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Liability and Insurance in the Context of National Authorisation

A. Kerrest de Rozavel and F. G. von der Dunk

1. Introduction: Liability under International Space Law

It is probably difficult to overstate the importance of liability and the related area of insurance when domestic legislation in the field of space activities is concerned, as such activities still constitute a relatively hazardous undertaking and the risks of something going horribly wrong are always close at hand. Moreover, though fortunately so far major accidents as a consequence of space activities—at least on earth—have not occurred, *if they would occur there should be little doubt that they may cause major damage, potentially even of a catastrophic size.* As a consequence, the question as regards who would be liable to pay for such damage, and as a follow-up whether and to what extent insurance might (have to) cover such liability compensation, is indeed of great importance.

In the context of national authorisation specifically, the issue of liability is framed by the general framework developed at the international level by means, principally, of Article VII of the Outer Space Treaty¹ and the Liability Convention.² The starting point in this respect is the principled allocation of liability for damage caused by a space object to the “launching State” or “launching States” of that space object.

Article II of the Liability Convention provides in this respect: “*A launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft in flight,*”³ whereas Article III along the same lines provides: “*In the event of damage being caused elsewhere than on the surface of the Earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible.*”⁴

The Liability Convention defines the “launching State” for the purposes of these clauses as: “(i) A State which launches or procures the launching of a space object; (ii) A State from whose territory or facility a space object is launched.”⁵ The fact that this definition may result in several states being liable for the same damage-causing event—a space object may be launched by one state on behalf of another, which thus has “procured” the launch in question⁶—does not take away any liability but merely results in liability being joint and several.⁷

2. The Problems Resulting from the International Regime on the Domestic Level

The exclusively public nature of liability for damage caused by space activities (more accurately, by the space objects involved in such activities) as it arises, at least as far as international space law is concerned, thus includes cases of fundamental or even comprehensive involvement of private actors in the launch or operation of that space object. This in turn means that national authorisation will always be connected to issues of public control over the private involvement in such activities, to ensure that such involvement takes place only with reasonable guarantees as to the capabilities of the entities involved to safely conduct them, and of risk sharing between the states and private entities concerned: the “launching State” is principally liable for activities of private operators.

A further problem arises where such liability of the “launching State” on the international level is neither limited in amount nor in time. As to the first point, the Liability Convention provides that: “The compensation which the launching State shall be liable to pay for damage under this Convention shall be determined in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore the person, natural or juridical, State or international organization on whose behalf the claim is presented to the condition which would have existed if the damage had not occurred”.⁸ This clause has been generally interpreted to mean that regardless of cost, in principle the injured party should be fully restored to its previous situation, meaning full and complete compensation.⁹

As to the second point, while the Liability Convention imposes some time limits on the possibility to assert a claim under it, these refer to the time lapsed between the time of the accident alternatively the time at which the injured party could be presumed to have become aware thereof and the time of the claim.¹⁰ As to the time period between the launch of the space object and any involvement therein as a launching State, and the actual event causing the damage, there is no limitation provided in the Convention. Once having qualified as a “launching State”: a state will always remain a “launching State”; and as such will remain liable as long as the space object has the capacity of causing damage.

Specifically the definition of space object as including component parts thereof has been acknowledged to include any fragment thereof after (partial) disintegration in outer space, for example as a consequence of malfunctioning or collision with space debris.¹¹ As a consequence, even such a fragment, if causing damage many years after the original launch of the space object of which it formed part and after being separated from the original space object, would lead to the liability of the original “launching State (s)” (assuming only that these can still be identified).

At the same time, the occurrence of damage leading to such legal consequences under international space law as sketched above does not exclude claims regarding the liability of operators. Article XI of the Liability Convention namely allows for private claims to be pressed ahead regardless of any claims under the Convention, as it provides: "Nothing in this Convention shall prevent a State, or natural or juridical persons it might represent, from pursuing a claim in the courts or administrative tribunals or agencies of a launching State."¹² In other words, an injured party has the option to press for liability compensation in the national courts of the "launching State" in case he considers the chances of success and/or a more effective compensation to be better in such a context. In particular an injured party of a private nature may be interested in doing so in view of his limitations to press for claims under the Liability Convention.¹³ In sum, the private victim has the choice of the procedure: it may either ask its own state to enter into the procedures provided by the Liability Convention, or it may use by itself the usual legal way to obtain satisfaction under domestic law before a domestic judge.

From the other end, such claims can obviously also be addressed to private operators, involving national law as relevant. This results in complications as soon as *both* the "launching State" itself is addressed under the Liability Convention with a claim under international space law possibly to be solved by means of a Claims Commission¹⁴ and the private party involved in the space object's activities at issue is faced with a claim in a private capacity in the courts of that state applying national laws for the purpose.

As a further consequence of the above, under domestic implementation mechanisms usually appropriate insurance or financial guarantees are required from the private operator, as states want to get their money back if they would be held liable as a "launching State" for damage caused by the activities of that operator. For example, the UK Outer Space Act mandates the Secretary of State to condition the grant of a license by "requiring the licensee to insure himself against liability incurred in respect of damage or loss suffered by third parties, in the United Kingdom or elsewhere, as a result of the activities authorised by the licence."¹⁵ Equally, in Belgium the appropriate Minister may "create an obligation for insurance to be taken out in favour of third parties to cover the damage that may result from the activities authorised by him."¹⁶

Here, a specific problem results from the aforementioned international lack of a limit to the liability resulting from damage caused by space activities, both in terms of amount and time-wise: insurers cannot manage a risk unlimited in amount and in time—alternatively, require exceptionally high premiums to establish a wide margin of safety. It is for such reasons that for example the US licensing regime not only imposes a limit to the possible reimbursement of the licensee due for international liability as such, but includes in the determination of any limit for a particular license the extent to which "the maximum liability insurance [for the amount under consideration as maximum would be] available on the world market at reasonable cost."¹⁷

This solution clearly entails a willingness on the side of the US government to accept the possibility that in cases of damage of catastrophic size reimbursement by the licensee respectively his insurer will not be able to cover compensation paid under the Liability Convention. In other words, the US government acts *de facto* as a kind of re-insurer for international damage above the amounts quoted in the license.

Such willingness, however, should not be presumed. In the European context, for example, Sweden determines the reimbursement obligation in the Act on Space Activities simply as “If the Swedish State on account of undertakings in international agreements has been liable for damage which has come about as a result of space activities carried on by persons who have carried on the space activity shall reimburse the State what has been disbursed on account of the above-mentioned undertakings, *unless special reasons tell against this.*”¹⁸

3. National Framework Laws as a Mechanism to Deal with Liability and Insurance

From a bird’s-eye perspective, the mechanism most often chosen by states to deal with any international space law issues in the context of their domestic legal systems is to draft a framework law, laying down the ground rules for the licensing process whilst merely indicating the substantive obligations to be included in specific licenses, or at best outlining them. As for the liability and insurance issues, this amounts usually to insertion in the national space law or act of a principled obligation to indemnify the state comprehensively if the latter would have to pay an international liability claim under the Liability Convention, but also to allowing for case-by-case deviations from that general rule without much detailed guidance on when such partial exemptions should be admissible.

The case of Sweden has already been referred to *supra*, but also other European states essentially follow this approach. The United Kingdom equally comprehensively requires that “A person to whom this Act applies shall indemnify Her Majesty’s government in the United Kingdom against any claims brought against the government in respect of damage or loss arising out of activities carried on by him to which this Act applies.”¹⁹ It does then temper the *de facto* effect of this provision not only by its requirement for insurance up to a limit discussed *supra*, but also by the sweeping competence of the Secretary of State to “except (. . .) persons or activities from the requirement of a license if he is satisfied that the requirement is not necessary to secure compliance with the international obligations of the United Kingdom,” in other words *inter alia* as long as he considers a cap sufficient to take care of those concerns.²⁰

The Russian Federation has a quite complex formulation to deal with the twin issues of liability reimbursement and insurance of the licensee for such events. Firstly, “[t]he types, forms, and terms of licenses, the conditions and procedures for their issue, withholding, suspension or termination, as well as other questions of licensing shall be regulated by legislation of the Russian Federation” —in other words, are deferred for the time being to further implementation.²¹ Secondly, however, the phrases “[t]he Russian Federation shall guarantee full compensation for direct damage inflicted as a result of accidents occurring while carrying out space activities in accordance with legislation of the Russian Federation” and “[c]ompensation for damage inflicted as a result of accidents occurring while carrying out space activities shall be paid by the organizations and citizens responsible for operation of the space technics involved” seems to suggest unlimited liability reimbursement would be the baseline rule.²²

Thirdly, regarding the relationship between liability reimbursement and insurance it is provided that “the liability of organizations and citizens participating in the creation and

use of space technics for damage inflicted as a result of accidents occurring while carrying out space activities shall be limited to the amount of the insured sum or insurance indemnity provided in contracts of insurance of space technics and risks involved in space activities"—but also: "if the insured sum or insurance indemnity is insufficient for compensation of the damage inflicted as a result of accidents occurring while carrying out space activities, recourse may be taken against the property of relevant organizations and citizens in the manner specified in legislation of the Russian Federation."²³ This suggests, at least, a limitation to reimbursement in first instance whilst nevertheless allowing the Russian authorities a basis for claiming reimbursement of amounts above such limits if warranted by special circumstances.

