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Item No. 12 on the Agenda: Triennial Work Programme 2009-2011

(submitted by the Secretariat)

<i>Summary</i>	<i>Consideration of the Work Programme for the 2009-2011 triennium</i>
<i>Action to be taken</i>	<i>see paras 12-17</i>
<i>Related documents</i>	<i>UNIDROIT 2003 A.G. (57) 3; 2005 A.G. (59) 4; 2005 A.G. (59)12; 2005 C.D. (84) 19</i>

I. Introduction: mandate, challenges and criteria for choice

1. Article 5(3) of the Statute mandates the Council to prepare the ground for the adoption of the new triennial Work Programme (2009-2011) by the General Assembly later this year by analysing proposals submitted by member Governments, international Organisations, industry and the Institute's correspondents with a view to formulating recommendations.

2. A random sample of articles published in the *Financial Times* (31 March 2008, pp. 15, 16, 19) indicates what today's challenges are and suggests that UNIDROIT's work and the objectives and priorities set throughout the recent past were timely and responded to the needs of States – in particular developing countries – and global markets, and that the Institute is well positioned to take on future challenges.

3. *Re Cape Town Convention and Protocols*

(a) 'Transport duo step up heat on rivals' (p. 16) – reports on merger of Italian public transport operators facing competition by two French and one British companies for the operation of Italian regional railway networks. One of the Italian companies has been operating Copenhagen's metro since 1 January 2008. Its bids to run the metro systems in Stockholm and Miami are awaiting evaluation. It lost to a UK company in the competition to run a regional system in Dubai. (On the same day, the Newsletter of the *Community of European Railway and Infrastructure Companies (CER)* reported that a French company acquired rail cargo companies in the Netherlands, Switzerland, Poland, Belgium and Germany and that the first container train from Beijing (China) to Hamburg (Germany) via Mongolia, Russia, Belarus and Poland reduced the journey for the delivery of cargo from China to Germany from 40 [by sea] to 15 days. All these ventures will be run employing privately financed railway rolling stock).

(b) 'China delays its new jet flight' (p. 16) – reports on a Chinese aircraft maker's success to sell 90-passenger aircraft to GE Aircraft Leasing (US/Ireland).

4. *Re Transnational Capital Markets*

(a) 'BATS set to land in Europe' – reports that an upstart trading facility, based in Kansas City (USA), owned by the five major US financial institutions and designed to help bring down transaction costs, is creating a London based European beachhead taking advantage of the EC's most recent "best-execution" legislation.

(b) 'BSE could list this year to raise global profile' (p. 19) – reports on the move by Bombay Stock Exchange as part of efforts to reform India's second-largest equities markets designed to raise its international profile. Since demutualization, BSE has divested a 51 per cent stake to domestic and foreign shareholders, with Germany's Deutsche Börse and the Singapore exchange each taking 5 per cent stakes. Its futures having been launched on the US Futures Exchange in Chicago, BSE has made significant steps to being among the avantgarde of emerging markets. Others in Asia, Africa and Latin America do not yet have the basic transaction infrastructure necessary for attracting domestic and foreign investors.

5. In determining the criteria for future UNIDROIT Work Programmes the Council and the General Assembly established the following guidelines:

- *clear evidence of potential benefits*, to be assessed against Governments', relevant international Organisations' and the concerned industry's *request that UNIDROIT undertake work*;
- persuasive arguments that *UNIDROIT is better placed* than other Organisations to carry out work on a specific project;
- *no risk of duplication or harmful overlap* with work underway in other Organisations as well as safeguards for proper co-ordination among Organisations;
- ensure that, at any point in time, at least one of the items featuring on the programme be clearly aimed at the needs of developing countries;
- realistic and predictable *timelines* for completion;
- *adequate funding* under regular budget or by earmarked extra-statutory or private-sector contributions.

(for details, cfr. UNIDROIT 2005 C.D. (84) 19; A.G. (59)4).

II. **Response to the Secretariat's invitation of proposals**

6. Member Governments were informed about the status of all items on the current and proposals for the future triennial Work Programme by Note Verbale (refce: 280/WP) dated 1 February 2008 (Annex I). 9 Governments replied by 14 April 2008: Australia, Finland, Germany, Italy, Latvia, Luxembourg, Spain (provisional ad subject to further consultations), United Kingdom, United States of America.

7. Relevant international Organisations were informed about the status of all items on the current and proposals for the future triennial Work Programme by letter dated 6 February 2008. The following intergovernmental Organisations replied by 14 April 2008: Committee of European Securities Regulators (CESR), European Central Bank (ECB), European Commission, Hague Conference on Private International Law, UNCITRAL. Furthermore, the following nongovernmental Organisations replied: International Swaps and Derivatives Association (ISDA), *Académie*

Internationale de Droit Comparé/International Academy of Comparative Law, Max Planck Institute for Comparative and Private International Law.

8. Seven of the Institute's correspondents submitted comments: Mr Cuming (Canada), Mr Boudahrain (Morocco), Ms Fresnedo (Uruguay), Mr Kozuka (Japan), Mr Özsunay (Turkey), Mr Morán Bovio (Spain), Mr Zumbo (Australia).

9. Four out of five of the Members of the Advisory Board on projects regarding transactions on transnational capital markets submitted comments: Mr de Vauplane (France), Mr Kanda (Japan), Mr Hopt (Germany), Mr Wymeersch (Belgium).

A. Recommendation no new legislative projects

10. The Government of Australia recommends that emphasis be given to completion of the ongoing work from the 2006-2008 programme. It specifically requests that special priority be given to the *Preliminary draft Protocol on Matters Specific to Space Assets* and to completion of five additional chapters of the *UNIDROIT Principles of International Commercial Contracts* before 2010 if possible.

B. Recommendations new legislative projects, targeted post-adoption work and non-legislative activities

11. The *number of nominations* for future work submitted by member Governments, international Organisations and other parties canvassed by the Secretariat are shown in the chart attached as Annex II.

III. Comments by the Secretariat and action to be taken

12. As regards the *Principles of International Commercial Contracts*, a flagship instrument and recognised by the Council, at its 84th session, as an ongoing project, the Working Group and the Secretariat will continue to deploy appropriate efforts to finalise the chapters currently under preparation and to further disseminate the instrument.

The Council is requested to confirm its evaluation and its recommendations regarding priority of the UPICC.

13. As regards the *Cape Town Convention* and its protocols, the Secretariat is currently following an action plan approved by the General Assembly, at its 61st session, aimed at the earliest possible completion of the preliminary draft *Space Protocol*. As regards work on an additional protocol on matters specific to *agricultural, construction and mining equipment*, the Council, at its 86th session, has deferred any decision to this session. The Secretariat has completed its preliminary research (cfr. Document C.D. (86) 8(d), Annex III), and further enquiries with Governments were inconclusive. Open questions remain: (a) significant differences between the three categories of equipment; (b) unique identifiability and feasibility of international registration system; (c) relationship between the 'Cape Town System', the draft UNIDROIT Model Law on Commercial Leasing and UNCITRAL instruments.

The Council is requested to give guidance as to the action to be taken.

14. As regards *Transactions on Transnational and Connected Capital Markets*, the Council as well as the General Assembly have repeatedly accorded a high priority to work on a *Legislative Guide on Principles and Rules Capable of Enhancing Trading in Securities in Emerging Markets*

(most recently C.D. (86) 9(b)) subject to availability of appropriate resources. Both such a guide and an *instrument on netting* clearly scored the highest number of nominations from Governments, international Organisations and the industry concerned (cfr. letter from ISDA dated 15 March 2008, attached as Annex IV). The members of the Advisory Board on capital-markets related work unanimously ranked it highest. Both projects differ significantly, but are connected:

(a) netting is a clearly defined topic and subject of industry standard contracts, certain aspects are already addressed in chapter VI of the draft Convention on Intermediated Securities and it is *part of the principles needed* for the development of *emerging markets*. A Study Group could be set up at short notice.

(b) While a list of possible items to be included in the envisaged *legislative guide* was drawn up in 2005 (C.D. (84) 19 para 23), extensive preliminary research would be required before one (or more, regional) Study Group(s) could be set up with a mandate capable of producing results within the triennium 2009-2011. Interestingly, the Government of the United Kingdom proposed a project to facilitate convergence of national investor classification systems standardisation – again, an item that might be part of the envisaged legislative guide.

Provided the Council accepts the offer by the Government of Luxembourg to establish jointly a Transnational Centre for Financial Markets Law as an extension of the Institute's resources (extended 'work-bench'), as recommended in the Strategic Plan update (C.D. (87) 6)), a practical and resource-saving way forward would be to (i) set up a Study Group for the preparation of an instrument on netting; (ii) mandate the Centre to conduct the necessary basic research with a view to enabling Council and member Governments to take definite decisions with respect to a legislative guide as early as possible within the triennium under consideration.

The Council is requested to formulate recommendations to be submitted to the General Assembly.

15. With respect to proposed work on an instrument on *civil liability for malfunction of satellite-based services*, the Council, based on a discussion paper by Mr Carbone *et al.*, mandated the Secretariat to commission a further study focusing on private-law issues. It furthermore asked Mr Bollweg and other interested members of the Council to give further thought to the issues involved and the Secretariat to consult informally with Governments concerned (C.D. (86) 22). A legal opinion by Professor Ulrich Magnus (Max Planck Institute and University of Hamburg) is attached hereto as Annex V, and a further discussion paper submitted by Mr Bollweg is attached as Annex VI.

The Council is requested to give guidance as to the action to be taken.

16. Both canvassed member Governments and non-governmental Organisation emphasise the importance of the Institute's non-legislative activities.

The Council is requested to give guidance as to the priority to be accorded to the various non-legislative activities (Uniform Law Review, scholarship and legal co-operation programmes, Unilaw data base, other publications).

17. As has been practice on previous occasion, the Council may wish to formulate its proposals in such a way as to provide for some margin of discretion capable of permitting the incoming Secretary-General to personally assess the situation and to sharpen the Work Programme's profile in accordance with the Strategic Plan and his or her own best judgment.

ANNEX I

280/WP

NOTE VERBALE

Re: new triennial Work Programme (2009-2011)

The International Institute for the Unification of Private Law (UNIDROIT) presents its compliments to the Embassy of ... in Italy and has the honour to transmit attached hereto copy of a Secretariat document providing information regarding the status of implementation, as of 15 January 2008, of the UNIDROIT Work Programme for the triennial period 2006-2008 as adopted by the General Assembly at its 59th session. The purpose of the information is to initiate consultations for the adoption of the new triennial Work Programme (2009-2011) by the General Assembly in late 2008.

Over the past three years, work has been focused on and projects were completed in four areas.

Firstly, Item 1 of the wider-ranging project Transactions on Transnational and Connected Capital Markets, the draft *Convention regarding Substantive Rules on Intermediated Securities* which has been transmitted to a Diplomatic Conference, for adoption. The Conference will be held from 1 to 13 September 2008 in Geneva (Switzerland).

As the Government of ... may recall, the General Assembly authorised the Secretariat to set up, subject to the availability of the necessary resources, (a) Study Group(s) on Items 2 to 5 of the capital-markets project. Item 2, which was accorded the highest priority, bears the tentative title *Legislative Guide on Principles and Rules Capable of Enhancing Trading in Securities on Emerging Markets*.

Secondly, the equipment-specific protocols to the 2001 *Cape Town Convention on International Interests in Mobile Equipment* were developed further. The Convention has 20 Contracting States and the Aircraft Protocol 19. The *Protocol on Matters specific to Railway Rolling Stock* was adopted on 23 February 2007, and the international registry for interests in rolling stock may be operational as soon as in the second quarter of 2008. Informal meetings in 2006/2007 and a meeting of the Steering Committee in early May 2008 will enable Governments to reconvene and finalise the *preliminary draft Space Protocol* in late 2008 or early 2009. Preliminary research has been carried out with respect to a proposed protocol on secured financing of high-value agricultural, mining and construction equipment.

Thirdly, invitations for the 2nd session of the Committee of governmental experts for the preparation of a *Model Law on Commercial Leasing* (Muscat, Oman, 6 to 9 April 2008) were sent out, and it is planned that a Joint Session of the Committee and the General Assembly will adopt the Model Law on Leasing in late 2008.

Fourthly, a Working Group for the preparation of five additional chapters of the *UNIDROIT Principles of International Commercial Contracts* has held two sessions and is expected to finalise its work on the enlarged edition in 2010.

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To the Embassy of ... in Italy
ROME

Furthermore, at the request of the Government of Italy supported by the Governing Council at its 86th session, preliminary research is being conducted by independent researchers on questions of liability for malfunctions of satellite-based navigation and other services.

In view of member Governments', the Governing Council's and the Secretariat's desire to keep the Institute's work focuses on those areas where UNIDROIT has acquired special expertise and to establish clear priorities, the Secretariat would recommend to continue work in the aforementioned subject-matter areas (i.e. credit, finance, capital markets, general law of contracts and, possibly, liability for space-based services) and caution against adding too great a number of new items or new subject-matter areas.

The Secretariat would submit that, apart from work in progress and depending on the availability of resources, the triennial Work Programme 2009-2011 may include:

- (1) Carefully selected additional items of the capital-markets work as already approved, but adapted in light of recommendations made by delegations and Observers to the intermediated-securities sessions as well as the UNIDROIT Advisory Board on work in this area (i.e. Emerging Markets Guide; Convention on Netting in Financial Services; rights of foreign shareholders; corporate action processing, the latter taking Article 8 of the draft Convention on Intermediated Securities as point of departure).
- (2) Determined promotion of the Convention and the Aircraft and Rail Protocols. On condition that sufficiently strong interest is shown and resources are made available, further work, in particular setting up of a Study Group, on a fourth protocol to the Cape Town Convention regarding secured financing of agricultural, mining and construction equipment.
- (3) Work on liability for malfunction of navigation systems and other satellite-based services.

As to the Organisation's objective to ensure that, in principle, at least one project be geared to the needs of developing countries feature on the Work Programme at all times, the Secretariat would submit that the emerging-markets item (*supra*, 1), a fourth protocol to the Cape Town Convention or liability for certain space-based services that are of particular importance for developing countries (meteorology, disaster forecasting etc.) might be considered to satisfy that criterion.

The General Assembly will be invited to formally approve the triennial Work Programme as proposed by the Governing Council at its 62nd session, to be held in November/December 2008. The Governing Council will discuss its proposals at its 87th session, to be held from 21 to 23 April 2008, and Governments may wish to indicate their specific priorities with regard to the above mentioned or indeed as yet unmentioned items.

In these circumstances, the Secretariat would be most grateful if the Embassy of ... in Italy could bring this Note Verbale as well as the attached document to the attention of the competent Authorities of its Government and to convey to the Secretariat, if possible no later than 20 March 2008, any comments and proposals on the Work Programme for the 2009-2011 triennium.

UNIDROIT finally avails itself of this opportunity to renew to the Embassy of ... in Italy the assurances of its highest consideration.

Rome, 1 February 2008

**STATE OF IMPLEMENTATION OF THE
UNIDROIT WORK PROGRAMME 2006-2008
As of 15 January 2008**

I. Preparation of uniform law instruments

Subject	State of work
1. Transactions on Transnational and Connected Capital Markets	<p>(a) <i>Draft Convention on Substantive Rules regarding Intermediated Securities</i>: transmitted to Diplomatic Conference (Geneva, 1-13 September 2008), for adoption.</p> <p>(b) <i>Legislative Guide on Principles and Rules Capable of Enhancing Trading in Securities on Emerging Markets</i> (= Item 2): approved by Governing Council and General Assembly but only very preliminary research conducted; project on hold until such time as resources will become available (foreseeable: after Diplomatic Conference, <i>supra</i> 1(a)). Study Group(s) to be set up.</p> <p>(c) <i>Items 3-5 as approved, but reformulated in light of Governments', Advisory Board's and industry's comments received in the meantime</i>, i.e. Convention on Netting in Financial Services; rights of foreign shareholders; corporate action processing (Article 8 draft Convention on Intermediated Securities as starting point). Study Group(s) to be set up.</p>
2. International Interests in Mobile Equipment – Cape Town Convention and industry specific protocols	<p>(a) <i>Convention and Aircraft Protocol</i>: in force (20 and 19 Contracting States); depositary functions (reporting, consulting) increasingly in demand; significant number of ratifications and accessions expected for 2008/2009.</p> <p>(b) <i>Rail Protocol</i>: signed by 4 States, at least four ratifications (i.e. entering into force) expected for 2008. <i>Future work</i>: promotion.</p> <p>(c) <i>Preliminary draft Protocol on Matters specific to Space Assets</i>: two sessions of a Committee of governmental experts held in 2003 and 2004; informal meetings of representatives of Governments in 2006 (London) and 2007 (New York); Steering Committee approved by the General Assembly at its 61st session (November 2007) to meet in May 2008; 3rd session of CGE planned for late 2008 – if successful diplomatic Conference to be envisaged in 2009.</p>
3. Model Law on Commercial Leasing	<p>2nd session of Committee of governmental experts to be held from 6 to 9 April 2008 in Muscat (Oman). Adoption by joint session of CGE and General Assembly in late 2008 expected.</p>
4. UNIDROIT Principles of International Commercial Contracts	<p>Working Group for the preparation of additional chapters held two sessions. Completion of enlarged edition expected for 2010.</p> <p><i>Future work</i>: promotion; in particular <i>cfr infra</i> II 1(b).</p>

II. Activities connected with legislative activities (outreach resources)

Subject	State of work
1. Programme of legal co-operation (for developing countries and countries in economic transition)	<p>a) <i>Research Scholarships Programme</i>: launched in 1993, this programme has enabled 185 researchers from 50 countries to pursue research at UNIDROIT. Identified as one of the priority outreach resources listed in the <i>Strategic Plan – Horizon 2016</i> (28 November 2003). Importance of the UNIDROIT Library.</p> <p>b) <i>Co-operation with the Organisation for the Harmonisation of Business Law in Africa (OHADA) for the preparation of a draft Uniform Act on Contracts</i>: transmission to OHADA (2004); submission to national committees (2006), ongoing consultations, most importantly Colloquium in Ouagadougou (Burkina Faso) (November 2007), imminent publication of Acts and Proceedings (financed by the Governments of Switzerland and Luxembourg as well as private donors)</p> <p><i>Future work</i>: follow-up activities requested by local partners.</p>
2. Promotion of UNIDROIT activities and instruments (in particular the Internet site)	Promotion by the Secretariat of UNIDROIT activities and of instruments concluded within the framework of the Institute with a view to securing their wider acceptance and application (for example legislative assistance, sponsorship and participation in national and international meetings, organisation of regional congresses). Important role of the UNIDROIT Internet site.
3. UNIDROIT publications	Dissemination of information concerning the unification of law: Uniform Law Review/Revue de droit uniforme, publication of international instruments prepared by UNIDROIT, Acts and Proceedings of congresses organised by UNIDROIT and of diplomatic Conferences for the adoption of UNIDROIT instruments, most recently Unidroit Guide to International Master Franchise Arrangements (2 nd edition, Rome 2007).
4. Data base on uniform law – UNILAW	Priority given to the creation of a database with relevant information on the Convention on the Contract for the International Carriage of Goods by Road (CMR) (in particular text, States parties, bibliography, case law). To-date, 369 cases relating to CMR have been made available, fully analysed and key-worded. Others are awaiting checking. Text of instruments, case law and bibliography regarding the law of transport, the Cape Town Convention, the 1995 Convention on Return of Stolen Cultural Objects will be available shortly.
5. Uniform Law Foundation	Contributes to costs associated with data base; funded three scholars to spend period of research at UNIDROIT; organised fund-raising event in Amsterdam.

ANNEX II – Nominations future work

	Cape Town additional protocols	Capital Markets			Liability Satellite-based services	Post-adoption; non-legislative activities			
		Guide emerging Ms	Netting	Other		UPI CC	Cape Town	Int. Secs.	non-leg.
Gov'ts	3	5	6	3 *	1	2	3	3	1
IGOs	1	1	3	3	1	1		3	2
NGOs	2	1		1	2	2	2	3	2
Corr	2	1	1		2	2	3	3	2
<i>Adv. Board CapM**</i>		1	4	4					

* The two 'other' topics most frequently mentioned by all those who responded are corporate-action processing and rights of foreign shareholders. The UK Government as well as one of the industry groups propose work on standardised investor classification systems.

