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Possible Future Work on Civil Liability for Satellite-based Services

(submitted by the Secretariat)

<i>Summary</i>	<i>Consideration of a proposal on the civil liability for satellite-based services</i>
<i>Action to be taken</i>	<i>Future work</i>
<i>Mandate</i>	<i>Work Programme</i>
<i>Priority level</i>	<i>To be determined</i>
<i>Related document</i>	<i>C.D. (88) 7</i>

Introduction

1. At its 86th session (2007), the Governing Council took note, with great interest, of the reports on recent meetings submitted by Professor Carbone as well as communications from the Italian Government received by the President on the subject. The Council agreed that, in view of that interest on the one hand and concerns regarding the wide-ranging implications on the other hand, informal discussions should be held with all potentially interested Governments and, should those consultations have a positive outcome, to commission a broad comparative feasibility study.

2. At its 87th session (2008), the Council discussed a legal opinion by Professor Ulrich Magnus (Max Planck Institute and University of Hamburg) and a discussion paper submitted by Mr Bollweg (cf. UNIDROIT 2008 – C.D.(87) 12, Annexes V and VI). It also decided to set up an *ad hoc* Committee to carry out further consultations on the basis of which a definite decision would be taken concerning work within UNIDROIT on a possible future instrument on civil liability for malfunction of satellite-based services. The report of the meeting of the aforementioned *ad hoc* Committee is here attached as Annexe 1 and the opinion of Mr Carbone, who was unable to attend the meeting, is attached as Annexe 2.

ANNEXE 1

**AD HOC COMMITTEE OF THE GOVERNING COUNCIL ON CIVIL LIABILITY
FOR SATELLITE-BASED SERVICES
(Rome, 11 November 2008)**

**REPORT
OF THE FIRST MEETING OF THE AD HOC COMMITTEE**

(prepared by the Secretariat)

1. The *ad hoc* Committee of the Governing Council on civil liability for malfunctions in satellite-based services held its first session in Rome, on 11 November 2008, at 5.30 p.m., at the FAO headquarters, with the participation of Mr Hans-Georg Bollweg, Mr Henry Gabriel, the Secretary-General (who was obliged to leave the meeting after 15 minutes) and Ms Alessandra Zanobetti, Deputy Secretary-General. Mr Sergio Carbone had excused himself.

2. The *ad hoc* Committee agreed that the object of the study would be limited to the so-called GNSS systems, and would not include other satellite-based systems. Other important issues that had to be ascertained were the following: should the instrument include both the commercial services and the non-commercial services; should it regulate the contractual liability, the non-contractual liability or both; should it have a territorial scope for each of the involved Governments. Moreover, the instrument should take into account the existence of other international instruments already in force, such as, for instance, the Montreal Convention.

3. Mr Bollweg underlined that he did not consider that an international instrument for the time being would be appropriate, because the only GNSS capable of involving issues as those addressed by the instrument was the European system Galileo, whose discipline would probably better taken into account by a system of bilateral instruments between the European Union and the Countries interested in using Galileo. However, the *ad hoc* Committee agreed that in the case of the interoperability of the different GNSS the adoption of a multilateral instrument could be envisaged.

4. The *ad hoc* Committee discussed the work currently undertaken by ICAO and ECAC. Mr Bollweg stated that, as responsible for ICAO's work in civil law matters in the German Government, he was aware of what was decided on that matter by ICAO; ICAO's General Assembly decided in September 2007 that commercial satellite navigation is a more or less European item and that it was up to the European Civil Aviation Conference (ECAC) to continue these negotiations. The General Assembly decided at the same meeting to lower the priority of this topic on ICAO's legal agenda from 1 to 3, and that, according to his experience, this meant that there would not be anything done on that matter in the future. Nevertheless the ECAC General Directors decided in August 2008 to ask ICAO again to deal with that matter; however, he underlined that he did not imagine that ICAO would do that after the Assembly's decision from 2007, and that, in any event, there was no reason for which two international organisations should deal with the same item.

5. Mr Gabriel expressed the opinion that, since the Galileo project was envisaged as a combination commercial/non-commercial venture, it was opportune to have an instrument that could provide a scheme for liability and other issues that will give potential investors some clear idea of their legal exposure. However, since other existing systems (the American GPS system) and those proposed systems did not create the same potential for private investor liability, a convention broader than one covering the Galileo system did not appear necessary at this time. For

this reason, the problem was uniquely a European one. He concluded that in the future the possibility of a convention along the lines that had been discussed could be revisited.

6. Mr Bollweg underlined that a UNIDROIT instrument would come too late for the European Satellite Navigation System Galileo because it would come into operation already in 2013 and it would be impossible to finish a UNIDROIT instrument to that date.

7. The *ad hoc* Committee agreed that the publication on the *Uniform Law Review* of the articles on the GNSS written by Prof. Magnus and other contributors would be valuable and interesting.

* * *

8. Not having been able to take part to the meeting, Mr Carbone sent his opinion to the members of the Committee and to the Secretariat, asking to append it to the Report. He underlined that ECAC and eventually ICAO were interested into the matter of regulation of GNSS - based applications, and that he believed that it was convenient that also UNIDROIT dealt with the matter in cooperation with such organizations, also because of the recent fruitful results in occasion of the protocol to the Capetown Convention. ICAO for the time being had decided to work on framework agreements, bilateral agreements and contracts, without prejudice to utilise in a further stage the instruments of an international convention, which was considered ideal, even if not realistic for the time being, by the majority of their member States. He observed that commercial satellite navigation was not a European item only, first for the reason that the European GNSS itself was a global system covering the total earth surface and needed this protection throughout the world, and second as the other systems originally conceived as military in scope had already developed on the basis of commercial use and would do so more and more in the future. He underlined that interoperability between systems was destined to increase in the future with the spreading of satellite navigation systems and applications, and that accordingly a legal basis for liability not only between operators but, above all, towards the final users, not linked by any contractual relationship, was a fundamental precondition for market GNSS-based applications to develop at a global level. As such development was expected to come into operation by 2013, UNIDROIT should therefore prepare a complete set of rules adequate to such occurrence without waiting any further. He was thus of the opinion that the matter was still worth of being studied and discussed among the members of the *ad hoc* Committee, after having clearly investigated about the present status of ICAO work and the future and further perspectives of such work. To this purpose, he expressed the opinion that it would be convenient that the UNIDROIT Secretariat take proper contacts and information by ICAO, due consideration being given to the fact that ICAO had recently very good relationships and collaboration with the Institute.

