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THIRD PARTY LIABILITY ARISING FROM GNSS-RELATED SERVICES

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Abstract: The liability regime for the erroneous information provided from GNSS is an issue of importance. There are a few proposals recently that suggest having an international convention and subjecting the operators to strict liability with limitation in the amount, supplemented by the compensation fund. This paper agrees with the need of convention but makes a different argument, based on the general doctrine on the liability for defective information. In order to facilitate the GNSS-related services, the liability of the GNSS operator for the basic positioning signal is better to be exempted. The liability of other supplier of value-added services may better be formulated through contractual arrangements between the supplier and user of the service, which will constitute the second tier of the regime.

I. Introduction

1. Past discussions about the liability framework of GNSS operator

As a promising case of commercial use of

space activities, the global navigation satellite system (GNSS) has attracted the interest of the public in the recent years.¹ The legal issues relating to it, in particular the liability toward the third party in case there is an error in the services provided, have been analysed from the early days of the civil use of the system.² However, the problem was rather theoretical because the systems that are in operation so far, GPS (Global Positioning

¹ For the overview of the system and its legal issues, FRANCIS LYALL & PAUL B. LARSEN, *Space Law: A Treatise* 389ff. (Ashgate, 2009). The importance is recognised internationally, as evidenced by the report of the Action Team on Global Navigation Satellite Systems (Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III): final report of the Action Team on Global Navigation Satellite Systems, A/AC.105/C.1/L.274 (2003)).

² Early works on the issue include JONATHAN M. EPSTEIN, Global Positioning System (GPS): Defining the Legal Issues of its Expanding Civil Use, 61 *Journal of Air Law and Commerce* 243 (1996); BRANDON ERIC EHRHART, A Technological Dream Turned Legal Nightmare: Potential Liability of the United States Under the Federal Tort Claims Act for Operating the Global Positioning System, 33 *Vanderbilt Journal of Transnational Law* 371 (2000); FRANS VON DER DUNK, The European Equation: GNSS = Multimodality + Liability, in *Liber Amicorum Karl-Heinz Böckstiegel: Luft- und Weltraumrecht im 21. Jahrhundert* (Carl Heymanns, 2001).

System) by the United States and GLONASS by the Russian Federation, are dual-use systems and, therefore, it seems unlikely that these systems, if ever experience malfunctions, become subject to liability.

The emergence of the project of a GNSS satellite system purely for civil services, namely the Galileo project being advanced by the European Union (EU) and European Space Agency (ESA), has made the issue no longer a subject of theoretical arguments but an agenda for international rule making. It has not, however, diminished the significance of a theoretical analysis of the problem. On the contrary, an international instrument must be based on the sound theory of civil liability so as to provide an effective framework for the development of services using the system.

The GNSS is a system that consists of satellites that send out positioning signals on an accurate timing. Using signals from at least four satellites, the user can work out an exact position of itself. The benefits deriving from this technology is expected to be enormous. Already the system is used for such business services as navigation to car drivers, monitoring of the transported goods, keeping track of the children and aged in prevention of their involvement in troubles as well as observation of the surface of the earth that contributes to the forecast of natural disasters.

The early discussions about the legal framework about GNSS services, especially the liability of its operators,

focused on the air traffic navigation. As a consequence, the principal forum that hosted the studies was the International Civil Aviation Organization (ICAO). ICAO, acknowledging the benefits of utilising GNSS for air traffic navigation, set up a study group on “legal aspects of CNS/ATM.” However, the opinions within the Study Group were divided about the need for an international convention on the liability from GNSS services and the report presented to the ICAO General Assembly contained both opinions without a compromise.³ After receiving the report, ICAO does not seem to be zealous in developing an international convention for the moment.

The subject was then tabled before UNIDROIT (international Institute for the Unification of Private Law), which is currently making a preliminary study about whether to include it in its work program.⁴ Further, the European Commission, the body responsible for the management of the Galileo program, is going to publish the “definition of the liability policy” by the end of this year.⁵

³ Final Report on the Work of the Secretariat Study Group on Legal Aspects of CNS/ATM Systems, A35-WP/75 LE/5 Appendix, paras.5.2.1-5.2.7 (2004).

