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Big Brother or Eye in the Sky? Legal Aspects of Space-Based Geo-Information for Disaster Management

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Abstract

Amongst the methods of gathering geo-information inter alia for disaster management purposes, the use of satellites is a particularly interesting one in view of their global coverage. In this area a number of recent interesting developments have taken place, such as the establishment of a Charter on Space and Major Disasters, and the rapidly evolving plans for GMES and GEOSS.

These developments raise a number of legal issues, related to state responsibility, state liability, and the respective roles of intergovernmental organizations and commercial and/or private entities in this regard. These issues cannot be easily solved, since the international legal environment for the use of space data for disaster management purposes from the other end offers a rather fragmented picture. Some rules and principles exist on the international level, often however not well-defined and leaving room for conflicting interpretations. Others are confined to certain national territories, certain types of activities or even certain types of natural or legal persons. In still other cases no specific rules or principles can be found to be applicable at all.

1 Introduction

Amongst the methods of gathering geo-information inter alia for disaster management purposes, the use of satellites (remote sensing; earth observation) is a particularly interesting one in view of its global coverage. Also, in this area a number of recent interesting developments have taken place, such as the establishment of a Charter on Space and Major Disasters, and the rapidly evolving plans for Global Monitoring for the Environment and Security (GMES) and the Global Earth Observation System of Systems (GEOSS).

These developments raise a number of legal issues, which should be tackled and, largely, solved if the possibilities of satellites to contribute to disaster management is to prosper as comprehensively as possible. This will partly determine whether the capabilities of satellite earth observation in such cases would make a satellite an "Eye in the Sky," capable of seeing where more conventional methods cannot look as efficiently and thus greatly contributing to mankind's wellbeing in such specific cases as disaster management, or whether it will turn out to be more of a "Big Brother," such capabilities being used predominantly against the interest of human beings rather than to help them.

The paper will present a first overview of the legal issues involved, how they might interfere with the ultimate objectives of disaster management and what might be done in respect of the most problematic gaps and overlaps in the legal regime(s) at a relatively short notice. In doing so, the paper will refer as appropriate in particular cases to the topic of disaster management, or relate more general conclusions to that specific topic.

2 Satellite Earth Observation for Disaster Management: The Role of Space Law

By way of starting point it should be clear that in view of the novelty of international disaster management and in particular the uses of satellite information in such a context, as of yet little dedicated and focused legal regulation exist. As a consequence, the international legal environment for the use of space data for disaster management purposes offers a rather fragmented picture. Some rules and principles exist on the international level, often however not well-defined and leaving room for conflicting interpretations. Others are confined to certain national territories, certain types of activities or even certain types of natural or legal persons. In still other cases no specific rules or principles can be found to be applicable at all.

The analysis thus represents an effort to address the most salient legal aspects of such operations from a more general, international space law-perspective. It is divided into four sub-themes as they arise under general space law:

1. international responsibility,
2. international liability,
3. the role of intergovernmental organizations and
4. the role of private entities.

Prior to that, a brief description of satellite earth observation, in particular of GMES and the Charter on Space and Major Disasters, will be provided.

The observation of the earth, including its oceans and atmosphere, has long been viewed as one of the major benefits of human space activities. Its applications have widened, in particular over the last two decades, from largely strategic (“spying”) ones to a wide variety of uses: for agricultural development, mining purposes, industrial and urban development, environmental controls, monitoring of arms and disarmament treaties up to and including, with the rapidly growing level of resolution of the data available on the open market, also geographical information systems (GIS).

Increasingly, also the use of satellite data in the context of major disasters, whether natural (earthquakes, floods, typhoons) or man-made (oil spills, landslides, refugees) became of interest. Though only rarely capable of avoiding the disaster altogether, such data could be used pre-disaster to mitigate its catastrophic effects by their warning capability, and post-disaster by rapid damage assessment and enhancement of the efficiency of rescue and damage-mitigation operations, as well as longer-term recovery and rehabilitation. For the sake of this paper, “disaster management” is viewed as comprising both categories of disaster-related activities.