ANNEXE 2

**The Rationale for an International Convention on Third Party Liability
in Satellite Navigation Signals**

by Sergio M. CARBONE* and Maria Elena DE MAESTRI**

1. Premise

The identification of the precise position of persons and objects all around the globe is nowadays a key element for the optimisation of many economical activities, like commercial transport, synchronisation of the communication chains, agriculture, as well as of private activities, like tourism, strengthening safety standards both for people and goods.

The Global Navigation Satellite System (GNSS) has become well known from the very first exploitation of United States' Global Positioning System (GPS), which made use of a satellite-based information for military purposes¹. Considering that the technical and operational development of GNSS is now well advanced, so that from the initial sole military scope of application nowadays we can envisage a multitude of possible civil uses of this technology, particularly with reference to the transport field, a question concerning the legal issues related to the present and future deployment of this infrastructure must be faced².

In fact, at present Global Navigation Satellite Systems are worldwide central both at a commercial and at an institutional level. This means that economic operators are investing in developing the instruments that allow the use of the signal in many applications and, contextually, governments and international organisations (i.e. the International Civil Aviation Organisation, but also European Community institutions) are analysing the current legal framework in order to decide whether such framework is appropriate for handling the specific issues related to this matter or an *ad hoc* discipline is needed.

Effectively, even though the usefulness of such a technology can not be denied, many situations where a failure or defect of transmission of the information may cause loss or damage can be imagined: one may think of an aircraft accident ultimately caused by wrongful or absent navigation information at a critical point in flight operations.

At the moment there is no specific legal framework concerning GNSS activities, therefore liability issues deriving from GNSS malfunction are currently covered by applicable national law. Moreover, considering that those who have suffered damage and those who could possibly be held liable only

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¹ In addition to USA GPS, we can mention the Russian GNSS GLONASS, the Indian GAGAN and several initiatives that are under development in order to provide improved navigation services and complement systems. European developments regarding WAAS, EGNOS and GALILEO underline the global nature of GNSS and the need for continued cooperation and complementarities in this field.

² See P. MANZINI, A. MASUTTI, *An International Civil Liability Regime for the Galileo Services: A Proposal*, in *Air & Space Law*, 2008, p. 114; G. VON DER DUNK, *Liability for Global Navigation Satellite Services: a Comparative Analysis of GPS and Galileo*, in *Journal of Space Law*, 2004, p. 429; B. POULAIN, *La situation juridique internationale du future service public européen de radionavigation «Galileo»*, in *Id.*, *L'Europe des transports*, 2005, p. 615; F.P. SCHUBERT, *An International Convention on GNSS Liability: When does desirable become necessary?*, in *Annals of Air and Space Law*, vol. XXIV (1999), p. 246; M. MILDE, *Institutional and Legal Problems of the Global Navigation Satellite System (GNSS): Solutions in Search of a Problem*, in *The Utilization of the world's Air Space and Free Outer Space in the 21st Century (Proceeding of the International Conference on Air and Space Policy, Law and Industry for the 21st Century)*, Kluwer Law International, Seoul, 23-25 June 1997, p. 337.

rarely live in one and the same country, in order to determine which is the applicable domestic law, reference must be made to private international law rules of the State where the action is brought. To this purpose, it is firstly necessary to recall the fundamental threefold distinction between contractual, non contractual and product liability, because of different conflict of law rules applying to these matters³. Eventually, if a uniform international convention is in force among the countries involved in the controversy, private international law rule will not be applied in favour of the application of the uniform discipline, except from the aspects that are not ruled by the treaty, for which national conflict of law rules will still apply.

This paper will focus on non contractual liability issues connected to the possible multiple applications of the GNSS technology, not analysing the contractual obligations regime. The premise of an exam of the current legal framework should be that, at the moment, relevant tort and third party liability regimes not specifically focused on GNSS would nevertheless apply.

2. The present legal framework

Considering the above-mentioned lack of an *ad hoc* discipline connected to GNSS exploitation as well as the real possibility of a damage caused by a system malfunction, it is necessary to outline the present legal framework which should cover liability for such a damage, in order to explain the need of a uniform discipline for all States making use of this technology.

To this extent, it has to be clarified that depending on each field that is involved in the accident (i.e. marine pollution, air crash, bank transactions etc...) and on the transnational dimension of the relationship, different liability rules are going to be applied.

In order to bring an example, we can consider that the first economic sector to acknowledge the potential benefits of global navigation satellite systems was, and still is, the aviation one. In 1983, in fact, the International Civil Aviation Organisation (ICAO) established a Committee on Future Air Navigation Systems (FANS), whose aim was, *inter alia*, to identify possible benefits, risks and drawbacks of the use of global navigation satellite systems for aviation purposes and came forward with recommendations for dealing with it properly. Later the FANS concept evolved into the more encompassing one of Communication, Navigation and Surveillance/Air Traffic Management (CNS/ATM), and a Legal Technical Expert Panel (LTEP) was established to make sure all relevant legal aspects were considered.⁴

Because of the required high degree of safety standards needed in the aviation sector, it quickly became clear that liability was a key issue for the acceptance of the GNSS as a structural component of air traffic services.

Efforts have been made to establish liability for such damage on the basis of the existing legal framework, referring to international instruments and national laws.

First of all, the Convention on International Liability for damage caused by Space Objects was mentioned, considering the satellite as a "space object" for the purpose of the convention's scope

³ As well known, the difference between the three types of liability stands upon the legal relationship between the claimant and the defendant. In fact, while the contractual liability, as the word says, arises from a contract or agreement, involving thus parties autonomy to define their duties and rights, non-contractual liability would then contemplate damages occurred outside a contractual relationship, such as loss or injuries caused to a third party, and has to be regulated by legislative means. Finally, product liability imposes liability upon the manufacturer or seller of a product by which, in the course of using it, damage has been caused, independently from a contract between them.