⁴ See UNIDROIT News, [2008] *Uniform Law Review* 762, 770. For details and backgrounds, HANS-GEORG BOLLWEG, Initial Considerations regarding the Feasibility of an International UNIDROIT Instrument to Cover Liability for Damage Caused by Malfunctions in Global (Navigation) Satellite Systems, [2008] *Uniform Law Review* 917.

⁵ Strategic Framework for the GNSS for the European satellite radio-navigation programmes (EGNOS and Galileo) and related activities,

2. Aim of this paper

These developments have already produced several thorough studies about the liability issues arising from GNSS. These studies, however, have had “biases” in three respects.

First, the studies, especially the recent ones, mainly deal with Galileo system. However, when considering the liability for damages caused by the erroneous information, there is hardly any reason to distinguish a “global” navigation system (Galileo) and a regional system of a similar nature, such as the Quasi-Zenith Satellite System (QZSS) planned by Japan. In this sense, the scope of discussions needs to be broadened and generalised.

Secondly, the previous studies have mainly dealt with a specific service, namely air traffic navigation. There was, of course, a good reason to have an exclusive focus on air traffic navigation when the issue was before ICAO. However, if the subject is going to be taken up by an organisation with general scope like UNIDROIT, consideration must be given to various other types of services. Air traffic control is a highly sensitive activity, the failure of which could lead to a disastrous accident involving many people. Other kinds of businesses, however, would not result in so serious an outcome even if the information from GNSS were to be erroneous.⁶ The liability scheme must be

flexible enough to respond to the latter case as well.

Thirdly, the study of GNSS liability in the past often referred to the existing international liability regimes, mainly the conventions on oil pollution and nuclear damages, besides the space law principles. However, damages in the case of malfunction of GNSS are usually not environmental damages. Rather, if the cause of liability is the erroneous information emitted by a satellite, the regime must be in line with the liability principles for providers of information in general. As the latter area of law has not been regulated by specific instruments, either internationally or within national law of most countries, the general principles of civil liability needs to be examined.

With these three “biases” in mind, this paper proceeds with its argument in the following way. First, the liability for erroneous information in general is considered (II). The cases and doctrines in the United States are especially useful in this regard. Then the possible principle for liability of GNSS operator is considered (III). Further, the supplementary compensation mechanism that is included in the recent proposals is examined, in comparison with

Satellite-based Services, [2008] *Uniform Law Review* 935, p.939. For example, in the case of a transport company trying to enhance the logistics of its fleet of trucks, the error in information could lead to less efficient allocation of its trucks and some loss in time of transport, but the damages from such an error, if any, are far less serious than the loss of many lives in crash of aircrafts.

C(2008) 8378 final, p.15.

⁶ ULRICH MAGNUS, Civil Liability for

the experiences of similar mechanisms in other regime (IV). A brief conclusion will follow (V).

II. Liability for erroneous information

1. Irrelevance of the Liability Convention

As the satellites constituting GNSS are space objects, the liability arising from an erroneous signal emitted by the satellite might seem to be governed by the Outer Space Treaty and the Liability Convention. However, it is not likely that these treaties are relevant after all.

First, the Liability Convention has been interpreted, although not unanimously, as applicable only to direct damage. The interpretation is based on the definition of “damage” in Art. I of the Convention, which mentions loss of life, personal injury or other impairment of health and loss of or damage to property, without any reference to economic loss.⁷ Therefore, the indirect damages, such as incurred by the end-user as a result of the erroneous signal may not be covered by the Liability Convention.

Secondly, the Liability

⁷ I. H. PH. DIEDERIKS-VERSCHOOR & V. KOPAR, *An Introduction to Space Law*, p.39 (Third revised ed. 2008, Wolters Kluwer); see also LYALL & LARSEN, *supra* note 1, p.405. Other authors are of the same view: see e.g. SERGIO CARBONE & MARIA ELENA DE MAESTRI, *The Rationale for an International Convention on Third Party Liability for Satellite Navigation Signals*, [2009] *Uniform Law Review* 35, p.38.

