LEGAL QUALIFICATION OF SIGNAL IN SPACE AND RELEVANT LIABILITY REGIMES

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ABSTRACT*

In the space domain it is currently of main importance to co-ordinate technical matters with legal topics.

On one hand the signal in space is the technical basis of any technical activity in outer space. But it does not benefit from any legal definition or qualification.

On the other hand various legal texts dealing with liability and responsibility can rule signal in space provision as long as the legal qualification or definition can be reached.

None of the currently existing legal frameworks in space law – i.e. the Outer Space Treaty, the 1972 Liability Convention, the 1975 Registration Convention, deals with the definition of the signal in space. Moreover no consensus is reached on the two main notions in space law – i.e. the space object and a space activity.

For space object, the definition gap deals with the material and technical understanding of a space object, either satellite, rocket, shuttles, etc. For space activities, the definition gap focuses on the localisation and the vocation of the activities.

Is the signal in space to be defined by one of those notions? Or is it possible to highlight new criteria to qualify the signal in space, mainly focusing on the twofold dichotomy between space object/product liability and space activity/service liability?

Application of those criteria shall be profitable to and fit the main current space domains – i.e. space telecommunications, satellite navigation and direct satellite television.

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INTRODUCTION

The Outer Space Treaty[1] is the main document related to space activities. It regulates general issues in space law. Under the 1967 Outer Space Treaty, the contracting States have, irrespective of their obligations under general international law, assumed special obligations regarding their responsibility for carrying or authorising space activities. Moreover States have assumed derogatory obligations regarding their liability for the launch of space objects and for damages cause by space objects. But it is worth noting that the Outer Space Treaty if an extensive document and in parts, unclear.

The Liability Convention[2] was developed in line with the principles outlined in the Outer Space Treaty. However, unlike the Outer Space Treaty, which has been incorporated into customary international law, the Liability Convention is binding only upon Signatory States, unless its provision are contractually incorporated into an agreement.

The Liability Convention, being a sort of application document of the general principles embodied in the Outer Space Treaty provides necessary definitions for main components of space legal regime.

But the Outer Space Treaty nor the Liability Convention focuses on the signal in space as a specific component of both space objects and space activities. "Signal in space" is an absent word of mayor texts dealing with outer space and space activities.

The Convention on Registration[3] defines the formal link between a space object and the responsible State. But nowhere in the Convention on Registration, the formal link concerns a signal in space.

Anyhow, international space law has developed two main concepts to define elements that can possibly be submitted to outer space legal framework and regulation. The logic of this article is to confront both concepts – i.e. space object and space activities, with signal in space as an element of space law and a possible origin of damage. It could be the case for erroneous signal in space for instance.

This paper will also focus on satellite navigation signal in space as being the first space activities widely highlighting the necessity to review basic and fundamental space law concepts and principles.

SIS AS SPACE OBJECT AND PRODUCT LIABILITY

Scope

According to the Liability Convention, "the term space object includes component parts of a space object as well as its launch vehicle and parts thereof"[4].

The main questions are to define if the aforementioned texts are to apply to signal in space. And if need be, due attention should be granted to liability regime for defective product.

What are the products in the signal in space, in the sense of the positive law related to defective product? Which entity is to be liable because of defective products? What is the legal regime for defective product that apply to signal in space if need be?

It is doubtful the signal in space can be considered as a space object, in its limited assumption – i.e. the satellite or material pieces of the satellite. But the Liability Convention also mentions "component parts of a space object"[5] which does not exclude in theory the signal in space.

In fact and in practice several elements definitively exclude the signal in space from the scope of Article I(d) definition[6].

The Outer Space Treaty as well as the Liability Convention only refer to direct damages caused by the space object – e.g. collision between a launch vehicle and an aircraft, fall of a satellite, etc. The signal in space is not likely to cause direct damages. Damages can only occur due to the use of the signal in space.

Moreover if the signal in space was assimilated to a space abject, liability disclaimers or liability waivers related to damage due to signal in space would not be possible, at least for third parties. Liability disclaimers and waivers could only be possible between State signatories to the Convention, according the *lex specialis* principle.