Finally, on insurance itself the Law provides "[t]he organizations and citizens which exploit space technics or on whose order the creation and use of space technics for scientific and national-economy purposes is carried out, shall take compulsory insurance coverage in the amount set by legislation of the Russian Federation."²⁴ Whereas it is not unequivocally clear that such insurance would cover the reimbursement obligation, that may at least be assumed.²⁵

Throwing in the competences of the licensing authority (that is *Roskosmos*, the Russian Space Agency) to determine the particular contents of any license,²⁶ the result is that the requirements regarding liability and insurance can be tailored very much to specific instances at hand—but also a concurrent lack of legal certainty and transparency, which in the case of Russia is further heightened by the complications resulting from the transition of the old communist system to a modern and balanced version of capitalism.

Then there are the largely similar approaches taken by the two neighbouring low countries, Belgium and The Netherlands.

The Belgian Space Law is the first European one making explicit reference in the operative Article both to Article VII of the Outer Space Treaty and to the Liability Convention.²⁷ It comes as no surprise therefore that the reimbursement of the unlimited liability thus explicitly referred to is itself in principle unlimited as well, although the licensing authority is allowed to cap such reimbursement liability, as long as the licensee will "comply with the conditions attached to his authorization."²⁸ The Law itself does not provide for an obligation to take out insurance, but the licensing authority may "create an obligation for insurance to be taken out in favour of third parties to cover the damage that may result from the activities authorised by him" whenever granting the license.²⁹

The Dutch Space Law, following roughly two years upon the Belgian one, equally starts from the presumption of unlimited reimbursement, then mitigates that by key references to the insurance requirements to be imposed individually per license. As for the applicable liability arrangement, "if the State is obliged to pay compensation under Article VII of the Outer Space Treaty or the Liability Convention, the State is entitled to recover this sum, in full or in part, from the party whose space activity has caused the damage."³⁰ Next, however, such obligatory redress to the Dutch government is effectively capped by the value of the sum insured,³¹ whilst as to this insurance obligation "the prospective holder shall have and maintain what Our Minister considers to be the maximum possible cover for the liability arising from the space activities for which a licence is requested. Account is taken here of what can reasonably be covered by insurance."³²

The most recent European national space law that entered into force is the French one; as France however presents a special case in a number of respects, the French national law will be discussed in detail further below.³³

In sum, in all these cases the states concerned require reimbursement by the licensee in cases where they have had to pay compensation for damage caused by the licensed private activity as a consequence of which they had to honour liable claims under the Liability Convention. States may then in individual cases accept to limit this reimbursement, for example to a certain fixed amount or to the amount of insurance available on the market.

4. National Liability and Insurance Arrangements, and Competition Law

While the flexibility noted above in determining the substantive obligations regarding liability and insurance on the part of national authorities may perhaps be reasonable, both from the perspective of likely dealing with many quite different actors, cases and scenarios, and—at least in some cases—from the lack of experience of the relevant authorities with many actual licensing requests, these “case-by-case” solutions from a legal perspective raise some serious questions. They may well turn out to be disputable under competition rules, either domestic, or under the law of the European Community, or perhaps even under WTO regulations.

As for the latter, the World Trade Organisation (WTO)³⁴ served *inter alia* to underpin the General Agreement on Tariffs and Trade (GATT)³⁵ and the General Agreement on Trade in Services (GATS)³⁶ with an institutional framework. The GATT is dedicated to abolishing or at least minimising all restrictions on international trade in goods, whereas the GATS is attempting to do the same for international trade in services.

Space activities may, obviously, both involve trans-frontier movement of goods and trans-frontier provision of services, and in consequence be possibly caught by GATT and GATS regulations in cases where these have been agreed to be applicable to certain space activities. So far, this would largely be the case in the context of satellite communications, where a 1997 agreement concluded in the context of the GATS called for access of foreign satellite communication service providers to national markets on the basis of reciprocity, under so-called “individual schedules of commitment.”³⁷

Whilst the GATT and the GATS generally focus on the most clear-cut trade restrictions such as import tariffs and quota, in principle *any* requirement which restricts international trade if applied in a discriminatory fashion as between national and foreign entities is considered to be—at the very least—contrary to the spirit of the treaties. When therefore one space operator would be offered a set of obligations, including in particular those related to reimbursement and taking out insurance, in terms of his license being rather different from those offered to another space operator, this may well run afoul of that spirit in particular if the advantaged space operator is a national entity and the other a foreign one, presuming there is no objective, nondiscriminatory justification for making such a difference.

As for EU law, the new Treaty on the Functioning of the European Union³⁸ has provided for an even more extended regime in its efforts to create a level playing field in any economic sector of concern. On the one hand, it established a regime for free movement of

inter alia goods and services between the EU member states,³⁹ along the lines of the GATT and GATS but much more elaborated—and backed up with the adjudicative powers of the Court of Justice of the European Union (QEU).⁴⁰

Imagine the likely consequence of the licensing systems being nationally implemented in the absence of any transparency and consistency (read legal certainty) at the level of the law. One company can be provided with a limit to liability and/or to its insurance obligation under a national license because it is of the nationality of the licensing state, whilst another company being of a different EU member state cannot avail itself of such limits because it would not be eligible to such a license, or not entitled to the same conditions if it is. Once this would come to be envisaged as “restrictions” imposed upon the latter which are not applied “without distinction on grounds of nationality or residence,” in principle it would be prohibited by the Treaty on the Functioning of the European Union.⁴¹

The main legal obstacle so far standing in the way of actually applying such principles and rules to the licensing of private space operators is the absence of competence at the EU level in the space sector (with the exception of satellite communications, as will be seen): liberalisation of services along the lines of the regime of the Treaty on the Functioning of the European Union requires specific Directives.⁴² The first instance where a principled legislative competence of the European Union in the space sector was provided for, was the (aborted) Treaty establishing a Constitution for Europe.⁴³ Unfortunately, perhaps, it was preserved in the Treaty of Lisbon only with an added *caveat* that the parallel competence of the Union thus established was specifically “excluding any harmonisation of the laws and regulations of the Member States.”⁴⁴

On the other hand, the Treaty on the Functioning of the European Union also established a quite encompassing competition regime, which may even present a more solid basis for tackling the lack of consistency and transparency in the provision of licenses, potentially leading to market distortions. The most important clause here concerns the comprehensive prohibition on state aid, which reads: “Save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, insofar as it affects trade between Member States, be incompatible with the internal market.”⁴⁵

As practice has shown, the term “any aid” is usually taken literally, and although the Treaty on the Functioning of the European Union itself already allows for certain exceptions and exemptions from the application of the state aid-regime,⁴⁶ these are subject to scrutiny by the EU institutions.⁴⁷ Offering private space operators limits to their third-party liability through a national license where otherwise unlimited liability would result in itself is a form of state aid, since the state acts as *de facto* reinsurer for any amount of compensation beyond the limit due under the regime of the Liability Convention, thus relieving the company concerned of certain risks and/or costs it would otherwise incur. Offering it to licensees, read national companies, of one EU member state only, would then indeed distort or threaten to distort competition: insurance premiums in this high-risk sector form a major part of the total cost of operations, and if one EU company is offered a certain cap on its liability, whereas another is not (or a much higher cap) there can be little doubt this is a distorting factor.

Most feasibly, the possibility for an exemption from application would arise on the basis of such a form of aid constituting “aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest.”⁴⁸ The argument could be that the space sector is still very much in its infancy, with as of yet not that much competition occurring within the EU Internal Market anyway, and hence deserves some protection for the time being. The “common interest” referred to could well lie in the need for Europe to build up a strong space sector in order to compete with the non-European giants, where for example the US space industry would indirectly be supported (“aided”) by the US government buying products or services exclusively from US providers.⁴⁹

As indicated, the main exception to the EU rules on free movement, free provision of services and competition so far not being applicable to the space sector, is the satellite communications sector—not accidentally the one sector of space where, also in Europe, a major commercial market has arisen. Thus, here the Commission and the Council have undertaken efforts to liberalise those markets and create one single Internal Market for satellite communication services. Part of that effort was trying to ensure that the licensing of space activities at the domestic level would not result in major distortions in the level playing field.

The process took off with a first Green Paper in 1987, a political document calling for liberalisation of the environment for telecommunications, as of yet excluding satellite communications in view of the special character of that sector.⁵⁰ That omission was repaired when a second Green Paper three years later addressed satellite communications specifically along the same lines.⁵¹ The general economic and legal principles asserted by those Green Papers then led to the 1994 Satellite Directive, the first piece of EU legislation on the matter.⁵² As its full title indicated, the Satellite Directive essentially provided for the application of some older Directives on the introduction of the Internal Market regime in the areas of terminal equipment and service provision to the satellite communication sector.⁵³

As of yet, this excluded the licensing process proper, but soon the Commission in particular realised that liberalising the European satellite communication markets at some point would not be possible without proper harmonisation of the national processes of licensing the operators. A true Internal Market for satellite communications could never result if major regulatory distortions following from rather divergent—not to mention nontransparent—conditions imposed by the various relevant national licensing authorities would be allowed to exist.

