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Point No. 20 de l'ordre du jour : Responsabilité pour les services fournis par les satellites

(Note préparée par le Secrétariat)

Sommaire	*Description de la proposition d'un projet sur la responsabilité pour les services fournis par les satellites*
Action demandée	*Le Conseil devrait décider les étapes futures*
Documents connexes	*Aucun*

1. A sa 85ème session, le Conseil de direction a pris note d'une proposition présentée par le Président pour un possible nouveau projet à inclure dans le Programme de travail de l'Institut, concernant un projet pour le développement d'un régime de responsabilité pour les dommages qui pourraient dériver de l'utilisation des Systèmes globaux de navigation par satellite (« GNSS ») tels que l'européen « Galileo », le GPS des Etats Unis d'Amérique et d'autres.

2. Des membres du Conseil de direction ont indiqué que le projet était intéressant mais que le Conseil avait besoin de plus d'informations.

3. A cet effet le Professeur Carbone, avec l'assistance d'un groupe d'experts, a préparé une étude de faisabilité sur "The civil liability and compensation for damage resulting from the performing of European GNSS Services" centré essentiellement sur le problèmes pouvant naître de l'utilisation du système européen Galileo qui est actuellement en cours d'être mis en place par un consortium. Cette étude (voir annexe I) donne un aperçu exhaustif des aspects techniques et des aspects juridiques du sujet. Il signale la nécessité d'un régime spécial pour la responsabilité civile et la compensation pour dommages-intérêts pouvant surgir quand ce système sera opérationnel,[1] et souligne la nécessité d'un instrument international en considération de l'impacte global du système.

[1] Cela a été le cas avec d'autres activités potentiellement dangereuses pour lesquelles des régimes spéciaux de responsabilité ont été mis en place.

4. La technologie de ces systèmes est extrêmement compliquée et coûteuse, et par conséquent ils ne peuvent être mis en place que par un nombre limité d'Etats. Cependant, les services qu'ils offrent sont déjà, et probablement deviendront de plus en plus, essentiels pour la croissance économique et sociale de tous les pays, tant avancés qu'en voie de développement. Leurs services couvrent en effet plusieurs secteurs, tels que les télécommunications, les transports (avions, navires, camions etc.), l'agriculture, la pêche, le maintien de l'ordre (par ex. surveillance d'individus suspects, mesures pour combattre le crime), opérations de douane, et assurances (par ex. repérage de véhicules volés). Les signaux GNSS peuvent couvrir toute la planète, inclues les régions défavorisées du point de vue géographique ou isolées ; leurs applications peuvent bénéficier la société au sens large, en fournissant assistance aux autorités publiques, au monde des affaires et aux individus dans leur vie de tous les jours. On peut donc s'attendre à ce que leur utilisation s'agrandisse et gagne diffusion.

5. Certains systèmes GNSS existent déjà, comme GPS ou GLONASS, d'autres sont en train d'être mis en place, comme l'européen Galileo. Si on devait décider l'inclure ce projet dans le Programme de travail de l'Institut, le Secrétariat estime que la matière pourrait être étudiée dans le but d'établir un régime juridique applicable à tous les différents systèmes. Les facteurs suivants peuvent suggérer qu'un régime uniforme de responsabilité pourrait être opportun : (a) la dimension essentiellement globale de tous ces systèmes ; (b) les implications juridiques de l'interconnexion potentielle des différents GNSS ; (c) la nécessité de créer un instrument cohérent avec d'autres instruments déjà existants qui pourraient interférer avec le système de responsabilité des services GNSS (par ex., avec référence spécifique au transport aérien, la Convention de Chicago de 1944).

6. La participation à ce projet d'autres Organisations internationales concernées devrait être envisagée.

7. Le Conseil est invité à considérer quels pas pourraient être entrepris, et en particulier à considérer la création d'un groupe d'étude pour examiner le projet proposé.