** Responded only re capital-markets related work.

ANNEX III

**Preparation of a new Protocol to the Cape Town Convention on
Matters specific to Agricultural, Construction and Mining equipment**

1. At its 86th session, held from 16 to 18 April 2007, the Governing Council instructed the Secretariat to transmit the document submitted to it on the *Preparation of an additional Protocol to the Cape Town Convention on International Interests in Mobile Equipment on Matters specific to Agricultural, Construction and Mining Equipment* to the member States of the organisation with a view to eliciting comment on the importance and relevance of the proposed project and the priority to accord it. The non-member States involved in the Cape Town process were also to be contacted for the same purpose.
2. The Secretariat duly transmitted the document prepared for the 86th session of the Governing Council, with minor editorial amendments. These included the updating of the table in Annex 2 comparing the texts of the different Protocols with the final text of the *Luxembourg Protocol on Matters Specific to Railway Rolling Stock*.
3. Following this submission, reactions were received from only two States: the Netherlands and Germany. While Germany favoured high priority being given to the preparation of an additional Protocol for agricultural, construction and mining equipment, the Netherlands indicated that it had no particular interest in this project. No other communications were received. However, as the proposal was submitted in the context of the preparation of the Work Programme of the Institute 2009 – 2011, other comments might be forthcoming in that context.

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ANNEX IV

15 March 2008

Professor Dr Herbert Kronke
Secretary-General
International Institute for the Unification of Private Law
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Per e-mail

Dear Professor Kronke

New Triennial Work Programme

Thank you for your letter of 11 February 2008 regarding the new Triennial Work Programme 2009-2011. We are pleased to be invited to comment on capital markets aspects of the new Triennial Work Programme. As you know, we are a strong supporter of the work that UNIDROIT is currently doing in relation to intermediated securities. We have always believed that UNIDROIT is in a position to play a very important role in strengthening legal certainty in the cross-border financial markets, just as it does in strengthening legal certainty for international commerce through promotion of private law unification in other areas.

Accordingly, we would like to endorse the idea, mentioned in your letter, of developing a Convention on Netting in Financial Services. As you know, close-out netting is the process by which mutual obligations between financial market counterparties are reduced to a single net balance following a default by one of the parties. Payment netting is the process by which amounts due in the same currency on the same day between financial market counterparties are reduced to a single net balance for settlement purposes. Each form of netting has a crucial role to play in reducing risk in financial systems, the former in reducing credit risk arising upon a default and the latter in reducing settlement risk, which can be substantial given the high volumes of payments flowing through the financial markets each day.

The importance of netting, and in particular close-out netting, to efficiency, reduction of credit risk and therefore reduction of systemic risk in financial systems has been acknowledged by various national and international bodies, including the Bank for International Settlements, in numerous documents over the years. The leading banking supervisors have recognised the risk-reducing effect of close-out netting by permitting the allocation of regulatory capital against net rather than gross credit exposures, provided that

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certain conditions are met (including the obtaining of robust legal comfort in all jurisdictions relevant to any close-out netting arrangement intended to benefit from this capital relief). Therefore in dealing with international banks, financial market participants in countries with robust legal regimes for close-out netting enjoy a clear competitive advantage over financial market participants in countries where such legal certainty is not available.

Over the past 20 years or so, more than 30 countries, including the world's leading developed jurisdictions and some emerging market jurisdictions, have adopted legislation to give effect to or strengthen netting and to ensure that it is enforceable against a local counterparty in the event of that counterparty's insolvency. A number of other countries are currently considering adopting netting legislation. (A list of countries that have adopted netting legislation is on the ISDA website at http://www.isda.org/docproj/stat_of_net_leg.html). ISDA has been closely involved in most of these efforts, providing information and support to legislators, regulators and local financial market associations and market participants. ISDA's Model Netting Act (http://www.isda.org/docproj/model_netting.html), first published in 1996 and most recently revised in 2007, has been used as a model for the legislation in a number of countries.

This work, however, has necessarily proceeded piecemeal, and many different approaches have been taken. Not all of this legislation is of the same quality and there is considerable variation in the scope, core principles and degree of certainty of the legislation in different countries. There are a number of reasons for these variations, but they were largely driven by extraneous political, economic and historical factors at the time the legislation was adopted (some of the earliest such legislation is now nearly 20 years old). In other words, there is no conceptual obstacle to the development of a common international set of legal rules for netting in financial markets.

The development of an international instrument, ideally a Convention, to set out core rules for netting and to deal with some closely related issues (such as the inadvertent effect of anti-gambling laws, restrictions on legal capacity and the unintended application of insurance laws on legitimate financial market transactions), would:

- Potentially increase the number of countries where netting is enforceable, thereby further reducing systemic risk for financial markets involving participants from those countries
- Enhance legal certainty for cross-border financial transactions by creating a common set of international norms for netting
- Extend the benefits of netting to emerging market jurisdictions seeking to develop and strengthen their financial market infrastructure as part of broader economic development programmes
- Help to create a level playing field in the cross-border financial markets, increasing the ability of emerging market firms to compete for business in the international financial markets
- Improve the efficiency of the financial markets and therefore improve the ability of small- and medium-sized enterprises to obtain cost-effective access to financial services in order to find their growth and manage associated financial risks

It should be remembered that the risk-reducing benefits of netting are not limited to derivatives markets but can be applied in virtually all sectors of the financial markets, including spot trading in foreign exchange, securities, energy, metals and other commodities, as well as in the context of securities and commodities lending and repurchase (repo) transactions.

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Finally, you invited us not only to express our views on the idea of a Netting Convention but also to comment on the relationship among and the priority to be given to each of the items listed in your letter in relation to the capital-markets agenda of UNIDROIT. You will perhaps not be surprised that we consider that, beyond, of course, finalising the proposed Securities Convention, developing a Netting Convention should be given top priority. While an Emerging Markets Guide could also be valuable, it is difficult to comment on this without knowing in more detail what it is intended to cover, although it is clear that there is a demand in the emerging markets for advice and assistance in relation to the development and strengthening of their local financial markets. The other proposed capital markets projects dealing with rights of foreign shareholders and corporate action processing, while no doubt important, are not central to ISDA's own mission, so we do not comment further on those.

The Netting Convention has the clear advantage over any proposed Guide of being a practical and targeted measure that is amply justified by existing empirical studies (including those by the Bank for International Settlements, as already mentioned) supporting the benefits of close-out netting, and as attested to by the number of countries that have already adopted netting legislation.

ISDA, together with the European Financial Markets Lawyers Group, is currently urging the European Commission to propose a European instrument on netting, to promote convergence of existing legal regimes for netting and to provide a common and sufficient basis for netting in the Member States that have most recently acceded to the EU as well as those likely to accede in the next few years. We are not certain at this point whether, despite the strong support of industry for such a measure, whether this is likely to proceed in the European context. If it does, there would clearly be a benefit in co-ordinating any European efforts with any UNIDROIT project. From ISDA's point of view as an international trade association, it is important that any such efforts are not confined to Europe but have the potential to benefit local financial markets all around the world. For this reason, we would clearly strongly support UNIDROIT taking up this project.

We would be pleased to continue our longstanding co-operation with UNIDROIT in relation to financial markets matters by working with you on this proposal. As you study the different items and any additional items that may be proposed for the next Triennial Work Programme, we would be happy to answer, if we can, any questions you might have about the ideal scope and/or content of a Netting Convention.

Yours sincerely,



Dr Peter M Werner
Director of Policy
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ANNEX V**Civil Liability for Satellite-based Services**

Ulrich Magnus, Hamburg

I. Aim of this study

What originally began as a special military technology¹ helps today many car-drivers to find their way in foreign or even their own cities: they often use so-called 'navis', navigation systems which in most cases direct them rather easily and safely to their destination. And not only benefit many car-drivers from these systems but also all kinds of transportation. The navigation systems make use of satellite-based information which allows the identification of the precise position of persons and objects around the globe. Many more uses of this modern technology have become possible or can be imagined. Its usefulness can hardly be denied. But likewise can situations be imagined where a failure or defect in the transmission of the satellite-based information causes loss. The loss must not but can reach even a disastrous magnitude, for instance where the system's failure or defect causes the crash of an airplane into a densely inhabited area or the collision and sinking of a fully booked ocean cruiser.

The following text deals with the aspect of civil liability in such scenarios. It is specifically addressed to the question whether the present situation of civil liability for malfunction of satellite-based services is satisfactorily regulated or whether, and if so, which improvement(s) should be envisaged. With respect to the factual situation in this field the paper draws mainly on the example of the European satellite-based information system GALILEO which at present is being developed and will be fully established in the next years.

II. Characteristics of Systems Providing Satellite-based Services**1. The present systems**

At present two Global Navigation Satellite Systems (GNSS) are in operation: the US Global Positioning System (GPS) which was the first one and the Russian Global Orbiting Navigation Satellite System (GLONASS).² There exist also complementary regional systems to GPS and GLONASS such as EGNOS in Europe (a precursor to GALILEO), WAAS in the US, MSAS in Japan or GAGAN in India which regionwise improve and augment the advantages and applications of the global systems.³ However, in the coming years the European Union and China (COMPASS) and perhaps also India will set up comparable own global systems, the EU under the name of GALILEO.⁴ The preparation of GALILEO has already started. The organiser is the European

¹ See *Jonathan M. Epstein*, Global Positioning System (GPS): Defining the Legal Issues of its Expanding Civil Use, 61 Air L. & Com. 243 et seq., 248 (1995-96).

² GLONASS does not yet offer services for commercial purposes and is reported to face repeatedly problems with its satellites.

³ A recent account of GNSS activities can be gathered from the Note of the Secretariat on the Second Meeting of the International Committee on Global Navigation Satellite Systems (a subcommittee of the UN Committee on the Peaceful Uses of Outer Space) of 10 December 2007 (UN-document A/AC.105/901).

⁴ See on the European initiative: *European Commission/ESA*, Galileo. The European Programme for Global Navigation Services (2nd ed. 2005); see also the Communication from the Commission to the European

Commission in cooperation with the European Space Agency (ESA) but private enterprises will be included in a form of public private partnership. However, the Commission remains the 'maître d'ouvrage' of the whole exercise.⁵ The European system is designed for civil purposes only. It intends to "be more advanced, more efficient and more reliable than the current US GPS monopoly."⁶ Although GALILEO shall establish a system independent from the US GPS an agreement between the EU and the US ensures the interoperability of the two systems.

It is not unlikely that other countries or regions than those already mentioned will also develop and establish further global systems in order to be independent from other nations with respect to this important technology.

2. The principal functioning of satellite navigation

Satellite navigation functions essentially in the following way: a number of satellites – in case of GALILEO 30 satellites – are being installed on fixed orbits on which they circle. They constantly emit signals which indicate their position at a given time in an extremely precise way (by using atomic clocks aboard the satellites). These signals can be received by any person possessing a respective receiver (a cheap and small instrument like the 'navi' which can recognise the signals and position of each satellite). By receiving the signals from at least four satellites the receiver can determine the position of persons or things in the air or on the ground exactly to the meter. The entire system needs further terrestrial up-link stations which contact and steer the satellites and a control centre for the coordination and control of the entire system.⁷

3. The organisational framework of GALILEO

GALILEO will be set up and managed by the European Community itself. At present it is likely that the Community itself will even offer the different services which this ambitious infrastructure project will provide (see below under IV.). Private enterprises will be involved in the manufacture and supply of hard ware. Perhaps in later years they may take over the provision of the envisaged services.

The satellite navigation system makes use of highly advanced radio and space technology. Its installation affords substantial financial means. At present the cost for GALILEO are estimated at € 3.4 billion.⁸ They will be borne by the EU and ESA.

Parliament and the Council: Progressing Galileo: Re-profiling the European GNSS Programmes, of 19 September 2007 (COM(2007) 534 final). After some difficulties the GALILEO programme received the assent of the Council of transport ministers by the end of November 2007 ("Political go-ahead for Galileo").

⁵ Communication from the Commission to the European Parliament and the Council: Progressing Galileo: Re-profiling the European GNSS Programmes, of 19 September 2007 (COM(2007) 534 final) p. 11.

⁶ *European Commission/ESA, Galileo. The European Programme for Global Navigation Services* (fn. 4) p. 4, 8.

⁷ See the description in *European Commission/ESA, Galileo. The European Programme for Global Navigation Services* (fn. 4) p. 7 et seq.

⁸ See Communication from the Commission to the European Parliament and the Council: Progressing Galileo: Re-profiling the European GNSS Programmes, of 19 September 2007 (COM(2007) 534 final) p. 3.

III. Envisaged and Possible Uses

Global navigation satellite systems are regarded as a core infrastructure which allows a multitude of possible applications. The European Commission envisages the use of GALILEO for the following fields:⁹

- for all kinds of transport, in particular the navigation of ships, planes and cars;
- in the field of energy, for instance for the monitoring of the electricity grid as well as a help for the exploration of natural oil or gas resources;
- in the finance, banking and insurance sector for safer services;
- for agriculture and fishing for easier and more efficient performance and monitoring of these activities;
- for emergency situations where the position of a victim or of a hospital etc. must be located;
- for environmental management (for instance tracing polluters etc.);
- for all kinds of surveying land or water areas;
- for recreational purposes, most obviously for leisure flying or sailing.

Global navigation satellite systems can also play an important role for the internal security by enabling the monitoring of suspects, the tracing of stolen objects (in particular cars) etc. It could be further imagined that one day a fully automatised transport system will be set up where satellite navigation and automatic driving are combined and personal driving becomes superfluous.

IV. The Services Envisaged by GALILEO

At present the promoters of GALILEO plan that the European satellite navigation system shall offer different services, namely:¹⁰

- the Open Service (OS) which provides timing and positioning signals free of direct charge for users;
- the Safety of Life Service (SoL) for all means of transport where lives could be endangered if the Open Service fails;
- the Commercial Service (CS) providing against extra charge higher accuracy than the Open Service offers;
- the Public Regulated Service (PRS) for the reserved use of state authorities such as the police, coastguard, customs etc;
- the Search and Rescue Service (SAR) where search and rescue operations become necessary.

All services work on the basis that certain different radio signals are made available on which users can rely for their purposes.

⁹ *European Commission/ESA, Galileo. The European Programme for Global Navigation Services* (fn. 4) p. 15 et seq. The International Civil Aviation Organisation (ICAO) had already discussed the use of global navigation satellite systems and in particular of GALILEO for civil aviation at its meeting in 2003 but remained somewhat reluctant.

¹⁰ *European Commission/ESA, Galileo. The European Programme for Global Navigation Services* (fn. 4) p. 22 et seq.; see also the Communication from the Commission to the European Parliament and the Council: Progressing Galileo: Re-profiling the European GNSS Programmes, of 19 September 2007 (COM(2007) 534 final) p. 5 et seq.

V. Possible Situations Giving Rise to Civil Liability

1. Loss scenarios

As already indicated loss scenarios caused by failures of global navigation satellite systems can be imagined rather easily. In some cases even catastrophic losses can be imagined. If, for instance, means of transport like ships, planes or railways – for whatever purpose (commercial or recreational) they may be used – are being navigated or directed in reliance on such satellite-based information systems then any malfunction of the system can cause the loss of hundreds and in worst cases even thousands of lives as well as loss of property because the failure may cause the collision or wreckage of ships, planes or railways. If, e.g., an oil tanker is involved its wreckage may also cause tremendous damage to the environment and the coastline of several states.¹¹

However, catastrophic losses must not be the rule. With respect to the use of satellite navigation for daily car traffic a system failure due to which the navigation system aboard the car does not work properly will probably not result in instant traffic accidents but only in traffic congestion and delay. Such failure is unlikely to cause immediate bodily harm; the loss will probably be of an economic nature. In each single case the loss may also be rather limited. On the other hand, taken together the economic loss of all people involved may be considerable.

Damage to persons can also occur where the satellite-based positioning system is used for rescue services of all kinds and does not work so that the ambulance, police, fire-brigade etc cannot provide help in due time. Damage to persons and to property can also follow from a system failure where otherwise criminals would have been detected or caught had the system worked properly.

Death or bodily injury would be a less likely consequence of a failure of a global navigation satellite system with respect to the further uses at present envisaged by the promoters of GALILEO (use in the financial sector, for prospecting, surveying etc.). But economic loss could always be the result. Damage, again of an economic nature, can also result insofar that permanent failures or changes of the satellite navigation system impairs already produced receivers which may become useless and unmerchantable.

Damage caused by a crash of a satellite with another object or on the ground can be left aside here because such damage would not be due to the specific services provided by global navigation satellite systems. Moreover, such damage would be already covered by the Convention on International Liability for Damage Caused by Space Objects of 1972. Under the Convention the launching state would be strictly liable.¹²

2. Possible causes for losses

As already seen, global navigation satellite systems have mainly three components, namely the satellites, the ground stations and the user's receiver instrument. A failure of each component can be the cause that the whole system fails to emit or receive correct signals and transform them into the precise information on the position of a person or object. In turn, the failure of the system will – probably inevitably – lead to defective services because the services depend on the correct functioning of the system. The system's failure can be due either to a defective design of the

¹¹ For similar loss scenarios see also *Copeland*, Overview of System Architectural Implications of Third-Party Liability and Government Indemnification for GPS Augmentation, 47 Navigation 7 et seq., 13 (2000).

¹² Art. II of this Convention.

respective component or of the whole system; it can be due to a defective fabrication or installation of one or more components or it can result from an incorrect operation.

This sounds rather similar to product defects where also design defects, fabrication defects and incorrect instruction are distinguished.¹³ But this parallel can be fully drawn only with respect to the receiver which the user normally buys from a private manufacturer. With respect to the satellites and in particular to the ground stations their failure may be due to a defect of design or fabrication of the hardware, for example of the atomic clocks, of the satellite itself or of the system steering it etc; but it might as well be the wrong operation by the staff involved that causes a system failure.

A further reason for a failure of the entire system besides internal failures or defects must also be taken into account: the intentional misuse by third persons. It has been reported that in 2006 scientists of Cornell University had deciphered the code of the European test satellite for the GALILEO system (the satellite Giove-A).¹⁴ This would have enabled them to influence the operation of the satellite. The same could be achieved by other persons, for instance by terrorists who after invading the system then could wilfully cause the collapse of the whole system and thereby cause damage of the kind mentioned above.

3. Evaluation of satellite navigation systems

The new technology of global navigation satellite systems has some inherent risks. These risks can be considerable and it is likely that they cannot be fully controlled even if all due care is exercised. Persons who rely on the GNSS technology – even indirectly, for instance as a passenger in a plane equipped with this technology – are then exposed to these risks and there is little or no chance for them to avoid these risks. The law in many countries reacts to such a situation generally by introducing strict liability requiring the operator to compensate the damage unless certain limited reasons exempt him from liability.

VI. The Present Legal Framework

1. General considerations

If one takes a hypothetical case where a person has suffered damage or where the environment has been impaired through the malfunction of a global navigation satellite system then the question of liability and compensation will in most cases raise rather difficult problems of private international law and international procedural law before the substantive law can be applied. The reason is that it is highly likely that all those who have suffered damage and those who could possibly be held liable will only rarely live in one and the same country. Loss scenarios of the envisaged kind will almost inevitably be characterised by an international dimension due to the global availability of the satellite navigation systems and the global effects of their malfunction.

An additional fact further complicates the situation, namely the complexity of global navigation satellite systems. As indicated, a number of institutions, businesses and persons contribute to their functioning. Although at present state authorities dominate the GNSS also private manufacturers are involved. In case of damage caused by a malfunction of the system any or even all of those involved can therefore be responsible for that malfunction. Thus, if a person who has suffered damage claims compensation it is necessary to determine the competent jurisdiction and the

¹³ See for instance in the US § 2 Restatement Third of Products Liability.

¹⁴ See *Harenberg* (ed.), *Aktuell* 2008 (2008) 428.

applicable law with respect to each possible defendant. And if a state – or in the case of the European Union the Community – shall be held liable the further question has to be decided whether it can be sued in a foreign court or whether it can invoke the defence of state immunity. All this multiplies the difficulties of the legal problems connected with a possible disastrous malfunction of GNSS.