Thus, in the decade following the enunciation of the Satellite Directive, several further pieces of EU legislation were drafted. Thus, a 1997 Decision called for a first level of harmonisation of national authorisation processes—but only for the subsector of personal handheld satellite services.⁵⁴ A Directive that same year harmonised the “framework” for licensing of all satellite communication operators—by listing the categories of conditions that could be imposed upon licensees, leaving wide discretion to the national licensing authorities to actually apply it, even if in a discriminatory fashion.⁵⁵ That the whole process in this area was fraught with difficulties and resistance of certain member states against EU-level interference with their national prerogatives became clear when eleven years later it was still necessary to draft a Decision on the authorisation of mobile satellite services.⁵⁶

Clearly, by that time the original aim of an EU-wide licensing process principally conducted at the EU level had effectively disappeared behind the horizon.

Not being able to harmonise the licensing of satellite communication operators at the European level, it will be clear that the Union also did not manage any harmonisation so far of any attendant liability and insurance issues in that context. This, however, in the end may not be so relevant for our present perspective to the extent international third-party space law liability is the principal subject of attention for national licensing authorities.

Such liability, as regulated under the Liability Convention, very much attaches to the states involved in the launch of a space object through the key concept of the “launching State”—and hence is essentially triggered by the practical and legal situation at the launch. This means, that also for satellite operators—and the states supposed to license them—the issue of liability as far as the Liability Convention is concerned arises only to the extent they would be involved in that launch. In other words, any flow-down consequences of liability under the Liability Convention would principally be arranged in the launch contract and the licenses for the *launch*, not in the context of the licenses for *operating* the satellites—which is what the Union has focused on, for Internal Market-related reasons. Not accidentally, in the few pieces of EU law referred to above, no clauses deal with liability potentially arising as a consequence of the international third-party space law regime in any substantive sense.

Nevertheless, once a satellite operator duly licensed causes damage covered by the Liability Convention, as it will very likely be assessed to have procured the launch of the satellite at issue, the licensing state may also be implicated by that procurement and be considered to be the “State which (. . .) procures the launching of a space object” for the purposes of triggering the application of the Liability Convention⁵⁷—in which case the issue of whether that state can be reimbursed for any compensation paid under the license arises again. In that context, major differences in reimbursement and insurance obligations, as a result of nontransparent and flexible—and sometimes plainly absent—national licensing systems could still be considered distortions of the satellite market in Europe.

5. The US Model for Dealing with Liability and Insurance in the Domestic Context

No doubt partly due to its large role in space activities and its principled support for private enterprise, the United States choose to take a far more detailed approach in dealing with licensing issues in the domestic context. Tailor-made licensing systems were developed for the various sectors of space where private enterprise became a player in its own right. In 1970, the 1934 Communications Act⁵⁸ was declared by the Federal Communications Commission (FCC), the licensing authority for all private US telecommunication activities, to be applicable also to telecommunications involving satellites.⁵⁹ Once the remote sensing sector seemed mature enough to be (partly) privatised, the 1984 Land Remote Sensing Commercialization Act⁶⁰ provided for the authority of the National Oceanographic and Atmospheric Administration (NOAA) to license private parties interested in operating satellite remote sensing systems, an authority not fundamentally changed by the 1992 Land Remote Sensing Policy Act.⁶¹ Finally, now that private spaceflight—often loosely labelled “space tourism”—seems about to take off, interim legislation has already

been developed by the US authorities dealing with this specific new type of private space activity.⁶²

In view of the abovementioned focus of the international liability regime emanating from the Liability Convention on the launch of a space object and the entities crucially involved in it, neither the Communications Act nor the remote sensing acts provided arrangements on third-party liability and insurance for it, whereas the new act regulating private spaceflight for the time being is an extension of the general legislation applicable to launch activities.

This brings analysis finally to the Commercial Space Launch Act, which not only indeed deals very fundamentally with issues of third-party liability, including those falling within the scope of the Liability Convention, but actually constitutes a considerably more sophisticated mechanism than those provided by the states discussed before. The original version of the Act was drafted in 1984,⁶³ then amended fundamentally in 1988,⁶⁴ and finally codified as part of the United States Code in 1994.⁶⁵

The mechanism resulting from this legislation in terms of liability starts with the determination of the “maximum probable loss”⁶⁶ for each particular launch by the licensing authority, which is the Office of the Associate Administrator for Commercial Space Transportation with the Federal Aviation Administration (FAA).⁶⁷ Obviously, the maximum probable loss varies depending upon the actual risk of something going wrong and the related potential size of damage caused, taking into account factors such as the size and complexity of launch vehicle and satellite, track record versus novelty of technology, and launch trajectory.

The amount arrived at under the maximum probable loss determination will be inserted as cap on the liability of the licensee, including a liability to reimburse the US government in case of claims under the Liability Convention, as well as on the insurance he is obliged to take out,⁶⁸ unless either no liability insurance would be available for the amount at issue “at reasonable cost” or the maximum probable loss would go beyond US\$ 500,000,000, corrected for inflation, in which case the lowest amount concerned provides the cap on liability and insurance obligation.⁶⁹

If an accident would occur and damage would result so as to trigger liability under the license, the licensee will have to compensate the damage up to the ceiling thus provided. In case the compensation exceeds the cap, the US government will carry the burden of such excess compensation, up to an express limit of US\$ 1,500,000,000, corrected for inflation.⁷⁰

As a matter of fact, however, two scenarios arise here, since this arrangement applies to any type of third-party damage the US government is concerned with, both that falling within the scope of the Liability Convention and hence giving rise to liability of the United States itself and that falling outside of its scope, hence giving rise to direct liability of the private operator under US national law and before a US court.

In the latter case, the limit of US\$1,500,000,000 means that, effectively, liability is capped by that amount as augmented by whatever cap was imposed upon the licensee in the license—which, as seen, in no case could exceed US\$500,000,000.⁷¹ In the former case, however, regardless of US law arrangements, the liability remains principally unlimited as per the Liability Convention.⁷² In this case, the arrangement under the US act means that the licensee will be obliged to cover a first tier of damage up to the cap included in his license—

again, under no circumstances more than US\$500,000,000. If the damage exceeds that cap, a second tier of compensation actually is at the expense of the US government, in the sense that—up to an amount of US\$1,500,000,000—the government accepts not being reimbursed by the licensee for *that* part of the international claim. In the (unlikely) event damage would exceed even the combined total of US\$1,500,000,000 and the cap included in the relevant license, a third tier would be at stake, where the US government under the Liability Convention would still be obliged to compensate also that part—and it would be a matter for internal US law whether and to what extent the US government can *de lege* call upon the licensee to reimburse him for that part, too (to the extent the licensee would of course *de facto* have the assets to do that).

This extended and detailed mechanism is rather good as it protects the victim, who has a better chance to receive appropriate compensation and has a choice of means: he can sue the company in a domestic court and does not need to use the long state-to-state procedure of the Liability Convention,⁷³ and even so may be rather comprehensively compensated—with the Liability Convention's unlimited compensation always as a stick behind the door in case of truly catastrophic-size damage. At the same time, this system also protects the US private companies, as these are provided a cap on liability respectively reimbursement, which clarifies their risk and therefore eases financing their project, and may get insurance at a reasonable cost for whatever cap is provided.

It also testifies to the feasibility of a state to enact domestic legislation on space activities by private enterprise taking into consideration not only its own liability but also the possible liability of its companies. The states discussed before may be focusing on being reimbursed; the United States has chosen a more balanced approach that also supports its private industry involvement in space activities.

The US arrangements as developed from the original Commercial Space Launch Act onwards also have some downsides. A first point here follows from the extended control of the US Congress as payment of a catastrophic claim is subject to the Congressional appropriation process. The claims must be presented to the Congress by the President upon the recommendation of the Secretary of Transportation, the Congress must appropriate funds to pay the claim.⁷⁴

Secondly, the mechanism is not automatic, nor is it permanent, but subject to a sunset provision. Contrary to the position of the House of Representatives, which did in addition to not proposing a cap on government indemnification not include a sunset provision, the Senate Commerce, Science and Transportation Committee refused to accept such a permanent form of support. It proposed a ten years period for the cap, later changed into a five years sunset provision. It considered that this support of private launching activity was not to be unlimited and should be deleted when the insurance market will be in a position to insure the total amount of the risk.⁷⁵ During the discussion of the Act before the Congress, the Senate Commerce, Science, and Transportation Committee determined that it is "necessary to ensure that the risk to the Government is restricted. This is both a protection of the public treasury and a means to foster and enhance the growth of private insurance markets over the life of the legislation."⁷⁶ The indemnification mechanism is thus only offered for a limited amount of time. This sunset provision of 1988 has been extended four times since.⁷⁷

Thirdly, as we have seen there is a limit to the guarantee of the state, at least when it comes to “national liability,” that is private claims pursued in US courts—of the cap on the licensee’s liability *plus* US\$1,500,000,000, in 1988 terms. Whilst damage between US\$1,500,000,000 and US\$2,000,000,000 may seem astronomical in size, and a cap of that size cannot easily be imagined to be exceeded, one should not forget that in the unlikely event that a space object *would* hit the earth, it might do so at enormous speeds and indeed catastrophic damages may result.