ANNEXE

THE CIVIL LIABILITY AND COMPENSATION FOR DAMAGE RESULTING FROM THE PERFORMING OF EUROPEAN GNSS SERVICES

FEASIBILITY STUDY

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FEASIBILITY STUDY ON CIVIL LIABILITY AND COMPENSATION FOR DAMAGE RESULTING FROM THE PERFORMING OF EUROPEAN GNSS SERVICES

I THE GALILEO SYSTEM

1. Characteristics of the system

The Galileo System is a European infrastructure project aimed at providing a satellite radio-navigation system co-financed by the European Union and European Space Agency (ESA). It will be made up of a constellation of thirty satellites positioned on a medium earth orbit and with adequate cover to guarantee services on a worldwide scale.

The system is intended to make direct and indirect contributions to various fields, such as, for instance, transport (overland, air, maritime and rail), insurance, motorway tolls, law enforcement (surveillance of suspects, measures to combat crime), customs operations (investigations on the ground, etc.), agriculture (fertiliser or pesticide dose adjustments depending on the terrain), territorial monitoring and fishing (monitoring of boat movements).

2. The services provided by the system

Galileo Services are[2]:

i) The **Open Service** (OS) that results from a combination of open signals, free of user charge, provides position and timing performances competitive with other GNSS systems.

ii) The **Safety of Life Service** (SoL) that improves the open service performances providing timely warnings to the user when it fails to meet certain margins of accuracy (integrity). It is envisaged that a service guarantee will be provided for this service.

iii) The **Commercial Service** (CS) that provides access to two additional signals, to allow for a higher data rate throughout and to enable users to improve accuracy. It is envisaged that a service guarantee will be provided for this service. This service also provides a limited broadcasting capacity for messages from service centres to users.

iv) The **Public Regulated Service** (PRS) that provides, for governmental uses, position and timing to specific users requiring a high continuity of service, with controlled access. Two PRS navigation signals with encrypted ranging codes and data will be available.

v) **The Search and Rescue Service** (SAR) that broadcasts globally the alert messages received from distress emitting beacons. It will contribute to enhance the performances of the international COSPAS-SARSAT Search and Rescue system.

3. The International arrangements for using Galileo services

To date, the European Union has signed cooperation agreements for the use of the Galileo system with the following countries: China, Israel, India, Ukraine, Korea and Morocco. Further agreements are currently being negotiated with Latin American and Asian countries.

The European Union has signed an agreement with the United States for the compatibility and interoperability of the Galileo system and the GPS system. The prospects for Galileo system use involve an ever-greater number of countries from all parts of the world.

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[2] Communication from the Commission to the European Parliament and the Council - State of progress of the Galileo programme /* COM/2002/0518 final */ Official Journal 248, 15/10/2002 P. 0002 – 0022.

4. Risks connected to the system

There are evident risks connected to the function of the Galileo system. A signal malfunction could not merely cause hefty economic losses (when used, for example, for the collection of motorway tolls), but also damage conventionally defined as "catastrophic".

One example could be the case in which incorrect signal function were to cause a plane crash or shipping accident causing substantial losses to people, property and the environment. Or again, a malfunction during the monitoring of the territory or civil engineering work could cause widespread inconvenience.

II LEGAL PROBLEMS ARISING FROM THE LACK OF AN INTERNATIONAL CIVIL LIABILITY REGIME

1. Identification of the applicable jurisdiction

It is evident that the incidents that could arise from system malfunction are likely to involve the interests of a number of jurisdictions. Incidents may involve subjects of different nationalities and the damage to property and the environment may affect several States. In such circumstances, in the absence of an international uniform discipline, many difficulties to solve legal problems could arise.

The first of these is the identification of the applicable jurisdiction. In this regard, in many legal systems, the place in which the incident occurred constitutes the criterion for establishing applicable jurisdiction. However, this criterion is not completely unambiguous, as it can be intended as both the place in which the loss occurs, and the place in which the action that produced the same loss occurred. In the interest of providing victims with better protection, other systems identify applicable jurisdiction according to their home address or domicile. In this kind of situation, it is evident that risks and uncertainties might derive from the absence of a single criterion for identifying the applicable jurisdiction.

These risks and uncertainties increase in the case of incidents that take place outside the areas of national jurisdiction, where normal connection criteria cannot be applied.