The United Nations Declaration on Principles Relating to Remote Sensing of the Earth from Outer Space, Resolution 41/651, adopted by consensus on 3 December 1986, sets out the main legal principles in this regard. Thus, Principle X states the need for states to convey relevant information regarding threats to the “Earth’s natural environment” to other states concerned; and even more to the point, in a similar vein. Principle XI calls upon states in the possession of relevant information regarding natural disasters

1 Res. 41/65; Official Records of the General Assembly, Forty-first Session, Supplement No. 20 (A/41/20 and Corr. 1); UN Doc. A/AC.105/572/Rev. 1, at 43; 25 ILM 1334 (1986).

to duly inform other states concerned.² Principle VIII furthermore describes the envisaged role of the United Nations itself in this context: it “shall promote international cooperation, including technical assistance and coordination in the area of remote sensing.”³

It should be noted, that Resolutions of the UN General Assembly are not binding legal documents *per se*; however, they may over time evolve into reflections of customary international law. In the case of Resolution 41/65, the fact that it was adopted by consensus is surely conducive to such a development. Moreover, UN General Assembly Resolutions carry considerable weight already in the political/moral sphere; hence states will be rather prudent in avoiding to be seen as neglecting the principles set out in such a Resolution. In any case, these principles provided a solid point of departure for the development of further legal rules and principles once the time would be ripe.

With a view to disaster management in particular, however, since then more stringent and/or legally binding rules and obligations were not developed. The inherent international and sovereignty-sensitive aspects, coupled to the enormous investment necessary for operational satellite systems, caused states with earth observation capacities (basically until then a handful of developed states) generally speaking to be weary in taking upon their shoulders any (additional) obligations potentially further complicating their satellite operations.

With the increasing onslaught, visibility, and global character (at least in terms of effects, such as in the case of refugees or aid programs) of major disasters over the last decades, no longer confined moreover to the developing world, the understanding grew that such an attitude would in the end be counter-productive. Furthermore, to the extent developing nations still bore the brunt of disasters, it is particularly noteworthy that leading developing nations such as India, China, Indonesia and Brazil acquired indigenous satellite earth observation capabilities, entering the club of “haves” in terms of space.

2 The full text of Principle X runs as follows: “Remote sensing shall promote the protection of the Earth’s natural environment. To this end, States participating in remote sensing activities that have identified information in their possession that is capable of averting any phenomenon harmful to the Earth’s natural environment shall disclose such information to States concerned.” The full text of Principle XI runs as follows: “Remote sensing shall promote the protection of mankind from natural disasters. To this end, States participating in remote sensing activities that have identified processed data and analyzed information in their possession that may be useful to States affected by natural disasters, or likely to be affected by impending natural disasters, shall transmit such data and information to States concerned as promptly as possible.”

3 Principle VIII, Res. 41/65.

These developments resulted not so much (yet) in the development of a distinct legal regime for disaster management or even the use of satellite data in that context—that still seems a bridge too far at this moment. It did result, though, in two institutional developments in particular. The most visible results of the changing paradigms thus are twofold: the development, on the one hand, of the GMES-concept, and on the other hand, of the Charter on Space and Major Disasters.