Fourthly, the liability arrangements are limited to the launch phase. At the highest level, the Commercial Space Launch Act itself does not make any specific reference to this point. It simply makes a license obligatory for a “launch” with all the attendant requirements to be included in the license—which do not, however, specify anything as to the definition of that launch or the coverage of third-party liability and/or indemnification clauses: the licensing authorities “shall specify the period for which the license issued or transferred under this chapter is in effect.”⁷⁸

At the second level, the Code of Federal Regulations then provided to a limitation of the *insurance period* as follows: “Insurance coverage (. . .) or other form of financial responsibility, shall attach upon commencement of licensed launch activities, and remain in full force and effect as follows: (1) Until completion of licensed launch activities at the launch site; and (2) For orbital launches, until the later of—(i) Thirty days following payload separation, or attempted payload separation in the event of a payload separation anomaly; or (ii) Thirty days from ignition of the launch vehicle.”⁷⁹

Thus, the problem of definition of the concept, both as to the beginning and end of the operations of “launch,” and thus of how extended the application of the Act in fact was, was left to the third level.⁸⁰ Here, the FAA presents different definitions of the end of launch and “in the interest of safety” stands to its position “to define the end of a launch as the point after payload separation when the last action occurs over which a licensee has direct or indirect control over the launch vehicle.” When dealing with financial obligations, insurance coverage applies “until completion of licensed launch” and until the later of thirty days following payload separation or thirty days after ignition of the launch vehicle.⁸¹

The conclusion here should be that after the launching phase so defined, the Commercial Space Launch Act and its financial guarantee do not apply any more to damage occurring on earth or in orbit. The support of the US government concentrates on the launching activity and not on life in orbit where the risk is considerably lower.

The Regulations together thus clarify the duration of obligations to thirty days alternatively—at least for suborbital launches—the time when according to “the risk analysis conducted before the launch to determine [the Maximum Probable Loss] and specified in a licence order,” the “risk to third parties and Government property (. . .) is sufficiently small that financial responsibility is no longer necessary.”⁸² The period during which the liability and indemnification system applies is only thirty days, which means that on the one hand for instance the obligation of the Act related to insurance lasts only during the launching period *stricto sensu*, and on the other hand that the indemnification mechanism lasts only during thirty days—and not during the whole life in orbit of the satellite. The Act was not intended to deal with satellites in orbit but only with launches and reentry. The control

over satellites in orbit is maintained, to the extent it is, by other administrations like the National Oceanographic and Atmospheric Administration (NOAA) for remote sensing satellites and the Federal Communications Commission (FCC) for satellite telecommunications.⁸³

So far the only example more or less following the US approach concerns Australia—accidentally or not, also a non-European state—which also has developed a rather detailed system for authorising private space activities. To begin with, it knows essentially of four types of licenses: (1) a “launch permit” for the launch of space objects from Australian territory *or* the return to Australia of space objects launched from Australia;⁸⁴ (2) an “overseas launch certificate” for launch activities by Australian nationals conducted outside Australia;⁸⁵ (3) an “authorisation” for the return to Australia of space objects launched elsewhere;⁸⁶ and (4) a “space license” for the operation of a launch facility on Australian territory.⁸⁷ For each of those, a separate set of requirements applies.⁸⁸

As for liability, the Act specifically refers in its definitional section to the Liability Convention, as well as distinguishing between liability periods in the context of the launch respectively the return of space objects covered by the Act.⁸⁹ In further scoping the application of the liability arrangements under the Act, specific reference is made to cases where “Australia is a launching State in relation to the object.”⁹⁰

The logical relationship thus established between domestic reimbursement obligations and the international liability of Australia as a consequence of qualifying as the “launching State” also means that the former are essentially limited to the launch permit and overseas launch certificate.⁹¹ The authorisation pertains to a space object launched elsewhere, so that Australia does not *need* to consider itself a launching state since at least one other state will qualify as such, whereas the space license concerns the operation of a launch facility, which as soon as involving a launch itself, requires a launch permit in addition.

The basic requirement in case of a licensee’s activity leading to damage compensable under the Convention is full reimbursement of the Australian government: “the responsible party for the relevant launch or return is liable to pay (. . .) an amount equal to (. . .) the amount of that compensation.”⁹² However, the possibility for obtaining a limit to the reimbursement obligation by means of the launch permit or the overseas launch certificate is then offered;⁹³ the limit being applicable “to the extent that the amount of the compensation would exceed the insured amount” subject to a few conditions amounting to compliance with the other conditions of the permit or certificate as well as absence of intent to cause damage or gross negligence.⁹⁴

The abovementioned “insured amount” may also be replaced by an alternative “guarantee”: the requirement is considered fulfilled also if “the holder has, in accordance with the regulations, shown direct financial responsibility for the launch or return for an amount not less than the amount that would otherwise have been applicable.”⁹⁵ As to that “amount,” it is then limited by a complex procedure providing for a “maximum cap” of A\$ 750,000,000.⁹⁶

That is not to say that an authorisation can be obtained without any liability coverage. An authorisation also requires compliance *inter alia* with the insurance (alternatively financial responsibility) requirements above; the main difference is that the holder of an authorisation can *not* avail himself of the limits to *liability*, only of the limits to *insurance*. In other

words, differently from the holder of a permit or certificate, the holder of an authorisation will be held liable beyond his insurance or financial responsibility in case the damage surpasses the latter; there is no principled protection from betting the company here.⁹⁷

The requirements for a space license, however, indeed are—at least as far as the Act itself is concerned—not inclusive of requirements regarding liability reimbursement or insurance.⁹⁸

6. The French Case Prior to 2008

France for a long time has chosen an altogether different approach to authorising and continuously supervising private space activities for which it might be held internationally responsible and/or liable: not by means of either a framework law or a detailed national legal regime, but by *de facto* control of the private activities arising in the French context.

The most obvious example is the launch service sector, in view of the direct relationship between launch activities and issues of liability. France houses Arianespace, currently the world's number one in the commercial space launch services market, and undoubtedly a private company.⁹⁹ It is also undoubtedly a *French* private company from a legal perspective, established under French law and headquartered in the French city of Toulouse. Moreover, it launches exclusively (so far) from the Kourou launch site in French Guyana, a piece of South-American territory falling under French sovereignty.

Nevertheless, there are also some profound reasons why France could not—and did not—simply on its own take care of Arianespace activities, easily invoking responsibility and liability of the French state under international space law, by a national licensing regime. Arianespace was using Ariane launch vehicles, which had been developed under various optional programmes of the European Space Agency (ESA),¹⁰⁰ even if France had been the leading partner. Its operations from Kourou still required substantive support by ESA, including the use of key facilities there. And finally, most of the other ESA member states had private companies as substantial shareholders in Arianespace—albeit that the majority of shares were in French hands, and the majority within *that* majority was in the hands of the French space agency CNES.

Thus, the normal functions of a license *vis-à-vis* private companies were taken care of, on the one hand, by the *de facto* control of CNES, a French government body, over the activities of Arianespace, and on the other hand by a triangle of legal documents involving Arianespace, France, and ESA.

Firstly, there is the Arianespace Declaration of 1980, which was regularly renewed since.¹⁰¹ Under this Declaration, the member states of the European Space Agency participating in the commercialization of Ariane by means of Arianespace amongst others undertake to support Arianespace in many ways.¹⁰² 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*.¹⁰³ 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).¹⁰⁴

Specifically on the issues of licensing and insurance, the legal framework imposed upon Arianespace with respect to its launch operations proceeded from the assumption that it

is in first instance the liability of France as a launching state which needs to be taken care of, because its territory is used for all Arianespace's launching activities.¹⁰⁵ At the same time, however, also ESA qualifies as a "launching State" under the definition of Article I(c) of the Liability Convention at least as far as the substance is concerned, in view of the use of its Kourou facilities, and, in many cases, its procurement of the launch contract.¹⁰⁶

In the CSG Agreement, France then legally protects ESA and its member states against claims arising from launch activities undertaken by Arianespace.¹⁰⁷ In fact one should distinguish between two different cases. For the launches operated for ESA programs, including the three first Ariane development launches (such as the first ones with Ariane 5), ESA is liable and will safeguard France from any claims for damage—excluding wilful misconduct by the French government or its agencies.

By contrast, in cases between Arianespace and France where commercial launches of Arianespace lead to international third-party liability claims against France, Arianespace would be required to reimburse the French government up to a maximum amount of FF 400 million (now some €61 million).¹⁰⁸ Hence, France effectively acted as an insurance provider for Arianespace for any amount of damage occurring in a single accident which exceeds FF 400 million.