Moreover, the involvement of a large number of jurisdictions implies the risk of a diversity of solutions and high costs connected with judicial protection.

2. Identification of the responsible party

On the one hand, Galileo is an extremely complex, technologically advanced system and on the other, it involves a number of public (European Union and Member States) and private (industries in various sectors) parties. The creation and operation of the system envisages that public parties are called on to finance and manage the same (this phase involves the European Union and the European Space Agency), and it also envisages that private subjects are charged with the building the infrastructures (contracted to a group of industries) and to supervise the functioning thereof (contracted to a *consortium* of enterprises).

Galileo services may also be offered to end-users by numerous other private and public parties.

In the absence of a clear uniform discipline attributing liability, these characteristics make the identification of the party responsible for loss somewhat complex and difficult.

Furthermore, in this context, the various damage proceedings pursued by the damaged parties run two different types of risk. Firstly, that of brought against financially inadequate parties, with a consequent frustration of loss reimbursement expectations. Secondly, that of acting against parties, such as, for example, the GSA Galileo Supervisory Authority, whose main duties are to coordinate the activities of the various bodies involved and to supervise their work in the general

interest and whose assets are intended to guarantee the very existence of the system with public interest purposes.

3. State Immunity

The international principle of state immunity constitutes another factor calling for a specific uniform discipline on the liability for damage in connection with the use of the Galileo system. The application of such principle could strongly affect the rights of injured parties when States are involved in service provision.

The immunity uniform discipline was recently codified by the International Law Commission in a Convention adopted by the UN's General Assembly on 2 December 2004. Under this convention, which tends to reflect the *communis opinio* of States, only actions that can be defined as commercial transactions can be excluded from judicial immunity. As regards Galileo services, the State immunity uniform discipline implies that the damage deriving from commercial services may be subject to claims for compensation, whereas the damage deriving from sovereign acts would benefit from procedural immunity.

The lack of a clear uniform discipline that legally qualifies the characters of Galileo system services and that confirms the state's role in the performing of the same would worsen the problems illustrated.

4. Definition of the notion of damage compensation

An international regulation framework would offer the undisputed advantage of identifying those cases in which damage is eligible for compensation and restricting the entity of disputes that could arise from the various national provisions eligible for application.

The concept of reimbursable loss is one of the doctrine's most controversial aspects and has given rise to a variety of national and international practices.

One widely applied principle is that of causal nexus, which consists in considering as reimbursable damage consequent to an event or behaviour likely to cause injury to third parties. In the case in question, a signal malfunction (interruption or deterioration or performance below the necessary prerogatives) may cause hefty loss to third parties.

It is equally difficult to identify the extent to which victim's claims can be accepted. The absence of a uniform regulation framework may cause disparity in treatment between those who, under certain systems, benefit from indemnity for indirect damage, and others, whose legal system only recognises indemnity for damage that is a direct and immediate consequence of an incident.

5. Shortfalls of the current international regulation framework and coordination with the relevant Conventions

Although there are no specific international regulations governing satellite radionavigation services, international conventions governing compensation for damage deriving from catastrophic incidents such as those that could be caused by performing Galileo services do exist. In this regard, it is worth mentioning the Brussels Convention of 29 November 1969 (CLC Convention) on civil liability for damage from oil pollution, with the correlated Brussels Convention of 18 December 1971, relating to the establishment of an international Fund (the Fund Convention), the International Convention on liability and compensation for damage in connection with the carriage of hazardous and noxious substances by sea London, 3 May 1996 (HNS Convention), and the Convention on Civil Liability for Nuclear Damage, Vienna, 21 May 1963 and Convention on Supplementary Compensation for Nuclear Damage, 12 September 1997.

The existence of these international Conventions poses a coordination problem as regards the provisions applicable to damage deriving from the malfunction of the Galileo system and the specific regime posed by them aimed at defining the compensation obligations of the responsible parties.

6. Coordination of the obligations deriving from the Convention on International Civil Aviation (Chicago, 7 December 1944)

One particular coordination problem arises in specific reference to air transport in relation to art. 28 of the 1944 Chicago Convention, which now enjoys universal application.