3 Global Monitoring for the Environment and Security (GMES)

The first-mentioned development was initiated by the two pre-eminent European international organizations in terms of space: the European Space Agency (ESA) and the European Union as represented by the European Commission. These two organizations had over the 1990's grown closer together in defining the interests and policies of "Europe" when it came to space, and such closer co-operation had resulted already in the first joint project, for a European Global Navigation Satellite System "Galileo," planned to be operational as of 2008.⁴

As a consequence inter alia of a few oil spill disasters, highly visible and political discussions concerning the Kyoto Protocol, and some major human tragedies in the Balkans and elsewhere, ESA and the Commission started considering, roughly along the lines of their co-operation on Galileo, to arrive at a coherent system of providing satellite observation data for a broad range of purposes: environmental but also others as long as related to both civil and "military"/political security of the peoples of Europe. This became the concept of GMES:

Global Monitoring for Environment and Security (GMES) is a joint endeavour by ESA and the European Commission to establish an independent capability for global monitoring, in support of European environment and security goals. GMES is envisioned as a complete decision-support system for use by the public and policymakers, enabling the acquisition, interpretation and distri-

4 See on Galileo e.g., the author's *Quis vadit cum vobis, Galileo?*—Institutional Aspects Of Europe's Own Satellite Navigation System, in *Proceedings of the Forty-Sixth Colloquium on the Law of Outer Space* (2004), 360-70; Liability for Global Navigation Satellite Services: A Comparative Analysis of GPS and Galileo, 30 *Journal of Space Law* (2004), 129-67; Of Co-operation and Competition: GALILEO as a Subject of European Law," in *Legal Aspects of the Future Institutional Relationship between the European Union and the European Space Agency* (2003), 47-64.

bution of all useful information related to the environment, risk management and the natural resources. It represents a vital part of Europe's contribution to issues affecting the global environment and the safety of the Earth. Making GMES happen involves improving current deficiencies in European information gathering by better coordinating existing information gathering resources situated on the ground. It also means optimizing the use of current and future Earth Observation systems—whose unique perspectives provide a whole new dimension of information about the Earth.⁵

In other words, the first “phase” consists essentially of an inventory of the types of satellite data currently available to Europe for those purposes, with the idea to identify gaps—whether in types of data, in terms of geographical or thematic coverage, or in time: many existing satellite earth observation operations were developed as one-off operations, with little planning in place for the after-satellite life of the data or continuation of generation of data after the end-of-life of the satellite. Once the gaps would be identified, in a second phase thus decisions would have to be taken as to where it would be possible and (technologically, politically, financially, socially) feasible to develop instruments and/or satellites to fill such gaps.

It is clear that a major benefit of GMES, already to some extent in the first phase but certainly in the second phase, would be in the area of disaster management. There is no doubt that disaster management presents one of the key drivers and key applications for GMES, as part of both “Environment” and civil “Security.”⁶ In view of the coherence of the participating entities, the dedication of the two entities as well as the member states behind them, the technical and operational expertise of ESA and the legislative machinery and political clout of the EU, it might be expected that GMES may come to represent a solid contribution to the future global capabilities to manage major disasters, possibly raising such operations to a fundamentally higher level. Yet, how large those benefits would be, would only (and likely gradually) become clear once any second phase of GMES will become

5 See http://wmv.esa.int/export/esaEO/SEMV343VQUOD_environment_0.html

6 Thus, for example currently amongst the GMES Services initiated under ESA guidance the following are considered: EO based risk information services for forest fire and flood management led by Astrium (France) (called “Risk-EOS”); water pollution risk and soil sealing maps for water management and soil protection, led by InfoTerra GmbH (Germany) (called “SAGE”); Real time Ocean Surveillance for Environment and Security covering oil pollution and water quality and led by Alcatel (France) (called “ROSES”); and working with the humanitarian community to improve access to maps, satellite imagery, and geographic information led by Infoterra (UK) (called “RESPOND”).

implemented. It may be noted here, that the GMES Services Element, agreed upon by ESA as its contribution to GMES's first phase in November 2001, is to run for five years; the capacity for GMES to be an "operational system" is envisaged as of 2008.⁷

Meanwhile, the European development of the GMES concept has also triggered non-European governmental earth observation satellite operators to consider the importance of enhancing global use of satellite data for disaster management. This has led to current discussions on ensuring that as between those various satellite operators as much co-operation in the area of (global) disaster management would be accommodated as was politically and economically possible. Currently, these discussions have given rise to the concept of Global Earth Observation System of Systems (GEOSS), the idea being that unavoidably a number of systems will continue to be operated separately for some time to come, but that those systems should at least find a way to work together in the relevant areas of access to, exchange of, and interpretation of data in a sort of rudimentary system—a "system of systems."