Interestingly, in view of the complicated legal situation surrounding Arianespace launches, somewhat complicating also the clear distinction of third-party liability from interparty liability, as to the latter the European Space Agency agrees to waive all claims for compensation against France, in as far as these claims result from launch operations at the Centre Spatial Guyanais.¹⁰⁹ The exception provided here pertains to damage caused by "*faute lourde, (. . .) acte ou (. . .) omission délibérés*" on the French side.¹¹⁰ 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.¹¹¹

The same structure—of *de facto* control—essentially applied to the other French private space company operating already for a number of years: Spot Image. In 1986, CNES had launched the SPOT-1 satellite, with involvement of both Sweden and Belgium on a minority-share basis, while Italy later also stepped in. Already in 1982, the private company Spot Image had been incorporated under French law and established in Toulouse to market and sell the remote sensing data collected by the SPOT satellites yet to be launched. Shareholders in Spot Image came, apart from France, from Belgium, Italy, and Sweden, the other states involved in financing the SPOT program. Spot Image, like Arianespace, was created in 1982 as a "*Societe Anonyme*" and subsidiary to CNES, which was moreover the largest single shareholder. Spot Image is now owned for 98.9% by EADS Astrium.

Differently from the case of Arianespace, however, there was no discernible special need to arrange for third-party liability with a view to the Liability Convention: either Spot Image would be launched upon an Ariane vehicle, in which case French third-party liability was already dealt with through the aforementioned construction pertaining to Arianespace, or it would be launched somewhere else, in which case France could only be argued to a "launching State" in an indirect fashion at best.¹¹²

Beyond Arianespace and Spot Image, lately with the privatisation of France Telecom as the French entity enjoying access to the international satellite networks of the old INTEL-SAT,¹¹³ INMARSAT,¹¹⁴ and EUTELSAT,¹¹⁵ as well as with the privatisation of the latter so

as to become a French company, Eutelsat, more private entities became fundamentally active in outer space for which France might directly be held liable, which started to threaten this system of *de facto* control—hence steps were taken to draft a proper French national space law.

7. The 2008 French Law on Space Operations

In 2004 the French Prime Minister asked the *Conseil d'Etat*¹¹⁶ to study the legal framework for space activities in France. A working group was created and proposed a draft of a law which was adopted by the government on April 2007 and passed as a law, the French Law on Space Operations, in June 2008.¹¹⁷ This text was elaborated by three decrees in June 2009, of which one is relevant here: Decree 2009-643.¹¹⁸

A control mechanism is created for every activity in outer space which may cause France to be responsible according to Article VI of the Outer Space Treaty or liable under Article VII and the Liability Convention.

Space operations are defined as “any activity consisting of launching or attempting to launch an object into outer space or in assuring control of a space object throughout the duration of its sojourn in outer space, including on the Moon and other celestial bodies, and also including where relevant at the time of its return to Earth.”¹¹⁹ Through the notion of “control of a space object” the application of the French Law on Space Operations is much larger than the US Commercial Space Launch Act which only applies to the launch itself; the former also includes the life in orbit of satellites and other space objects.

There is an obligation to get an authorisation for any operator who intends to proceed to a launch from the French territory or using a facility under French jurisdiction (the criterion of the territory or facility of launch), any French operator projecting to “assure control of such an object throughout the duration of its sojourn in outer space” (the obligation to control national activities¹²⁰), or to launch a space object from a foreign territory or from a territory not subject to any state sovereignty (the criterion of the state which launches and procures the launch). The transfer of an authorised space object and the transfer of a space object to a French company are subject to prior authorisation.¹²¹ In order to ease the authorisation process for operators usually involved, a “license” mechanism has also been created. The “authorisation” is given for a specific activity; a “license” may be awarded to an operator which operates in outer space on an ongoing basis.

7.1. The Authorisation Process

A file containing every information required by the Decree is transmitted to the Minister in charge of outer space activities, which is currently the Minister of Research. It is then transmitted to CNES which controls the conformity of the system and procedures with the technical regulations in order to ensure public security and protection of the environment. It may ask for some complementary information. The President of CNES gives his advice within two months from the date of registration of the file. If the operator has a license, the delay is reduced to fifteen days.¹²² The Minister has four months to decide (or one if the claimant is a licensee); he may extend the delay by two months by a motivated decision.

Decree 2009-643 elaborates the requirements for authorisation. They are both administrative and technical. The administrative part deals with moral, financial, and professional qualifications of the operator; the technical one provides a description of the operation, quality control mechanism, environmental impact assessment, prevention of the risks of the operation including mitigation of space debris, prevention of collision, potential nuclear risks, and risks related to planetary protection.¹²³

A license may be obtained by habitual operators; its requirements mostly regard the qualification of the operator itself and his financial obligations. If the operator is licensed, his authorisation process will be eased or even waived for such habitual activities.¹²⁴

The controlling authority is the Minister in charge of outer space with an important technical advising role for the French space agency CNES.

An obligation of insurance or financial guarantees is set by Article 6 of the Law on Space Operations and elaborated by Articles 16 through 18 of Decree 2009-643. The financial guarantees take the form of an insurance but also of other various financial guarantees or assets. If it is impossible to obtain coverage under the current status of the insurance market, the Minister in charge of space and the Minister of Finance may exempt the operator from this obligation for a limited time.¹²⁵ The Minister in charge of space may also exempt the operator of the obligation of insurance or guarantee for a geostationary satellite as long only as it maintains its position. The obligation thus applies only for change of orbit or orbital position.¹²⁶

Chapter III of Decree 2009-643 deals with the difficult problem of launch from a foreign territory or from facilities under the jurisdiction of a foreign state. In that case, France is of course a “launching state” at least as a state procuring the launch but is not in a position to control efficiently the operations. Article 12 decides that in that case the claimant provides for every element to appreciate the guarantees required by Article 4 of the Law on Space Operations exempting him from the conformity control. The Minister may accept this exemption or not. His refusal must be motivated. This solution is not very convincing because in practice it would be impossible to control activities conducted on the territory of a foreign state. The solution is not to require less information but to regulate and streamline the application of these requirements by passing agreements between the two launching states. These agreements should deal with the sharing of the obligation to indemnify the victims according to the phase. As far as the launching phase is concerned, the state of the launch should pay and guarantee the state procuring the launch. Reciprocally, the state procuring the launch should pay for the in-orbit phase and guarantee the state of the launch in case of an accident during this phase.

Any activity involving the control of a space object is subject to authorisation. In case of a transfer of the control of a space object, an authorisation is needed. If the transferee is not subject to implementation of the French Law on Space Operations, the situation is more complex. We know the difficulty: under the Liability Convention France is going to remain a liable “launching State” without having real control over the transferred space object. On this issue Decree 2009-643 is not efficient—and moreover it is not in accordance with the current international legal framework. The liability issue is not really dealt with. The text asks for a proof of a transfer of registration of the object and its notification to the UN Secretary General. In fact, most of the time this may not be possible as, for the time being,

the transfer of registry of a space object is not possible if the state of the transferee is not one of the original launching states, because, according to Article 1 of the Registration Convention,¹²⁷ only a launching state can register a space object.

Contrary to the solution in the US Commercial Space Launch Act, the control is not conducted by an independent body; the conscious choice was made to give CNES a central role in this respect. This may lead to a conflict of interests as CNES now acts both as judge and party. As a major shareholder of Arianespace and in charge of the Kourou launch port, it may have to appreciate the security of the competing launch ports when an authorisation is required for a launch from outside France.

The authorisation or the license may be withdrawn in case of disrespect or if the operation could be a risk for France's defence or respect of its international obligations.¹²⁸

7.2. Responsibility, Liability and Financial Obligations

France being a launching state because of its territory in French Guyana, the legal situation is rather close to the US one. Thus the rationale of the mechanism follows closely the US Commercial Space Launch Act.

Like the United States, France wants to support its space activities, especially the launching industry. It wants to avoid pushing operators towards a "bet the company" behaviour. Its financial obligations are limited to a certain amount in order to obtain insurance and to clarify the financial risk of the operation. As in the US Commercial Space Launch Act, this limitation applies both if the victim chooses to use the protection of the Liability Convention¹²⁹ or to sue the operator before a domestic judge.¹³⁰ In both cases the ceiling applies and the government is going to pay if the damage exceeds it.

Article 14 of the French Law on Space Operations deals with the possibility of the state to "take recourse action against the operator who has caused the damage having pledged the international liability of France." If the operation was not authorised under the Law or in case of a deliberate fault, the ceiling of Articles 16 and 17 do not apply.

Article 15 of the Law consider "the case where an operator has been ordered to indemnify a Third Party for damage caused by a space object used within the framework of an operation authorised by implementation of this present Law and provided the operation in question was conducted from French territory or from the territory of another Member State of the European Union" except in case of a deliberate fault.