According to the interpretation that is commonly given, the latter makes the participating States responsible for the services intended to facilitating air navigation and improving the safety thereof. Worldwide adoption of Galileo services could affect the effective possibility of States to fulfil such obligation, given that these services are provided through a system outside the States' control.

In the case of a plane crash, the problem of the effective observance of Article 28 of the Convention and the consequent responsibility of the States could arise.

III INTERNATIONALLY-RECOGNISED CIVIL LIABILITY PRINCIPLES

1. The normative framework for the drafting of regulations regarding civil liability for damage deriving from Galileo services

Since the 1960s, many international instruments have been adopted to guarantee forms of indemnity for the victims of serious incidents, defined as "catastrophic", given that they are likely to involve a significant number of people and to extend over vast areas of one or more Countries, to the detriment of both the environment and economic activities.

Specifically, such regulations were adopted in those sectors in which it was believed particularly urgent to introduce forms of responsibility for those who intended to undertake hazardous activities, regardless their being a public or private body, and in order to prevent forms of disparity of treatment arising from the payment of varying indemnity to the victims of the same incident.

Furthermore, in such occasions, it was also felt necessary, through the adoption of a framework of international regulations, to protect the parties involved in the provision of services of significant public interest (in many cases potentially hazardous activities may assume such legal nature), in order to prevent them from being obliged to answer unlimited claims for compensation.

The most important and best known elements in this regulation framework are represented by the abovementioned international conventions such as, for instance, the Convention on Civil Liability for Nuclear Damage 1963 and Supplementary Convention 1997, the Civil Liability Convention and the Fund Convention.

An analysis of said texts shows that all of them draw inspiration from certain consolidated principles that tend to be uniformly applied and that may serve as a reference for the future uniform discipline of civil liability deriving from the performing of Galileo services.

2. Damage eligible for compensation

To this regard, is should be remembered that in relation to so-called "catastrophic" incidents, the general principle has been adopted whereby three types of damage are eligible for compensation: loss of life and personal injury; property damage and the cost of preventative measures.

The experience accrued in sectors in which the responsible parties are expected to compensate a large number of victims (for instance hydrocarbon or nuclear energy pollution) has, in any case,

led to the formulation of a concept of reimbursable damage encompassing "loss of life and personal injury" and "property damage".

3. Compensation for loss of life and personal injury

The international regulation framework mentioned above considers loss of life and personal injury as the main and most important category of reimbursable loss, and dedicates it preferential treatment also as regards the distribution of indemnity, to the detriment of property damage.

One controversial point on an international scale relates to the possibility of indemnifying, in addition to physical injury, also mere psychological damage regardless of whether or not it is a direct consequence of it[3].

For this reason, an organic uniform discipline should aim to define the concept of personal injury, in order to evaluate whether or not to restrict it to physical damage alone, with the eventual exclusion of psychological damage. In this perspective, it is important to consider that international case law practice is not always directed at recognising the reimbursability of psychological loss, even when it is the direct consequence of a physical injury.

4. Property damage and permitted compensation

Personal injury also generally covers property damage (loss of or damage to the same). Again for this type of damage it will be necessary, when drafting uniform regulations, to make a specification only if it is taken into account that certain jurisdictions are based on the general principle of reimbursability of the patrimonial damage suffered on the assumption that there is a physical injury or loss of an asset, whereas others are not.

5. Compensation for indirect damage

It should also be remembered that there is some non-homogeneity in case law emerging from international practice as regards the eligibility of claims aimed at restoring loss of profit.

In certain cases, the courts have admitted compensation for so-called "pure economic loss", namely the mere economic loss suffered by the victim, even in the absence of a "loss of or damage to property", whereas others exclude reimbursability for damage in the absence of a precise correlation between the latter and the ownership of an asset[4]. The prevalent orientation however,

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[3] In certain sectors of contractual responsibility, case law is primarily oriented towards excluding reimbursability for mere psychological damage, in the knowledge that this would lead to a massive number of claims. In this sense, see for instance, the jurisprudence formed in relation to the interpretation of the 1929 Warsaw Convention, and subsequent amendments, which excluded indemnity for mere psychological damage by the carrier (U.K. Court of Appeal, 17th May 2001, *Morris v. KLM Royal Dutch Airlines*) on the grounds that the uniform discipline only envisages indemnity for "*bodily injury*" (art. 17 of the 1929 Warsaw Convention and the 1999 Montreal Convention).