4 The Charter on Space and Major Disasters

A more immediate development in the area of disaster management and potential involvement of satellite data therein concerns the establishment of the Charter on Space and Major Disasters⁸, which focuses directly and exclusively on the mitigation of major disasters and their harmful effects, without creating any new international bureaucratic and cumbersome institutional layer.

The Charter was established by a number of leading space agencies with operational remote sensing capabilities, initiated by ESA and the French space agency CNES in 1999 as a follow-up to the UNISPACE III Conference, where the potential of earth observation in the context of major disasters was prominently discussed. The Canadian Space Agency (CSA), the US National Oceanic and Atmospheric Administration (NOAA) and the Indian Space Agency (ISRO), and most recently (in July 2003) the Argentine National Commission on Space Activities (CONAE) joined, so that the charter currently counts six partners.⁹ The International Charter, declared formally operational on 1 November 2000, aims at providing a unified sys-

7 See http://esamultimedia.esa.int/docs/GMES_Newsletter_1.pdf, p. 2.

8 The full name is Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters.

9 See <http://www.disasterscharter.org/mamje.html>

tem of space data acquisition and delivery to those affected by natural or man-made disasters. Each member agency has committed resources to support the provisions of the Charter and thus is helping to mitigate the effects of disasters on human life and property: ESA provides data from ERS and Envisat, CNES from the SPOT satellites, CSA from the Radarsat satellites, ISRO from the IRS satellites, NOAA from the POES and GOES satellites and CONAE from SAC-C.

Article 6.1 of the Charter stipulates in this respect that requests to adhere to the Charter may be made by any space system operator or space agency with access to space facilities which agrees to contribute to the commitments made by the parties under Article IV; therefore, it is a *de facto* prerequisite for membership to the Charter to possess capability to operate satellite systems or at least of doing so in the near future. Those space facilities are not necessarily limited to earth observation satellites or instruments; "space systems for observation, meteorology, positioning, telecommunications and TV broadcasting or elements thereof such as onboard instruments, terminals, beacons, receivers, VSATs and archives" are also included.¹⁰ Indeed, for example GOES and POES are meteorological satellites.

Upon request by a "beneficiary body," the member agencies acquire the data of the area affected by the disaster from their satellites, process the data so as to create useful images, analyze them further if necessary, and distribute the resulting information free of charge to those states affected by the disaster via associated bodies. Only so-called "authorized users" can activate the Charter: a state affected by a disaster who wishes to access relevant data needs to contact either one of the "associated bodies"¹¹ or one of the "co-operating bodies"¹² acting in partnership with an associated body.

Indeed, the Charter has been able to assist the countries affected by disaster rather promptly, though constant efforts are made to bring the time of response down even further. For instance, in the case of a flood occurring in Toulouse in 2002, the image was available 38 hours after the request to activate the Charter and just 14 hours after image acquisition. As per December

10 Art. I, Charter on Space and Major Disasters.

11 An "associated body" is "an institution or service responsible for rescue and civil protection, defense and security under the authority of a State whose jurisdiction covers an agency or operator that is a party to the Charter"; Art. 5.2.

12 Cooperating bodies includes the European Union, the UN Bureau for the Coordination of Humanitarian Affairs and other recognized national or international organizations with which the parties may have cause to cooperate in pursuance of the Charter. A "cooperating body" does not operate a space system but acts in partnership with the an associated body which does; see Art. 3.5.