A distinction is made between two phases: the launch phase itself and the in-orbit phase. The launch phase "begins at the moment when the launch operations become irreversible and (. . .) terminates when the object destined to be placed in outer space is separated from the launcher." The "in orbit phase" called "control phase" begins at the separation from the launcher and ends either after a deorbiting manoeuvre and passivation, return to earth or disintegration in the atmosphere, or if the operator has lost control of the object.¹³¹

For the launches from French territory, in fact currently from the Kourou Space Centre, a ceiling is set at the level of 60,000,000€ (equivalent to the former FF 400,000,000). The operator must get an insurance for this amount. In case of an accident, the insurance will cover the cost up to this level; to the extent the damage would rise above that amount, the French government will pay. This amount includes both damages to the launch pad or any installation on the ground even on the French territory¹³² and damage to third parties

whether they are caused on the earth or in outer space and whether they are liable under the Liability Convention or not.¹³³ Contrary to the US Commercial Space Launch Act, there is no limit here to this payment—but this supportive clause applies only to launches from France.

During the in-orbit phase this mechanism also applies. A ceiling is set, in case of damage the operator has to pay up to that ceiling and the government will take over the cost above this ceiling. But for this phase, only damage on earth is taken into consideration, not damage in orbit. As there is extremely little risk of damage on earth for geostationary satellites, this constitutes an important limit for satellite telecommunication operators such as Eutelsat SA.

During the discussion within the parliament, the draft has been modified in order to limit the liability of the operators. This is considered in Article 13, last paragraph, of the Law on Space Operations. For the time being the real effect of this Article is not quite clear. The first part of Article 13 copies the Liability Convention, making the operator “fully liable” for damage caused on the ground or in air space but requiring that a fault is proven for damage caused elsewhere. The second paragraph is more controversial: “Except in the event of deliberate fault, the liability set out in 1 and 2 above shall cease when all obligations set by the authorisation or licence have been met, or at the latest one year after the date when these obligations should have been met. The Government replaces the operator in the event of any damage caused after this date.”

This provision seems to put the burden of the obligations related to space debris on the government, whether or not the obligations for the authorised private operator under the Law are met. The question is: what about damage in orbit involving a space object after the period of authorisation? Is the liability really transferred to the government? Is it the case even if the victim decides to sue the operator himself? The burden of the risk is then completely transferred to the state, which seems to be paradoxical because it would mean that during the applicability of the authorisation the government would only be partly liable (namely over the ceiling) whereas for the period *after* the one authorised it would be fully liable even if the obligations of the authorisation had not been fulfilled or if the launch was made outside France. This provision therefore has to be clarified. In any case this kind of provision limiting the liability applies only if the French law applies. Given the very international character of the activity, such a solution for a limitation of the liability had been avoided in the draft proposed by the *Conseil d'Etat* working group because it is not applicable in case of an action outside France's jurisdiction and may open the door to forum shopping.

Articles 19 and 20 deal with the question of liability between persons having participated in the activity and protect both from legal actions. It sets a reciprocal waiver of liability for the benefit of the operator and of the persons taking part. Here also the problem of the application of the French Law on Space Operations applies; strong contractual links are still needed in order to avoid action outside the French jurisdiction.¹³⁴

Notes

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). Art. VII, Outer Space Treaty, provides for the general principle that a state is liable for damage caused by a space object if it has launched that space object, procured its launch and/or has lent its territory or facility for the launch thereof.
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. Emphasis added.
4. Emphasis added.
5. Art. I(c), Liability Convention.
6. It should be noted that the definition of “procures” as the term is used in Art. I(c), Liability Convention, is not provided by the Convention itself; hence various authors have provided different interpretations, though there seems to be general consensus on the core of the concept of “procurement” as including states paying for the launch of their space object on top of some other state’s launch vehicle. See further e.g. discussion in A. Kerrest de Rozavel & L. J. Smith, Article VII, in *Cologne Commentary on Space Law*, Vol. I—Outer Space Treaty (2009), 137; K. H. Biickstiegel, The Terms “Appropriate State” and “Launching State” in the Space Treaties—Indicators of State Responsibility and Liability for State and Private Space Activities, in *Proceedings of the Thirty-Fourth Colloquium on the Law of Outer Space* (1992), 15; F. G. von der Dunk, Passing the Buck to Rogers: International Liability Issues in Private Spaceflight, 86 *Nebraska Law Review* (2007), 411; V. Kayser, *Launching Space Objects: Issues of Liability and Future Prospects* (2001), 34–35.
7. Cf. Artt. V, also IV, Liability Convention.
8. Art. XII, Liability Convention.
9. See e.g. already F. G. von der Dunk, *Private Enterprise and Public Interest in the European ‘Spacescape’* (1998), 63, and literature referred to; also Kayser, 50.
10. Cf. Art. X, Liability Convention. The latter scenario effectively also causes to project the possibility to claim into the future, if not indefinitely, at least as long as the space object or parts thereof remain in outer space and capable of doing damage.
11. See Art. I(d), Liability Convention; further e.g. Kerrest de Rozavel & Smith, 139–40; Kayser, 46.
12. Art. XI(2), Liability Convention.
13. Formally, only states can assert claims under the Liability Convention, so it depends on domestic law and custom to what extent a private party can induce or oblige his state to assert such a claim on his behalf, as well as—in case that state does invoke the Liability Convention—to what extent it remains involved in the further process of claims settlement under the Liability Convention.
14. See Artt. XIV–XX, Liability Convention, detailing the dispute settlement system provided by the Convention in respect of such a Claims Commission.

15. Sec. 5(2.f), Outer Space Act, 18 July 1986, 1986 Chapter 38; *National Space Legislation of the World*, Vol. I (2001), at 293; *Space Law—Basic Legal Documents*, E.I; 36 *Zeitschrift für Luft-und Weltraumrecht* (1987), at 12.
16. Art. 5(2), Law on the activities of launching, flight operations, or guidance of space objects, 17 September 2005, adopted 28 June 2005.
17. Sec. 70112(a)(3)(B), Commercial Space Transportation—Commercial Space Launch Activities, 49 U.S.C. 70101 (1994).
18. Sec. 6, Act on Space Activities, 1982: 963, 18 November 1982; *National Space Legislation of the World*, Vol. I (2001), at 398; *Space Law—Basic Legal Documents*, E.II.1; 36 *Zeitschrift für Luft-und Weltraumrecht* (1987), at 11. Emphasis added.
19. Sec. 10(1), Outer Space Act.
20. Sec. 3(3), Outer Space Act.
21. Art. 9(3), Law of the Russian Federation on Space Activities, No. 5663-1, 20 August 1993, effective 6 October 1993; *National Space Legislation of the World*, Vol. I (2001), at 101.
22. Art. 30(1) & (2), respectively, Law of the Russian Federation on Space Activities.
23. Art. 30(4), Law of the Russian Federation on Space Activities.
24. Art. 25(1), Law of the Russian Federation on Space Activities.
25. Cf. Art. 25(1), Law of the Russian Federation on Space Activities, which further provides “Compulsory insurance shall be affected against damage to the life and health of the cosmonauts and the personnel at ground and other objects of space infrastructure, as well as against property damage to third parties.”
26. Cf. Art. 6, in particular § 2, 5th bullet, Law of the Russian Federation on Space Activities, also Art. 9(3); as further elaborated by the Statute on Licensing Space Operations, 2 February 1996, and the Order of the Government of the Russian Federation On Approval of the Regulation on Licensing of Space Activity, 14 June 2002; *National Space Legislation of the World*, Vol. II (2002), at 302.
27. See Art. 15(1), Law on the activities of launching, flight operations, or guidance of space objects, 17 September 2005, adopted 28 June 2005.
28. See Art. 15(1), (3), & (4), Law on the activities of launching, flight operations or guidance of space objects.
29. Art. 5(2), Law on the activities of launching, flight operations, or guidance of space objects.
30. Sec. 12(1), Law Incorporating Rules Concerning Space Activities and the Establishment of a Registry of Space Objects, 24 January 2007; 80 *Staatsblad* (2007), at 1. Note that also this operative Article makes direct and explicit reference to Art. VII, Outer Space Treaty, and the Liability Convention.
31. See Sec. 12(2) & (3), Law Incorporating Rules Concerning Space Activities and the Establishment of a Registry of Space Objects.
32. Sec. 3(4), Law Incorporating Rules Concerning Space Activities and the Establishment of a Registry of Space Objects. That last phrase refers to the concept already used in the US Commercial Space Launch Act; see text at n. 17, *supra*.
33. See section 7, *infra*.
34. The WTO was established by the Agreement Establishing the World Trade Organization, Marrakesh, done 15 April 1994, entered into force 1 January 1995; 1867 UNTS; UKTS 1996 No. 57; ATS 1995 No. 8; 33 ILM 1125, 1144 (1994).