Convention addresses only the state liability of the launching state. If, therefore, the allegedly damaged user raises suit against the operator of GNSS, its liability is not covered by the Liability Convention at all. In this case, the applicable domestic law on civil liability must be referred to.

2. Raw data versus “processed” information

Turning to the domestic law does not provide an easy answer, either, because in many jurisdictions the civil liability for defective information is an issue not fully explored. Still, some thoughts may be drawn from the cases and arguments.

In the United States, there are a series of cases in which the reader of a book raises suit against the publisher alleging that he or she was injured by following the incorrect information contained in the book. The courts held in many of these cases that the book was not the “product” for which the publisher should owe strict product liability. In some cases the court mentioned the freedom of speech (First Amendment of the US Constitution),⁸ while other courts more directly warned about the threat of inhibiting the exchange of ideas by imposing strict liability on the publisher.⁹ On the other hand, in cases where a defective chart caused the aircraft accident, the court tend to hold the

⁸ *Walter v. Bauer*, 439 N.Y.S. 2d 821 (Sup. Ct. 1981).

⁹ *Winter v. G.P. Putnam’s Sons*, 938 F. 2d 1033 (9th Cir. 1991).

publisher of the chart strictly liable for the defect.¹⁰ The difference between these two lines of cases has remained as a puzzle.¹¹

It might be useful to note that one of the courts have tried to distinguish an aeronautical chart from a book by pointing to the “technical” nature of the former:

Aeronautical charts are highly technical tools. They are graphic depictions of technical, mechanical data. The best analogy to an aeronautical chart is a compass. Both may be used to guide an individual who is engaged in an activity requiring certain knowledge of natural features.

... In contrast, *The Encyclopedia of Mushrooms* [the book that the case was disputed over] is like a book on how to use a compass or aeronautical chart. The chart itself is like a physical “product” while the “How to Use”

book is pure thought and expression.¹²

In other words, the courts in the United States seem to be concerned about the difference of raw data and information produced from the data.¹³ Considering that any meaningful information must be selective about the data contained,¹⁴ it may better be understood as the degree of “processing” of the data, rather than the dichotomy of data and processed information: the more processed the information is, the less likely the liability arises.

3. Expected behaviours of the user

Another element that may be relevant to determining the liability for defective information is the expected behaviour of the recipient. In the United States, the Restatement of Torts (Second) provides that the supplier of false information is subject to liability for pecuniary loss when the loss is caused “by their justifiable reliance upon the information.”¹⁵ Japanese cases on the bank’s liability for supplying the incorrect information about the solvency of its customer are on the same line. One court stated in *obiter* that a bank should be liable only when it knew that the recipient would

¹⁰ *Aetna Casualty & Surety Co. v. Jeppesen & Co.*, 642 F. 2d 339 (9th Cir. 1981); *Saloomy v. Jeppesen & Co.*, 707 F. 2d 671 (2d Cir. 1983); *Fluor Corp. v. Jeppesen & Co.*, 216 Cal. Rptr. 68 (Ct. App. 1985); *Brocklesby v. United States*, 767 F. 2d 1288 (9th Cir. 1985).

¹¹ See ROY W. ARNOLD, *The Persistence of Caveat Emptor: Publisher Immunity from Liability for Inaccurate Factual Information*, 53 *University of Pittsburgh Law Review* 777, p.784 (1992); LARS NOAH, *Authors, Publishers, and Products Liability: Remedies for Defective Information in Books*, 77 *Oregon Law Review* 1195, p.1207 (1998); ROBERT SCHULZ, *Application of Strict Product Liability to Aeronautical Chartpublishers*, 64 *Journal of Air Law and Commerce* 431 (1999); NATHAN D. LEADSTROM, *Internet Websites as Products Under Strict Products Liability: A Call for an Expanded Definition of Product*, 40 *Washburn Law Journal* 532 (2001); NORIKO KAWAWA, *Civil Liability for Defects in Information in Electronic Form* 128 (Shinzansha International, 2002).