[4] The first significant applications of the rule of the correlation between loss and ownership of the asset were in American jurisprudence: see, *Robins Dry Dock & Repair Co.V. Flint*, 48 S.Ct., 134.

Subsequently, American jurisprudence, with specific regard to pollution damage, recognised specific protection for those subjects put in a particularly vulnerable position due to sea pollution to ensure that, on equal standing with other citizens, they may have property rights (which can therefore be damaged) over the sea's fishing resources (see, sentence of *Burgess v. Tamano*, 370 F.Supp., 247, and sent. *Union Oil Co. V. Oppen*, 501 F.2d., 558).

With regard to this, it should also be pointed out that, for instance, the Oil Pollution Act 1990 (cited as "*Oil Pollution Act of 1990*"), in force in the United States would appear to recognise the reimbursability of "*pure economic losses*", regardless of whether a property right has been damaged. Section 1002 titled "Elements of Liability", in par. b), 2, E) reads: "*PROFIT AND EARNING CAPACITY, Damage equal to the loss of profits or impairment of earning capacity due to the injury, destruction, or loss of real property, personal property, or natural resources, which shall be recoverable by any claimant".*

is to recognise the reimbursability of such damage when the victims are able to demonstrate the existence of a connection between the damage suffered to their assets and the economic loss connected to the same and consequent to the occurrence of damage to the same. A clear regulation framework may prevent the occurrence of disparity in the treatment in liquidation for damage also from this standpoint.

6. Compensation for measures of reinstatement of impaired environment and the cost of preventative measures.

Further problems tackled by case law refer to the reimbursability of the costs incurred in order to mitigate as far as possible the damage consequent to accidents in general and those that have an impact on the environment. With this regard, it should be pointed out that jurisprudence does not offer a single orientation.

It should be taken into account that a strong boost was recently given by the States in order to promote the adoption of measures aimed at encouraging forms of intervention to protect the environment. This includes the initiatives undertaken in emergency situations to mitigate noxious effects and aimed at controlling, mitigating or preventing the damage (for instance international regulations on assistance and salvage of ships whose cargo could pollute seawater and coastlines).

Indemnity for the adoption of preventative measures has sometimes been confused with those incurred for the reinstatement of the situation prior to the accident.

A clear regulation framework on the subject would not only help identify the entity and type of reimbursable damage, by introducing instruments aimed at encouraging certain forms of damage prevention, but could also prove essential for the adoption of urgent salvage and assistance measures for loss involving several countries, when regulatory uncertainty may constitute a hindrance to swift action.

Indemnity certainty can undoubtedly constitute a strong stimulus to action of this kind, specifically if recognised also in favour of the responsible party, in order to reduce the entity of its exposure.

Significant experience in this sense has been accrued as regards the legal regime of damage caused by nuclear energy pollution, which, by virtue of the type of damage that this industrial activity can cause, has inevitably led the States to reflect on this point. The States will certainly have to make similar reflections considering that many Galileo system services can be offered on a vast scale by public and private bodies in certain countries, to the advantage of others. In such contexts it will be necessary to devise regulations encouraging and regulating the adoption of damage prevention measures.

7. The characters of international uniform discipline on civil liability

International regulatory practice demonstrates that civil liability is characterised by the following principles:

- *strict liability attributed exclusively to the responsible party;*
- *liability channelled exclusively towards such subject, with the exclusion of any other public or private entity;*
- *limitation of responsibility in terms of amount and time;*
- *responsible party's obligation to keep up insurance cover (or other financial guarantee) that is at least equivalent to the limit of liability;*
- *arrangement of supplementary compensation to guarantee satisfactory loss reimbursement;*
- *identification of applicable jurisdiction.*

8. The strict liability regime

By virtue of such principle, the damaged party is only required to show that the loss can be attributed to the relevant conduct, and is not obliged to demonstrate the fault or negligence of the party called on for compensation. A first advantage of such principle consists in holding the damaged party free from the onus of proof, often a somewhat complex and delicate matter, of the illicitness of the conduct of the party designated as responsible.