2. National compensation schemes

Apparently, most countries do not have specific regulations for compensation in case of mass disasters while some have provided for a public compensation fund for such cases.¹⁵ Nonetheless, it is not rare that the respective state will provide for help on an *ad hoc* basis. The level of compensation by such measures differs however widely between the different countries depending on the financial support made available in the involved country. Generally only part of the ensued damage will be compensated.¹⁶ Such schemes and state interventions are likely to be called on by victims should a catastrophic damage through GNSS malfunction occur. But at best part of the damage is covered and part of the victims receive compensation. Therefore the traditional rules on liability in contract and tort remain important.

3. Contractual liability vs. tortious liability

It increases the complexity of legal problems connected with compensation for damage through GNSS malfunction that a damages claim can be based on contractual or tortious liability or on both and that the rules on private and procedural international law often vary for both. In most situations envisaged here there will be no contractual bond between claimant and defendant. Then, any liability can only be based on tort. But nonetheless, contractual liability may play a certain though limited role as well. Persons who have suffered damage through the malfunction of a global navigation satellite system may partly be able to claim compensation under a contract because the envisaged services rendered by systems such as GALILEO will be partly provided on a contractual basis. This will be the case with the special commercial services (CS) to be offered by GALILEO for which also certain fees must be paid. In case that these services are defective there may therefore lie a claim in contract. A contractual damages claim may also be successfully brought by the buyer of a defective receiver against the seller, at least where the latter is the manufacturer. And finally, the system operator if itself liable may have a right of redress in contract against suppliers/manufacturers of defective components.

However, in general liability in contract is not likely to be of particular importance in case of damage caused by the failure of a global navigation satellite system. Moreover, the widely recognised principle of party autonomy allows the parties to a contract to regulate themselves their relationship with respect to jurisdiction and applicable law and also to a great extent with respect to the material contents of their contract. Tort liability or liability irrespective of any contractual bond will be of much greater importance in the field under review and here for obvious reasons the parties can generally not determine in advance which court shall decide and which law shall apply.

¹⁵ See the comparative survey by *Faure*, in: *Faure/Hartlief* (eds.), *Financial Compensation for Victims of Catastrophes – A Comparative Legal Approach* (2006) 415 et seq.

¹⁶ See the survey and summary by *Faure*, in: *Faure/Hartlief* (eds.), *Financial Compensation for Victims of Catastrophes – A Comparative Legal Approach* (2006) 418.

4. Relationship to existing international conventions

At present no uniform global liability regime in the kind of an international convention is in place for damages caused by global navigation satellite systems. However, if their malfunction causes, for instance, the loss of lives through air crashes or the pollution of the environment through ship wreckages it is true that international air ¹⁷ or maritime conventions ¹⁸ may come into play. In the worst case that due to a satellite system failure an airplane crashes into a nuclear power plant and causes a nuclear incident even the nuclear conventions ¹⁹ become applicable.

These conventions deal with the liability of the air carrier, of the ship owner or the operator of the nuclear installation only. They do not deal with the liability of third persons who in turn have caused the air crash or ship wreckage or nuclear incident. Partly, they cover damage caused by the malfunction of global navigation satellite systems, partly they do not. The Convention on Civil Liability for Oil Pollution Damage of 1969, for instance, excludes explicitly the shipowner's liability if "he proves that the damage was wholly caused by the negligence or other wrongful act of any Government or other authority responsible for the maintenance of lights or other navigational aids in the exercise of that function."²⁰ Damage through a state-run GNSS as a 'navigational aid' would therefore not fall under this Convention.

On the other hand, the Nuclear Conventions channel liability exclusively onto the operator who then is the only person whom victims can sue.²¹ The Nuclear Conventions do not exclude GNSS caused nuclear damage. Furthermore, the mentioned Conventions and further additional instruments safeguard that the liable person provides for appropriate insurance coverage and that further (public) funds become available. Where these instruments are applicable and where they cover liability for damage even through GNSS failures there is no need for further protection of victims. However, the scope of the mentioned Conventions is limited insofar as only a limited number of countries has ratified them and by far not all cases are covered where the malfunction of a global navigation satellite system may possibly cause damage. Then it becomes necessary to determine the competent court and the applicable law according to the various and diverse national, sometimes regional rules of private international and procedural law.

¹⁷ The Montreal Convention for the Unification of Certain Rules for International Carriage by Air of 1999; the Convention on International Liability for Damage Caused by Space Objects of 1972.

¹⁸ The Brussels Convention on Civil Liability for Damage from Oil Pollution of 1969 as amended by the Protocol of 1992; the Brussels Convention Relating to the Establishment of an International Fund of 1971; the London Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea of 1996; the UN Convention on Civil Liability for Damage Caused during Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels of 1989; the Convention on Civil Liability for Bunker Oil Pollution Damage of 2001.

¹⁹ The Convention on Third Party Liability in the Field of Nuclear Energy of 1960 (Paris Convention) with amending Protocols (in force in 15 States); the Convention on Civil Liability for Nuclear Damage of 1963 (Vienna Convention) with amending Protocols (in force in 35 States); the Convention on Supplementary Compensation for Nuclear Damage of 1997 (not yet in force).

²⁰ Art. III (2) (c) of this Convention. The London Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea of 1996 contains the same provision (Art. 7 (2) (c)).

²¹ See Art. 3 and 9 Paris Convention; Art. IV Vienna Convention.

5. Problems of the present solutions

The following part gives a short account of the solutions and problems posed by the present state of affairs in regard of liability for damage caused by failures of satellite-based information systems. It is based on the assumption that state or European Community authorities run or will run these systems and bear the overall responsibility, that even the ground stations are or will be operated by state or Community authorities and officials, and that private enterprises are or will only be involved as manufacturers of specific components of the system.

a) State immunity

i) The legal basis

As far as state authorities provide the services of the global navigation satellite systems it is questionable whether they can invoke the defence of state immunity when sued in foreign courts. Actually, two international conventions on state immunity – the Basle Convention on State Immunity of 1972 and the UN Convention on Jurisdictional Immunities of States and Their Property of 2004 – provide general rules for this issue.²² However, the Basle Convention is in force in a limited number of states only²³ and can hardly be taken to represent the current global solution, and the UN Convention is not yet in force at all. Therefore as far as possible the international customary law on state immunity has to be applied which is however more or less mirrored and thus to a great deal evidenced by the mentioned Conventions.

ii) Immunity of the EU

A first question would be whether the European Community as such being the responsible organiser of GALILEO could enjoy immunity like a single state in the courts of countries outside the EU.²⁴ The view prevails that the Community – in parallel to international organisations – enjoys immunity to the same extent as its Member States.²⁵ This understanding is however not yet reflected by the definition of the term “state” in Art. 2(1)(b) UN Convention on Jurisdictional Immunities of States and Their Property of 2004.

iii) Immunity for sovereign acts

According to international customary law on state immunity which has been also adopted by the two above-mentioned Conventions it is decisive whether the state acted as state (“*acta jure*

²² But it should be noted that certain international conventions on specific matters also deal with the issue of state immunity and prevail over the two general Conventions on state immunity. Examples are again the Nuclear Conventions: see Art. 13 (e) Paris Convention; Art. XIV Vienna Convention.

²³ This Convention is in force only in Austria, Belgium, Cyprus, Germany, Luxembourg, The Netherlands, Switzerland and the United Kingdom.

²⁴ Inside the EU sovereign acts of the Community or its institutions and organs can be attacked in accordance with the provisions of the EC Treaty.

²⁵ *Simma/Vedder*, in: *Grabitz/Hilf* (eds.), *Das Recht der Europäischen Union* (looseleaf, October 2007) Art. 281 EGV no. 17 et seq. with numerous references. The same distinction can be found in international conventions on specific subjects. An example is the Convention on Liability and Compensation for Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea of 1996. Its Art. 4 (6) prescribes that “(w)ith respect to ships owned by a State Party and used for commercial purposes, each State shall be subject to suit in the jurisdictions set forth in Article 38 and shall waive all defences based on its status as a sovereign State.”

imperii”) or like a private person (“acta jure gestionis”).²⁶ For acts of the latter kind the defence of state immunity is not available while for the former it is. As far as immunity is granted it extends not only to the respective state or, in case of the EU, to the Community but also to state or Community agencies “performing acts in the exercise of sovereign authority.”²⁷

Due to the prevailing view the borderline between the two kinds of state activities must be determined according to the objective character of the activity.²⁸ It therefore depends on the nature of the transaction but also on the purpose for which a state-run infrastructure such as GALILEO is used. As indicated, GALILEO will serve different aims with various programmes. Therefore, for each of these programmes the question of state immunity must be answered separately: for the commercial service (CS) it is rather certain that the Community cannot invoke immunity. For the rescue service (SoL) and similar specialised services for the police etc it is on the contrary rather likely although not certain that the Community would enjoy immunity in the courts of other countries when the system’s failure causes damage. This is because the provision of rescue services serves purposes whose performance is regularly and primarily a public task even though private organisations may also provide rescue services. For the open service (OS) which benefits the public at large it is rather uncertain whether or not immunity would be granted. Courts of different countries may decide differently on this matter.

iv) Doubtful exclusion of damage claims from immunity

Both the Basle Convention and the UN Convention on state immunity prescribe that a Contracting State cannot invoke immunity when being sued for damage done to a person in another Contracting State if the damage is attributable to the (first) State and if the author of the damage was present in the (second) State when the damage was done.²⁹ It is questionable whether this rule constitutes already a rule of international customary law. In any event it will be rare that its requirements are met in cases here under discussion.

v) Evaluation

In sum, the current rules on state immunity are not free from uncertainties. Persons who have suffered damage through the malfunction of a global navigation satellite system such as GALILEO have to bear a considerable risk that the operating state or the operating Community or its respective agency cannot be made liable because of the defence of state immunity.

²⁶ See thereon *Brownlie*, Principles of Public International Law (6th ed. 2003) 335 et seq.; *Stein/von Buttlar*, Völkerrecht (11th ed. 2005) no. 717 et seq.

²⁷ See the definition in Art. 2 (2) UN Convention on Jurisdictional Immunities of States and Their Property; in the same sense Art. 27 Basle Convention.

²⁸ See in this sense the express definition of Art. 2 (2) UN Convention on Jurisdictional Immunities of States and Their Property; further for instance German Federal Constitutional Court (Bundesverfassungsgericht – BVerfG) Entscheidungen (BVerfGE) 16, 27; BVerfGE 46, 362; *Stein/von Buttlar* no. 719. Specific Immunity Acts which some states have introduced follow the same line: see, e.g., the US-Foreign Sovereign Immunity Act (sect. 1603 (d) where ‘commercial’ acts are defined).

²⁹ Art. 12 UN Convention on Jurisdictional Immunities of States and Their Property; Art. 11 Basle Convention.

b) International jurisdiction

i) Legal basis

As seen, the court competent to hear a damages claim must be determined separately with respect to each possible defendant. The applicable jurisdiction rules may then be either part of international instruments (international conventions but also EU-Regulations) or they may be the autonomous national rules. However, jurisdiction rules of international conventions in special fields can be left aside because these conventions do not yet cover liability for damage through satellite-based services. But regionally harmonised jurisdiction rules may apply: this is the case in Europe where the EC-Treaty provides for some special jurisdiction rules and where the EU Regulation 44/2001/EC on Jurisdiction and the Enforcement of Judgments in Civil and Commercial Matters (Brussels I Regulation),³⁰ with its predecessor, the Brussels Convention of 1968³¹ on the same matters, and with the Lugano Convention of 1988³² (as well on the same subject) establishes a general framework. This Brussels-Lugano-regime provides rules also on jurisdiction for law suits for the compensation of damage. These rules bind however only the courts within the territorial scope of the Brussels-Lugano-regime.

All mentioned instruments and also national jurisdiction rules allow generally the claimant to sue the defendant in the defendant's forum. This is in accordance with the worldwide-recognised maxime *actor sequitur forum rei*. A competent court is therefore at least located at the place of the defendant's seat or domicile. This would mean that each member in the chain of supply of the satellite-based services can be, and often has to be, sued at its seat. However, this basic rule is further refined by additional jurisdiction rules.

ii) Jurisdiction for claims against the EU

There are specific jurisdiction rules for damages claims against the European Community even if the damage is done by officials or agencies of the EC.³³ If such a claim is based on a contract which contains a jurisdiction clause conferring jurisdiction on the European Court of Justice then according to Art. 238 EC-Treaty the ECJ is – exclusively³⁴ – competent. The proceedings must then be instituted in Luxembourg. Without such a jurisdiction clause the national provisions on jurisdiction apply (Art. 240 EC-Treaty). In the EU Member States the Brussels I Regulation provides for jurisdiction in contract matters at the seat of the Community in Brussels³⁵ and at the place where the services were or should have been provided.³⁶ It is rather likely that the commercial services (CS) of GALILEO are regularly provided at the client's (and claimant's) seat or domicile where the signals will most likely be received for further use. Claimants may then choose between the different competent courts.

³⁰ The Regulation is directly applicable in all EU Member States except Denmark.

³¹ This Convention still applies with respect to Denmark.

³² This Convention is applicable in most of the EU Member States and also in Iceland, Norway and Switzerland.

³³ See thereto *Karpenstein*, in: *Grabitz/Hilf* (eds.), *Das Recht der Europäischen Union* (looseleaf, October 2007) Art. 238 EGV no. 8 et seq.

³⁴ *Karpenstein*, in: *Grabitz/Hilf* (eds.), *Das Recht der Europäischen Union* (looseleaf, October 2007) Art. 238 EGV no. 13.

³⁵ This follows from Art. 2 and 60 Brussels I Regulation. Brussels is also to be regarded as the regular seat of EU agencies which perform the activities of the EU.

³⁶ Art. 5 no. 1 2. indent Brussels I Regulation.

Courts in countries outside the Brussels-Lugano-regime follow their own jurisdiction rules which for contract matters may also allow proceedings at the place of performance.

Special jurisdiction rules apply, too, for tortious damages claims against the EU. According to Art. 235 and 288 (2) EC-Treaty the European Court (the Court of First Instance) is competent to decide on such claims if the damage was caused through the exercise of the Community's powers and violated a right of the claimant.³⁷ Again, the Court's jurisdiction is exclusive.³⁸ And again, courts in countries outside the Brussels-Lugano-regime would apply their own jurisdiction rules on tort claims (see further below under *iv.*).

iii) Jurisdiction for contract claims

For all other contract claims (except the discussed claims against the EU) the general jurisdiction rules apply. Within the Brussels-Lugano-regime the courts of the country are competent where the defendant is domiciled (which means at the seat of the service provider)³⁹ or where the services were or should have been rendered, provided that these places are located in Member States of the Brussels-Lugano-regime.⁴⁰ The claimant can choose between the different courts. Outside the Brussels-Lugano-regime the national procedural laws generally allow proceedings at the defendant's seat and often as well at the place of performance or at a place with which even less contacts exist.⁴¹ Again, the claimant may choose between the competent courts.

iv) Jurisdiction for tort claims

Also with respect to tort claims the Brussels-Lugano-regime allows the victim a choice of forum: the victim is entitled to sue either in the courts of the country where the defendant is domiciled⁴² or where the harmful event occurred⁴³ or threatened to occur.⁴⁴ The place where the harmful event occurred includes both the place where the tortfeasor/operator acted and where the victim suffered the harm.⁴⁵ If these places are located in different countries (which however must be Member States of the Brussels-Lugano-regime), the claimant may also choose between the courts of these countries.⁴⁶

³⁷ Art. 288 (2) EC-Treaty does not mention the requirement that a right of the claimant must have been infringed but the ECJ has constantly interpreted the provision in this sense: see e.g. ECJ [1992] ECR I-2533 (C-55/90, *Cato*).

³⁸ See for instance ECJ [1979] ECR 623 (Case 101/1978, *Granaria*).

³⁹ See Art. 2 Brussels I Regulation; Art. 2 Brussels Convention and Art. 2 Lugano Convention.

⁴⁰ Art. 5 no. 1 2. indent Brussels I Regulation. Under Art. 5 no. 1 Brussels Convention and Art. 5 no. 1 Lugano Convention the place of performance has still to be determined according to the applicable law; for further discussion see *Mankowski*, in: *Magnus/Mankowski* (eds.), Brussels I Regulation (2007) Art. 5 no. 128 et seq.

⁴¹ See in particular the so-called long arm statutes of several US States.

⁴² Art. 2 Brussels I Regulation, Brussels and Lugano Convention.

⁴³ Art. 5 no. 3 Brussels I Regulation, Brussels and Lugano Convention.

⁴⁴ Only Art. 5 no. 3 Brussels I Regulation.

⁴⁵ See ECJ [1976] ECR 1735 (C 21/76, *Handelswerkerij G.J. Bier v. Mines d'Alsace de Potasse*).

⁴⁶ See ECJ [1976] ECR 1735 (C 21/76, *Handelswerkerij G.J. Bier v. Mines d'Alsace de Potasse*). In the exceptional case that a claimant should have suffered damage in different (Member) states it is likely that the so-called Shevill doctrine would apply. According to this doctrine the claimant can claim compensation in tort in each state only to the extent to which damage in the respective state ensued. Compensation for all damage suffered can only be claimed at the defendant's domicile (see ECJ [1995] ECR I-415 (C-68/93, *Shevill v. Press Alliance SA*)).

Outside the Brussels-Lugano-regime the national rules on jurisdiction for tort claims vary considerably from country to country. The respective rules in the United States, Russia and India may suffice here as examples. In the United States the jurisdiction of civil courts falls within the competency of the single states. They accept the international jurisdiction in tort cases generally if the defendant has acted in the country of the forum ⁴⁷ but also if there occurred intended or reasonably foreseeable effects of damaging conduct which was committed outside the forum state.⁴⁸ Thus, rather transient contacts can suffice to found the international tort jurisdiction of US courts. Instead, the claimant can always sue the defendant at the latter's domicile. In Russia the claimant is entitled to choose among the courts either at the defendant's domicile, at the place where the tort was committed or where the damage was suffered.⁴⁹ In India the defendant can be sued in the courts at its residence but also where the tort was committed.⁵⁰

v) Evaluation

The survey shows that the determination of the competent court is not without complications. On the one hand claimants have very often an option where to sue the defendant: either at the latter's domicile or at the place where the damaging conduct was committed or where the damage was suffered if all these places are not located in the same state. On the other hand in cases of damage caused by the malfunction of global navigation satellite systems it will often be difficult to locate the place of damaging conduct in a certain country either because the precise cause of the malfunction may remain unclear or, if it is the malfunction of a satellite, there is no place of conduct in a certain state.

Nonetheless, the present legal situation allows claimants regularly forum shopping which is accepted in the interest of victims. But in cases of disastrous damages and at the same time limited funds of the defendant(s) the possibility of forum shopping might adversely affect all victims' interests because a race to the courthouse in each country where damage was suffered would be highly likely. And the first claimant would be probably served best in terms of full compensation. On the other hand for the possible defendants, in particular the service providers, would it be difficult to foresee and take precautions for the situation of being sued in many different countries. Also the litigation costs for the defendant(s) would be multiplied and would reduce the available funds. A 'procedural channelling' concentrating all actions arising from one incident in one court – as is known for instance in international nuclear law conventions ⁵¹ – could be an alternative.

c) Determination of the applicable law

i) General considerations

Not only the determination of the competent court(s) poses problems. Once the competent court is seized with the case it must determine the applicable law if the dispute has a foreign element

⁴⁷ See *World-Wide Volkswagen Corp. v. Woodson*, 444 US 286, 100 S. Ct. 559 (1980); § 27 Restatement Second on Conflict of Laws.

⁴⁸ See, e.g., *Kaiser Aetna v. I.C. Deal*, 86 Cal. Ap. 3d 896; 150 Cal. Rptr. 615 (1978); *Moon Carrier v. Reliance Insurance Co.*, 153 N.J. Super. 312, 379 A. 2d (1977); see further § 37 Restatement Second on Conflict of Laws.

⁴⁹ See Art. 247 Code of Arbitrage (the Code of procedure for commercial cases).

⁵⁰ Sec. 19 and 20 of the Code of Civil Procedure; see further *Paras Diwan*, Private International Law (3rd ed. 1993) 569 s.

⁵¹ See Art. 13 Paris Convention; Art. XIV Vienna Convention.

which in the cases under review is rather the rule than the exception due to the global effects of global navigation satellite systems and the likewise global effects of their malfunction.