¹² *Winter v. G.P. Putnam’s Sons*, 938 F. 2d 1033, p.1036 (9th Cir. 1991).

¹³ For the distinction of data and information, see KAWAWA, *supra* note 11, pp.9-10.

¹⁴ See SCOTT D. MAKER & MICHAEL R. MAKER, JR., *Geographic Information Systems: Legal and Policy Implications*, 69 *Florida Bar Journal* 44, p.47 (1995).

¹⁵ *Restatement of the Law (Second)*, Torts, § 552(1).

rely on the information without any further investigation,¹⁶ while another court denied the liability for the reason that the recipient acceded to another source of information as well.¹⁷

Some have argued for applying a similar idea to the case of liability for physical damages caused by the defective information. A note in the law review suggested that the information that “can reasonably be expected to invite reliance thereon without further investigation”¹⁸ be subject to the strict liability. Another author from Japan noted that the supplier of information that “is intended to be used actively”¹⁹ may be more exposed to liability than in the case otherwise. These ideas of considering the behaviour of the recipient of the information are consistent with the law of product liability that takes into account the expected use of the product.²⁰

III. Liability enabling contractual arrangements

¹⁶ Tokyo District Court, 8 Aug. 1974, *Hanrei Jihō* 767, 63.

¹⁷ Tokyo District Court 31 Jan. 1980, *Hanrei Jihō* 973, 107.

¹⁸ LEADSTROM, supra note 11, p.557.

¹⁹ KAWAWA, supra note 11, p.134.

²⁰ The Council Directive of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products (85/374/EEC), art.6, para.1 (b); the Products Liability Law (Japan), art.2 (2). For the comparative analysis of this point, see LUKE NOTTAGE, *Product Safety and Liability Law in Japan*, p.94 (Routledge Curzon, 2004).

1. Liability for errors in GNSS-related services

In order to apply the general framework analysed above to the case of GNSS malfunction, as already pointed out,²¹ the distinction needs to be made between the basic positioning signal itself and the services based on them (value-added services). The basic positioning signal is, though close to raw data emitted without “processing,” very general in nature and it is hardly conceivable that the recipient takes action in reliance on it alone. Usually a user matches the signal with information from other sources and makes its own decision before taking an action. Therefore, the emitter of the basic positioning signal (operator of a GNSS satellite) will not be held liable for an error in the signal under the framework. If, on the contrary, a rule is introduced that holds the operator liable for the results of the mistaken actions taken when there is an error in the basic positioning signal, the whole system will become too costly, as the operator will become overly cautious about the measures in preventing such errors

As regards the value-added services, they may further be distinguished according to the kinds of services provided. For example, the liability of the provider of the navigation services for air traffic can be distinguished from the neighbourhood

²¹ See FRANS G. VON DER DUNK, Liability for Global Navigation Satellite Services: A Comparative Analysis of GPS and *Galileo*, 30 *Journal of Space Law* 130, p.136 (2004)

information delivered to a mobile phone, as the latter type of service is “processed” in the sense that it includes not only positioning of the location of the user but also various information about the shops and events available in the area. A single liability rule cannot be applicable to all of these services. Otherwise, the liability will be so heavy for the supplier of some services as to deter entries into such business, or so loose for the supplier of other services that people do not find GNSS-related services reliable.

2. Deterrent effects of tort liability

It might be argued that the deterrent effect of liability is the very mechanism that leads to the socially optimal activities of the parties. The costs for preventing the errors in basic positioning signals or the disincentives for entering the market of value-added services must be welcomed, rather than avoided, in order to achieve the socially optimal situation. In particular, economists argue that a strict liability rule will make the party take optimal levels of care and to engage in optimal levels of activities.²²

However, these arguments are constructed on a simple case where the existence of an accident and the damages caused by it are clearly identifiable. The framework for the liability of defective information, as discussed above, relate to

²² STEVEN SHAVELL, *Economic Analysis of Accident Law*, pp.9, 24 (Harvard University Press, 1987).

such elements as “accidents” or “causation,” because these elements are not so evident in the case involving information. The theory predicts that, if liability is imposed on a party for damages not caused by its action, it will be intimidated from engaging an activity that is socially desirable.²³ A simple strict liability without regard to the types of information provided may have just such an effect.