⁴ In order to accommodate the possible usage of GNSS, ICAO also drew Standards and Recommended Practices (SARPs) to be followed by all signal providers.

of application ⁵, which provides a strict liability regime upon launching States for certain damages caused by a satellite. However, the relevance of this convention is limited, because it establishes an absolute and exclusive liability for launching States, without involvement of any other subject (private or public) interested into the exploitation of the GNSS; moreover, the convention refers to liability only for damage caused “by” space object, which clearly covers the sole direct physical damages, thus excluding any damage other than those physical and caused by the fall of space objects. Finally, also the envisaged system of strict liability does not seem to be the best one for granting adequate compensation for catastrophic events, because the compensation amount would often be not very high, so that an additional granting fund should be set up ⁶.

Liability for damages caused by the exploitation of a satellite should be established also on the basis of the Chicago Convention on International Civil Aviation ⁷, following which States, on the one side, have complete and exclusive sovereignty over the airspace above their territory and, on the other side, undertake to provide adequate air navigation services, including the relevant air navigation facilities, in accordance with ICAO Standards of Recommended Practices ⁸. According to common interpretation of Article 28 of the convention, therefore, participating States are responsible for the services intended to aid air navigation and improve the safety thereof. Moreover, when the convention was signed the reference to air navigation facilities did not include services deriving from systems of satellite global navigation, where a navigation signal is provided all around the globe by transmitters located in a zone where States have no sovereignty: space.

In any case, in granting such services, most States have to rely on signals in space and their augmentation provided by others, today mainly United States, so that a question arises whether the implementation of GNSS should also involve additional arrangements establishing a link between the State providing the signal from space and the State having jurisdiction under Article 28 of the Chicago Convention. To this extent it must be considered that Article 28 does not prevent contracting States from delegating to another State the responsibility for establishing and providing air navigation services ⁹, but the responsibility of the delegated State is limited to the technical and organisational aspects.

In any case, responsibility under Article 28 should not be considered the same as liability from the point of view of international law; this rule of law, in fact, regulates the relationship between States only and does not give cause of action to private persons to claim compensation for damage. Such claims should rather be handled at the level of applicable domestic law, European normative instruments and international treaties concerning the substantive matter involved (i.e. aviation) ¹⁰.

⁵ See article II of Convention on International Liability for Damage Caused by Space Objects, London, Moscow, Washington, 29 March 1972 (Liability Convention), saying that «*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*». For a definition of the term “space object”, see Article I which includes «*component parts of a space object as well as its launch vehicle and parts thereof*». See also the exemption clause contained in Article VII

⁶ To this extent, the best solution would be to set up a two tier system of liability, as the one draw by the Convention on Civil Liability for Damage from Oil Pollution of 29 November 1969 and by the correlated Brussels Convention of 18 December 1971 on establishing an international fund (FUND Convention).

⁷ Convention on International Civil Aviation, Chicago, 7 December 1944.

⁸ See Article 1 and Article 28 of the Chicago Convention.

⁹ See Annex 11, par. 2.1, of the Chicago Convention.

¹⁰ Still considering the aviation field as a reference model, we recall the Warsaw Convention of 12 October 1929, concerning international air transports of people, luggage and goods given on compensation; the Montreal Convention for the Unification of Certain Rules for International Carriage by Air, of 28 May 1999, providing for an unlimited responsibility in case of death or injury of airplane passengers; and the Rome Convention of 7 October 1952, on Damage Caused by Foreign Aircraft to third parties on the surface.

Moving forward from the aviation example, there are many types of tort actions that may be relevant for the purposes of analysing GNSS' potential liability, the basic principle of which is, in any case, that the claimant must show that the defendant's wrongdoing caused the actual damage. It, therefore, must be clearly established : i) that a legal duty of care exists; ii) that the defending party did owe to the claimant such a duty of care; iii) that the defending party did indeed breach such a duty of care; iv) that the claimant did suffer damage; and v) that the alleged damage was not caused by the action or inaction of the claimant.

Considering that each State has a different legal framework concerning the extent of the duty of care and recoverability of damages, and that the applicable law will be determined in accordance with the conflict of law rules of the State where the action is brought, evidently a problem of certainty and clarity of law arises in this field. In the European area this problem has been partially reduced by regulation (EC) n. 864/2007 of 11 July 2007 on the law applicable to non-contractual obligations (Rome II) ¹¹; this, even though this regulation leaves unaffected the differences among European substantive tort laws, establishing only common conflict rules for non contractual obligations.

Clearly, the main deficiencies of the present framework of the liability regime applicable to GNSS are not only connected to a complete absence of specific substantive provisions concerning these issues or to the absence of compensation channels for all situations, but also to the ambiguous interaction between the possible existing tools which may be used to this purpose. In fact, considering the implications of global navigation systems, with their multimodal dimensions and multiplicity of stakeholders, and focusing on the key issues of clarity and legal certainty, the need for a comprehensive framework is self-evident.

3. The rationale for an international framework

The need for an international comprehensive framework is traditionally strictly connected to the specific risk that characterises a particular activity and to the international scope of the effects of such risk. In this perspective, on the one hand, being GNSS a high technological activity, it has a great risk's factor, principally during the development and first use phases; on the other hand, the multimodal dimension of global navigation systems carries out that the geographical scope of