Like the jurisdiction rules also the choice of law rules for the determination of the applicable law require to distinguish between contract and tort claims. Though there are no conventions on a global level which unify the choice of law rules for these matters there do exist some relevant regional instruments of unification: for the – here less important – field of contracts the Rome Convention of 1980 and its successor, the Rome I Regulation,⁵² as well as the Inter-American Convention on the Law Applicable to International Contracts of Mexico, 1994,⁵³ and for the field of tort law the Rome II Regulation.⁵⁴ Outside the scope of these instruments the various and rather diverse national conflicts rules have to be applied.

ii) Conflicts rules for contracts

Both international instruments⁵⁵ and national conflicts rules⁵⁶ regularly allow the parties of an international contract to choose the applicable law. In the absence of any choice differing solutions are provided. The Rome Convention and Rome I Regulation provide for the law at the place of the party which renders the characteristic performance.⁵⁷ Under the Convention of Mexico “the contract shall be governed by the law of the State with which it has the closest ties.”⁵⁸ The closest ties must be determined taking into account all objective and subjective elements of the contract and the general principles of international commercial law.⁵⁹

National conflicts rules determine the objectively applicable contract law partly also by redress to the seat of the characteristically performing party,⁶⁰ partly by applying a multi-factor approach which groups and weighs all relevant contacts,⁶¹ partly by taking the law of the place of performance⁶² or of the place where the contract was concluded.⁶³

iii) Conflicts rules for tort claims

On a regional level the Rome II Regulation designates “the law of the country in which the damage occurs” as generally applicable to international torts⁶⁴ but knows also of more specific rules on product liability⁶⁵ and environmental damage.

⁵² The Rome I Regulation is still a draft but it will be finally concluded in the next months and will probably enter into force in 2009.

⁵³ As yet, this Convention is in force only in Mexico and Venezuela.

⁵⁴ The Rome II Regulation enters into force in the EU Member States (except Denmark) on 11 January 2009.

⁵⁵ Art. 3 Rome Convention and Art. 3 Rome I Regulation; Art. 7 and 8 Mexico Convention.

⁵⁶ See for instance for Russia: Art. 1254 Civil Code of the Russian Federation.

⁵⁷ Art. 4 Rome Convention and Art. 4 Rome I Regulation.

⁵⁸ Art. 9 Mexico Convention.

⁵⁹ Art. 9 Mexico Convention.

⁶⁰ For instance Russian law: Art. 1255 Civil Code of the Russian Federation.

⁶¹ For instance the law of the single US States: see, e.g., Art. 3537 Civil Code of Louisiana (which codified this approach).

⁶² See for instance Art. 834 (2) Vietnamese Civil Code of 1996.

⁶³ See as examples which represent many others: Art. 19 Egyptian Civil Code; Art. 7 Japanese Horei.

⁶⁴ Art. 4 Rome II Regulation (with the exception that the law of the common habitual residence and a more closely connected law take precedence).

On the level of national conflicts rules again a broad variety of solutions encounters. A widely accepted general principle designates the law of the country where the incident occurred (*lex loci delicti*). But the place of the tort may be either where the tortfeasor acted⁶⁶ or where the victim suffered damage. Partly, the tort must be actionable both in the country where it was committed and where it was sued upon.⁶⁷ In particular in the United States it is decisive with which country the tort and the parties are most closely connected.⁶⁸ This has to be determined by weighing all relevant factors, in particular the place of the injury, the place of the tortious act, domicile, residence, nationality, place of business,⁶⁹ but also other factors like the relevant policies of the forum, justified expectations of the parties etc.⁷⁰

iv) Evaluation

In cases of damage caused by the malfunction of global navigation satellite systems it will often if not regularly be necessary to designate the applicable law according to the rules of private international law. With few exceptions of limited harmonisation this law is mainly national law and varies from country to country. Even the brief survey presented above shows a rather great variety of different conflicts rules when such damage has been caused. First, the conflicts rules for contract and tort claims differ. Second, even though the starting point for international tort claims is often the *lex loci delicti* principle there are many variations and exceptions to that rule. It is clear that in same cases the different conflicts solutions do not lead to the same law but produce differing results in this respect and promote thereby forum shopping. Not infrequently it is also rather unpredictable which law will finally govern a given case since many national laws grant the judge a rather wide discretion to designate the applicable law. In cases of international or even global mass disasters of the kind envisaged here the present system of private international law answers inappropriately to the challenge that like cases should be treated alike.

d) Diverse substantive laws

i) General considerations

The few conventions left aside which in certain specific situations may already cover damage caused by global navigation satellite systems⁷¹ national contract and tort law has finally to be applied to claims concerning such damage. It is neither possible nor necessary here to give a full comparative account of the national contract and tort laws. Few remarks may suffice.

⁶⁵ Art. 5 Rome II Regulation (mainly the law of the country where the product was marketed).

⁶⁶ See for instance China: § 146(1) General Principles of Civil Law; further *Young*, IPRax 1993, 343 et seq.; *Xu Guojian*, ICLQ 1991, 684 et seq.; also Russia: Art. 1219(1) Civil Code of the Russian Federation (both with certain exceptions)..

⁶⁷ See, e.g., India (which still follows the former English rule of double actionability): see for instance *The Kotah Transport Ltd. v. The Jhalawas Bus Service Ltd.*, 1960 Raj.224; further *Paras Diwan*, Private International Law (supra fn. 50) 551 ss., 570.

⁶⁸ See, e.g., *Babcock v. Jackson*, 191 N.E. 2d 279 (N.Y. 1963); *Reich v. Purcell*, 432 P. 2d 727 (Cal. 1967); further *Rosenberg/Hay/Weintraub*, Conflict of Law. Cases and Materials (10th ed. 1996) 520 et seq.; *Scoles/Hay*, Conflict of Laws (2nd ed. 1994, Suppl. 1995) 570 et seq.; also § 145 (1) Restatement Second on Conflict of Laws.

⁶⁹ See § 145 (2) Restatement Second on Conflict of Laws.

⁷⁰ See § 6 (2) Restatement Second on Conflict of Laws.

⁷¹ See supra under VI. 3.

ii) Claims in contract

A damages claim in contract generally requires a breach of contract, a damage and causation between both. Differences between national laws exist as to the requirement of fault; while some systems require fault, others provide for strict liability with certain excuses.⁷² With respect to contracts for services the fault principle may prevail. Sometimes, national law even expressly implies a contract term that the service provider “will carry out the service with reasonable care and skill”⁷³ thereby adopting a fault standard.⁷⁴ In contract there is a tendency to place the burden of proof on the debtor who must prove that he acted with reasonable care and skill.⁷⁵ Major differences between the legal systems exist with respect to the extent of damages in contract although the principle of full compensation is generally the common starting point.⁷⁶

iii) Claims in tort

The general tort law is most frequently based on four requirements: damage (partly limited to certain protected interests such as life, body, property etc); wrongfulness (breach of a duty); fault and causation. Generally the claimant bears the burden of proof of all these elements. If these requirements are met then full compensation (*restitutio in integrum*) is owed. However, the single elements are not everywhere understood in the same sense and applied in a uniform sense.⁷⁷

Regularly this basic liability scheme is supplemented by strict liability statutes or precedents which dispense with fault in cases of specific activities which are unusually dangerous or place unreasonable risks on possible victims. Under strict liability only few grounds of exoneration are recognised.⁷⁸ The rather widely accepted example of strict product liability,⁷⁹ however, may be already on the retreat in some parts of the world.⁸⁰ Partly the courts are given discretion, and partly they are not permitted, to extend strict liability statutes by way of analogy.⁸¹ Partly those statutes provide for maximum amounts for damages. Rather far-reaching variations between the different legal systems concern the compensable heads of damage under tort law,⁸² in particular with respect to environmental damage. Some countries, in particular the United States, allow even for punitive damages.

⁷² See the comparative observations by *Markesinis/Unberath/Johnston*, *The German Law of Contract* (2nd ed. 2006) 444 et seq.

⁷³ See sec. 13 (English) Sale and Supply of Goods Act 1982.

⁷⁴ *Markesinis/Unberath/Johnston*, *The German Law of Contract* (2nd ed. 2006) 445 et seq.

⁷⁵ See thereon *Magnus/Micklitz*, in: *Magnus/Micklitz*, *Liability for the Safety of Services* (2006) 517.

⁷⁶ See the comparative observations by *Markesinis/Unberath/Johnston*, *The German Law of Contract* (2nd ed. 2006) 479 et seq.

⁷⁷ See the broad comparative studies on the single elements: *Kozioł* (ed.), *Unification of Tort Law – Wrongfulness* (1998); *Spier* (ed.), *Unification of Tort Law – Causation* (2000); *Magnus* (ed.), *Unification of Tort Law – Damages* (2001); *Widmer* (ed.), *Unification of Tort Law – Fault* (2005).

⁷⁸ For a comparative survey see *Koch/Kozioł*, in: *Koch/Kozioł* (eds.), *Unification of Tort Law – Strict Liability* (2002) 395 et seq.

⁷⁹ In this sense with respect to the European Directive on Product Liability of 1985: ECJ [2001] ECR I-3569 (C-203/99, *Henning Vedfeldt ./. Århus Amtskommune*) no. 15; ECJ, NJW 2006, 1409 (C-402/03, *Skov Æg ./. Bilka Lavprisvarehus A/S; Bilka Lavprisvarehus A/S ./. Jette Mikkelsen, Michael Due Nielsen*) Rz. 19.

⁸⁰ In the United States design defects and warnings defects are mainly subjected to negligence standards: see § 2 Restatement (Third) of Torts: Product Liability (1998).

⁸¹ *Koch/Kozioł*, in: *Koch/Kozioł* (eds.), *Unification of Tort Law – Strict Liability* (2002) 395 et seq.

⁸² For a comparison see *Magnus*, in: *Magnus* (ed.), *Unification of Tort Law – Damages* (2001) 185 et seq.

With respect to damage caused by the malfunction of a global navigation satellite system it is likely that most countries would require fault for the provider's liability. Principles of strict product liability would however cover cases where defects of the hard-ware were the cause of damage.

iv) Evaluation

The national solutions concerning liability for damage caused by satellite-based service activities such as those here under review vary considerably. This fact will lead to differences in compensation. Depending on the applicable substantive law some victims will receive less or no damages than others for like losses.

e) Recognition of judgments

A further aspect deserves short mentioning, namely the recognition and enforcement of judgments which have been rendered on claims for the compensation of damage caused by the malfunction of global navigation satellite systems. It is an aspect of rather high practical importance. If such judgments cannot be recognised and enforced in other countries in particular where the defendant's assets may be located then the whole exercise of instituting proceedings and gaining a judgment would be frustrated.

At present, no global instrument regulates the international recognition and enforcement of judgments in a general way. Some specialised conventions such as the Nuclear Conventions⁸³ deal however also with the aspect and provide for recognition and enforcement of judgments in the Contracting States. Further, a number of bilateral treaties concerns the matter and some states still recognise foreign judgments only on this basis.⁸⁴ But regularly, this issue must be dealt with according to national and sometimes regional regulations applicable in the country where recognition and enforcement is sought.

On a regional level the Brussels I Regulation provides for the recognition and enforcement of Member State judgments. Judgments rendered in one Member State have to be recognised and enforced in all other Member States unless few grounds like *ordre public* or failure of service allow to reject recognition.⁸⁵ As far as the Brussels Convention and the Lugano Convention apply they contain almost identical rules and serve the same purpose as the Brussels I Regulation.

On the national level a variety of solutions encounters. Regularly, the judgment must be final and conclusive, rendered by a competent court and must not offend the *ordre public*. But partly reciprocity is further required.⁸⁶ Sometimes also any conflict with internal law hinders recognition.⁸⁷ Rather often it is further required that the defendant had been given proper notice of the suit and the opportunity to be heard.⁸⁸

⁸³ Art. 13 (e) Paris Convention; Art. XII Vienna Convention.

⁸⁴ This had been the prior Russian practice.

⁸⁵ See Art. 34, 35, 45 Brussels I Regulation. Again, Denmark is not bound by these provisions of the Regulation but by the respective rules of the Brussels Convention.

⁸⁶ See for instance for China: Art. 266 and 268 Civil Procedure Law of the People's Republic of China and thereon *Jing-ping*, in: *Paley*, International Recognition and Enforcement of Money Judgments (1994) no. 403.001 et seq.; probably also for Russia: Supreme Court of the Russian Federation, 7 June 2002, IPRax 2003, 356 et seq. (in German translation).

⁸⁷ For instance in India: see sec. 13 Code of Civil Procedure; for further discussion see *Sarkar*, The Law of Civil Procedure (10th ed., 2004) 159 et seq.

⁸⁸ An example is the US: see § 98 Restatement Second on Conflict of Laws.

The short survey shows again a considerable variety of solutions which may have the consequence that judgments can be neither recognised nor enforced in countries where they were not rendered. In case of global activities with global effects this is an unfortunate outcome.

VII. Shortcomings of the present solution and consequences

At the outset it has to be stated that services based on global navigation satellite systems – despite their great and undeniable advantages – carry a certain potential to cause in worst cases tremendous damage. Possible victims should be satisfactorily protected against this risk. The present legal framework allows a certain protection of possible victims but the current solution suffers also from some significant shortcomings:

- The main operators of global navigation satellite systems are and will be states or the European Community. To some extent they can invoke the defence of state immunity so that they cannot be sued in foreign courts. This is a disadvantage for potential victims outside the operator's state.
- In principle, for each claimant the international jurisdiction must be determined separately with respect to each possible defendant and almost regularly there may be more than one forum where a suit can be brought. The victim can generally choose between the different fora. At first glance this may appear as an advantage for victims because they are often granted the opportunity to sue at the place where the damage was sustained which may be their home country. But in cases of international mass disasters this leads to litigation in many states multiplying the litigation costs of the defendant(s) and reducing the assets available for compensation. Moreover, a just and fair distribution of all assets among all victims cannot be safeguarded. The first claimants have best chances of full compensation. A further disadvantage is the fact that the rules on international jurisdiction and their application are not everywhere clear beyond any doubt. It needs time and money to ascertain their contents and even then claimants may run a certain risk to have approached the wrong court.
- At present it will often, if not regularly be necessary to determine the applicable law according to national or regional conflicts rules when damage is caused through a GNSS malfunction. Due to the different solutions this step may be complicated and may again cost time and money when a victim prepares a claim. Moreover, because courts are frequently accorded a certain discretion in determining the applicable law the outcome is often hardly predictable. The diversity of national or regional conflicts rules has the further consequence that courts of different countries apply different laws to like cases thereby again furthering forum shopping.
- The final success of a claim depends on the contents of the substantive law that is applicable. Here, the national solutions for compensation of damage through GNSS malfunction vary widely. Often no claim will lie when the claimant is unable to prove fault on the part of the defendant. Great differences concern also the recoverable heads of damage and the level of compensation. Not infrequently like cases of damage are treated completely differently in different countries. For victims it may become a kind of lottery whether the applicable national law is favourable or unfavourable to them.
- The recognition and enforcement of judgments on the compensation of damage through GNSS malfunction in other countries is not always secured. In a considerable number of cases such judgments would not be recognised in other countries. The party favoured by the judgment could not rely on it in the foreign country where for instance the other party may have assets.

In sum, the present rules on state immunity, international jurisdiction, applicable law, substantive liability and compensation as well as on recognition and enforcement of judgments do not altogether exclude victims from compensation in case of damage caused through global navigation satellite systems. But the problems and complexity of these rules make it difficult and in some instances impossible for victims of such damage to receive fair compensation and for defendants to care in advance for the situation that they become liable.

Are these shortcomings serious enough to demand a change of the traditional rules of private international and procedural law according to which liability and compensation for damage in international cases are generally dealt with? The answer depends to some extent on how grave the risks of damage through GNSS malfunction are to be assessed. For certain risks the traditional rules have already been replaced by uniform conventions, in particular for the risk of damage through oil pollution at sea, through nuclear installations, during flight etc. At present the potential damage through GNSS malfunction can be assessed only in a hypothetical way. But as stated already at the outset due to the global effects of global navigation satellite systems there is a potential of extremely high damage which comes close to those risks for which international conventions have been concluded. It may be questioned how likely the entry of such risk in fact would be. But in case of doubt one should follow the precautionary principle and take reasonable steps of precaution in particular if the risk may not materialise frequently but if so may cause tremendous damage.

Consequently, also for the protection against damage through GNSS malfunction a global solution should be sought. It is therefore advocated here that a global convention on civil liability for damage caused through global navigation satellite systems should be concluded.

VIII. Possible Proposals

1. General considerations

An international convention as envisaged here had not to break entirely new ground. As already mentioned there are examples that could serve as models. The most prominent and apt model is the international liability regime for nuclear damage. This regime was likewise established in order to enable a new technology in, as was then thought, the common interest and to safeguard against its immense inherent risks. As far as it avoids the mentioned shortcomings it could be copied.

The following part discusses possible solutions for the different procedural and substantive aspects that have been addressed above.

2. State immunity

A possible Convention on GNSS liability should exclude the defence of state immunity. As far as commercial activities of states are concerned this exclusion follows already from international customary law. But in the field here under review the immunity defence should also be excluded – as is the case with the Nuclear Conventions⁸⁹ or with the Convention on International Liability for Damage Caused by Space Objects of 1972⁹⁰ – insofar as victims claim damage caused through state activities which do not qualify as commercial or whose qualification is uncertain. Where states

⁸⁹ See Art. 13 (e) Paris Convention; Art. XIV Vienna Convention.

⁹⁰ This Convention does not explicitly exclude the defence of state immunity but allows claims against states and intergovernmental organisations (such as the EU) by providing certain procedures for such claims.

or bodies such as the European Community establish worldwide services thereby transcending the boundaries of their sovereign territory there is no convincing reason that they should be exempted from an otherwise applicable jurisdiction in foreign countries even if these states or bodies act in the global common interest.

3. International jurisdiction

The proposed instrument should also regulate international jurisdiction. It should – again after the model of the Nuclear Conventions⁹¹ but also of other conventions⁹² – prescribe exclusive jurisdiction at the seat of the operator of the global navigation satellite system which caused the damage. This would allow a procedural channelling of all claims in connection with such damage. The litigation could be concentrated at one single court. Also an eventual distribution of all available assets of the defendant could be handled by one court. The equal treatment of victims or, as the case may be, of classes of victims could be safeguarded. These advantages outweigh the disadvantage that the exclusive jurisdiction of the court at the defendant's seat forces victims regularly to sue in a foreign court. The disadvantage could be still minimised if operators of GNSS would be obliged to name a claims bureau in each Contracting State of the proposed Convention.

The proposed instrument had also to secure its general priority over the provisions of the EC-Treaty on jurisdiction of the European Court of Justice and of the Court of First Instance but could leave untouched those provisions in relation to entirely internal EU cases.

4. Applicable law

An international Convention on GNSS Liability should further explicitly determine the applicable law for matters covered but not expressly regulated by that instrument. In general it should be the law at the seat of the system operator. Again the Nuclear Conventions provide an example for such a solution.⁹³ The designation of the applicable law would avoid the difficulties and diversities to which the differing national choice of law rules lead.

5. Substantive law

i) General considerations

The central contents of an international instrument on GNSS liability had to be the material provisions on liability and compensation. Here not only the Nuclear Conventions but also further liability conventions such as the Convention on International Liability for Damage Caused by Space Objects of 1972, the Convention on Civil Liability for Oil Pollution Damage of 1969 (as amended by several Protocols), the Convention on Liability and Compensation for Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea of 1996 or the Montreal Convention for the Unification of Certain Rules for International Carriage by Air of 1999⁹⁴ form the background and fund from which general principles can be derived. They can and should be used for present

⁹¹ See Art. 13 (a) Paris Convention; Art. XI (1) Vienna Convention.

⁹² Other Liability Conventions deal also with the issue of jurisdiction but prescribe that exclusive jurisdiction lies in all states affected by pollution damage: see Art. IX Convention on Civil Liability for Oil Pollution Damage of 1969; Art. 9 Convention on Civil Liability for Bunker Oil Pollution Damage of 2001.

⁹³ See Art. 14 (b) Paris Convention; Art. I (e) and VIII Vienna Convention.