A case that supports this prediction is found with the liability of Internet service providers. It is now the common rule in the United States, Europe and Japan that the Internet service provider that has taken a certain procedure will not be held liable for the copyright infringements or defamation because of the content uploaded on the server that it hosts.²⁴ The aim of the rule was to exclude the risks of liability that could intimidate the providers from offering socially desirable services, and indeed it succeeded in enabling various services flourish on the Internet. This case is indicative when considering the liability of the emitter of the basic positioning signals. By exempting the liability of the emitter of

²³ *Id.*, p.108.

²⁴ 17 U.S.C. § 512; Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market, art.14; Act on Limitation of Damages Liability of Certain Telecommunications Entities and the Disclosure of Information over the Subscriber (Japan), art.3. As regards the last legislation, see SOUICHIROU KOZUKA, *The Role of Japan in World-wide Copyright Protection*, in: F. Gotzen (ed.), *The Future of Intellectual Property in the Global Market of the Information Society* 23, p.32 (Bruylant, 2003).

the basic positioning signal, or at least limiting it, the promotion of businesses based on GNSS, just as what happened in the case of Internet service providers, will be expected.

3. Convention or contract?

The next question is how to achieve the outcome that has been advocated here. Currently there is no international regime on the liability for GNSS-related services and, if in case any error takes place and damages are caused, the applicable domestic law applies. Such a situation is, as has already been pointed out by many, too uncertain for those engaged in the GNSS-related activities.²⁵ One cannot be sure that the case law in the United States analysed above is sufficiently established. The courts in other jurisdictions are even less predictable about what rules to apply. Such a situation will induce strategic behaviours of relevant parties over the choice of law and forum shopping once an accident occurs. It is especially doubtful that courts applying the existing national law will limit or exempt the liability for errors in basic positioning signals, which seems to be a desirable solution from the policy viewpoint.

Therefore, adopting an international instrument, such as a

²⁵ CARBONE & DE MAESTRI, *supra* note 7, pp.45-51; MAGNUS, *supra* note 6, pp.957-959; PIETRO MANZINI & ANNA MASUTTI, An International Civil Liability Regime for the Galileo Services: A Proposal, 33 *Air & Space Law* 114, pp.116-118 (2008).

convention, will enhance the legal certainty and improve the operational environment of GNSS. If so determined, the first element to be included in the convention is the exemption of the liability for errors in basic positioning signals. Drafting a rule that suits every kind of value-added services will be more difficult. It seems that drafting a sufficiently flexible rule without becoming too discretionary to exclude the legal uncertainty is almost impossible. The risk and responsibility most suitable to the type of information provided in each of the services will perhaps be best arranged through a contract between the service provider and the user of each service.²⁶

Thus it seems appropriate to conceive of a two-tier scheme. The first tier is the exemption of liability for the emitter of the basic positioning signals, explicitly provided by the convention. The second tier will be the contractual regime, responding to the types of value-added services. The idea to the contrary may be the strict liability imposed on the basic operator of GNSS, but such a system will be inflexible and could intimidate the development of business based on GNSS signals.²⁷

The argument in this paper is much different from the recent proposals²⁸ on

²⁶ It is noteworthy in this respect that the Study Group under ICAO worked on the Draft Contractual Framework Relating to the Provision of GNSS Services (A35-WP/75 Appendix, Attachment F (2004)).

²⁷ See STEPHEN M. BAINBRIDGE, Abolishing Veil Piercing, 26 *Journal of Corporate Law* 479, pp.499, 504, 515 (2001).