35. General Agreement on Tariffs and Trade; Geneva, done 30 October 1947, entered into force 1 January 1948; 55 UNTS 194; TIAS 1700; ATS 1948 No. 23.
36. General Agreement on Trade in Services; Marrakesh, done 15 April 1994, entered into force 1 January 1995; ATS 1995 No. 8.
37. See Agreement on Telecommunications Services, Geneva, done 15 February 1997, entered into force 5 February 1998; ATS 1998 No. 9; 36 ILM 354 (1997).
38. Treaty establishing the European Community as amended by the Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community (hereafter Treaty on the Functioning of the European Union), Lisbon, done 13 December 2007, entered into force 1 December 2009; OJ C 115/47 (2009).
39. The freedom of movement of goods is provided most fundamentally by Artt. 28–37, Treaty on the Functioning of the European Union; the freedom to provide services in an EU member state different from one’s own is essentially based on a Chapter providing for the free movement of workers (Artt. 45–48, Treaty on the Functioning of the European Union), a Chapter providing for the right of establishment in another EU member state (Artt. 49–55, Treaty on the Functioning of the European Union) and a Chapter dealing with the provision of services as such (Artt. 56–62, Treaty on the Functioning of the European Union). All these Chapters have been elaborated by a mass of secondary EU law, that is Regulations, Directives, and Regulations.
40. The CJEU has jurisdiction in principle over all disputes pertaining to the interpretation, application, and implementation of EU law across the European Union; cf. esp. Artt. 258, 259, 263, 265, & 267, Treaty on the Functioning of the European Union.
41. Art. 61, Treaty on the Functioning of the European Union.
42. See Artt. 59–60, Treaty on the Functioning of the European Union.
43. Treaty establishing a Constitution for Europe, Rome, done 29 October 2004, not entered into force; OJ C 310/1 (2004). See Artt. III-254, also 1–14(3); also e.g. S. Hobe *et al.*, A New Chapter for Europe in Space, 54 *Zeitschrift für Luft-und Weitraumrecht* (2005), 346–48.
44. Art. 189(3), Treaty establishing the European Community as amended by the Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, Lisbon, done 13 December 2007, entered into force 1 December 2009; OJ C 115/47 (2009). See further *infra*, the contribution of B. Schmidt-Tedd.
45. Art. 107(1), Treaty on the Functioning of the European Union.
46. See Art. 107(2), Treaty on the Functioning of the European Union, on aid which *ipso facto* “shall be compatible with the common market”: resp. Art. 107(3), Treaty on the Functioning of the European Union, on aid which “may be considered to be compatible with the common market.”
47. Cf. Artt. 108, 109, EC Treaty.
48. Art. 107(3.c), Treaty on the Functioning of the European Union.
49. Cf. also Art. 107(3.b), Treaty on the Functioning of the European Union, allowing for the possibility to exempt aid “to promote the execution of an important project of common European interest.”
50. Towards a Dynamic European Economy—Green Paper on the Development of the Common Market for Telecommunications Services and Equipment, Communication from the Commission, COM(87) 290 final, of 30 June 1987; OJ C 257/1(1987); as per Council Resolution on the development of the common market for telecommunications services and equipment up to 1992, of 30 June 1988, OJ C 257/1 (1988).

51. Towards Europe-wide systems and services—Green Paper on a common approach in the field of satellite communications in the European Community, Communication from the Commission, COM(90) 490 final, of 20 November 1990.
52. Commission Directive amending Directive 88/301/EEC and Directive 90/388/EEC in particular with regard to satellite communications (hereafter Satellite Directive), 94/46/EC, of 13 October 1994; OJ L 268/15 (1994).
53. See Commission Directive on competition in the markets in telecommunications terminal equipment 88/301/EEC, of 16 May 1988; OJ L 131/73 (1988), resp. Commission Directive on the competition in the markets of telecommunications services, 90/388/EEC, of 28 June 1990; OJ L 192/10 (1990).
54. See Decision of the European Parliament and of the Council on a coordinated authorization approach in the field of satellite personal communications systems in the Community, No. 710/97/EC, of 24 March 1997; OJ L 105/4 (1997).
55. See Directive of the European Parliament and of the Council on a common framework for general authorizations and individual licenses in the field of telecommunications services, 97/13/EC, of 10 April 1997; OJ L 117/15 (1997).
56. See Decision of the European Parliament and of the Council on the selection and authorisation of systems providing mobile satellite services (MSS); No. 626/2008/EC, of 30 June 2005; OJ L 172/15 (2005).
57. Art. I(c) sub (i), Liability Convention. It is still not unequivocally clear whether this clause applies to the state of licensing if a licensee is the actual entity “procuring” the launch in the sense of paying for it; at least state practice so far differs considerably as to the extent a private entity procuring a launch requires a license, entailing obligations to reimburse compensation paid out by the licensing state and/or to insure against such events, although most of the states having actually addressed this issue extensively on a domestic level have come to accept that they qualify as “launching States” in case of private procurement of the launches by their nationals.
58. Communications Act, 19 June 1934; 47 U.S.C. 151 (1988); 48 Stat. 1064.
59. See Communications Satellite Facilities, *First Report and Order*, 22 FCC 2d 86 (1970), Appendix C, p. 1.
60. Land Remote Sensing Commercialization Act, Public Law 98-365, 98th Congress, H.R. 5155, 17 July 1984; 98 Stat. 451; *Space Law—Basic Legal Documents*, E.III.4.
61. Land Remote Sensing Policy Act, Public Law 102-555, 102nd Congress, H.R. 6133, 28 October 1992; 15 U.S.C. 5601; 106 Stat. 4163.
62. Cf. Commercial Space Launch Amendments Act, Public Law 108-492, 108th Congress, 23 December 2004, 49 U.S.C.; 118 Stat. 3974.
63. Commercial Space Launch Act, Public Law 98-575, 98th Congress, H.R. 3942, 30 October 1984; 98 Stat. 3055; *Space Law—Basic Legal Documents*, E.III.3.
64. By means of the Commercial Space Launch Act Amendments, Public Law 100-657, 100th Congress, H.R. 4399, 15 November 1988; 49 U.S.C. App. 2615; 102 Stat. 3900; *Space Law—Basic Legal Documents*, E.III.3, 13 ff.
65. Commercial Space Transportation—Commercial Space Launch Activities, 49 U.S.C. 70101 (1994).
66. See Sec. 70112 (a)(1), Commercial Space Transportation—Commercial Space Launch Activities.
67. Thus bringing the licensing authority for private launches within the FAA was one of the changes resulting from the 1994 codification.

68. The licensee is offered one alternative to actually taking out insurance: if he can “demonstrate financial responsibility” up to the desired level (which basically means he can prove he could pay the maximum amount concerned from his own assets), his obligation to take out insurance is waived. Cf. e.g. Sec. 70112(a)(3), Commercial Space Transportation—Commercial Space Launch Activities.
69. See Sec. 70112(a)(3), Commercial Space Transportation—Commercial Space Launch Activities.
70. See Sec. 70113(a)(1)(B), Commercial Space Transportation—Commercial Space Launch Activities.
71. In practice, so far the highest cap imposed by a license was US\$261,000,000 for a Delta 4-M launch vehicle. Sometimes, caps as low as US\$10,000,000 have been inserted in licenses, such as for small air-launches to near-earth orbits by the Pegasus company.
72. Cf. Art. XII, Liability Convention, which provides: “The compensation which the launching State shall be liable to pay for damage under this Convention shall be determined in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore the person, natural or juridical, State or international organization on whose behalf the claim is presented to the condition which would have existed if the damage had not occurred.”
73. It may be noted that an individual victim can not be precluded from claiming in a private capacity merely by the fact that his own state has instigated proceedings under the Liability Convention; see Art. XI(2). Once private claims are being asserted, however, the other way around the state concerned shall not instigate proceedings under the Liability Convention—presumably at least until the private law proceedings have been concluded.
74. See J. A. Yedda, Study of the Liability Risk-Sharing Regime in the United States for Commercial Space Transportation Aerospace Report, N° ATR-2006(5266)-1, 1 August 2006, 2.
75. See Yedda, 5–6.
76. Senate Report 100-593 on H.R. 4399, Commercial Space Launch Act Amendments of 1988, October 7, 1988. Quoted by Yedda, 6; see also 11.
77. In 2005 it was extended until 31 December 2009.
78. Sec. 70101(a), Commercial Space Transportation—Commercial Space Launch Activities.
79. Sec. 440.11, 14 C.F.R.
80. The end of the launch is thus not considered in the regulations themselves but only in the introduction to the Final Rule; see Kayser, 133, quoting (1997) Federal Register, 13215, effective 21 June 1999: “The FAA notes that the end of launch may be expressed both in terms of flight activity and ground operations. For purposes of flight, the FAA will continue to define the end of a launch as the point after payload separation when the last action occurs over which a licensee has direct or indirect control over the launch vehicle. For a liquid-fueled stage, that point may be when any remaining fuel is emptied from the upper stage, the vehicle propellant and gas tanks are vented, and other stored energy is released. For solid rocket motors, that point may arrive when the upper stage fuel is expended or the stage is inert, and the payload is released. For purposes of ground operations, launch no longer ends with the cessation of supporting ground operations but when the vehicle leaves the surface.”
81. 14 C.F.R. Sec. 440.11, “Duration of coverage for licensed launch, including suborbital launch, or permitted activities; modifications.” For reentry, see Sec. 440.12, “Duration of coverage for licensed reentry.”
82. 14 C.F.R. Sec. 440.11(a)(3)(ii).
83. See *supra*, text at nn. 58–61.