"The maxim pact *dant legem contractui* is a clear expression of this principle. It holds that two parties to a multilateral treaty can, in an exclusive bilateral agreement dealing with the same or almost the same issue, derogate from some legal norms stipulated in prior multilateral agreement"[7]. The main limit of this right is consequences on third parties.

Regarding the signal in space and *a contrario*, the fact the States can waive or disclaim liability related to damage due to erroneous signal in space means that signal in space is not covered by general binding dispositions in international law.

Defective Product Definition and GALILEO

In Europe the main text ruling defective product liability is the European Directive 85/374/EEC[8] on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products.

The Directive aims at approximating the laws of the Member States concerning the liability of the producer for damage caused by the defectiveness of his products. The reason for such a legal framework is that the existing divergences may distort competition and affect the movement of goods within the common market and entail a differing degree of protection of the consumer against damages caused by a defective product to his health of property (1st Whereas of the Council Directive)[9].

According to Article 2 as amended in the Council and the European Parliament Directive 1999/34/EC[10], "'product' means all movables even if incorporated into another movable or into an immovable. 'Product' includes electricity".

And according to the 3rd Whereas of Directive 85/374/EEC[11], the legal regime set up in the directive only applies to movable that have been industrially produced and/or used in the construction of immovables or are installed in immovables.

A defective product – i.e. GALILEO signal in space if considered as such when erroneous, should be a product not providing the safety that a person is entitled to expect. The fact that a product is not fit for the use expected is not enough. Moreover only if the product lacks safety does the Directive apply. The fact that a product is made afterwards does not render defective the older models.

The liable

Producers as defined in Directive 85/374/EEC[12] shall therefore be liable for damage caused by a defect in his product[13]. Therefore regarding satellite navigation the 'producer' will be any manufacturer of a finished product in the GALILEO system, the producer of any raw material or the manufacturer of a component part or any person who, by putting his name, trade mark or other distinguishing feature on the product presents itself as its producer.

But if the producer of the defective product in the GALILEO system cannot be identified, each supplier of the product – e.g. the receiver supplier, becomes liable, unless he informs the injured person within a reasonable time of the identity of the producer or of the person who supplied him with the product. When several persons are liable for the same damage, they are all liable jointly and severally.

The damage

The producer must compensate for damage caused by the defective product to individuals (death, personal injury) and private property (goods for private use). However the Directive does not cover any damage to property under 500 Euro for a single incident. The directive does not cover the destruction of the defective product itself and therefore there is no obligation to compensate for it under the Directive of defective product, without prejudice to national law.

The causal link

Anyhow it is to be noted that the producer is not automatically liable for damages caused by the product. The injured person, whether or not he is the buyer or the user of the product must claim his rights to obtain compensation. The victim will be paid only if he proves that he has suffered a damage, the product was defective and this product causes the damage.

The main question is the following: can a user claim for the GALILEO service provider liability if the damage is due to erroneous data due to defective component of the system? This aims to qualify the causal link between the defective product and the damage. As long as the causal link can be indirect, there is no reason why not to consider the defect component of the system as the cause of the damage. If the causal link shall be direct, the defective component of the system will only be the cause of the damage in the sense of the Directive if the victim suffered direct damage.

To my sense it would be rather illogical to consider the signal in space as the causal link between a defect in the satellite for instance and the suffered damage. On one hand a regime for defective services is in preparation. Both regimes are sought to be exclusive one another. It would not be the case in the aforementioned scenario.

On the other hand, a main criteria for the establishment of the defective product liability product is the situation of the general public in front of certain main damages because of the presence of those products on the market. This is rather clear in when studying the possible liability waivers. The producer will not have to pay, if he proves:

- He did not place the product on the market – e.g. the product was stolen;
- The product was not defective when he places it on the market;
- The product was not manufactured to be sold;
- The defect was caused due to compliance with mandatory regulations issued by the public authorities;
- The state of scientific and technical knowledge at the time when the product was put on the market could not as such enable the existence of the defect to be discovered;
- Where he is a subcontractor, that the defect was due either to the design of the finished product or to defective instructions given to him by the producer of the finished product.