⁹⁴ A survey over international conventions relevant for GNSS activities is given by *van der Dunk*, The European Equation: GNSS = Multimodality + Liability, in: *Liber Amicorum Böckstiegel* (2001) 231 et seq.

purposes. A short account of the relevant problems and possible solutions is given in the following text although further in-depth considerations remain necessary.

ii) Definition of the material scope of a possible Convention

A first necessary step is the definition of the material scope of application of the proposed Convention. The instrument should apply to any damage caused by the malfunction of a global navigation satellite system. The global navigation satellite system is to be understood as described above. It should include also those services which make local or regional use of such global systems. Whether the system is operated by a public body or a private enterprise should not matter. The definition requires further that a malfunction of the system was the cause of damage. The malfunction may be due to a design defect, manufacture defect or incorrect operation of the system or of one of its components except the receiving device. The latter is neither operated nor controlled by the operator of the global navigation satellite system. If the receiver does not work and causes damage the user must approach the seller or manufacturer of this device. Here the rules of product liability is the adequate and already existing remedy.

iii) Definition of the operator

A further issue of a future instrument would be the definition of the operator of the system who could be made responsible (as to channelling onto the operator see below). The operator should be the person or entity bearing the overall responsibility for establishing and managing the system. In case of GALILEO this is the European Community. For GPS it is at present the United States and for GLONASS the Russian Federation.⁹⁵ It is not required that the operator owns all satellite or ground components of the system nor that it has built up or runs all those components. It suffices but is also necessary that the operator has the central control.

Where global navigation satellite systems are run in cooperation of two or more states or entities (like the European Community) each functions as operator unless one of them is the leading operator with over-all responsibility.

iv) Strict liability

Many international liability conventions prescribe strict liability of the responsible person.⁹⁶ Strict liability is the adequate reaction of international but also of national law⁹⁷ to specifically dangerous activities which create either high risks or risks for many people or risks to which potential victims are – often necessarily – exposed and which they are neither able to control nor to avoid or where proof of negligence of the risk creator is difficult if not impossible. Where liability is strict the victim need no more prove fault, in particular negligence of the liable person. It suffices but is also necessary that the victim proves causation between its damage and the damaging activity.

⁹⁵ In space law it is the traditional approach that states are held liable for any damage cause by space activities; see in particular the Convention on International Liability for Damage Caused by Space Objects of 1972. According to its Art. II the “launching State shall be absolutely liable”; see thereto also *van der Dunk*, The European Equation: GNSS = Multimodality + Liability, in: *Liber Amicorum Böckstiegel* (2001) 231 et seq., 235.

⁹⁶ See for instance Art. II Convention on International Liability for Damage Caused by Space Objects of 1972; Art. 3 Paris Convention; Art. IV Vienna Convention; Art. III Convention on Civil Liability for Oil Pollution Damage of 1969; Art. 3 Convention on Civil Liability for Bunker Oil Pollution Damage of 2001.

⁹⁷ See thereto *Koch/Kozioł*, in: *Koch/Kozioł* (eds.), *Unification of Tort Law: Strict Liability* (2002) 395 et seq.

The risks of global navigation satellite systems may be considerable. Although the introduction of this technology is highly desirable because of its advantages it is likewise desirable that potential victims are adequately protected against the inherent risks. This aim requires the introduction of strict liability for GNSS.

v) Exoneration

Even the strictest liability regimes admit certain grounds of exoneration. The operator is generally exempted from liability if war (including civil war) or an exceptional natural disaster caused the damage.⁹⁸ Partly, the intentional or negligent conduct of the victim may lead to an appropriate reduction of the latter's claim.⁹⁹ Eventually, the act or omission of a third party with intent to cause damage exonerates the actually liable person.¹⁰⁰

Under a future instrument on GNSS liability these grounds of exoneration should also be recognised. The system operator should be exempted from liability if the cause of damage were war or a comparable incident, a natural disaster or the conduct of a third person with the intent to cause damage. For all these exemption grounds it should be further required that they could neither be foreseen nor avoided. Intentional or negligent conduct of the victim should reduce or exclude the latter's claim.

vi) Channelling of liability onto operator

One of the central questions is whether civil liability should be channelled onto the operator of the global navigation satellite system so that victims could only sue the operator (in the sense just defined) even if other persons involved in providing the system's services had caused the actual damage. Such channelling is an essential feature of liability under the Nuclear Conventions.¹⁰¹ To a certain extent also the Oil Pollution Damage Conventions channel liability onto the shipowner in that they exclude liability of the shipowner's servants agents.¹⁰² The main advantages of channelling are two: victims can always, and need only, sue the operator; they need not seek who in the complicated network of the service system is the correct defendant; they run no risk of having sued the wrong person. The second reason is that only the operator must take out full insurance for all potential damage while sub-suppliers, subcontractors etc need insure at most only their share (in case of a recourse action by the operator). This enables a certain concentration of insurance capacity both in the interest of victims and all those involved in the supply of the system services.¹⁰³

On the other hand it is argued that channelling reduces the incentive of all those persons who except the operator may also or even alone have caused the damage to take efficient care to avoid

⁹⁸ This is the solution under, e.g., Art. 9 Paris Convention, Art. IV (3) Vienna Convention, Art. III (2) (a) Convention on Civil Liability for Oil Pollution Damage of 1969.

⁹⁹ See Art. IV (2) Vienna Convention, Art. III (3) Convention on Civil Liability for Oil Pollution Damage of 1969.

¹⁰⁰ See Art. III (2) (b) Convention on Civil Liability for Oil Pollution Damage of 1969.

¹⁰¹ See Art. 3, 6 Paris Convention; Art. II Vienna Convention.

¹⁰² See for instance Art. III (4) Convention on Civil Liability for Oil Pollution Damage of 1969.

¹⁰³ See the arguments for channelling as stated in the Exposé des Motifs of the Paris Convention (as revised and approved by the OECD Council on 16 November 1982) no. 15; see thereto also *Stoiber/Baer/Pelzer/Tonhauser*, Handbook on Nuclear Law (2003) 112.

damage.¹⁰⁴ This argument is however only valid if there would be no recourse of the operator against those third persons. It supports therefore that such recourse should be possible.

A possible instrument on GNSS liability should channel liability onto the operator. The reasons given for the introduction of channelling under the Nuclear Conventions apply also here. Both the GNSS technology and the nuclear technology have also some features in common which allow a parallel. They resemble each other insofar as many sub-suppliers, subcontractors etc are involved in achieving the 'end product' making it difficult if not impossible for victims of a damage caused by these technologies to identify the single responsible cause and person. Furthermore, damage through both technologies transcends almost inevitably the boundaries of a single state and its compensation may reach astronomic amounts.

vii) Heads of damage

A further central point would be the circumscription of the recoverable damage. In this respect the law of the international liability conventions has developed over the years. In particular costs for preventive measures and environmental damage has become recoverable.¹⁰⁵ Meanwhile the following heads of damage are recognised and are regarded as recoverable by or on behalf of the victim: - loss of life and personal injury, - loss of or damage to property, - economic loss as the result of these infringements, - costs of measures of reinstatement of the environment, - costs of preventive measures to reasonably mitigate damage after an incident, - any other economic loss if permitted by the applicable national law.¹⁰⁶ An instrument on GNSS liability should provide for the recoverability of these heads of damage as well. However, it is advocated here that the instrument should avoid the reference to national law but should instead regulate the recoverability of pure economic loss itself.

viii) Limitation in amount and time

Many of the international liability conventions and in particular the Nuclear Conventions¹⁰⁷ limit liability of the liable person by a maximum amount per incident. They further fix the time within which victims must bring an action for damages. Also an instrument on GNSS liability should provide for such limits. The limits of the Nuclear Conventions could give some guidance for their contents. In regard of the limit in amount it could be argued that it is unnecessary because at present only states are engaged in GNSS technology and their liability should be unlimited since in case of mass disasters they have to step in anyhow in one or the other form. An international GNSS Liability Convention would however also cover the liability of private system operators who in future will eventually manage such systems. For them the reasons apply which support a limit in amount, namely their protection against too farreaching a liability for which no insurance coverage is available.¹⁰⁸

¹⁰⁴ See *Faure*, Economic Analysis (of strict liability) in: *Koch/Koziol* (eds.), *Unification of Tort Law: Strict Liability* (2002) 386.

¹⁰⁵ See in particular Art. 1 (f) Convention on Supplementary Compensation for Nuclear Damage of 1997 (although this Convention is not yet in force).

¹⁰⁶ See the list in Art. 1 (f) Convention on Supplementary Compensation for Nuclear Damage of 1997; the Convention allows even compensation of an economic loss resulting from significantly impaired environment (Art. 1 (f) (v)).

¹⁰⁷ Art. 7 Paris Convention; Art. V Vienna Convention.

¹⁰⁸ For these reasons in nuclear law see *Stoiber/Baer/Pelzer/Tonhauser*, *Handbook on Nuclear Law* (2003) 113.

ix) Proof

Proof is partly a matter of substantive law, partly of procedural law. The burden of proof is mainly regarded as substantive law whereas rules and principles of evidence belong to the law of procedure. The latter is generally not unified by international conventions and need therefore not be regulated by a GNSS Liability Convention. But like in other liability conventions the burden of proof should be expressly regulated.¹⁰⁹ In a future instrument on GNSS liability victims should bear the burden to prove their damage and its causation through the malfunction of a global navigation satellite system. The operator should bear the burden to establish a ground of exoneration. Also any contributory negligence should be pleaded and proven by the operator.

x) Obligation to take insurance

The Nuclear Conventions and the Maritime Liability Conventions on oil pollution and on carriage of hazardous substances provide as a specific feature that the operator or shipowner – the master of the dangerous source – is obliged to take out insurance or other financial security for its possible liability before engaging in its dangerous activity.¹¹⁰ Partly a fund solution has been introduced. Instead of or in addition to insurance the shipowner must contribute a certain amount to a fund. The amount depends on the likely risk. The fund then indemnifies victims to whom the shipowner has become liable.¹¹¹ This compulsory insurance, fund solution or other security excludes the otherwise serious risk that a liable operator or shipowner cannot satisfy the claims up to the amount to which liability is incurred.

A GNSS Liability Convention should also contain instruments which safeguard that the liable system operator is able to satisfy all claims up to the prescribed maximum limit of liability. As long as only states or the European Community are system operators such a solution might appear superfluous. But again, the proposed Convention has also to provide for cases where private enterprises become system operators. In that case such safeguarding is more than appropriate. The experience¹¹² with the Oil Pollution Damage Fund may encourage to establish a similar global fund for the compensation of damage caused through GNSS activities. The means of the fund would have to be paid by the system operators.

The existing liability conventions grant victims regularly a direct right of claim against the respective insurance, fund or other financial guarantor.¹¹³

¹⁰⁹ See, e.g., Art. III (2) and (3) Convention on Civil Liability for Oil Pollution Damage; Art. IV (2) Vienna Convention.

¹¹⁰ Compare Art. 10 Paris Convention; Art. VII Vienna Convention; Art. 7 Convention on Civil Liability for Bunker Oil Pollution Damage.

¹¹¹ See Art. V Convention on Civil Liability for Oil Pollution Damage in connection with the Convention relating to the Establishment of an International Fund for Compensation of Oil Pollution Damage of 1971; Art. 9 and 13 et seq. Convention on Liability and Compensation for Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea.

¹¹² As to this experience see *Renger*, *Recht und Praxis der Haftung und Entschädigung für Ölverschmutzungsschäden auf See*, in: *Koch/Willingmann* (eds.), *Großschäden – Complex Damages* (1998) 151 et seq.

¹¹³ See Art. 6 (1) Paris Convention and Art. II (7) Vienna Convention (however, both Conventions reserve a direct claim only if the applicable national law provides for such a right); Art. V and VI Convention on Civil Liability for Oil Pollution Damage; Art. 14 Convention on Liability and Compensation for Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea.

xi) Recourse

The proposed Convention should not exclude any right of recourse the operator may have under the applicable law against any third person. The channelling excludes direct claims of victims against third persons who without the channelling may also or alone be responsible for the GNSS damage. There is no reason to relieve these persons wholly from liability. Therefore the envisaged Convention should be without prejudice for eventual recourse claims of the system operator against these persons.¹¹⁴

xii) Relationship with other conventions

A future instrument would also have to solve the relationship with other already existing or future conventions. In case of a conflict between the future instrument and another convention the general solution should be that specialised conventions – like for instance the Nuclear Conventions – should prevail to the extent that they were also applicable. Whether a conflict would exist had first to be clarified by interpretation. For instance, a conflict of a possible GNSS Liability Convention with the Convention on International Liability for Damage Caused by Space Objects of 1972 has probably to be denied. The better view is that the latter Convention (Art. II: “damage caused by ... space object on the surface of the Earth or to aircraft in flight”) covers only cases where damage is caused by space objects in their corporeal capacity by hitting an aircraft or persons or objects on the ground and does not cover cases where signals emitted by space objects cause damage.¹¹⁵

6. Recognition of judgments

As has been shown above it is often not certain that a judgment rendered in one country will be recognised in another country. It is therefore a considerable advantage of practical importance if international conventions such as the Nuclear Conventions¹¹⁶ provide that judgments on matters covered by them have generally to be recognised and enforced in all Contracting States and that recognition and enforcement can be denied for very few reasons only (denial of being heard and public policy).¹¹⁷ The same solution is desirable for an international GNSS Liability Convention.

7. Further procedural issues

Some further procedural aspects should be considered for an international GNSS liability instrument. Again, they can only be mentioned here. For easier access of victims to compensation it should be taken into account to oblige system providers to establish or at least to name a Claims Bureau in each Contracting State. As long as States or the European Community are the only GNSS operators a department of their diplomatic representation in each Contracting State could perform

¹¹⁴ This is also the general solution under the international liability conventions: see for instance Art. 3(6) Convention on Civil Liability for Bunker Oil Pollution Damage; Art. 6(f) Paris Convention (with some limitations).

¹¹⁵ In this sense *Epstein*, Global Positioning System (GPS): Defining the Legal Issues of its Expanding Civil Use, 61 Journal of Air Law and Commerce 243 et seq., 269 et seq. (1995) with further references ; *Hurwitz*, State Liability for Outer Space Activities in Accordance with the 1972 Convention on International Liability for Damage Caused by Space Objects (1992) 18 et seq.; but contra for instance *Larsen*, Legal Liability for Global Navigation Satellite Systems, in Proceedings of the Thirty-Sixth Colloquium on the Law of Outer Space (1993) 69 et seq.

¹¹⁶ Art. 13 (d) Paris Convention; Art. XII Vienna Convention. Similar rules are provided for by the Convention on Civil Liability for Oil Pollution Damage (Art. X) and the Convention on Liability and Compensation for Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea (Art. 40).

¹¹⁷ See as an example Art. 12(1)(a) – (c) Vienna Convention.

this function. For future private operators it could suffice if they name a lawyers' office in each Contracting State of the proposed Convention as their Claims Bureau.

A further issue is the question whether any form of mediation should be made mandatory before victims can go to court. If so it is then questionable whether a global mediation centre for claims arising from GNSS activities should be established which had to deal with these cases. Should a fund solution be instituted an – independent – mediation centre could be established at the place where the fund organisation would be located.

VIII. Conclusions and Recommendation

Global challenges require global answers. The highly advanced technology of global navigation satellite systems is an activity with global positive as well as negative effects. The risks created by this technology are considerable. The present legal framework does not provide an adequate answer to this challenge. The present legal framework is complicated, burdened with uncertainties and may leave victims without compensation without just reason. To amend these shortcomings, to provide safeguards against the risks of this new technology and also to facilitate its acceptance an international Convention on Civil Liability for Damage Caused by Global Navigation Satellite Systems should be concluded. This Convention should be formed according to the model of the Conventions on Liability for Nuclear Damage. Such instrument should primarily meet the following requirements: It should provide for strict liability of the operator of that system whose malfunction caused the damage in question. It should further channel liability onto the operator, define the notion of damage as including also environmental damage and costs of preventive measures, limit liability in amount and time and secure that operators of global navigation satellite services dispose of sufficient insurance or other coverage in the amount of their maximum liability. The Convention should also deal with the accompanying procedural aspects such as state immunity, jurisdiction, recognition and enforcement of judgments.

The envisaged Convention would provide an adequate global answer to the global challenge that is posed by GALILEO and its companions.

ANNEX VI

Dr. Hans-Georg Bollweg

Berlin, 31 March 2008

Initial considerations

**regarding the feasibility of an international UNIDROIT
instrument to cover liability for damage caused by
malfunctions in global (navigation) satellite systems**

I. Reasons for the considerations

1. At the suggestion of the Italian government the UNIDROIT Governing Council held initial consultations at its 85th session in 2006 on the inclusion of a new project in the UNIDROIT Work Programme: The elaboration of an international instrument to cover liability for damage caused by malfunctions in global (navigation) satellite services.
2. At the 86th session of the UNIDROIT Governing Council in 2007, Governing Council member Professor Carbone presented a feasibility study (C.D. (86) 20 Appendix), which was compiled in cooperation with his Italian colleagues Manzini, Masutti und Vasselli and is entitled "*The civil liability and compensation for damage resulting from the performing of European GNSS Services*". This feasibility study, which came to a positive assessment, was submitted to the 86th UNIDROIT Governing Council in 2007 together with a working paper (C.D. (86) 20) drawn up by the Secretariat entitled "*Liability for Satellite-based Services*".
3. During its consultations the 86th UNIDROIT Governing Council in 2007 agreed that "*in view of that interest (Italian Government) on the one hand and concerns regarding the wide-ranging applications on the other hand, informal discussions with all potentially interested Governments should be held with a view to commissioning, should those consultations have a positive outcome, a broad comparative feasibility study*" (Uniform Law Review 2007-1, page 142 (150)). In view of the reservations expressed by the present author during the session Professor Carbone and the present author were requested to pursue the matter further.
4. The UNIDROIT verbal note of 1 February 2008, which accompanied the "*New Triennial Work Programme (2009 – 2011)*" sent to the Member States, has the following to say on this matter: "*Furthermore, at the request of the Government of Italy supported by the Governing Council at its 86th session, preliminary research is being conducted by independent researchers on questions of liability for malfunctions of satellite-based navigation and other services.*" Furthermore it is proposed that the Triennial Work Programme 2009 – 2011 may include: "*3. Work on liability for malfunctions of navigation systems and other satellite based services.*"
5. The 87th UNIDROIT Governing Council in 2008 will take up this issue not in the form of a special item on the agenda but as part of the discussions of the Triennial Work Programme (2009-2011). To this end an expert opinion entitled "*Civil Liability for Satellite-based Services*", prepared by Prof. Dr. Ulrich Magnus of Hamburg University, will be presented to the Governing Council to help it in its deliberations.
6. Both the feasibility study by Professor Carbone et al. and Professor Magnus' opinion merely draw up a list of the potential problems in the areas of the law of contractual and non-contractual liability as well as problems of private international law and international civil procedure faced by national law and present thoughts on the structure and the contents of an international public law instrument. In accordance with his terms of reference, Professor Magnus did not embark on examining any policy issues, it being understood that those issues were to be exclusively within purview of the mandate given by the Governing Council to Professor Carbone and the present writer. Consequently these studies do not discuss whether or not it makes sense for UNIDROIT to incorporate a project of this kind in its Work Programme. There is no discussion either of the issues, particularly relevant in this context, of prior involvement by other international organisations in such a project, of the political implications associated with a project of this nature or, finally, of the ongoing need for regulation in view of other international conventions (covering air, ocean-going and inland waterway traffic, for instance), which already envisage a liability system for damage caused indirectly by satellite navigation errors.

7. Having been requested by the 86th UNIDROIT Governing Council in 2007 to address this issue, the present author has compiled the following thoughts on the issue of feasibility. They deal in detail with the reservations already expressed during the session of the Governing Council with respect to the questions mentioned under Fig. 6 above.