¹¹ Regulation (EC) No 864/2007 of the European Parliament and of the Council of 11 July 2007 on the law applicable to non-contractual obligations (Rome II), in Official Journal L 199, 31/07/2007, P. 0040 – 0049. On this topic see LUZZATTO R., *Riflessioni sulla c.d. comunitarizzazione del diritto internazionale privato*, in VENTURINI G., BARIATTI S. (edited by), *Liber Fausto Pocar, Nuovi strumenti del diritto internazionale privato*, Milano, 2009, p. 613; BRAND R.A., *Evolving competence for private International law in Europe: the external effects of internal developments*, in VENTURINI G., BARIATTI S. (edited by), *Liber Fausto Pocar, Nuovi strumenti del diritto internazionale privato*, Milano, 2009, p. 163; BOGDAN M., *Some reflections Regarding Environmental Damage and the Rome II Regulation*, in VENTURINI G., BARIATTI S. (edited by), *Liber Fausto Pocar, Nuovi strumenti del diritto internazionale privato*, Milano, 2009, p. 95; DUTOIT B., *Le droit International privé des obligations non contractuelles à l'heure européenne: le Règlement Rome II*, in VENTURINI G., BARIATTI S. (edited by), *Liber Fausto Pocar, Nuovi strumenti del diritto internazionale privato*, Milano, 2009, p. 309; GAROFALO L., *Diritto comunitario e conflitti di leggi. Spunti sulle nuove tendenze del diritto internazionale privato contemporaneo emergenti dal Regolamento Roma II*, in VENTURINI G., BARIATTI S. (edited by), *Liber Fausto Pocar, Nuovi strumenti del diritto internazionale privato*, Milano, 2009, p. 413; TONOLO S., *La nuova disciplina di conflitto delle obbligazioni extra-contrattuali nel Regolamento (CE) Roma II*, in *Studium iuris*, 2008, p. 1; DE LIMA PINHEIRO L., *Choice of Law on Non-Contractual Obligations between Communitarization and Globalization. A First Assessment of EC Regulation Rome II - La scelta del diritto applicabile alla responsabilità extracontrattuale tra armonizzazione e globalizzazione. Prime valutazioni del Regolamento Roma II*, in *Riv. dir. int. priv. e proc.*, 2008, p. 5; MUNARI F., *L'entrata in vigore del Regolamento « Roma II » e i suoi effetti sul private antitrust enforcement*, in *Dir. comm. int.*, 2008, p. 281; MUNARI F., SCHIANO DI PEPE L., *Liability for environmental torts in Europe: Choice of forum, choice of law and the case for pursuing effective legal uniformity - Responsabilità per danni ambientali in Europa. Scelta del Foro, della normativa e del procedimento giudiziario per perseguire l'effettiva uniformità giuridica*, in *Riv. dir. int. priv. e proc.*, 2005, p. 607.

damage caused by a system malfunction is, in principle, not confined within the national boundaries of one State only. In the event of damages in more than one country, therefore, it is desirable that the recoverable amount to be accorded to victims be distributed equitably among all affected persons under the same criteria, irrespective to the country which they belong to, on the basis of mandatory uniform rules.

To this purpose, an international legal framework is the only way to ensure adequate, equitable and uniform compensation for persons who suffered damage. Such framework implies the unification of the basic rules which applies in the different countries to the liability incurred from a specific occurrence, whilst eventually leaving these countries free to take, on a national basis, any additional measures which they deem appropriate¹².

In this perspective such international legal framework is not aimed at regulating States' relationships, but at giving a substantive discipline of a subject that is in its essence international.

To this extent a debate has developed during ICAO, ECAC and UNIDROIT consultations on the GNSS legal framework's "state of the art". In this context, we can identify three possible approaches to the issue of third party liability: i) a strict approach, which considers that the current liability regime under domestic law is perfectly coping with GNSS; ii) a wide approach, which deems that a universal liability system or convention should be set up; and iii) a middle ground approach, proposing a contractual approach accompanied by a framework agreement, containing some uniform rules, among which the one concerning liability. Namely we should find two versions of the third middle approach, because some people deem that those common rules should be mandatory for all parties concerned, while other people lean towards a mere recommendation.

4. Continues: the strict approach

As we said the strict approach is focused on the suitability of the present legal framework in managing any liability issue deriving from a malfunction of satellite navigation systems. The reasons behind this thought lay in the fact that today there are only two operating systems (GPS and GLONASS)¹³ that are run by two public operators (USA and Russia) mainly for military purpose, even if their signals are available for private and commercial use¹⁴.

It is therefore said that being the navigation service mainly established for public purposes, it is not a suitable subject for international (private or public) agreements. Following this assumption, considering the double use of the signal, public and private, but with the particular military dimension of the existing technology, it would be hard to imagine that the countries in which these systems have been developed are prepared to expose themselves to an international liability convention that is the outcome of international negotiations and is to a large extent heteronomous. To this purpose it has to be considered that it is true that, at the moment, GPS and GLONASS have mainly a military dimension but, as already said, the GNSS market is growing in a boundless way, affecting all fields where information relating to the precise position of people and goods is necessary and encouraging commercial operators in developing new applications of this technology, so that also the existing systems have developed, or however shall develop, a commercial and civil interest. For example, the provision of navigation services for such an

¹² See Premises to the Paris Convention on Third Party Liability in the Field of Nuclear Energy, the Vienna Convention on Civil Liability for Nuclear Damage and the International Convention on Civil Liability for Oil Pollution Damage.

¹³ The European system (GALILEO) is under construction, following its implementation plan it is to be operated from 2013 by a public-private partnership.

¹⁴ See H.G. BOLLWEG, *Initial considerations regarding the feasibility of an international UNIDROIT instrument to cover liability for damage caused by malfunctions in global (navigation) satellite systems*, in *Uniform Law Rev.*, 2008.

utilisation is already a key element in the aviation sector, where the management of those services is fundamental for the safety standards required by national authorities.

From another point of view, it has been observed that international negotiations for an international regime of GNSS liability issues would be endless, because of the different interests pursued by the various States. In fact, on the one hand signal provider countries would rather support an international regime grounded on limitation of liability and consistent with the insurability of such liability, being such criteria essential pre-requisites for finding private investors and stimulating the presence of private-operating companies in this field, while, on the other hand, end user countries would prefer to have only limited restriction on the liability of the signal provider and, eventually, in case of limitation of compensation, the amount of such regime to be very high.

In order to object to this argument, it is sufficient to observe that all the existing international instruments concerning liability are based on a compromise between these competing interests and a solution has always been found. Effectively, even if the interests brought by signal providers and possible victims of system malfunction are not the same, as well as interests brought by polluters and victims following the CLC Convention, it is proved that the best solution to find adequate compensation in all damage cases is to set up an international regime¹⁵.