2004, the Charter had been activated a total of 58 times for various disasters all around the world.¹³

By way of further examples and with reference to one particular satellite data provider, over the past year and a half data from the SPOT satellites (through SPOTImage) have been used in the following cases:¹⁴

- April 2003, Italy: volcanic eruption on the island of Stromboli
- April 2003, India: violent storm in the state of Assam, leaving thousands of people homeless and killing about 30 people
- April 2003, Argentina: floods devastating the whole province of Santa Fe and neighboring regions, causing 60,000 inhabitants to be evacuated
- May 2003, Turkey: earthquake (6.1 on the Richter scale) killing hundreds of people and causing extensive damage in the state of Bingol
- May 2003, Algeria: very violent earthquake at Boumerdes (6.6 on the Richter scale) killing more than 2,200 people and injuring 9,000
- July-August 2003, France: Var, Corse and the Alpes Maritimes departments suffering from gigantic forest fires
- July-August 2003, Portugal: gigantic forest fires
- December 2003, France: Gard and Bouches-de-Rhone departments: floods causing 30,000 inhabitants to be evacuated and killing 7 people
- January 2004, Iran: 6.7 magnitude earthquake in Barn and environments: more than 30,000 people being killed, 50,000 injured and 100,000 homeless.

It is clear therefore, that the Charter can be of help in a large number of rather varying events; not only in developing but certainly also in developed countries.

5 Legal Issue # 1: International Responsibility

Firstly, under current space law states are responsible for “national activities in space,” even if conducted by “non-governmental entities,” and for ensuring these activities are in conformity with the law.¹⁵ This raises issues of the extent to which there are relevant legal obligations pertaining to the

13 See http://www.disasterscharter.org/disasters_e.html

14 See http://www.spotimage.fr/html/_167_210_214_215_.php

15 Art. VI, Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (hereafter Outer Space Treaty), London/Moscow/Washington, done 27 January 1967, entered into force 10 October 1967; 610 UNTS 205; TIAS 6347; 18 UST 2410; UKTS 1968 No. 10; Cmnd. 3198; ATS 1967 No. 24; 6 ILM 386 (1967).

duty to provide information versus the right of ownership over data, including intellectual property rights and data protection issues, since only non-conformity with such clear legal obligations could raise the issue of state responsibility.

Here, it is noteworthy to recall that Principle XI of Resolution 41/65 calls upon states in the possession of relevant information regarding natural disasters to duly inform other states concerned.¹⁶ Being an elaboration of an even more general principle of “good neighborliness” amongst states, this would be seen by many as representing customary law, and hence a binding legal obligation.

However, the mere existence of the Charter – which of course restates such “intentions” – at the same time makes clear that such an obligation can only move from the realm of theory to that of practical relevance if, indeed, mechanisms and procedures are provided for. Even with the Charter itself being a binding document, though not on the state but on the agency level, “violations” of the obligations contained in it Charter would be difficult to define, let alone to determine the proper “reparation” to address any state responsibility. To begin with, the Charter itself does not provide so much for “rights,” either of victim states or individual victims, but for obligations of a still rather general nature. Also, it would be difficult to imagine what forms of “reparation,” what “sanctions” should follow in case of any “violation” of a relevant obligation.

The above, as a consequence, certainly leaves any existing protection of copyrights, patents, or other potentially applicable intellectual property rights (such as trademarks) intact, so that in a sense any obligation to provide data provides an exception to the right of a copyright holder to not allow use of their data as such or only allow it against certain fees – a right effectively waived by the Charter for the limited purposes which it deals with. Therefore also, at this point inherent difficulties in applying copyrights, usually requiring some “intellectual effort” or “creativity” directly at the level of data generation need not be dealt with as these are still predominantly dealt with at the national level, each state largely maintaining its sovereignty in dealing with those issues by legal means.