One main criteria is therefor to place the product on the market and to offer it to the general public. It shall definitely not be the case for navigation satellite signal in space in the aforementioned scenario.

Liability regime

However in case of damage due to defective product as defined above, the Directive on defective product establishes a strict liability regime on manufacturers and importers in the Community. The victim does not need to prove that the producer was negligent, because the Directive on product liability is based on the principle of liability without fault of the producer. The producer will not therefore be exonerated even if he proves he was not negligent, if an act or omission of a third person contributes to the damage caused, if he has applied standards, or of his product has been tested.

But if the injured person contributes to the damage, the producer's liability may be reduced or even disallowed.

Lastly no contractual derogation should be permitted as regards the liability of the producer in relation to the injured person. According to article 12[14], the liability of the producer arising from the Directive may not, in relation to the injured person, be limited or excluded by a provision limiting his liability or exempting him from liability. Moreover according to article 5[15], when two or more persons are liable for the same damage, they shall be liable jointly and severally.

The main consequences regarding GALILEO signal in space are:

- firstly the injured person is likely to claim for liability to any of the involved manufacturer or importer, for the total amount of his damage. This possibility is obviously subject to article 4 that states that the injured person shall prove the damage, the defect and the causal relationship between defect and damage[16].
- But as long as a joint and several liability regime is established, contractual limitation of liability for defective product between producer is legal, when they are not victim as any private consumer (French Civil Code art. 1386-15). Contractual liability limitation or exoneration for GALILEO defective products can be established between the various GALILEO system and receiver producers.

SIS AS SPACE ACTIVITY AND SPACE RESPONSIBILITY

Scope

Definition of space activities is included in Article VI of the Outer Space Treaty[17]: "activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or non-governmental entities".

Operational imperatives regarding signal in space related to satellite navigation can be clearly defined: universal accessibility, non discrimination, continuity, quality and integrity of the provided data. Therefore the question is: what would happen and who would be responsible/liable in case of negligence, mistake, damageable lack of accuracy or restrain access to the system?

The space activity concept moves the issue of liability for signal in space, from the signal in space itself to the provision of a signal in space. And therefore, the debate now focuses on "service" as opposed to "product".

SIS Provision and Space Activities

As aforementioned, Article VI[18] provides that the contracting States shall bear international responsibility for all national activities in outer space, whether those activities are carried on by public or private entities. But one can notice that nothing is mentioned about damages caused by wrong satellite data.

Moreover is signal in space provision a national space activity? "The phrase "national activities" must refer to activities that have some special connection with the nation, alias the State, whether they are carried on, as the article itself clearly says, by the State itself through governmental agencies or by non-governmental entities for their own account, in order to qualify as "national" activities"[19].

Therefore the debate focuses on defining signal in space provision as space activities. For space activities, the definition gap focuses on the localisation and the vocation of the activities. One can consider that signal in space provision are not space activities, arguing the criteria of Earth dedicated applications – unlike space observation for instance.

It is to our sense erroneous to read Article VI in such a restrictive view. "National activities in Outer Space, including the Moon and other celestial bodies" should not focus exclusively on activities located in outer space, including the Moon and other celestial bodies. Basically this interpretation separates each space system space segment from its necessary ground segment.

But both segments raise the same definition problems such as trans-border signals, control, nationality. Moreover those segments are technically interdependent and intimately related.

Claimants would necessarily suffer damage from both segments – e.g. erroneous ephemeris data transfer to the space segment and satellite transferring positioning signal including erroneous ephemeris. Because of artificially separating space from ground segment, user would have to claim for damage twice, under two different jurisdictional orders, provided that the claimant can even dissociate damages due to space segment from damages due to ground segment.

This interpretation also means that certain ground activities are submitted to space law – e.g. launching activities, and that other ground activities are not – e.g. ground control activities. Moreover it means that launch activities are submitted to peculiar obligations of the Liability Convention but not the general obligations of the Outer Space Treaty.