Further criticisms to the effective need of an international liability regime, are argued by the circumstance that in many cases even if damage caused by a system malfunction is incurred not by the first user, who is contractually tied to the system operator, but by a second, third or fourth user, the latter are nevertheless each linked by contract to the respective prior user and the last prior user to the system operator. Also in this case, therefore, the best solution would be to settle claims in accordance with the contractual chain, where the respective contract determines the existence, the contents and the extent of the respective liability.

However, if we make reference to the possible “catastrophic events” that might occur, such as an airplane crash causing damages to people and goods located in the area of the disaster, it is clear that there are many cases where the injured party is not tied directly or indirectly to contracts leading to the system operator, so that it would be hard, or even impossible, to find compensation based on contractual liability.

5. Continues: the middle ground approach, the contractual framework

Being conscious of the abovementioned limits of the existing legal framework to provide a complete and consistent discipline concerning GNSS liability issues, the ICAO Study Group proposed in 2004 a middle-ground approach¹⁶. Such approach is based on the assumption that «*a contractual framework may provide a link between the provider of signals and a State having jurisdiction under Article 28 of the Chicago Convention as regards the terms and conditions, under which GNSS services are provided*», also concerning the issue of liability.

The search for uniformity, following this setting, would be achieved by establishing common elements applicable to all contracts that would be negotiated separately among different parties involved in the exploitation of GNSS applications; therefore the framework would coordinate the relationships among different players in various stages of the provision of the GNSS services for the benefit of all subjects which may be injured or damaged by a malfunction of the signals.

¹⁵ See HAGUE ACADEMY OF INTERNATIONAL LAW, Centre for Studies and Research in International Law and International Relations, *The International Aspects of Natural and Industrial Catastrophes*, Dordrecht-Boston-London, 1995.

¹⁶ See Final Report on the Work of the Secretariat Study Group on Legal Aspects of CNS/ATM Systems, presented in 2004 to the 35th ICAO General Assembly (ICAO docs. A35-WP/75; A35-WP/125).

The idea of an elaboration of contractual clauses and models is not new in the effort of unifying rules concerning a specific field, and it is based on practitioners' need for certainty which, through the general acceptance of standards there proposed, can assume an "objective" shape, capable of ruling the subject matter concerned and of prevailing also on national laws.

However, it has to be clarified that at the basis of the application of such a contractual discipline there must always be an expression of parties', at least implicit, willingness to be bound to the framework.

Consequently, the first negative aspect of this solution arises from the fact that the nature of the framework agreement is evidently voluntary and based on applicable national law. According to this, in fact, for example the ICAO draft framework provides that «*the liability of each party for failure to perform its obligations under this contract shall be governed by the liability regime applicable to its activity*» and that «*the right of recourse and indemnification of a party may be limited by the proportion of its respective fault, if the applicable law so provides*». It is easy to understand that this kind of assessment will neither improve certainty, nor guarantee adequate compensation to the victims of damages.

Effectively, the middle ground approach comprises two separate and distinct options: a flexible approach and a binding approach. Under the flexible approach just now mentioned, a number of model clauses would be drafted and it would be up to the negotiating parties to decide whether or not to use them in the contract. Under the binding approach, on the contrary, the contractual framework should include a number of mandatory common clauses which should bind all parties. In order to define such mandatory elements, a Framework Agreement among States at governmental level is envisaged, whose nature and binding effect is equivocal and uncertain. However, even though in the ICAO Framework Agreement the liability element is classified as mandatory, the corresponding provision says that «*the liability of the parties shall be ruled by the material liability regime normally applicable to its activity, in accordance with applicable existing international and national laws. [...] In the event that loss or damage can be attributed to GNSS failure, malfunction or improper use, but cannot clearly be traced to a specific defendant, the defendants involved in the chain of the events which resulted in the occurrence of the loss or damage shall be declared jointly liable for the entire amount of the loss or damage*».

The propelling idea of such Framework Agreement was also to create a readily available instrument to cover all legal clauses related to the operation of the GNSS, harmonising contractual relationships between the parties involved, and providing legal certainty also for the benefit of any third party injured or damaged from the GNSS malfunction. The Framework Agreement is, therefore, based on a two-tier approach: on one level, it offers a regulatory agreement dealing with public law matters, including liability, on the other level it deals with private contractual arrangements between the various parties involved in the exploitation of the GNSS where a very large degree of autonomy is granted subject to certain mandatory elements determined by the regulatory agreement.

Such a solution does not seem to be sufficiently appropriate for managing third parties liability issues in a complete and consistent way. The contractual nature comes along with the principle following which a contract concerns only the parties tied to the contract, and does not involve third parties who are totally unaware of the negotiations between the service provider and the signal provider. Evidently, it would be weird to oblige victims of an accident caused by a system malfunction to bring an action in accordance with a contractual scheme to which they were extraneous.

Eventually, as proposed within the same ICAO, the arrangement of such Framework Agreement, accompanied by related contract clauses, could be “an interim solution” between the *status quo* and the long term solution consisting in an international convention. In fact, from a practical point of view, a convention would take longer to put in place than such framework, meanwhile a contractual instrument would not only help to bridge the gap. Moreover a convention would be likely to evolve more smoothly from a workable interim solution.

An example of such an approach can be derived from the evolution of the international discipline of oil pollution¹⁷, where the entities concerned with the carriage of oil by sea set up a system on voluntary and contractual basis (TOVALOP and CRISTAL) before the drawing and entry into force of an international convention (CLC convention and FUND convention). The reason for the private agreement has been the anticipation of the effects that a uniform regime could guarantee, even in a financial perspective connected to the restoration of damages to the environment.

It has to be noted that even once the convention has been implemented, private agreements may maintain their relevance with a subsidiary role, by extending the scope of application and filling the gaps in the international regime.