The GMES and GEOSS concepts steer completely clear from such difficult questions, as they provide for informal – though highly relevant and, hopefully, beneficial – institutional cooperation mechanisms. Again, any general duty of “good neighborliness” even as applied to space in the context of Resolution 41/65 would be too vague to distil any clear-cut obligations for the purpose of state responsibility and questions of eventual reparation.

16 See *supra*, ...

6 Legal Issue # 2: International Liability

Secondly, along similar lines under current space law states are specifically liable for damage caused by space objects.¹⁷ Such damage, however, is generally seen as focusing on physical damage caused by direct impact of a satellite; it remains rather doubtful – to say the least – whether liability can be apportioned under the Outer Space Treaty or the Liability Convention for damage caused by absence of or non-access to certain data, conversely caused by certain data and their usage. Further in detail, issues arise as to what kind of liability – absolute or fault – would apply, what level of compensation could be expected, whether any waivers of liability would, could or should apply, and appropriate procedures to effectively and fairly arrive at dispute settlements on liability issues.

As to the Charter, services are provided on a “best efforts” basis, implying that Charter members will take all necessary measures in rendering aid but do not guarantee successful results. A specific provision in the Charter clearly waives the liability of satellite operators called upon to provide data under the Charter: “The parties shall ensure that associated bodies which, at the request of the country or countries affected by disaster, call on the assistance of the parties undertake to: [...] confirm that no legal action will be taken against the parties in the event of bodily injury, damage or financial loss arising from the execution or non-execution of activities, services, or supplies arising out of the Charter.”¹⁸ So the member agencies would assume no liability arising from the Charter service. Death cases are also subject to the waiver of liability, even though it is not stipulated specifically in the above clause.

This waiver of liability, however, does not comprehensively solve the problem. Firstly, since the Charter is concluded among the partner agencies but not with all the potential crisis victims, the waiver of liability is not mutually agreed upon. Wherever the victim of a crisis is not one of the countries to which the Charter partners belong, the one-sided waiver of liability raises questions as to its validity.

17 Art. VII, Outer Space Treaty, and Artt. I(c), II, III, Convention on International Liability for Damage Caused by Space Objects (hereafter Liability Convention), London/Moscow/Washington, done 29 March 1972, entered into force 1 September 1972; 961 UNTS 187; TIAS 7762; 24 UST 2389; UKTS 1974 No. 16; Cmnd. 5068; ATS 1975 No. 5; 10 ILM 965 (1971); provide for liability of a “launching State” respectively the “launching States” for any damage caused by a space object launched by such state, as procured by such state, or as launched from the territory or facility of such a state.

18 Art.5.4, Charter.

Furthermore, the Charter provides for a waiver of liability only concerning cases arising between the affected country and the Charter partners. It does not mention, for instance, cases arising from potential liability of value-added service providers with respect to Charter partners or states affected by disaster. The Charter does not stipulate whether a state affected by the disaster can bring action against value-added service providers directly, in case these are somehow involved in the damage being caused.

This finally raises issues regarding the so-called “Good Samaritan” principle, a principle known in various national jurisdictions which essentially means that a person who injures another in imminent danger while attempting to aid him, and who is then sued by the aided one, will not be charged with contributory negligence unless the rescue attempt is an unreasonable one or the rescuer acts unreasonably in performing the attempted rescue.¹⁹ Its purpose is to prevent people from being unduly reluctant to help a stranger in need, for fear of legal repercussions should they make some mistake in doing so.

The Good Samaritan doctrine has been used widely in different jurisdictions throughout the world. In Canada and the United States, it is incorporated by means of specific acts. The principle is also reflected in different national laws in European countries. If the aid worker has worsened the condition of the imperiled person, many techniques are available to assess the rescuer’s conduct: from mitigation of damages in Dutch law to the presumption of a low standard of care in French and English law. Since the Good Samaritan principle is incorporated into domestic law of many countries, it is considered to reflect customary international law. What it means in the context of the International Charter, and whether its main criteria and parameters are overruled by it, remains an issue to be dealt with in further detail, however.