Consequently, the responsible party also responds if the loss cannot be attributed to negligent conduct on its part.

As regards this liability regime, international conventions introduce a limit of liability, which may only be exceeded in certain cases, which are traditionally identified in those cases in which the responsible party has acted with the intent to cause such damage or recklessly and with the knowledge that such damage would probably result.

As mentioned previously, the strict liability regime is widely applied in international regulatory practice. As regards loss through sea pollution, for example, it is envisaged that the owner of the ship has absolute liability that is limited, for reimbursement purposes, within a preset maximum amount. Consequently, the obligation to reimburse losses caused during the oil shipment (CLC Convention of 1969) is focused on a specific party. Similar provisions are set forth in the HNS Convention and the abovementioned Vienna Convention and Protocol. The same type of liability regime can be envisaged for the cases of Galileo malfunctions that cause an incident within a given area or that are the consequence of a given commercial use of said signal.

9. The channelled liability system

This principle, which consists in channelling the liability to a specific party, which conventionally coincides with the party performing a presumably hazardous activity, is widely used in international regulatory practice in relation to the consequences of events that might cause massive losses in relation to persons, assets and the environment[5].

The institution of channelled liability has been adopted to 'internalise' the costs deriving from the performance of hazardous activities (such as the transportation of highly toxic materials), allocating the total costs of reimbursement, prevention and restoration to the party that, being engaged in an activity that is presumably hazardous, creates the conditions which result in the losses lamented.

The main effect sought by the channelling approach is to simplify the onus of proof, since it is sufficient for the victims of a loss to demonstrate that it derives from the adverse effects of the incident that occurred. Once the causal relationship has been established between the loss and the conduct held to be relevant from a regulatory standpoint, the victims of the incident are able to identify the responsible party with certainty. This eliminates the likelihood of erroneously identifying jurisdiction and/or having to propose a number of claims with a consequent increase in costs.

The advantages consequent to the adoption of this approach are immediately evident for victims of an incident arising as a consequence of a malfunction of the Galileo system. Injured parties could enjoy the possibility of identifying the responsible party without particular difficulties, when it coincides with the party that in ultimate analysis offers system services on the market and allows users access to them. This approach is similar to that set forth in the 1963 Vienna Convention, as amended in 1977, which envisages a strict liability regime only so far as it concerns nuclear plant

[5] In the case of damage cause by a nuclear incident, the responsibility of plant builders has been excluded in the fear that their excessive involvement would have created a hindrance to energy producing industries ("including some or all suppliers of related technology, and suppliers of nuclear fuels and materials").

operators[6], whereas other subjects involved in the production of this kind of energy, such as suppliers and carriers, are excluded from this liability regime.

10. The parties excluded from the civil liability regime under the channelling approach

Again with regard to the principles characterising the international regulatory framework on civil liability, it must also be considered that the channelling of liability approach entails, on the one hand, attribution of responsibility to a party engaged in activities assumed to be hazardous and in any case likely to cause hefty loss to others and, on the other, it makes it possible to exclude from responsibility all those who are involved, to varying degrees, in the performing of such services.

In such cases, for instance, it has been observed that channelling, combined with a strict liability regime, protects employees and those performing services for the responsible party. Similarly, under the above international uniform discipline, it is not possible to claim any type of compensation from those who provide, under order of the competent authorities, salvage and assistance work following the occurrence of an incident, or those who have adopted damage prevention measures and their employees.

11. Grounds for exoneration from responsibility

Traditionally, exoneration from responsibility occurs when the incident is the consequence of armed conflict, an act of terrorism or any act having similar characteristics or that is the consequence of negligent behaviour by public authorities. Similarly, the party may invoke its irresponsibility by demonstrating that the loss is the consequence of an exceptional, irresistible and unforeseeable event, or that the loss was caused by the action or omission of third parties, with the intent to cause damage or in the full knowledge that their action would have caused loss. Proof that the loss was wholly or partly caused by the victim makes it possible, according to the principles on which civil liability regulations are based, for the party to be exonerated from responsibility.