Because of the peculiarity of using satellite and space segment, signal in space provision is a space activity in the sense of the Outer Space Treaty and the Liability Convention.

SIS and Space Responsibility

States bear international responsibility for national space activities such as providing satellite navigation signal in space.

"Responsibility means essentially answerability, for one's acts and omissions, for their being in conformity with whichever system of norms, whether moral, legal, religious, political or any other; which may be applicable, as well as answerability for their consequences, whether beneficial or injurious"[20]. Breaches of one's civil legal duties constitute civil wrongs or torts and involve and obligation to make integral reparation – *restituto in integrum* – for any damage cause.

But responsibility and breaches of obligation do not necessarily involve the payment of compensation, especially when no damage has been caused.

Under Article VI of the Outer Space Treaty[21], States bear responsibility for national activities being carried out in conformity with international law and with the provisions set forth in the Outer Space Treaty.

In fact as long as control is effective and signal in space is provided in conformity with international regulation, this issue may not be raised. Breaches of international law shall be proven to evoke State responsibility.

Therefore the notion of responsibility does not cover damages due to erroneous data, as long as signal in space provision complies international and space law.

"The term liability is used specifically to denote the obligation to bear the consequences of a breach of a legal duty, in particular the obligation to make reparation for any damage caused, especially in the form of monetary payment"[22]. But in positive space law, liability is only foreseen for damages due to space objects and launching activities. As demonstrated signal in space provision does not comply these definitions.

SATELLITE NAVIGATION: SERVICE OR PRODUCT

It is not always an easy task to legally qualify 'goods'. Regarding satellite navigation, the question concerns the legal qualification of the signal in space – i.e. whether it is legally addressed as a product or a service. Shall it be considered as a product submitted to the legal regime for defective products, or is it out of the application field of this legal regime because of being a service? If satellite navigation signal in space are defined as "products", a failure or a disruption on the SIS could be considered as a "defect in the product", in the sense of article 1 of Directive 85/374/EEC[23].

One criteria is to consider 'goods' as products when damage are directly and physically due to the 'good' – e.g. explosion, fire due to electricity. On the other hand when damage is only possible because of the use, the 'good' shall be consider as a service.

Regarding satellite navigation, the signal in space will not cause damage directly and physically even if erroneous for instance. No harm can be directly caused because of erroneous data.

Moreover telecommunication 'goods' are services and not products. Transport of information (voice or data) over a telecommunication network are services. Therefore the legal regime for defective products shall not apply to GALILEO signal in space failure or disruption because service as such are excluded from the scope of the defective product legal regime.

On the contrary the legal regime for defective product will apply to any product of the satellite navigation system – i.e. any movable of the system even if incorporated in another movable or into an immovable, any raw materials and components of the final products.

Due consideration shall therefore be granted to current working groups on the establishment of a liability regime for defective service. European regulation on defective services felt through in 1995. But the project of regulated defective services currently revives in Europe work plan.

Because of the main consequences on signal in space and space service provision, assiduous follow-up of this regulation is a

clear imperative for space law expert community.

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[7] HENAKU B. D. Kofi, *The International Liability of the GNSS Space Segment Provider*, in Annals of Air and Space Law, 1996, P. 156

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[10] Directive 1999/34/EC of the European Parliament and of the Council of 10 May 1999 amending the Council Directive 85/374/EEC on the approximation of laws, regulations and administrative provisions of the Member States concerning liability for defective products (OJ L 141, 04/06/1999 p.0020 – 0021

[11] See note 8

[12] See note 8, Article 3

[13] See note 8, Article 1

[14] See note 8

[15] See note 8

[16] See note 8

[17] See note 1, Article VI

[18] See note 1, Article VI

[19] CHENG Bin, *Article VI of the 1967 Space Treaty revisited: "international responsibility", " National activities" and the " appropriate State, in* Journal of Space Law, vol. 26, n°1, 1998

[20] CHENG Bin, see note 20

[21] See note 1, Article VI

[22] CHENG Bin, see note 20

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