The further development of the law on such issues will be followed with particular interest by the EU and ESA in their on-going GMES-related activities. For example, whether liability for wrongful information could effectively be waived in the case of usage of GMES-derived information, might be considerably clarified when, in the case of the Charter, actual disputes have arisen, and have to be adjudicated, on such issues. To what extent moreover, in view also of the limitation of the Good Samaritan doctrine to cases of aid, such legal outcomes would apply to other types of usage of GMES data (e.g. on security-related issues), is yet to be analyzed as well.

19 See http://pa.essortment.com/goodsamaritanl_redg.htm

7 Legal Issue # 3: The Role of Intergovernmental Organizations

Thirdly, the role of intergovernmental organizations in this area results in some particular ramifications of (state) responsibility and liability, due to the fact that under international space law these organizations are given a kind of secondary status. This issue may be relevant in the context of disaster management since, for instance, ESA is one of the founding fathers and parties of the Charter on Space and Major Disasters, GMES is a project jointly initiated by ESA and by the Commission on behalf of the European Union, and both these organizations consequently are also involved in the discussions on GEOSS.

As to state responsibility under the Outer Space Treaty, it also applies “when activities are carried on in outer space [...] by an international organization,”²⁰ though in such cases jointly with the responsibility of the international organization itself. Further to this provision, states are to resolve “any practical questions arising in connection with activities carried on by international intergovernmental organizations.”²¹ As a consequence, effectively the member states of neither ESA nor the EU can hide behind those organizations in case any of their activities in the context of the Charter or of GMES would violate applicable rules of international law; it is their duty and responsibility to ensure that the organizations themselves do not undertake any such violating activities.

As to liability, intergovernmental organizations equally enjoy a similar secondary status. This status effectively allows them to act as liable entities, and a similar construction under the Registration Convention allows them to themselves register satellites and exercise concomitant competencies over them.²² ESA actually enjoys the relevant status, as it has deposited relevant Declarations in respect of both Conventions, but the EU does not: in the latter case, any liability would revert directly to the individual member states to the extent of course qualifying as “launching States” under the relevant Articles.

But even in the case of ESA, there is a subsidiary liability for the member states: in case ESA is not able to satisfy any justified claim for compensa-

20 Art. VI, Outer Space Treaty.

21 Art. XIII, Outer Space Treaty.

22 See respectively Art. XXII, Liability Convention, and Art. VII, Convention on Registration of Objects Launched into Outer Space (hereafter Registration Convention), New York, done 14 January 1975, entered into force 15 September 1976; 1023 UNTS 15; TIAS 8480; 28 UST 695; UKTS 1978 No. 70; Cmnd. 6256; ATS 1986 No. 5; 14 ILM 43 (1975).

tion under the Liability Convention within six months, the individual member states (to the extent again qualifying as “launching States”) are held to jointly compensate the damage concerned.²³

When it comes to the Charter or GMES therefore, to the extent that responsibility and/or liability would arise, the secondary status of the inter-governmental organizations involved may cause problems of efficient and proper handling of disputes. How, for example, will proper reparation in case of violations of international obligations be guaranteed when the relative responsibility of the organizations respectively their member states is not clearly outlined? Similar issues might arise with respect to compensation for any damage caused, where the risk of delay is almost inherent in the provision of Article XXII(3) of the Liability Convention that only after six months of non-payment by the relevant intergovernmental organization individual member states may be called upon to compensate.

8 Legal Issue # 4: The Role of Private Entities

Fourthly, focusing on possible involvement of commercial and/or private entities in relevant activities, apart from aforementioned issues relating to access to data, privacy and data protection (which are of special relevance in a commercial environment), particular issues arise on the point of (national) licensing and certification, and the way law handles the “public good versus fair competition” dichotomy. These themes will not be further explored here, as this would obviously be beyond the scope of the paper, but are nevertheless of primary importance for the current topic and will therefore have to be taken into due consideration.