12. Limits on the level of compensation

The limits on the level of compensation offset the channelling of liability, which as we have already seen, satisfies the need to guarantee the damaged subject certain reimbursement for the losses incurred.

The sacrifice imposed on the damaged party by the compensation limit established is appropriately offset by the certainty of compensation.

This provision also meets the further requirement of mitigating the impact of strict liability channelled towards a specific party. This provision responds to a specific requirement to "administer" the risk associated with socially-useful entrepreneurial activity.

The limited compensation mechanism has many applications with regard to breaches of contract as well as to non-contractual forms of non-performance.

With regard to the former type of non-performance, ship-owners benefit from reimbursement limits pursuant to the 1969 CLC Convention and the 1996 HNS Convention.

The responsibility of ship-owners and salvors is limited by the London Convention for Maritime Claims (LLMC Convention 1976) and by the 1963 Vienna Convention and the subsequent 1997 Protocol.

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[6] The Vienna Convention as amended by the 1997 Protocol, which channels liability to the "operator", defines the latter in art. I as follows: "Operator, in relation to a nuclear installation, means the person designated or recognised by the installation State as the operator of that installation".

Many examples of contractual responsibility are found in the uniform discipline that establishes certain rules for contracts for the air transportation of persons, goods and baggage, and for the sea transport of goods (1929 Warsaw Convention, as amended in 1955, the 1999 Montreal Convention, the Brussels Convention on the loading policy 1924 and the relative 1968 protocol).

The size of the limit is traditionally established considering not merely the type of services provided, but also taking into account the insurance market and its ability to support claims for indemnity from damaged parties.

13. The establishment of a financial deposit corresponding to the liability limit in order to protect the responsible party

The limited liability approach envisaged in the aforesaid international conventions is characterised by mechanisms aimed at protecting the responsible party and its entire wealth. Note in particular that international Conventions such as the 1969 CLC or 1996 HNS conventions envisage the establishment by the responsible party, and in agreement with the Courts or other competent authorities in one of the States in which damage compensation proceedings have been undertaken, of a financial deposit represented by the overall sum equivalent to the liability limit.

This financial deposit will cover all claims for compensation, thus protecting the responsible party's remaining assets and property. For the latter, this advantage represents an incentive to the establishment of the aforesaid financial deposit, either through deposition of a sum of money not exceeding the liability limit or a bank surety for the equivalent, or any other guarantee considered to be of equivalent nature and efficacy by the signatory State in which the financial deposit is set up.

14. Loss of the benefit of the limit

International regulations envisage the loss of benefit from the limit if the responsible party committed the action that caused the damage through its own deliberate or reckless action (deliberate fault, characterised by foreknowledge of the event) or serious negligence. It is widely recognised that such limit cannot be invoked by the responsible party when such party caused the damage deliberately or by reckless behaviour in foreknowledge of the severe consequences of the same, which the injured party is required to prove.

15. Compulsory insurance

International practice pursues the guarantee of effective reimbursement for the loss suffered, within the legally established liability limits, through the imposition of an insurance obligation (or adoption of other equally effective financial instrument) at the responsible party's responsibility and charge, for an amount equivalent at least to the mentioned limit. Said obligation is conventionally accompanied by detailed provisions concerning the content and minimum requisites of insurance cover or other financial guarantee (for instance, the provisions set forth in the CLC Convention on sea pollution liability, contemplate a standard certificate model to be used when transporting hydrocarbons by sea).

16. Claim against the insurer

The insurance obligation is conventionally accompanied by the faculty offered to the damaged party of claiming against the insurer, rather than the responsible party. This approach was introduced to favour both injured parties, in so much as it allows them to take direct action against the parties that will cover the risk of the civil liability of the responsible parties, and the latter.