6. Continues: the wide approach, the *need* for an international convention

Considering the previous objections to the suitability of the present legal framework relating to GNSS services, and since a great number of States would have to authorise the use of signals over which they have no control, it seems that the only way to secure confidence in the system and encourage private bodies to invest in this technology would be to oblige both providers and users to act and operate under a binding international legal instrument, namely an international convention. Such a convention should provide certain and reliable regime to the liability towards third parties not linked by any contractual relationship to the subjects involved in the chain of the signal providing. As a matter of fact, a global operating environment needs global solution through international law instruments.

To this extent, international conventions have the prerogative not only to give a uniform discipline, but also to provide a mandatory regime for situations included in their scope of application, leaving to parties' autonomy only the possibility of extending it¹⁸, and establishing a clear legal structure imposing rights and duties on parties.

Precisely, one of the reasons that lead to the elaboration of an international convention relates to the fact that, through an international instrument the political trends of national legislators are left apart, as well as the economic pressure exerted by private or public operators in the specific field concerned by the legislative initiative.¹⁹

Bringing this assumption to the subject concerned, and considering the above mentioned global nature of GNSS technology, the international nature of the subject matter is self-evident; this entails that many different legal orders are virtually implied in the regulation of the phenomenon,

¹⁷ See S.M. CARBONE, L. SCHIANO DI PEPE, *Uniform Law and Conflicts in Private Enforcement of Environmental Law: the Maritime Sector and Beyond*, in *Dir. mar.*, 2009.

¹⁸ In such a case a problem concerning the value of the remand will arise. In fact it is doubtful if the will of parties to make the uniform regime applicable to a situation not included in the convention's scope of application makes the international regime binding with reference of all its rules, or whether parties should repeal it in part, as an expression of parties autonomy.

¹⁹ See S.M. CARBONE, *Accordi interstatali e diritto marittimo uniforme (a proposito di un recente scritto di Natalino Irti)*, in *Dir. mar.*, 2008, p. 351; R. LUZZATTO, *Metodi di unificazione del diritto marittimo e interpretazione uniforme*, in *Dir. mar.*, 1999, p. 147; S.M. CARBONE, *Il diritto marittimo uniforme nell'ordinamento italiano tra codificazione e decodificazione*, in *Dir. mar.*, 1999, p. 94; S. BARIATTI, *L'interpretazione delle convenzioni internazionali di diritto uniforme*, Padova, 1986 p. 1 ss.

each of them setting its own laws and principles based on different political and economic purposes. Facing this scenario, the only way to address States' policies and laws is to set up a uniform international regime, through an interstate agreement, capable of ruling the subject matter independently from national legislators' trends.

Usually the international uniform regulation consists in a compromise between the different national disciplines of a particular field, or however entails a compression of States' legislations by imposing a uniform regulation to the detriment of the substantial interests grounding internal laws, but, in cases where the "internationality" is an intrinsic factor of the subject, the international regime is naturally the most appropriate way to balance all the interests involved; States therefore do not feel to be deprived of their traditions, considered that the specific sector originally wants to be regulated at an international level.

In order to establish a fair discipline, the principles of the international regulation will be driven, firstly, by other international conventions concerning third parties liability that States have ratified, as well as by national principles, without however being dependent on, or influenced by, national legislative frameworks.

The objective of such an instrument is to create a framework of a legal institution out from a specific national legal and political order, grounding it on the principles directly belonging to the international community but obviously derived from national principles. This will provide, on the one hand, the best protection of the involved interests and, on the other hand, certainty concerning the applicable regime, in favour of both the responsible party of, and the damaged persons by, a system malfunction.

To this purpose, a uniform law convention would provide a comprehensive framework for the subject, playing the role usually recognised to national laws for the regulation of a particular legal question, thus providing imperative rules concerning the most relevant issues.

In fact, different imperatives often guide the action of a national legislator, who is directed to set up mandatory rules in order to protect a particular interest, belonging to a precise class of economic operators, thus differing from State to State.

This is the reason why, with reference to third party liability in satellite navigation, a proper international convention should manage the charge of the harmful event, the types of damages that can be restored, liability exemption causes, liability limits, the distribution of liability criteria, joint and several liability, the types of liability and right of recourse, establishing common mandatory rules.

Evidently, also at the international level it is not plain to agree on the substantive regulation that has to be achieved, depending on limits to national traditions and social evolution that States are willing to accept in order to find a balance among all the interests involved, and on differences characterising the principles at the basis of a particular legal institution.

With reference to third party liability, even though at the international level we can find some common principles (see the existing conventions on the civil liability regime), each State has its own rules concerning the identification of the liable party, the onus of the proof, the quantification of damages' compensation etc.

Moreover, it is a matter of fact that in case of damages incurred by third parties outside of any contractual relation, many international conventions concerning civil liability already grant compensation to the injured party, also in case that the damage is caused by a system malfunction in the satellite navigation; obviously such conventions are connected to a particular field (i.e. oil

pollution, transport of nuclear material...), namely to a particular kind of damage, that can interfere with the provision of the signal.

Considering the variety of applications of the GNSS technology, and the consequent variety of international and national regimes that could be applied, we deem that it would be better to set up a convention which protects, in any case, victims of a system malfunction, not leaving to fate the chance of finding an adequate regime of their compensation. In fact, it is not difficult to imagine a situation where a system malfunction causes different damages, i.e., for example, an accident involving ships from which an oil spill derives but also a car crash which damages third parties goods. In such a case, victims of the first kind of damage would benefit from the international uniform regime of liability, while victims of other damages will find compensation only through applicable national law, with all the consequences that this solution implies in terms of compensation amount and evidence rules. At the same time, a unique system malfunction could cause different damages to the same person, who will be obliged to claim compensation to different subjects and following different normative rules.

By unifying liability rules in an international convention, the possibility of uneven deals of damages caused by the same event (i.e. system malfunction/failure) would be avoided, and the peculiarities of the tortious event would be duly taken into consideration.

From a substantive point of view, in order to understand the need for a convention it is necessary to analyse the main problems arising from the existing framework that will be faced by the international instrument.