II. Necessary differentiation between global satellite services and global navigation satellite services

1. In the matter of feasibility a distinction needs to be made between global satellite services in general and global navigation satellite services in particular. In the documents for the 86th Governing Council in 2007 (C.D. (86) 20) and in the verbal note on the new Triennial Work Programme reference is made there either to satellite services in general or to navigation satellite services and other services. On the other hand, Professor Carbone's feasibility study addresses only navigation satellite services and, more precisely, only those of the European Galileo system. The same applies to the expert opinion just submitted by Professor Magnus.
2. Global satellite services in general are provided by both public and private operators. They serve public and private purposes and have public and private users. Individual uses vary tremendously; they range from telecommunications, television and radio applications via weather forecasts, navigation, search and rescue services to police, military and secret service uses. Different judgements will need to be reached concerning not only the liability issues, but also the feasibility of an international instrument. This will depend on whether we are looking at public or private providers, public or private users, applications to maintain public (external and internal) security (e.g. police and military services, search and rescue services), the provision of basic public services and the infrastructure required by the state (e.g. weather reports for shipping and air traffic, telecommunications) and other public services or uses for purely private purposes (navigation of private motor vehicles). A feasibility study assumes that these very different uses can be individually identified, thereby allowing definitive exclusion of those areas which are entirely unsuitable for a liability regulation deriving from an international convention (presumably all the satellite-based services run by public providers and uses for public purposes). To this end an empirical study must be carried out before any assessment of feasibility can be made.
3. However, if the focus is restricted to the global navigation satellite services, the area of application is much narrower and more specific, thus allowing feasibility to be assessed. In this sector there are just two systems (GLONASS, GPS) run by two public operators (Russian Federation, USA). A third system, Galileo, is under construction, which is to be operated from 2013 by a public-private partnership (PPP) in a legal form under private law. This system will be operated neither by the European Community, which provides it with political support, nor by the Member States themselves. The Galileo services comprise navigation services only. These services can be used for both public purposes (e.g. military, police) and private purposes. There are reasons for doubting whether the use of the navigation services for public purposes is a suitable subject for international agreements. But even if there were to be a limitation to navigation satellite services for private purposes, other serious reservations would need to be considered.

III. Studies carried out by other international organisations to elaborate an international instrument covering liability for navigation satellite services: economic and labour implications

1. Liability for navigation satellite services deriving from international instruments as such and their individual regulations have been the subject of extensive investigations and consultations in the international arena for many years now.

a. International Civil Aviation Organization (ICAO) and European Civil Aviation Conference (ECAC) studies

(1) The development of a legal framework to govern the implementation of GNSS has been on the Work Programme of the Legal Committee of the International Civil Aviation Organization (ICAO) since 1992. First of all, a committee of legal and technical experts was established by the ICAO Council in 1995 which led to the adoption of a charter on the rights and obligations of states relating to GNSS services at the 32nd ICAO Assembly in 1998. However, this alone was not considered adequate, as several aspects related to certification, operating structures, administration, cost recovery and, most importantly, liability were not addressed. The liability aspects in particular were found to merit further examination. The 32nd ICAO Assembly in 1998 set up a new Study Group, the Secretariat Study Group on Legal Aspects of CNS/ATM Systems, which reported to the 33rd ICAO General Assembly in 2001. The 33rd Assembly mandated the ICAO Secretariat Study Group to finalize a contractual framework, focussing predominantly on model clauses (ICAO doc A36-WP/140, paragraph 1.1, Appendix 3 to this paper).

The main purpose of the contractual framework was to provide a number of legal and institutional provisions that are deemed necessary for addressing GNSS at regional level. The contractual framework is based on a two-tier approach. On one level, it offers a regulatory agreement dealing with public law matters including certification, liability and jurisdictional matters. The other level consists of private contractual agreements between the various stakeholders in which they would have a very large degree of autonomy, subject to certain mandatory elements determined by the regulatory agreement (ICAO doc A36-WP/140, paragraph 1.2, Appendix 3 to this paper).

(2) The present author himself was a member of the EUROCONTROL Legal Task Force on GNSS Liability from 1999 to 2001. If his memory serves him correctly, these consultations were not concluded, being incorporated instead in the work of the ICAO Study Group on Legal Aspects of CNS/ATM Systems.

(3) The Study Group submitted its final report in 2004. This report has the following to say, *inter alia*, about the issue of liability (ICAO Doc. C-WP/12197, Appendix 1 to this paper):

3.3.2.: Approaches to the issue of liability

3.3.3.: The Group identified three possible approaches to the problem of liability relating to GNSS:

a) 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;

- b) to establish an adequate recourse action mechanism for the state having jurisdiction under article 29 and the aircraft operator to take recourse against the other party or parties (mainly the primary signal provider and the augmentation signal provider) involved in the provision of the services, to the extent that such other party or parties have been negligent in the provision of the signals; or*
- c) to ensure adequate compensation coverage through compensation fund arrangements, as have been set up in the field of maritime transport and other fields.*

3.3.4.: The group had detailed and lengthy discussions concerning the possible approaches to the problem of liability. A part of the group believed that, in order to achieve universality and certainty of the new air navigation system, the issue of liability should be dealt with under a universal regime and should not be left to national law. Another part of the group, however, did not consider it necessary to establish a new universal liability system or a liability convention for GNSS, since there was no indication that the current liability regime under domestic law could not cope with GNSS, and further, since there was no connection between GNSS and the perceived gaps in the liability system.

4. 1.: Pursuant to its mandate as confirmed by the 33rd Session of the ICAO Assembly, the Study Group also focussed on the consideration of a contractual framework as an interim framework for CNS/ATM systems.

.....

4. 3.: Elements of contractual framework

.....

4.3.6 Liability

4. 3. 6. 1.: Article 6 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. This clause focuses on liability between parties in the contractual context, without addressing the issue of liability towards a third party.

.....

5.2. Discussion of an international convention in the Study Group

.....

"5.2.2: One view was that since a great number of states would have to authorize the use of GNSS signals, over which they have no control, the only way to secure confidence in the system would be by committing both providers and users to accept certain rights and obligations in the form of a binding international legal instrument. In the view of these members, the international convention should set out, inter alia, such principles as the acknowledgement of the paramount importance of the safety of international civil aviation, unlimited access to GNSS services on a non-discriminatory basis, the sovereign right of every state to control operations of aircraft and enforce safety regulations within its airspace and the obligation of providers to assure continuity, availability, accuracy, transparency and liability of GNSS services. It was further pointed out that the liability issue is an essential element of the legal framework of GNSS, particularly in view of the multiplicity of the players and possible litigations taking place at the same time for the same event in a number of countries. According to this view, the implementation of a worldwide seamless and interoperable system such as CNS/ATM would not be compatible with a scattered liability system. These members supported the development of an international convention which they believed had been an option favoured by the vast majority at the Rio Conference, and the 32nd and 33rd Sessions of the Assembly. They saw the contractual framework as a flexible interim solution from which an international convention or other binding instruments might evolve."

"5.2.3.: A second view was that ICAO's existing legal framework, namely the Chicago Convention, its Appendixes and the other elements, discussed in Part I above, including applicable domestic law, offered continued serviceability and no deficiencies had been found to impede the implementation of CNS/ATM Systems. It was unnecessary to establish a new universal liability system or a liability convention for GNSS, since there was no indication that the current liability regime under domestic law could not cope with GNSS, and further, since there was no connection between GNSS and the perceived gaps in the liability system. While legal issues had been discussed in various bodies of ICAO, at no point had any ICAO body achieved consensus on a proposal for new global conventional law. At the same time, every ICAO body which had considered legal issues relating to CNS/ATM had been careful to state that work on legal issues must not be permitted to delay technical implementation of CNS/ATM systems."

"5.2.6. At the end of the discussion on the subject of a draft convention and its specific clauses most members present observed that since the implementation of GNSS was in progress, there was not enough experience on which the drafting of an international convention could be based. It was therefore advocated not to pursue this matter, pending further development of GNSS:"

This report was presented to the 35th ICAO General Assembly in 2004 for its attention and the adoption of a resolution (ICAO doc. A35-WP/75, Appendix 1 to this paper).

(4) The European Civil Aviation Conference (ECAC), acting on behalf of its 41 member states, also submitted a working paper (ICAO doc.A35/WP/125; Appendix 2 to this paper) to the 35th ICAO General Assembly. The draft of a "contractual framework" was first presented as Appendix B in the form of this Working Paper, which states the following:

"4.1: A contractual framework which addresses GNSS must provide a unified structure capable of addressing both public law and private law arrangements between the various stakeholders. It needs to be comprehensive in coverage, addressing the full range of issues that concerns those stakeholders. The contractual framework proposed by the ECAC States is attached in Appendix B. It is not new. It was already presented and discussed at the 33rd Assembly, which asked for this completion as an interim step towards the development of a possible convention.

4.2: It is based on a two-tier approach. On one level, it offers a regulatory agreement dealing with public law matters including certification, liability and jurisdictional matters. The second level is private contractual agreements between the various stakeholders in which they would have a very large degree of autonomy subject to certain mandatory elements determined by the regulatory agreement. These mandatory elements would focus, inter alia, on compliance with SARPs with regard to continuity, availability, integrity, accuracy, reliability, recognition of (strict) liability, compulsory risk coverage, recourse to arbitration, waiver of right to invoke sovereign immunity. Harmonisation of these essential parts of the contracts would help achieve a framework where the roles and responsibilities of all players involved are clear to all and where relationships are defined.

4.3: The two main elements of this contractual framework, therefore, are the private law contracts to be concluded between the parties involved in the chain of implementation, operation provision and the use of GNSS signals and systems and the public law agreement between states involved to ensure these contracts are har-

monised in order to contain the same essential provisions on safety, certification, liability etc. In this way, the necessary distinction between the public and private law elements of this proposed contractual framework will be ensured.

4.4.: The contractual framework being proposed by ECAC states is not a GNSS Convention. While it includes binding elements, it also creates a flexible and readily available framework to cover all legal and institutional elements relating to GNSS at the regional level and harmonises contractual relationships between the parties involved, providing clarity and legal certainty. It may, however, provide experience and know-how and represents a first step, which could evolve into a long-term focussed and precise global instrument of international law under the aegis of ICAO.

By way of a long-term solution the ECAC further submitted a draft convention in the form of Appendix C to this Working Paper, which states the following:

"5.2: The objective would be to achieve a dedicated convention limited to the essential common elements for legally and institutionally adequate provision of GNSS services. It would address, in particular, liability, including the issue of third party liability which cannot be adequately addressed through the contractual framework solution. This convention is foreseen to be the most appropriate way to address all parties affected by such a global system in the long term."

The 35th ICAO General Assembly in 2004 resolved to finalise a "contractual framework" in line with the ECAC proposal.

(5) This issue was discussed again at the 36th ICAO General Assembly in 2007, although this time no longer as a separate item on the agenda but as part of the "Work Programme" item. To this end ECAC again submitted a Working Paper (ICAO doc. A36/WP 140, Appendix 3 to this paper), which has the following to say on liability:

"2.7.: The issue of liability has been widely debated in the context of the Galileo and EGNOS programmes over the past three years. The most important topics have been Third Party Liability, Design Risk, liability associated to the system operations and the Allocation of Liability. This illustrates the need for a framework as presented by the ECAC states in order to channel liability."

The Working Paper ends with the following conclusions:

"3.1.: The contractual framework proposed by the ECAC States has already been recognized by ICAO in Assembly Resolution A 35-3 as a mechanism to create a flexible and readily available framework to cover all legal and institutional elements related to GNSS at the regional level and harmonises contractual relationships between the parties involved, providing clarity and legal certainty.

3.2.: Developments in Europe with regard to EGNOS and Galileo confirm the need for such a contractual framework and highlight the need to align the said framework to take on board the need for harmonisation of, inter alia, international standards, certification, interoperability, liability allocation in a multi-State environment, particularly in the context of the European Single Sky legislation.

3.3.: The contractual framework will be refined in the light of these developments and presented as soon as possible to the ICAO Secretary General and Council, as foreseen in the resolution. It is envisaged that the framework will satisfy the needs

widely voiced in ICAO regarding GNSS and will assist in clarifying many of the difficult issues faced and serve as a useful basis for ongoing discussions in the Legal Commission."

However, the 36th ICAO General Assembly in 2007 no longer regarded the finalisation of the "contractual framework" as the task of the ICAO, seeing responsibility for it as resting exclusively with the ECAC. The report of the 36th General Assembly in 2007, Legal Commission, (ICAO doc. A36-WP/297, Appendix 4 to this paper) has the following to say on this matter:

"47.9.: The Commission noted its understanding that once a model of a regional framework is developed by the members of the European Civil Aviation Conference, such model could be distributed through ICAO to its member states, and interested states may use the information as guidance material to develop their own regional legal framework as appropriate."

Finally, the 36th ICAO General Assembly in 2007 downgraded the priority of this project from 1 to 3. In the author's experience, this low level of priority means in effect that the ICAO has washed its hands of the project.

The author is not aware of any similar studies having been carried out in other international organisations concerning liability for satellite navigation in other traffic sectors. If so, they would need to be examined.

b. Italian initiative for a Regulation of the European Community

In late 2006 the Italian government launched an initiative for a European Community Regulation on liability:¹ In the course of an international workshop held in December 2006 / January 2007 in Rome, a "*European GNSS Initiative for an EU Regulation on Third Party Liabilities (TLP)*" (Presentation Appendix 5 to this paper) was presented and discussed with the participants. A "*Draft Regulation on civil liability and compensation for damage resulting from the performing of Galileo services*" (Appendix 6 to this paper) was presented, the intention being to establish a legal liability basis for damage caused by commercial Galileo services for the area covered by the European Community. The Regulation should have effect beyond the Member States as a result of individual user states outside the EC acceding to the Regulation through bilateral agreements under international public law.

The Italian proposal for an EC Liability Regulation has reportedly been forwarded in the meantime to the EC Commission.

2. The ICAO has been engaged in consultations for over 15 years now on an international instrument covering liability for global satellite navigation in air traffic, which will shortly come to a provisional conclusion upon completion of the ECAC's "contractual framework". It therefore appears very doubtful whether an international convention for global satellite navigation in air traffic is still necessary at all and whether UNIDROIT should include the project, which has evidently failed in the ICAO, on its agenda. These doubts are reinforced if it is borne in mind that the Italian government is simultaneously pursuing an initiative for a Liability Regulation of the European Community. A regulation of this kind supplemented by bilateral agreements under international public law, as is foreseen, would render a UNIDROIT convention unnecessary.

¹ Giemulla/Heinrich, Responsibility and Liability for Galileo-Services, *Zeitschrift für Luft- und Weltraumrecht (ZLW)* 2008, 25 (37).

Taking this into account, economic aspects (unnecessary costs) and labour aspects (unnecessary work) appear all the more significant, as do matters regarding UNIDROIT's external image, should an ICAO project that has proved abortive after years of discussion be taken over or pursued in competition with a project in the hands of the European Community.

IV. Feasibility of a UNIDROIT instrument covering liability for satellite-based navigation services: political and legal implications

1. The above considerations notwithstanding, an international instrument (convention, model law) would have to face the fact there are currently only two international satellite navigation systems in operation in the world (three after the installation of Galileo), liability for which might conceivably be the subject for regulation by such an instrument. It is hard to imagine the countries responsible for GPS (USA) and GLONASS (Russian Federation), which are – in part at least – military systems, would subject themselves to an international liability regime that is the outcome of international negotiations and is to a large extent heterogeneous. Confirmation of this is provided by the consultation process within the ICAO, which renounced its initially global focus to concentrate exclusively on the EU's Galileo system. The Galileo system will not suffer comparable treatment. It enjoys the support of the EC and its 27 Member States, has a distinctly commercial dimension and is to be operated on a private basis or in private legal forms at least (PPP).² The subject of this liability is readily identifiable; other subjects of liability are ruled out. However, the achievement of an international convention on liability for a single subject of liability appears highly unusual in the context of international public law at least. The ICAO, for its part, ultimately renounced this approach.
2. Should it be the case, for political reasons, that consideration is to be given to just one subject of liability in the form of the company operating Galileo, it only would make sense if the regional economic integration organisation responsible for such a subject or the Member States behind this organisation were to install a liability regime for it. There are some doubts whether UNIDROIT has the human resources and the financial means to carry out preliminary work for an EC liability regime as a service provider for the EC Commission. Having carried out preliminary studies at the international level for many years, the ICAO has evidently also come to realise that this is exclusively or at least primarily a European project; it apparently now sees the ECAC as being responsible for it and has placed the project so far down its agenda that further work on it is ruled out to all intents and purposes. Even the Italian government, as the initiator of the UNIDROIT considerations, appears to regard this as a European project if it draft a EC regulation on satellite navigation liability and forward it to the EC Commission.
3. A Regulation under Community Law would have the disadvantage of applying only to areas covered by the law-making competence of the Community. Moreover, it could not therefore cover cases of damage occurring outside the Community. On the one hand, this can be offset by the conclusion – in line with the Italian EC initiative – of bilateral agreements under international public law, which would entail the application of EC law, with the countries wishing to use Galileo. On the other hand, an international convention would only be superior to a regulation under Community Law if it were not only to come into existence, but were also to be ratified worldwide by all the countries in which there are potential users. But this is very unlikely to happen, especially when it comes to liability for malfunctions in European satellite navigation services. Here the interests of the EC Member States are likely to be diametrically opposed to those of the states which are not members of the EC. The former give their political support to the operator and are therefore primarily inter-

² Amended proposal for a Regulation of the European Parliament and of the Council on the further implementation of the European satellite radionavigation programmes (EGNOS and Galileo), COM (2007) 535, p. 8.

ested, although users themselves, in both a limitation of liability and the insurability of liability as essential prerequisites for finding private investors and for setting up a private operating company.³ The latter are exclusively users and, in the event of such a limitation of liability, would see restrictions placed solely on the claims of their users, to which the operating company might otherwise be fully liable in accordance with their domestic legislation. The only conclusion that can be drawn from this for an international convention is that either it would not limit liability at all or only marginally and therefore the EC Member States would regard it as a creditor-friendly regulation and refuse to ratify it or, if liability were to be considerably limited, the non-EC Member States would regard it as a debtor-friendly regulation and refuse to ratify it. A compromise regulation, which might be the only way of guaranteeing far-reaching (albeit never worldwide) ratification by both the EC Member States backing the operating company and the non-EC Member States as users, is likely to be hard to find because of the very disparate interests involved.

4. With regard to the feasibility of an international instrument covering liability for malfunctions of global satellite navigation a further distinction must be made between

- contractual und extra-contractual (tortious) liability;
 - services used without a contract and free of charge and services used on a contractual basis and incurring costs;
 - the direct and indirect damage caused by satellite navigation errors;
 - the direct liability claim and the claim of recourse;
 - areas, in which liability extending to damage caused by satellite navigation errors is already regulated by special international instruments, and areas, in which there is a complete lack of any regulation on liability.
- a.** Anyone paying a fee for the use of satellite navigation services is linked by contract to the system operator. Damages incurred by the user can, therefore, be regulated on a contractual basis. The claims arising can be made the subject of individual contractual regulations. This is all the more valid in that only a single legal subject – the operator of the satellite-based navigation system – can be considered as both the contractual partner and as the liability opponent. Moreover, regulation of liability on the basis of an individual contract is more flexible than contractual liability specified in conventions. Hence it can be assumed that the contracts covering the provision of satellite navigation services will contain liability regulations of this kind, for instance in the form of penalty clauses.⁴ Moreover, an international instrument will soon be available in the form of the ECAC's "Contractual Framework", which will structure contractual liability in this field.
- b.** 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, these latter are each linked by contract to the respective prior user and the last prior user to the system operator. Nothing would be more appropriate than to regulate the damages incurred by these other users on a contractual basis in their respective contractual relations and to seek contractual recourse with the respective prior user. Thanks to his contract the first user in this contractual chain can then hold the system operator liable. Claims can therefore be settled in a contractual chain. The respective contract determines the existence, contents and extent of the claim. A statutory regulation, especially one of this kind in an international instru-

³ Cf. Giemulla/Heinrich, Responsibility and Liability for Galileo Services, *Zeitschrift für Luft- und Weltraumrecht* (ZLW) 2008, 25 (29, 34 f.).

⁴ Giemulla/Heinrich, Responsibility and Liability for Galileo Services, *Zeitschrift für Luft- und Weltraumrecht* (ZLW) 2008, 25 (35).

ment, appears to be not only dispensable but also hardly suitable, given the individual nature of the contractual relations. This is all the more valid in that ultimately there is only one subject of liability who has to bear the damage in economic terms at least. This is also the assumption made in the “Contractual Framework” for satellite navigation in air traffic, which is to be limited to the key elements of liability in these contractual relations.