²⁸ CARBONE & DE MAESTRI, *supra* note 7, p.52;

international instrument on GNSS-related liability, which appear to adopt the second idea. The latter idea, however, will have a good reason to be adopted if focused on the air navigation service. It is one of the value-added services that supplies the information tailored to a specific purpose. The degree of “processing” is rather high, while the user, pilot of an airplane, is very likely to rely on the information. Therefore, there is a good reason to introduce an enhanced liability for this type of service. It also is in line with the cases in the United States that held the publisher of the aeronautical chart liable for the accident caused by its error. The idea cannot be applicable to either the errors in the basic signal itself or other types of services, though. It is, as a consequence, more desirable to provide the enhanced liability specific to air navigation as a contractual framework and make it a condition for using the service to accept it.

IV. Supplementary compensation and cross-subsidisation

Recent proposals on the international instrument also suggest introducing the supplementary compensation fund,²⁹ apparently inspired by the existing systems

MAGNUS, *supra* note 6, p.962; MANZINI & MASUTTI, *supra* note 25, pp.125-127.

²⁹ CARBONE & DE MAESTRI, *supra* note 25, p.54; MAGNUS, *supra* note 6, p.966; MANZINI & MASUTTI, *supra* note 25, pp.129-130.

for nuclear damages³⁰ and the oil pollution at sea.³¹ However, a supplementary fund for damages caused by GNSS-related services can have some different consequences from the existing funds.

In the case of oil pollution from tankers or nuclear facilities, there is only one industry involved. Therefore, the fund means simply the risk transfer from one party (shipowner or nuclear power plant operator) to another (oil company or taxpayers). In the case of GNSS services, the operators supplying various services by using the basic positioning signal are diverse in nature, risk and likelihood of incurring liability. Under such circumstances, if contribution is required of the service providers, a compensation fund will result in the cross-subsidisation between those service providers, which will transfer the costs to the end-users of each service. A similar problem was a much contested issue when the HNS Convention³² was discussed.³³ Even after a compromise was reached and the Convention

³⁰ Convention on Supplementary Compensation for Nuclear Damage, 1997.

³¹ International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971; International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992; Protocol of 2003 to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992.

³² International Convention on Liability and Compensation for Damage in Connection With the Carriage of Hazardous and Noxious Substances by Sea, 1996.

³³ ALAN KHEE-JIN TAN, *Vessel-Source Marine Pollution*, p.338 (Cambridge University Press, 2006).

was adopted, the problem subsists in some other form, which now necessitates the adoption of the Protocol to make the Convention more acceptable. It is not desirable that a convention on GNSS-related services is involved in similar difficulties.

If a supplementary compensation mechanism is found necessary for the sake of victims, which is again plausible in the case of air navigation service, the mechanism can be provided through a private arrangement. The precedent of TOVALOP, which preceded the Fund Convention for oil pollution from tankers, may offer a good model for such a privately arranged mechanism.

V. Conclusion

As the services from GNSS have become so widespread and non-military operator (Galileo) or a similar system on a regional basis (QZSS) is expected soon, the liability for an error in the supplied information needs to be discussed seriously. Some proposals for an international convention have been made in order to meet such needs and suggest a regime of liability to be adopted.

Such a regime must be based on the analysis of cases and doctrines on the liability for defective information. This paper has argued that the liability will depend on the kind of information at issue, in particular two elements: the degree of “processing” made to the information and the behaviour expected of the recipient. Applying this

framework will lead to a conclusion that the regime shall not be a single rule applicable to every kind of services. More flexible approach is required to reflect the types of information supplied in those services.

Of particular importance is the liability for basic positioning signal. As this kind of signal is, by its nature, not likely to induce direct actions of the recipient, it is reasonable not to impose heavy liability for its supplier. Further, a policy consideration for not enhancing the cost of service too much in order to promote the services using the signal will favour the exemption of liability as regards the basic positioning signal, just like exempting the Internet service provider from liability caused by the content that it hosts.

In conclusion, this paper proposes that an international convention is desirable, but it should be made up from two tiers, the basic tier exempting the liability for basic positioning signal, while the second tier allowing flexible arrangement depending on the type of services involved, through contractual framework arranged by relevant parties. Because of the variety in the providers and users of the services offered, a supplementary fund will better formed by voluntary arrangements, rather than by the convention.