First of all there is not a common notion of damage "*caused by a system failure or malfunction*"; what in a country can be seen as a consequence of a system malfunction, can be not causally connected to the GNSS system according to another legal system. Moreover, also the characterisation of the responsible party for a system malfunction may be different in each State, depending on the chain of the services' provision.

Another problem arises from the fact that, at present, the services of the global navigation satellite systems are provided by state authorities. This entails an issue related to whether, and to which extent, those authorities can invoke State immunity as a defence, if directly sued in foreign courts by the victims of a system malfunction.

In fact, following international customary law and international conventions²⁰, States, States' authorities and States' agencies, can not be sued before foreign courts in relation to "*acta iure imperii*", which means whenever a State acts as an Authority, and is not acting as an economic operator, i.e. "*iure privatorum*". To this extent it would be fundamental to know if the state-run infrastructure supplies public aims, private activities or both.

Therefore, it is reasonable that when the signal service is provided for military purposes the State immunity rule can be invoked, while when the application has a mere commercial nature also States have to be treated as a common economic operator, that can be sued in order to find compensation for damages caused by a system malfunction. In any case, if the problem of State immunity is not properly regulated, it is easy to forecast that, with reference to GNSS activities, States will try to extend the immunity principle as far as they can, because of the great amount of compensations they otherwise risk to be condemned to pay.

²⁰ See Basle Convention on State Immunity of 1972 and the UN Convention of Jurisdictional Immunities of States and Their Property of 2004.

Such a problem is not a new issue in the liability regime, being rather a focal point that is faced through international conventions on different specific matters, which exclude the State immunity exception in order to favour the position of the victims. As an example, we can quote the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy, where at article 13 it is said that *«if an action is brought against a Contracting Party under this Convention, such Contracting Party may not, except in respect of measures of execution, invoke any jurisdictional immunities before the court competent in accordance with this Article»*, and also Article 14 of the 1992 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, following which *«Any State which is bound by a declaration made under this Article shall, in any proceedings brought against it before a competent court in respect of any obligation specified in the declaration, waive any immunity that it would otherwise be entitled to invoke»*.

Another problem which arises from the current legal framework concerns international jurisdiction. As we said, the multiplicity of applications connected to the satellite system comes along with the multiplicity of people and goods that could be injured or damaged. Therefore, on the one hand different courts may grant different compensation for the same damage, involving a race to courthouses which ensure higher compensation, giving birth to the well known phenomenon of *“forum shopping”*; on the second hand, if there is not a uniform liability regime, pointing out who is responsible for the system malfunction, it may also happen that conflicting decisions may occur in which the service provider or the signal provider may or may not be considered as the responsible party for the damage. Moreover, if we consider that the international treaties concerning specific matters usually have a jurisdiction clause which determines the exclusive competence of a specific court, the said inconvenient situation shall be avoided.

With relation to this issue, we can recall what we have already observed in relation to the global effects of global navigation satellite systems and the need for a uniform and mandatory liability regime, through an international convention. We have already indicated that a contractual framework will not provide an answer to this problem, because even if the choice of law clause were binding, each contract would point out a different national law, chosen in the best interest for the parties, which nevertheless is often not the best solution for victims. If the framework agreement behind the contract definitely pointed out a particular national law as the best one for contracts concerning GNSS, other problems would arise: which law can set the best balance among the various interests involved? Is there a national law which deals with GNSS liability issues? Is it the best solution for victims? Will service providers and signal providers accept this rule?

The above mentioned considerations lead us to confirm that the best solution would be a convention setting up a uniform liability regime, rather than to leave this matter to conflict of laws rules related to GNSS services.

The last aspect that deserves attention concerns recognition and enforcement of judgements ensuring compensation to the victims of a global navigation satellite system malfunction. Evidently if a judgement can not be enforced or even recognised in the country where the assets of the defendant are located, any liability regime would be useless. At present there is no uniform international regime dedicated to this purpose, but at the European level parties could benefit from the Brussels I Regulation, obviously if the matter is included in the regulation scope of application (i.e. civil and commercial matters), that is not plain at present.

Considering the fact that in many cases States would be directly involved in disputes concerning GNSS, and that issues relating to this matter could touch basic principles of a legal system, many situations can easily be imagined where a foreign judgement according compensation to a victim of the system malfunction will not be recognised or enforced.

From the review of the existing legal framework, also the ICAO Study Group proposed a different approach to the problem of liability relating to GNSS, identifying three key elements: i) to ensure that the doctrine of sovereign immunity and related principles will not be an obstacle to bringing all potential defendants, including all parties involved in the provision of the GNSS services, into legal proceedings before the court where the victim of an accident involving failure or malfunction of GNSS has brought action; ii) to establish an adequate recourse action mechanism; and iii) to ensure adequate compensation coverage through compensation fund arrangements, as have been set up in the field of maritime transport and other fields (see nuclear damages convention).

As we already said, ICAO is not fully convinced on the need, at present, for an international convention, but following the remarks we have just underlined, we deem that ruling in advance for sure a possible dramatic situation will be the best solution, both in order to increase confidence in the new technology and to encourage private investors in developing new applications.

In fact, even though present rules do not altogether exclude victims from compensation in case of damage caused through GNSS, the complexity and the uncertainty of these rules make it difficult or even impossible for victims of such damage to receive fair compensation and for defendants to care in advance for the situation that they become liable.

7. Which model for a convention on third party liability?

Once explained the considerations at the basis of the need for an international convention on civil liability for satellite-based services, the following step will concern the identification of a model for the draft convention.

First of all, the convention should deal with a uniform substantive law of civil liability related to GNSS services and not with private international law rules. Effectively, it is usual that when a uniform discipline can not be achieved, mainly because of the great differences concerning national substantive laws and the impossibility of solving a contrast among those disciplines by finding a fair balance, States find an agreement in the harmonisation of private international law rules related to the specific topic, both with reference to conflict of law rules and to international jurisdiction.

However, this compromise does not fully satisfy the requirement for certainty which affects global navigation satellite systems, because the issue of the identification of the responsible party and the measure of the compensation amount will in any case vary from State to State.