- c. In the event of any doubt, persons taking advantage of satellite navigation services without making any payment will not be tied by contract to the system operator. The use of services free of charge without any contract having been concluded is unlikely to have any consequences for either contractual or non-contractual liability. In the event of any doubt, the system operator will be well advised, when starting services free of charge, to make it clear by means of a statement readily accessible to anyone availing themselves of the services that the use of these services free of charge is undertaken at the user's own risk and that no liability will be assumed. Anyone permitted to use services offered free of charge and without a contract being signed will not expect liability to be assumed if any malfunctions should occur in the system, along the lines of “what is free of charge is not worth anything.”
- d. However, if the contractual liability does not fully cover all damages, or if the respective contractual partner is not solvent, an extra-contractual liability can be considered for the settlement of claims. The same holds true of cases in which the injured party is not tied directly to the system operator or indirectly to the same, i.e. by means of an uninterrupted contractual chain (third party liability). Only for extra-contractual liability need serious thought be given to a regulation by means of an international convention. For in such cases individual contractual regulations cannot grant compensation, or adequate compensation at least, and the “Contractual Framework” covering liability for global satellite navigation in air traffic, for its part, does not encompass forms of liability between legal subjects who are not contractually tied to one another. The Italian initiative for an EC Regulation on liability is evidently also limited to extra-contractual liability and, moreover, only to cases in which there is a lack of any direct or indirect contractual relationship between the injured party and the system operator (third party liability).
- e. Extra-contractual liability can only be of practical relevance in cases in which the user, who is directly tied by contract to the system provider, or the users, who are contractually tied to this user or his successors, suffer damage but do not receive full compensation because, for example, the maximum limits for liability have already been reached (e.g. in international air traffic pursuant to Article 21, paragraph 2 of the Montreal Convention), which may not be exceeded in an individual contract or by a “Contractual Framework” (Article 29 of the Montreal Convention), or in which damages are incurred by third parties outside of these contractual relations (third party liability). As a rule, damages of this kind will only have been caused indirectly by system malfunctions in satellite-based navigation services but directly by another object (generally a vehicle), which was misdirected because of the malfunction. This applies, for instance, to accidents involving ships or aircraft in which passengers, primarily third parties who – or whose goods – were not conveyed by these vehicles, incur damage.

On the other hand, there are already numerous international conventions for such cases of damage, which grant compensation to the injured party irrespective of the causality of a system malfunction in the satellite navigation. In the field of shipping they include the Athens Agreement and the 1992 International Convention on Civil Law Liability for Oil Pollution Damage; in inland waterway traffic the Strasbourg

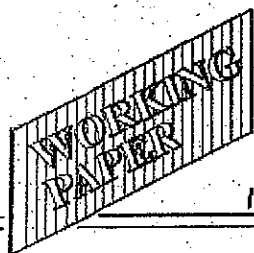
Convention; in air traffic the Rome Convention, the Warsaw Convention and the Montreal Convention; and in special cases (e.g. the transport of nuclear material) also the Paris Convention on Third Party Liability in the Field of Nuclear Energy and the Brussels Supplementary Convention. Hence only minor gaps in protection will remain (in air traffic liability, for instance, for damages exceeding the maximum liability limits specified in the aforementioned conventions or those to which the conventions do not apply and which are not covered by the “Contractual Framework” of the ECAC). These gaps in protection require elaboration in detail, but that would exceed the scope of these considerations. Only where such gaps in protection are ascertainable can a need arise at all for action to be taken concerning a new international instrument. Otherwise a liability would be established on the basis of a new international instrument that would add to the existing liabilities deriving from international conventions. This would only lead to unnecessary duplications and barely resolvable problems of differentiation.

- f. While such gaps in protection may remain in the existing international conventions and the Contractual Framework, they will generally be closed by domestic legislation applied in extension. In most cases this will be the domestic tortious liability in general and domestic product liability in particular.⁵ Given a product liability which entails considerable liability risks and is getting out of hand in individual countries, the EC and its Member States are understandably keen to harmonise domestic product liability in the field of satellite navigation. However, elaborating such an instrument and ensuring its ratification by those states to which it is addressed at least (see Fig. 3 above) would appear to be a largely futile undertaking. Moreover, it is very difficult to justify harmonising product liability or general liability in tort only for this relatively small segment of satellite-based navigation, but not in general terms. Ultimately, any product liability covered by an international treaty would be obliged to resolve the difficult problem of the EC having a product liability directive, and thus a liability regime of its own for product liability in general, which would infringe product liability regulations in international conventions for special products. This contradiction will be almost impossible to resolve without a regulation under Community Law on satellite navigation liability.

Moreover, while the need for harmonisation in this respect was studied in depth during the ICAO consultations, it proved impossible to reach agreement on the need for the relevant legal harmonisation (see the Final Report of the Secretariat Study Group (ICAO Doc. C-WP/12197, Appendix 1 to this paper). In the meantime the matter would appear to have resolved itself with the de facto abandonment of the project by the ICAO.

- g. The regulations referred to at e. encompass only the liability claim as such but not the right to recourse of the airline, ship owner or fund, whose aircraft or ship was misdirected because of a defective satellite navigation signal and as a result inflicted damage on the legal assets of others. As a rule, however, the person liable to the directly injured party in such cases will enjoy contractual relations with a user who is in direct or indirect contact with the system operator, (e.g. the directly liable airline with the air traffic control organisation and this organisation, in turn, with the satellite navigation operator). In such instances, recourse can take place within the contractual relations described above at b. without an international agreement being required or, indeed, proving helpful in any way because of its lack of flexibility.

⁵ For a detailed discussion of the situation under German law see Glemulla/Heinrich, Responsibility and Liability for Galileo Services, *Zeitschrift für Luft- und Weltraumrecht (ZLW)* 2008, 25 (29 ff.).



INTERNATIONAL CIVIL AVIATION ORGANIZATION

Appendix 1

A35-WP/75

LE/5

28/07/04

ASSEMBLY - 35th SESSION

LEGAL COMMISSION

Agenda Item 36: Report on the establishment of a legal framework with regard to CNS/ATM systems including GNSS

REPORT ON THE ESTABLISHMENT OF A LEGAL FRAMEWORK WITH REGARD TO CNS/ATM SYSTEMS INCLUDING GNSS

SUMMARY

This paper reports to the Assembly for its consideration the work on legal aspects of CNS/ATM systems.

Action by the Assembly is in paragraph 5.

1. INTRODUCTION

1.1 The 32nd Session of the Assembly adopted in 1998 Resolution A32-20: *Development and elaboration of an appropriate long-term legal framework to govern the implementation of GNSS*, instructing the Council and the Secretary General, within their respective competencies, and beginning with a Secretariat Study Group, to consider, *inter alia*, the elaboration of an appropriate long-term legal framework to govern the operation of GNSS systems, including consideration of an international convention for this purpose. In September/October 2001, based on A33-WP/34: Progress Report on the Establishment of a Legal Framework with Regard to CNS/ATM Systems including GNSS, the 33rd Session of the Assembly decided, *inter alia*:

- a) that further work on the legal aspects of CNS/ATM systems be carried out so as to finalize the concept of a contractual framework for CNS/ATM as an interim framework and provide a path toward its implementation, including the consideration of an international convention, having regard to the following guidance to:
 - 1) be mindful of States' reliance on others to provide all or part of their CNS/ATM services;

- 2) consider carefully the kinds of relationships States should have with providers of services or elements of services; and
 - 3) ensure that States retain full responsibility under the Chicago Convention for services provided on their behalf; and
- b) that a report be presented to the next ordinary session of the Assembly.

1.2 Pursuant to this decision, the Secretariat Study Group on Legal Aspects of CNS/ATM systems finalized its work in January 2004. It reviewed the current legal framework applicable to CNS/ATM systems, identified certain inadequacies, discussed in detail a contractual framework for the systems, and studied the possibility of an international convention for this purpose. The Final Report on the Work of the Secretariat Study Group on Legal Aspects of CNS/ATM Systems is set out in the **Appendix**.

2. MAIN POINTS OF THE FINAL REPORT OF THE STUDY GROUP

2.1 Part I of the Final Report describes the current legal framework applicable to CNS/ATM systems. The work of the Study Group was based on the premise that it has been generally agreed that there is no legal obstacle to the implementation of CNS/ATM systems and that there is nothing inherent in CNS/ATM systems that is inconsistent with the *Convention on International Civil Aviation* (Chicago, 1944, hereinafter referred to as the "Chicago Convention"). There is also consensus that the Chicago Convention and its Annexes are applicable to CNS/ATM systems and that GNSS shall be compatible with the Chicago Convention, its Annexes and other principles of international law. Other elements of the current framework include the ICAO Council Statement of Policy, the Exchange of Letters of ICAO respectively with the United States and the Russian Federation, and Assembly Resolution A32-19: *Charter on the Rights and Obligations of States Relating to GNSS Services* (cf. paragraph 2.1 of the Final Report). The current framework also includes national law, since certain legal aspects of CNS/ATM systems are governed by national law, particularly in relation to liability rules. The Group concluded that the implementation of GNSS leaves unaffected the responsibility of States under Article 28 of the Chicago Convention for provision of air navigation services within their respective airspace. The Group also recognized that in providing the services under Article 28 when GNSS is implemented, most States have to rely on signals-in-space and their augmentation provided by others. Accordingly, a link between the provider or providers of signals and the States having jurisdiction under Article 28 should be established. The Final Report of the Group also deals with issues relating to certification, authorization for use of signals, services or other facilities, and delegation of responsibility.

2.2 Part II of the Final Report identifies inadequacies of the current legal framework relating to liability. While the substantive law may be reasonably adequate to determine or apportion liability from accidents involving failure or malfunction of GNSS systems, the procedural rules and, in particular, the applicable rules on jurisdiction may not be adequate to bring all parties to the court in order to ensure prompt and equitable compensation in these cases. In particular, application of the doctrine of sovereign immunity and related principles may in many cases render court action against foreign States or foreign governmental entities providing ATC or GNSS signals, facilities and services in countries other than their home States difficult or impossible.

2.3 Part III of the Final Report reflects consideration of a contractual framework, which was the focus of the work of the Study Group. A contractual framework may provide a link between the provider or providers of signals and the State having jurisdiction under Article 28 of the Chicago Convention as regards the terms and conditions, under which GNSS services are provided. A contractual framework may also provide the necessary provisions regarding the issue of liability. The Study Group discussed in detail and concluded on a set of contractual clauses in the form of **"Draft Contractual Framework Relating to the Provision of GNSS Services"**, as set out in **Attachment F** to the Final Report of the Group. While the Draft Contractual Framework was supported by the majority of the Group, differences exist with respect to the scope and mandatory nature of the framework. Some Members regarded the framework as an optional, non-binding model contract, in respect of which States or other parties retain freedom to accept. Other Members believed that in order to maintain a desired degree of uniformity and to provide essential assurances of confidence in CNS/ATM systems, the framework should contain a number of mandatory common elements binding upon the parties, which should take the form of an intergovernmental agreement, and which may gradually evolve in the future into an international convention.

2.4 Part IV of the Final Report relates to the consideration of an international convention. In spite of detailed discussions during several meetings of the Group, the Group could not find a consensus on this subject. One view was that since a great number of States would have to authorize the use of GNSS signals over which they have no control, the only way to secure confidence in the system would be by committing both providers and users to accept certain rights and obligations in a form of a binding international legal instrument. It was further pointed out that the liability issue is an essential element in the legal framework for GNSS. A second view was that ICAO's existing legal framework, namely the Chicago Convention, its Annexes offered continued serviceability and no deficiencies had been found to impede the implementation of CNS/ATM systems. It was unnecessary to establish a new universal liability system or a liability convention for GNSS, since there was no indication that the current liability regime under domestic law could not cope with GNSS. A third group of Members shared a similar aspiration for an international convention as the first group viewed this as the necessary and long-term solution to the issue of a legal framework for GNSS. At the same time, they believed that a mandatory contractual framework could serve as an interim solution between the *status quo* and the long-term elaboration of an international convention.

2.5 In summary, there were two schools of thought in the Study Group regarding an international convention as a long-term legal framework to govern the operation of GNSS systems: one was that, at present, not enough experience had been gained with the implementation of CNS/ATM systems, and GNSS in particular, and that it was therefore premature at this point to elaborate and draft an international convention; the other was that an international convention was necessary and desirable.

2.6 Part V of the Final Report addressed certain issues relating to communications and surveillance.

3. CONSIDERATION BY THE COUNCIL OF THE FINAL REPORT OF THE STUDY GROUP

3.1 When the Council considered the Final Report of the Study Group on 5 March 2004 during the ninth meeting of its 171st Session, a view was expressed that since there had not been any consensus on the need for an international convention, it was proposed that the Council acknowledge that ICAO's studies of the legal aspects of CNS/ATM systems implementation had been exhaustive and that the Council

recommend to the 35th Session of the Assembly that ICAO consider its legal research complete and concentrate its efforts on the technical aspects of CNS/ATM systems implementation for at least the upcoming triennium. A number of Representatives on the Council also supported the view that it was premature at this stage to elaborate and draft an international convention.

3.2 Another view was expressed that the study on the legal aspects of CNS/ATM systems must continue. Since satellite radio communication should ultimately become the single tool for use in air traffic management, the need for new international arrangements to govern the implementation and operation of the future GNSS should be recognized. Such arrangements should, in particular, provide adequate legal certainty for those States which would be relying on signals provided by others regarding their obligations under Article 28 of the Chicago Convention. The arrangements should also provide a comprehensive, consistent and coordinated liability framework for GNSS-related activities.

3.3 It was further pointed out that the three approaches mentioned in paragraph 2.4 could be regarded as four approaches, since the third approach, namely that of a contractual framework, comprises two separate and distinct options: a flexible approach and a binding approach. Under the flexible approach, a number of model clauses would be drafted and it would be for the negotiating parties to decide whether or not to use them in the contract. Under the binding approach, the contractual framework should include a number of mandatory common elements which should bind on all parties. Accordingly, the contractual framework should include a framework agreement among States at governmental level mainly to define the mandatory common elements.

3.4 In conclusion, the Council observed that the subject of the legal aspects of CNS/ATM systems implementation is of a high degree of importance. This subject, which is complex not only from the legal point of view but also from the technological and technical point of view, is one of the items on the General Work Programme of the Legal Committee which was approved by the Assembly and reviewed by the Council on a yearly basis. It is for the 35th Session of the Assembly to determine what further action could be taken. The Council also emphasized the need to distinguish the two approaches to the contractual framework as indicated in paragraph 3.3 of this paper.

4. FINANCIAL IMPACT OF THE PROPOSED ACTION

4.1 The financial impact of the work in this area is dependent upon the decision of the Assembly under paragraph 5.1 b).

5. ACTION BY THE ASSEMBLY

5.1 The Assembly is invited to:

- a) note this paper and its appendix; and
 - b) give guidance, as appropriate, concerning the work in this respect.
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APPENDIX

FINAL REPORT ON THE WORK OF THE SECRETARIAT STUDY GROUP ON LEGAL ASPECTS OF CNS/ATM SYSTEMS

(Presented by the Secretariat)

1. INTRODUCTION

1.1 The Secretariat Study Group on Legal Aspects of CNS/ATM Systems was established pursuant to a decision of the Council, taken at the tenth meeting of its 154th Session (C-DEC 154/10) and endorsed by Assembly Resolution A32-20: *Development and elaboration of an appropriate long-term legal framework to govern the implementation of GNSS*, which instructed the Council and the Secretary General, within their respective competencies, and beginning with a Secretariat Study Group, to:

- "a) ensure the expeditious follow-up of the recommendations of the worldwide CNS/ATM Systems Implementation Conference, as well as those formulated by the Panel of Legal and Technical Experts on the Establishment of a Legal Framework with regard to GNSS (LTEP), especially those concerning institutional issues and questions of liability; and
- b) consider the elaboration of an appropriate long-term legal framework to govern the operation of GNSS systems, including consideration of an international Convention for this purpose, and to present proposals for such a framework in time for their consideration by the next ordinary Session of the Assembly."

1.2 The 33rd Session of the Assembly in 2001 decided that further work on the legal aspects of CNS/ATM systems be carried out so as to finalize the concept of a contractual framework for CNS/ATM as an interim framework and provide a path toward its implementation.

1.3 The Group held eleven meetings between 1999 and January 2004 to consider the legal aspects of CNS/ATM systems, particularly those related to GNSS.

1.4 The Global Navigation Satellite System (GNSS), which is one of the key elements of the CNS/ATM systems, is a worldwide position and time determination system, which includes satellite constellations, aircraft receivers, and system integrity monitoring, augmented as necessary to support the Required Navigation Performance for the actual phase of operation. At present, there are two satellite navigation systems in operation: the Global Positioning System (GPS), developed by the United States, and the Global Orbiting Navigation Satellite System (GLONASS), developed by the Russian Federation. There is also the development of a new system in Europe, called Galileo, intended to become a new element of GNSS as of 2008.

1.5 Consideration of the legal aspects of CNS/ATM systems has been based on the following basic assumptions: (1) The long-term GNSS, which will be the evolution of the existing systems, will be composed of different global and regional systems. (2) These systems could be civilian-controlled, military-controlled or a mixture of them. (3) The long-term GNSS will include core elements (primary signals in space) and augmentation systems. In this context, the Secretariat Study Group reviewed the current legal framework applicable to CNS/ATM systems, identified certain inadequacies, discussed in detail a contractual framework for the systems, and studied the possibility of an international convention for this purpose.

2. PART I – CURRENT LEGAL FRAMEWORK

2.1 The work of the Study Group was based on the premise that it has been generally agreed that there is no legal obstacle to the implementation of CNS/ATM systems and that there is nothing inherent in CNS/ATM systems that is inconsistent with the *Convention on International Civil Aviation*, (Chicago; 1944, hereinafter referred to as the “Chicago Convention”). (Report of the 28th Session of the Legal Committee, Doc 9588-LC/188, 3-12). There is also consensus that the Chicago Convention and its Annexes are applicable to CNS/ATM systems and that GNSS shall be compatible with the Chicago Convention, its Annexes and other principles of international law. Furthermore, ICAO has adopted or concluded:

- 1) the *Statement of ICAO Policy on CNS/ATM Systems Implementation and Operation* (approved by the Council on 9 March 1994), copy of which is reproduced as **Attachment A** to this report;
- 2) the Exchange of Letters between ICAO and the United States of America concerning GPS, 14 and 27 October 1994, copies of which are reproduced as **Attachment B** to this report;
- 3) the Exchange of Letters between ICAO and the Russian Federation concerning GLONASS, 4 June and 29 July 1996, copies of which are reproduced as **Attachment C** to this report; and
- 4) Assembly Resolution A32-19: *Charter on the Rights and Obligations of States Relating to GNSS Services* (hereinafter referred to as the “Charter”), copy of which is reproduced as **Attachment D** to this report.

2.2 Chicago Convention

2.2.1 In light of its discussions, the Study Group reached the following conclusions and recommendations:

2.2.2 Responsibility under Article 28

2.2.2.1 Under Article 28 of the Chicago Convention, Contracting States undertake to provide air navigation services, including the relevant air navigation facilities, in accordance with ICAO Standards and Recommended Practices (SARPs). The implementation of GNSS leaves unaffected the responsibility of States under Article 28 for provision of air navigation services within their respective airspace. States having

undertaken to provide for the provision of air navigation facilities in their territory, whether using their own signals, services or facilities or procuring their provision by others, remain responsible under Article 28 of the Convention. In providing such services once GNSS is implemented, most States have to rely on signals-in-space and their augmentation provided by others. In this connection, a question arises whether the implementation of GNSS should also involve additional arrangements establishing a link between the provider or providers of signals and the State having jurisdiction under Article 28. The Study Group was of the view that in implementing GNSS, a Contracting State should satisfy itself that the following comply with the relevant ICAO SARPs: (a) the signals-in-space; (b) its own implementation facilities; and (c) the equipment and procedures of operators. It was recommended by the Group that the procedures laid down in Recommendations 1 to 7 of LTEP (Attachment E to this report refers) should be used to facilitate the decision-making process of Contracting States in this respect.

2.2.3 Certification

2.2.3.1 In accordance with their responsibility under Article 28, States providing signals-in-space, or under whose jurisdiction such signals are provided, should certify the signals-in-space by attesting that they are in conformity with the ICAO SARPs, and the State having jurisdiction under Article 28 should ensure that avionics, ground facilities and training and licensing requirements comply with the ICAO SARPs.