84. See Secc. 11, 13, An act about space activities, and for related purposes, No. 123 of 1998, assented to 21 December 1998; as amended by amending legislation up to No. 100 of 2002.
85. See Sec. 12, An act about space activities, and for related purposes.
86. See Sec. 14, An act about space activities, and for related purposes.
87. See Sec. 15, An act about space activities, and for related purposes.
88. Cf. Secc. 18(a), (b) & (d), 26(3)(c) & (e), 29(a), 43(3)(a) & (c) & 44(a), An act about space activities, and for related purposes.
89. See Sec. 6, An act about space activities, and for related purposes, ref. definitions of “Liability Convention” and “liability period.”
90. Sec. 63(1) sub (ii), (2A) sub (ii), An act about space activities, and for related purposes. Also Sec. 64(2) clearly establishes the link between the part on liability and the specific scenario of third-party liability for Australia under the Liability Convention.
91. Interestingly, as the overseas launch certificate by definition applies to launches conducted outside Australia, the mere fact that they are conducted by Australian nationals apparently is interpreted by the Australian authorities as giving rise to potential Australian liability under the Liability Convention, either because a launch by Australian nationals is equated to a launch by the Australian state for the purpose of the Convention (cf. Art. I(c), Liability Convention, sub (i): “A State which launches (. . .) a space object”) or because it is equated to a launch procured by the Australian state (cf. Art. I(c), Liability Convention, sub (i): “A State which (. . .) procures the launching of a space object”).
92. Sec. 74(2) sub (a), An act about space activities, and for related purposes.
93. See Sec. 69(1), resp. (2), An act about space activities, and for related purposes.
94. Sec. 69(3), An act about space activities, and for related purposes, further §§ 1 & 2.
95. Sec. 47(2) sub (b), An act about space activities, and for related purposes.
96. See Sec. 48(3), An act about space activities, and for related purposes; actually the cap can be less than that amount if “(a) the amount of the maximum probable loss that may be incurred in respect of damage to third parties caused by the launch or return, as determined using the method set out in the regulations; or (b) if the regulations set out a different method of determining a minimum amount for the purposes of this subsection—the amount determined using that method.” It may be pointed out, that the US Commercial Space Launch Act, as discussed, has roughly the same method of arriving at a limit of insurance or financial responsibility, quoting a figure of US\$500,000,000 as the “maximum cap.” As of 2 February 2009, this equals roughly A\$782,000,000: Australia clearly wants to be on a par with the United States here!
97. Cf. in conjunction Sec. 43(3.b), 48(1), 69 & 74, An act about space activities, and for related purposes.
98. See Secc. 18–20, An act about space activities, and for related purposes.
99. See *Statuts de la Societe Arianespace*, 26 March 1980.
100. Cf. Artt. V(1.b), XIII(2), Convention for the Establishment of a European Space Agency, Paris, done 30 May 1975, entered into force 30 October 1980; 14 ILM 864 (1975); *Space Law—Basic Legal Documents*, C.I.1; “optional activities” are those programmes where member states have the option to opt out of, alternatively have the possibility to determine their own level of contribution—as opposed to “mandatory activities” where all member states have to contribute at predetermined levels; cf. Artt. V(1.a), XIII(1).
101. Declaration by Certain European Governments Relating to the Ariane Launcher Production Phase (hereafter Arianespace Declaration), done 14 January 1980, entered into force 15 October 1981; 6 *Annals of Air and Space Law* (1981), at 723.

102. For example, by giving it preferential treatment in respect of launches of their space objects. See Art. 1(3.b) and (3.c), Arianespace Declaration; cf. further Art. 1(7), (8), and (9). In addition, Arianespace is supported by ESA in many other ways. See e.g. Art. 2, Arianespace Declaration.
103. Convention between the European Space Agency and Arianespace (Arianespace Convention), signed 24 September 1992.
104. Agreement between the French government and the European Space Agency with respect to the Centre Spatial Guyanais (CSG) (hereafter CSG Agreement). Also this Agreement was regularly renewed.
105. See e.g. Artt. 3(9), 4(1), Arianespace Declaration.
106. Cf. Art. XXII, Liability Convention, and ESA's Declaration of the acceptance of rights and obligations under the Liability Convention; Declaration of 23 September 1976; *Space Law—Basic Legal Documents*, A.III.2, p. 1.
107. See Art. 11(3), CSG Agreement. ESA member states could in the end also qualify individually as launching states; cf. Artt. V, XXII *in toto*, Liability Convention.
108. See Art. 3(9), Arianespace Declaration, in conjunction with Art. 4(1), restating the undertaking by the French government to answer international third-party liability claims flowing from Arianespace's activities.
109. See Art. 13(1), CSG Agreement.
110. Art. 13(2), CSG Agreement; see also Art. 11(1).
111. In principle this Declaration as modified in 2001 is not published, see however http://www.admin.ch/chlflrs/0_425_123/index.html. The text of the decision to extend the 1980/2001 Declaration until 2008 is available in English at <http://www.official-documents.gov.uk/document/cm70/7033/7033.pdf>.
112. See also p. 142, *supra*.
113. The old intergovernmental organisation INTELSAT was established by the Agreement Relating to the International Telecommunications Satellite Organization (INTELSAT), Washington, done 20 August 1971, entered into force 12 February 1973; 1220 UNTS 21; TIAS 7532; 23 UST 3813; UKTS 1973 No. 80; Cmnd. 4799; ATS 1973 No. 6; 10 ILM 909 (1971); and the Operating Agreement Relating to the International Telecommunications Satellite Organization (INTELSAT), Washington, done 20 August 1971, entered into force 12 February 1973; 1220 UNTS 149; TIAS 7532; 23 UST 4091; UKTS 1973 No. 80; Cmnd. 4799; ATS 1973 No. 6; 10 ILM 946 (1971). INTELSAT was then privatised by means of the Agreement Relating to the International Telecommunications Organization (ITSO), Washington, done 20 August 1971, entered into force 12 February 1973, as amended 17 November 2000, amended version not yet entered into force but applied provisionally 18 July 2001; *Space Law—Basic Legal Documents*, C.V.1.
114. The old intergovernmental organisation INMARSAT was established by the Convention on the International Maritime Satellite Organization (INMARSAT), London, done 3 September 1976, entered into force 16 July 1979; 1143 UNTS 105; TIAS 9605; 31 UST 1; UKTS 1979 No. 94; Cmnd. 6822; ATS 1979 No. 10; 15 ILM 1052 (1976); and the Operating Agreement on the International Maritime Satellite Organization (INMARSAT), London, done 3 September 1976, entered into force 16 July 1979; 1143 UNTS 213; TIAS 9605; 31 UST 1; UKTS 1979 No. 94; Cmnd. 6822; ATS 1979 No. 10; 15 ILM 233, 1075 (1976). INMARSAT was then privatised by means of the Convention on the International Mobile Satellite Organization, London, done 3 September 1976, entered into force 16 July 1979, as amended 1998, amended version entered into force 31 July 2001.
115. The old intergovernmental organisation EUTELSAT was established by the Convention Establishing the European Telecommunications Satellite Organization (EUTELSAT), Paris, done 15

- July 1982, entered into force 1 September 1985; Cmnd. 9069; *Space Law—Basic Legal Documents*, C.II.1; and the Operating Agreement Relating to the European Telecommunications Satellite Organization (EUTELSAT), Paris, done 15 July 1982, entered into force 1 September 1985; Cmnd. 9154; *Space Law—Basic Legal Documents*, C.II.2. EUTELSAT was then privatised by means of the Convention Establishing the European Telecommunications Satellite Organization (EUTELSAT), done 15 July 1982, entered into force 1 September 1985, as amended 20 May 1999, amended version not yet entered into force but applied provisionally 2 July 2001; *Space Law—Basic Legal Documents*, C.II.1.
116. *Pour une politique juridique des activités spatiales*, Conseil d’Etat, Etudes du Conseil d’Etat la documentation française, Paris, 2006.
117. Law on Space Operations (*Loi relative aux opérations spatiales*) (hereafter French Law on Space Operations); Loi n° 2008-518 du 3 juin 2008; 34 *Journal of Space Law* (2008), at 453; unofficial translation 34 *Journal of Space Law* (2008), at 453.
118. Decret No. 2009-643 relatif aux autorisations délivrées en application de la loi no. 2008-518 du 3 juin 2008 relative aux opérations spatiales (hereafter Decree 2009-643); *Journal Officiel de la République Française* 10 June 2004, text 30 of 154.
119. Art. 1(3), French Law on Space Operations.
120. See Art. VI, Outer Space Treaty.
121. See Art. 3, French Law on Space Operations.
122. See Artt. 2, 3, Decree 2009-643.
123. See Art. 1, Decree 2009-643.
124. See Art. 4, French Law on Space Operations.
125. See Art. 17, Decree 2009-643.
126. See Art. 18, Decree 2009-643.
127. 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).
128. See Art. 15, Decree 2009-643.
129. See Art. 14, French Law on Space Operations.
130. See Art. 15, French Law on Space Operations.
131. Art. 1(5), French Law on Space Operations.
132. Art. 15 *in fine*, French Law on Space Operations.
133. For instance if the victim is a French citizen.
134. Cf. the symmetrical obligation of cross waivers of liability under the US Commercial Space Launch Act, Sec. 70112(b).