Obviously, an international convention could not manage all issues related to GNSS liability system, for which national substantive laws shall keep a subsidiary role, while the international rules shall be limited to establish some basic principles and standards in order to provide financial protection against damage resulting from a GNSS malfunction.

From the analysis of the existing international instruments concerning civil liability, it comes out that the best way to manage such kind of liability is to submit it to a strict liability principle, channelled exclusively toward a sole responsible party easily identifiable and economically reliable, with the exclusion of any other private or public entity.

Applying strict liability principle to GNSS field, the damaged party would only be required to show that the loss can be attributed to the system malfunction, and would not have to demonstrate the fault or negligence of the party called on for compensation. According to this regime the damaged party is lightened from the evidence rule following which it has to prove that the damage is linked to a negligent conduct of the responsible party, and it only has to prove the causal connection between the damage and the system malfunction.

Pointed out the responsibility rule, it has to be identified who is the responsible party. Considering the possible chain going from the signal provider to the end user, it would be rather difficult to identify the person to be sued for compensation. Therefore, the identification has to be made directly by the international and uniform regime in channelling the liability to the specific party, easily identifiable, economically reliable and performing a presumably most hazardous activity. This principle has been worked out to “internalise” costs deriving from the performance of hazardous activities, allocating the total costs of reimbursement, prevention and restoration to the party that, being engaged in the risky activity, creates the conditions which result in the alleged losses.

The reference model should be the one set forth by the 1963 Vienna convention, as amended by the 1997 Protocol, which establishes that liability is channeled exclusively on the operators of the nuclear installations and that liability of the operator is absolute, i.e. the operator is held liable irrespective of fault. This means also that no person other than the operator shall be liable for nuclear damage in respect to the victims.

Channelling the liability on one person entails, on the one hand, attribution of responsibility to a party easily identifiable, economically reliable and presumably engaged in activities assumed to be the most hazardous and, on the other hand, it makes possible to exclude from responsibility, at least towards third parties and subject to possible recourse action, any other party involved in performing such services.

A proper convention on GNSS civil liability would allow victims of an accident arising from a system malfunction of the global navigation satellite system to identify the responsible party in the “person” with the above mentioned characteristics. This person would be the best responsible party both for victims, because of the plain relationship between its role of service provider and end users, so that it could be easily identified and, consequently, sued before the competent court, as well as for the person called for compensation, being the service provider the best person who can evaluate and internalise costs of the performed activity providing adequate insurance coverage.

However, some protection clauses for the responsible party should be introduced in order to mitigate the impact of strict liability channelled towards a specific party; first of all common exemptions from responsibility, such as when the accident is directly due to an act of armed conflict, hostilities, civil war or insurrection, the consequence of armed conflict, or to an act of terrorism or any act having similar characteristics, as well as to a serious natural disaster of an exceptional character, should be provided. Furthermore, the operator can be wholly or partially relieved from his obligation to pay compensation in respect of the damage suffered by the person who caused it either from his gross negligence or from an act or omission done with intent to cause damage.

Furthermore, time limits to compensation action and limits to the amount of compensation could be laid; the size of the limit is usually established considering not merely the value of the type of service that is provided, but above all with reference to the insurance market and its ability to support claims for indemnity from damaged parties. In fact, international practice calls for a compulsory insurance at the responsible party’s charge, for an amount at least equivalent to the above mentioned limit, in order to have full financial cover for the alleged damages and protect both victims and responsible parties.

Strictly connected to this clause, a faculty to claim directly against the insurer can be given to the damaged party; this approach would certainly reduce procedural costs and simplify the compensation mechanism, splitting the relationship between the insurer and the insured-responsible party from the right of the victims to find full compensation.

Considering the massive damage that could be caused by a system malfunction, and always keeping in mind the aim of an international regulation in this field, a supplementary compensation fund could be established. The reference models are the 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1971 Fund Convention) and the 1997 Convention on Supplementary Compensation for Nuclear Damage, through which the payment of supplementary compensation to those who could not obtain full compensation for the damage from the responsible party is provided.

While according to the FUND convention the fund is financed by contributions levied on companies in Fund Convention countries that receive crude oil and heavy fuel oil after sea transport, the specific nature of GNSS activities and the bond between private operators and public entities in the exploitation of satellite systems, let us deem that the fund should be financed by States in proportion of the advantage they take from the system's use.

With reference to the conditions under which the damaged party should benefit of the supplementary compensation, the general rule following which the right of extra-compensation arises only if the responsible party and his insurer can not meet the reimbursement obligation, or if the liability limit is lower than the total reimbursement claims, or if an exoneration clause excludes liability, can be transposed to the GNSS specific field.

Finally, provisions should be set up with regard to the conditions under which sovereign immunity could not be invoked, in order to avoid situations where parties would be unable to seek redress due to this rule, and the convention should also propose exclusive jurisdiction of a court, preferably of courts of the participating countries in whose territory damages occurred.

8. Conclusions

From the analysis of the premises of the possible solutions concerning the liability deriving from GNSS, it emerges that the proper legal framework for an uniform regime of GNSS third party liability is an international convention of uniform law. The need of such instruments is mainly due to the fact that such regime implies mandatory rules and may not depend on acts of private autonomy not being capable: i) to protect victims of incidents in a specific field characterised by a high risk factor, and ii) to introduce an element of certainty in the discipline of compensation of huge damages.

The need for an international convention is even stronger if we consider the global aspect of GNSS, and the wider spread of this technology affecting all relevant economic activities, by now free from the original military purpose. In fact, differences among States' legal orders are stressed in case of trans-national phenomena where relevant damages can be imagined and different courts could be seized.

In such cases, the uncertainty connected to the new technology comes along with the need for a uniform mandatory regime, as the best solution for the removal of uncertainty and for the balance among different interests involved in the exploitation of satellite based applications.

Moreover, the international nature of the subject matter implies that many different legal orders are virtually ruling the phenomenon, each of them setting its own laws and principles based on different political and economic purposes. As already said, these differences in national regulations come along with uncertainty for all the parties interested in the provision of the service; therefore in order to address States' policies and laws, a uniform international regime has to be set up, independently from national legislators' trends.