The issue of state responsibility under Article VI of the Outer Space Treaty as discussed *supra* strongly impacts upon this issue, as such responsibility also arises for privately conducted space activities. Hence, it points to the need for national legislation to implement on a national level any international obligations relevant; from this perspective it may be pointed out that so far only a handful of states have actually established such more or less comprehensive space legislation. This concerns, in varying degrees of detail and elaboration, the United States, Norway, Sweden, the United Kingdom, Russia, South Africa, the Ukraine, Australia, and Brazil, as well as Hong Kong as Special Administrative Region within the People’s Republic of China. In addition, states such as Argentina, Canada, France, and Japan have important pieces of national legislation in place which come

23 See Art. XXII(3)(a), Liability Convention.

close to, but do not yet really provide for proper legislative control over private space activities conducted within their respective jurisdictions.²⁴ A still larger number of states, however, so far remain without any transparent and coherent domestic legal means to control and monitor relevant private activities. A lot of work remains to be done in this area.

As a consequence, the legal implications for example for SPOTImage, the French private company involved in Charter operations, may be difficult to analyze or even ascertain. As for GMES, at this point it is not at all clear whether, and if so, at what level private entities might be involved in its operations. It may be pointed out here, however, that GMES is very often referred to as the “second Galileo,” primarily because it equally is a cooperation project of the EU and ESA. Further to that, one can not rule out that, once GMES would call for additional operational satellite systems or operations, the example of a Public-Private Partnership (PPP) as currently being established for Galileo, where a private operator of the satellite system would be supervised by a public entity, would be aimed for in this context as well.

In any case, any involvement of private entities, either currently in the context of the Charter, or in future in the context of GMES, would result in bringing a number of legal regimes into the picture either trying to ensure private activities will be as beneficial to society at large as possible, or actively stimulate their involvement by protecting their interests—such as intellectual property rights regimes allowing companies to market their inventions and operations. Such legal regimes are largely developed at national levels, and moreover generally without any specific space application in mind. This warrants thorough further analysis as to the gaps and overlaps, inconsistencies and further problems created by such an extended and complex legal environment.

9 Concluding remarks

In conclusion, a rudimentary (certainly as far as the international level is concerned) legal framework can be discerned providing a very limited set of parameters to disaster management activities involving satellite data. Whilst at the national level, in particular when it comes to private-sector involvement, much more detailed regimes sometimes do apply, questions

24 See e.g. the author’s *Heeding the Public-Private Paradigm: Overview of National Space Legislation around the World*, in *2004 Space Law Conference Papers Assembled* (2004), 20-34.

automatically arise as to the consequences of any such applicability to such an international, as well as specific space-related issue as the use of satellite data for disaster management.

The Charter and, as a next-generation step, GMES may be seen as major milestones in the international domain to address this highly important area of global relations, but they remain principally at the level of institutional practical co-ordination, co-operation and efficiency-enhancement. Considerable analysis would be required on the issue of how these new developments – the Charter, GMES, but more in general, any use of satellite data for such activities of clear benefit to humanity as disaster management – may, would, or should result in new complementary legal developments. Actually, as of yet “legal practice” is hardly in existence, which does not even allow us a solid evaluation of the various consequences of applicability (or not) of the legal regimes which do exist – intellectual property rights, licensing, liability, and so on.

How should for example, liability (civil/financial as much as criminal) be approached and dealt with, in an internationally-harmonized fashion, in the difficult and different context of disaster management using satellite data? How should the balance between the right of owners of the relevant intellectual property to do with the data as they see fit and the interests of actual or potential victims or victim states be established? Is there a proper way to prevent abuse of data by free-riders? These and many other questions will have to be solved if one is to ensure satellites, from a disaster management perspective, will indeed act like “Eyes in the Sky,” rather than as “Big Brothers.”