As a consequence, in all States where it is currently allowed or contemplated for the near future for private enterprise to become involved in space activities in a substantial manner, the establishment of national space laws is to be highly recommended, if it is not, indeed, outright required. This is as much a matter of law as it is of policy – or at least, it should be.