17. Supplementary compensation

The supplementary compensation provision was introduced into the international regulations governing civil liability for loss caused by nuclear energy and sea pollution, in the knowledge that the massive damage caused cannot be sustained by the responsible party and its insurers or those granting equivalent financial guarantees alone. It should be remembered, for instance that further indemnity to that guaranteed by the CLC Convention was made available by the establishment of an international fund (under the 1971 Fund Convention) intended to supplement or replace the responsible party in reimbursement of losses suffered by the victims of an oil spill.

18. States' involvement in contribution to supplementary compensation and method of contribution

The international conventions mentioned previously have founded this approach on political and economic reasons, by virtue of which the consequences of severe loss cannot lie exclusively with the responsible parties. Consequently, in establishing international funds, States have introduced funding mechanisms other than that of the responsible party. Such mechanisms are essentially of two types: they may be provided by parties belonging to the industry involved in the hazardous activity (in the 1971 Fund Convention, such parties coincide with those that, during the year, have received a substantial amount of hydrocarbons established by the convention); or alternately, they may be constituted by public funds (for instance, as contemplated in the Convention on Supplementary Compensation for nuclear damage, 1997).

In the case of damage arising due to a malfunctioning of the Galileo signal, the specific nature of the programme in question may be taken into account, given that it coincides with a partnership between the States of the European Union and private sector industries. It also envisages the provision of commercial services and services of considerable public interest, and is intended to involve other non-European States due to its strategic importance as regards satellite radionavigation and the essential public interests involved.

By virtue of such considerations, and in order to guarantee full restoration for the injured parties of an incident, in addition to a first level of liability and compulsory insurance, it would appear suitable to introduce a second level of compensation for loss constituted by an international fund, financed by those States that adopt the Galileo system.

On the one hand, such cooperation spreads the insurance burdens and costs for loss reimbursement evenly between States and private industry, without the total of the same constituting a competitive obstacle to the performing of services and, on the other, it improves the guarantees offered to damaged parties.

19. Grounds for the application of supplementary compensation

Supplementary compensation is usually envisaged in cases when, for instance, the responsible party and its insurer are unable to meet the reimbursement obligation, or when the liability limit is lower than the total reimbursement claims forwarded by damaged parties legitimated under applicable uniform discipline, or when the party considered as responsible is eligible for exoneration from liability.

It must be remembered that, essentially, the reimbursement obligations of supplementary compensation are not forgone in cases in which the loss is the consequence of the action of a third party, a natural calamity or negligent behaviour by States or public Authorities. Supplementary compensation also usually has a maximum limit that varies in the different international conventions.

20. Identification of the competent jurisdiction

The prevalent internationally recognised criterion as regards safeguarding the victims of catastrophic incidents is that of the exclusive jurisdiction of the courts of the participating countries in whose territory the loss occurs. Various supplementary criteria apply when the identification of the place in which the incident occurred is certain or when it occurs in a place not subject to the jurisdiction of any State.

IV CONCLUSIONS AND RECOMMENDATIONS

According to several studies, the Galileo system is expected to have an extremely vast global diffusion, representing an evolution and a substantial improvement of the satellite radionavigation systems currently existing. Its very nature will make it significant in various economic sectors and in sectors of substantial public interest.

Having regard for this diffusion, the risk of loss is significant and may include catastrophic loss. The absence of an international uniform discipline causes a number of problems. Such problems include the risks of a multiplication of applicable jurisdictions, the difficulty and costs of identifying the responsible party, uncertainty relating to the notion of reimbursable loss, the introduction of effective loss restoration mechanisms and difficulties in coordinating with existing convention regimes.

Analysis of the convention scenario concerning the civil liability uniform discipline highlighted a set of approaches well consolidated in regulatory practice that may provide UNIDROIT with a reference when devising a specific regime for the civil liability for loss deriving from the performing of Galileo services. These approaches most notably include: the strict liability regime; liability channelling; limit to liability; compulsory insurance at least equal to the limit of liability; the provision for supplementary compensation to guarantee satisfactory reimbursement of losses and the criteria for identifying the applicable jurisdiction.

In devising the aforesaid conventional instrument, UNIDROIT could benefit from the cooperation of experts with adequate technical knowledge and who have suitable experience in the international law and space law sectors.

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