2.2.4 Authorization for use of signals, services or other facilities

2.2.4.1 In providing air navigation facilities, States making use of the signals, services or other facilities provided by others, including other States and international organizations, should require that the use of such signals, services or other facilities provided by others in its airspace be subject to authorization. In line with the Recommendations of LTEP (in particular, Recommendations 1 to 8) and emerging practice, and subject to further study, States in authorizing the use of GNSS signals for air navigation purposes should take into account issues such as:

- a) application of safety management processes;
- b) attestation of conformity with the ICAO SARPs;
- c) commitments relating to continuous signal availability;
- d) licencing and training;
- e) coordination and contingency procedures; and
- f) establishment of channels for exchange of information.

2.2.5 Delegation of responsibility

2.2.5.1 The Group concluded that for the implementation of CNS/ATM systems, no amendment to Article 28 of the Chicago Convention is warranted at the present time. Article 28 does not prevent Contracting States from delegating to another State the responsibility for establishing and providing air navigation services in flight information regions, control areas or control zones extending over the territories of the former. Annex 11, paragraph 2.1.1, to the Convention provides for such delegation. These provisions, as well as contractual arrangements, may provide a basis for delegation of responsibility relating to the provision of air navigation services from one State to another State or entity.

2.2.6 Responsibility vs. liability

2.2.6.1 The Group also pointed out that responsibility under Article 28 should not be seen to be the same as liability. From the point of view of international law, Article 28 regulates the relationship between States only and does not give a cause of action to private persons to claim compensation for damage. Such claims should rather be handled at the level of the applicable domestic law.

2.3 Council Statement of Policy

2.3.1 The ICAO Council issued on 9 March 1994 its: *Statement of ICAO Policy on CNS/ATM Systems Implementation and Operation*, which laid the foundation for certain legal principles to be applied to GNSS services, including the principle of universal accessibility without discrimination, sovereignty, authority and responsibility of Contracting States, responsibility and role of ICAO, continuity and quality of service, and cost recovery. It also addressed the issues of technical cooperation, institutional arrangements and implementation, global navigation satellite system, and airspace organization and utilization.

2.4 Exchange of Letters with the United States and the Russian Federation

2.4.1 The ICAO Council further exchanged letters with the United States regarding GPS in October 1994, and with the Russian Federation regarding GLONASS in June/July 1996. Both countries have offered their systems for use by the international community free of direct charge for a period of at least ten years in the case of GPS and fifteen years in the case of GLONASS. These letters reiterated certain principles in the aforementioned Statement of Policy, such as the provision of signals on a nondiscriminatory basis to all users of civil aviation, the maintenance of the integrity and reliability of the service, and the rights of any State to control the operations of aircraft and enforce safety regulations within its sovereign airspace.

2.5 The Charter

2.5.1 In October 1998, based on the work of the LTEP, the 32nd Session of the Assembly adopted Resolution A32-19: *Charter on the Rights and Obligations of States Relating to GNSS Services*. The Charter embodied fundamental principles which shall apply in the implementation and operation of GNSS.

2.5.2 With respect to the status of the Charter, one school of thought within the Study Group was of the view that, while the Charter was a significant declaration, it was non-binding. Another school of thought believed that the legal value of the Charter should not be underestimated. A Charter adopted unanimously in the form of an Assembly resolution was not devoid of all legal effects. The key factor was the willingness of States to agree on standards of conduct, rather than the form of such standards.

2.5.3 Discussions after the adoption of the Charter centered around the question whether and how further arrangements should be made with regard to the long-term legal framework applicable to CNS/ATM systems.

2.6 National law

2.6.1 A number of legal aspects of CNS/ATM systems are currently covered by applicable national law, particularly in relation to the issue of liability. In this context of the current legal framework, the Study Group reviewed the national law of certain States representing different legal systems in relation to liability rules which would be applicable to GNSS activities. The review showed that the substantive law

governing the liability of air traffic control (ATC) agencies, which would likely apply in case of failure or malfunction of GNSS, is in all cases based on fault principles. It is, in particular, based on negligence (wrongful action or omission, in the case of one State on gross negligence) and it requires proof of fault of the ATC agency, or its employees or agents.

3. **PART II – IDENTIFIED INADEQUACIES OF THE CURRENT LEGAL FRAMEWORK RELATING TO LIABILITY**

3.1 On the basis of the review of the current legal framework as set out in Part I above, the Group then examined whether any inadequacies of the current legal framework could be identified, in particular in relation to liability arising from an accident caused by the malfunction or failure of GNSS.

3.2 **Principles governing liability**

3.2.1 Based on the study mentioned in paragraph 2.6.1 above, the Study Group expressed the view that in the provision of GNSS facilities within their territory, States remain liable under domestic law for loss or damage resulting from their own negligence or fault, or that of their agents, whether they provide their own signals, services or facilities or procure their provision by others, to the extent that such negligence or fault is proven.

3.2.2 Similarly, States or international organizations providing GNSS signals, services or other facilities to other States are liable under domestic law for damage resulting from their negligence or fault, or that of their agents.

3.2.3 Accordingly, States should ensure in their domestic legislation that persons suffering damage, as a result of negligence or fault of the State or its agents in the provision of CNS/ATM signals, services or other facilities, will be provided with adequate remedies to obtain prompt, just and equitable compensation regardless of sovereign immunity.

3.3 **Inadequacies of the current legal framework**

3.3.1 While the substantive law referred to above may be reasonably adequate to determine or apportion liability from accidents involving failure or malfunction of GNSS system, the procedural rules and, in particular, the applicable rules on jurisdiction may not be adequate to bring all parties to the court in order to ensure prompt and equitable compensation in these cases. In particular, the application of the doctrine of sovereign immunity and related principles may in many cases render court action against States or governmental entities providing ATC services by making use of GNSS signals, facilities and services difficult or impossible, when such action is brought abroad.

3.3.2 **Approaches to the issue of liability**

3.3.3 The Group identified three possible approaches to the problem of liability relating to GNSS:

- a) 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;

- b) to establish an adequate recourse action mechanism for the State having jurisdiction under Article 28 and the aircraft operator to take recourse against the other party or parties (mainly the primary signal provider and the augmentation signal provider) involved in the provision of the services, to the extent that such other party or parties have been negligent in the provision of the signals; or
- c) to ensure adequate compensation coverage through compensation fund arrangements, as have been set up in the field of maritime transport and other fields.

3.3.4 The Group had detailed and lengthy discussions concerning the possible approaches to the problem of liability. A part of the Group believed that in order to achieve universality and certainty of the new air navigation system, the issue of liability should be dealt with under a universal regime and should not be left to national law. Another part of the Group, however, did not consider it necessary to establish a new universal liability system or a liability convention for GNSS, since there was no indication that the current liability regime under domestic law could not cope with GNSS, and further, since there was no connection between GNSS and the perceived gaps in the liability system. Eventually, the Group supported a middle ground, namely to explore the approach of a contractual framework. It was recommended that a number of common elements, some of which are relating to liability, could be incorporated into the contractual framework. Such common elements should include at least the following:

- a) participants in GNSS, including the contractual provider of services, shall comply with the SARPs of ICAO;
- b) the issue of sovereign immunity;
- c) while an Article 28 State remains entirely responsible for provision of ATC services in its territory, other participants also at the same time are responsible for the services or elements they undertake to perform; consequently, Article 28 States may wish to ensure that an adequate recourse mechanism is established;
- d) participants in GNSS shall ensure that they have adequate means of risk coverage; and
- e) liability should be based on fault.

3.3.5 Certain Members of the Group maintained that these common elements should be mandatory for all parties to the contractual framework. Therefore, they should be incorporated into the framework agreement as illustrated in **Attachment G** to this report. Other Members supported the inclusion of the common elements in the contractual framework, under the condition that each party retains freedom whether to enter into the contractual framework.

4. PART III – CONSIDERATION OF CONTRACTUAL FRAMEWORK

4.1 Pursuant to its mandate as confirmed by the 33rd Session of the ICAO Assembly (paragraph 1.2 above refers), the Study Group also focussed on the consideration of a contractual framework as an interim framework for CNS/ATM systems.

4.2 Concept of contractual framework

4.2.1 A contractual framework may provide a link between the provider or providers of signals and the State having jurisdiction under Article 28 of the Chicago Convention as regards the terms and conditions, under which GNSS services are provided. A contractual framework may also provide the necessary provisions regarding the issue of liability.

4.2.2 The discussion of the Group clarified that in principle a contractual framework would be a non-mandatory framework, although several Members expressed the view that a set of mandatory common elements was required. The framework would cover the relationships among different players in various stages of the provision of GNSS services, including primary signal providers, augmentation signal providers, and States having jurisdiction under Article 28 of the Chicago Convention. In view of the possibility that the contracts relating to GNSS would be negotiated separately among different and numerous parties, certain Members of the Group believed that in order to maintain a desired degree of uniformity and to provide essential assurances of confidence in CNS/ATM systems, a set of common elements should be applicable to all the contracts. These common elements are intended to have considerable persuasive force in the search for uniformity. Some of the common elements relating to liability have been identified in paragraph 3.1 above. These arrangements must be consistent with the Charter.

4.3 Elements of contractual framework

4.3.1 The Study Group discussed in detail and concluded on a set of contractual clauses in the form of a **"Draft Contractual Framework Relating to the Provision of GNSS Services"** as set out in **Attachment F** (hereinafter referred to as the **"Draft Contractual Framework"**), which was supported by the majority of the Group. The following elements form part of the Draft Contractual Framework:

4.3.2 Parties

4.3.2.1 Article 1 of the Draft Contractual Framework defines the parties under the framework and the scope of application of the framework. The framework is principally designed for the relationship between the Air Traffic Service (ATS) provider and the GNSS signal provider, which is defined in Article 2, but may also be used to cover the relationship between the ATS provider and the augmentation signal provider and potentially other parties. Each contract would be applicable to the airspace where the respective ATS provider is responsible for providing its services.

4.3.3 Obligations of the GNSS signal provider

4.3.3.1 Article 3 sets out the basic obligations of the GNSS signal provider, including provision of the signals, obtaining of licence if required, compliance with the safety management provisions, and provision of relevant aeronautic information. Detailed technical criteria should be spelled out in an annex, which should be drafted by experts.

4.3.4 Obligations of the ATS provider

4.3.4.1 Article 4 sets out the basic obligations of the ATS provider, including obtaining the necessary authorization for the use of GNSS signals, coordination with the GNSS signal provider with a view to facilitating the transmission of the signals, compliance with the safety management provisions, and payment of the service charges to the GNSS signal provider, if applicable.

4.3.5 Cost recovery

4.3.5.1 Article 5 allows the GNSS signal provider to establish a cost recovery mechanism for the purpose of recovering the cost of such services from the users of GNSS signals. It was suggested that such mechanism shall ensure the reasonable allocation of costs among civil aviation users themselves and among civil aviation users and other system users, in view of the current statistics that aviation users only amount to a small percentage of the users of the signals.

4.3.6 Liability

4.3.6.1 Article 6 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. This clause focuses on liability between the parties in the contractual context, without addressing the issue of liability towards a third party.

4.3.7 Other matters

4.3.7.1 Article 7 addresses the issue of recourse and indemnification; Article 8 deals with waiver of sovereign immunity, in order to facilitate the resolution of the liability issues as identified in Part II of this report; Article 9 provides for the settlement of disputes.

4.3.8 When **Attachment F** was introduced and discussed in the Group, a large majority was of the view that the contractual framework set out therein represents a realistic approach to the issue of a legal framework for CNS/ATM systems and accepted it.

4.4 Alternative proposal by certain Group Members

4.4.1 Some strong views were expressed by some Members of the Group, however, that the contractual framework should go beyond the content of **Attachment F**, namely that it should not be limited to a series of contracts between the various stakeholders in the implementation of CNS/ATM systems, but should include a framework agreement among States at governmental level mainly to define the mandatory common elements which should apply. In their view, the agreement should not only address the relationship between States but should also govern certain aspects of the contractual relationships involving the system operators and service providers. Essential in the agreement is a set of mandatory common elements, which would be respected by all players. Such mandatory elements could include, *inter alia*, compliance with ICAO Standards and Recommended Practices, compliance with the Charter, compulsory risk coverage, recourse to arbitration, waiver of right to invoke sovereign immunity, and a central role for ICAO as global coordinator. These views are reflected in **Attachment G**.

5. PART IV – CONSIDERATION OF AN INTERNATIONAL CONVENTION

5.1 Discussion of an international convention in other ICAO fora

5.1.1 It was part of the mandate of the Group to consider an international convention for the purpose of elaborating a long-term legal framework for CNS/ATM systems. The question whether there is a need for an international convention on GNSS had already previously been the subject of extensive discussions in ICAO fora, including the 28th and 29th Sessions of the Legal Committee, the World-wide

CNS/ATM Systems Implementation Conference held in Rio de Janeiro from 11 to 15 May 1998, and the 32nd and 33rd Sessions of the Assembly.

5.1.2 The Rio Conference recommended that the complex legal aspects of the implementation of CNS/ATM, including GNSS, require further work by ICAO. Such further work should seek to elaborate an appropriate long-term legal framework to govern the operation and availability of CNS/ATM, including the consideration of an international convention for this purpose. Such further work should not, however, delay implementation of CNS/ATM.

5.1.3 Further to Assembly Resolution A32-20, the 33rd Session of the Assembly decided that further work on the legal aspects of CNS/ATM systems be carried out so as to finalize the concept of a contractual framework for CNS/ATM as an interim framework and provide a path toward its implementation, including the consideration of an international convention.

5.2 Discussion of an international convention in the Study Group

5.2.1 Pursuant to the decisions of the 32nd and 33rd Sessions of the Assembly, the Group considered the subject of an international convention which would set out rights and obligations of States in relation to GNSS services. However, in spite of detailed discussions during several meetings of the Group, the Group could not find a consensus on this subject.

5.2.2 One view was that since a great number of States would have to authorize the use of GNSS signals over which they have no control, the only way to secure confidence in the system would be by committing both providers and users to accept certain rights and obligations in a form of a binding international legal instrument. In the view of these Members, the international convention should set out, *inter alia*, such principles as the acknowledgement of the paramount importance of safety of international civil aviation, the unlimited access to GNSS services on a non-discriminatory basis, the sovereign right of every State to control operations of aircraft and enforce safety regulations within its airspace, and the obligation of providers to assure continuity, availability, accuracy, transparency and liability of GNSS services. It was further pointed out that the liability issue is an essential element in the legal framework for GNSS, particularly in view of the multiplicity of the players and possible litigations taking place at the same time for the same event in a number of countries. According to this view, the implementation of a worldwide seamless and interoperable system such as CNS/ATM would not be compatible with a scattered liability regime. These Members supported the development of an international convention, which they believed had been an option favoured by the vast majority at the Rio Conference, and the 32nd and 33rd Sessions of the Assembly. They saw the contractual framework as a flexible interim solution from which an international convention or other binding instruments might evolve.

5.2.3 A second view was that ICAO's existing legal framework, namely the Chicago Convention, its Annexes and the other elements discussed in Part I above, including applicable domestic law, offered continued serviceability and no deficiencies had been found to impede the implementation of CNS/ATM systems. It was unnecessary to establish a new universal liability system or a liability convention for GNSS, since there was no indication that the current liability regime under domestic law could not cope with GNSS, and further, since there was no connection between GNSS and the perceived gaps in the liability system. While legal issues had been discussed in various bodies of ICAO, at no point had any ICAO body achieved consensus on a proposal for new global conventional law. At the same time, every ICAO body which had considered legal issues relating to CNS/ATM had been careful to state that work on legal issues must not be permitted to delay technical implementation of CNS/ATM systems.

5.2.4 A third group of Members shared a similar aspiration for an international convention as those Members referred to in paragraph 5.2.2 above and indeed viewed this as the necessary and long-term solution to the issue of a legal framework for GNSS. The constraint was in their view not a legal one but one of practicality in that a convention would clearly take longer to put in place than a contractual framework. Meanwhile, a contractual solution would not only help to bridge the gap, but also a convention would be likely to evolve more smoothly from a workable interim solution. Therefore, a contractual framework as referred to in paragraph 4.4.1 above could serve as an interim solution between the *status quo* and the long-term elaboration of an international convention. It may be recalled that the framework referred to in paragraph 4.4.1 above would require, *inter alia*, a framework agreement among States at governmental level.

5.2.5 The Members referred to in the preceding paragraph submitted a proposed draft convention which covered elements derived from the Charter, elements inspired by the LTEP recommendations, and other elements considered necessary to create a binding and embracing instrument of international law. The *Proposal by Certain Members of the Group relating to Main Elements of an International Convention* is set out in **Attachment H** for information; it should be noted, however, that this draft does not represent the view of the majority of the Group.

5.2.6 At the end of the discussion on the subject of a draft convention and its specific clauses, most Members present observed that since the implementation of GNSS was in progress, there was not enough experience on which the drafting of an international convention could be based. It was therefore advocated not to pursue this matter, pending further development of GNSS.

5.2.7 In summary, when the issue of an international convention was on the agenda of the tenth meeting for final consideration by the Group, the majority view was that, at present, not enough experience had been gained with the implementation of CNS/ATM systems, and GNSS in particular, and that it was therefore premature at this point to elaborate and draft an international convention. Another view expressed was that an international convention was necessary and desirable.

6. PART V – OTHER ISSUES CONSIDERED BY THE GROUP

6.1 Two additional items had been included in the mandate of the Study Group, namely consideration of issues relating to communications and to surveillance in the framework of CNS/ATM.

6.2 Issues relating to communications

6.2.1 With respect to the issue of liability and other legal principles relating to communications by satellite, the Group noted the widespread use of liability disclaimer clauses in the telecommunications industry, including the satellite communications industry. The Group reached consensus with respect to the finding that despite the current practice on limited liability, the legal regime for telecommunications had not impeded public confidence in the system. The use of communication satellites, as compared to the use of terrestrial systems, did not present any new legal issues at the current stage. The disclaimer clause was almost universally used. It was the air traffic service providers' responsibility to arrange redundancy of communication services to satisfy the requirements relating to reliability, availability and continuity of the services. On the other hand, in the light of further experience with CNS/ATM, and if deemed necessary and opportune, the issue of the limitation of liability in communication services could be further studied in the future.

6.3 Issues relating to surveillance

6.3.1 The Group also discussed the legal issues relating to surveillance. Since the issues relating to surveillance was not the major part of its mandate, the Group limited itself to a general discussion. It was noted that, since surveillance was linked to both communications and navigation, the legal framework for this activity would largely depend upon the legal regimes applicable to these latter two elements of CNS/ATM systems. The Group further observed that, since surveillance would depend more on automated systems, a shift of focus from human error liability to the equipment manufacturers' liability could be expected. However, no separate legal issues regarding surveillance, which may need to be addressed at this stage, were identified by the Group.

7. CONCLUSIONS

7.1 GNSS, which is one of the key elements of the CNS/ATM systems, is in the process of implementation. The work of the Study Group was based on the premise that it has been generally agreed that there is no legal obstacle to the implementation of CNS/ATM systems and that there is nothing inherent in CNS/ATM systems that is inconsistent with the Chicago Convention.

7.2 Current legal framework

7.2.1 Under the current legal framework, the Chicago Convention, in particular its Article 28, is applicable to CNS/ATM. Other elements of the current framework include the ICAO Council Statement of Policy, the Exchange of Letters of ICAO respectively with the United States and the Russian Federation, and Assembly Resolution A32-19: *Charter on the Rights and Obligations of States Relating to GNSS Services*. The current framework also includes national law, since certain legal aspects of CNS/ATM systems are governed by national law, particularly in relation to liability rules.

7.2.2 Under Article 28 of the Chicago Convention, Contracting States undertake to provide air navigation services, including the relevant air navigation facilities, in accordance with the ICAO SARPs. The implementation of GNSS leaves unaffected the responsibility of States under Article 28 for provision of air navigation services within their respective airspace. In fulfilment of such responsibility, certain issues relating to certification and authorization of the use of GNSS, as well as the delegation of responsibility, will have to be resolved by the relevant States.

7.2.3 The Group also recognized that, in providing the services under Article 28 when GNSS is implemented, most States have to rely on signals-in-space and their augmentation provided by others. Accordingly, a link between the provider or providers of signals and the States having jurisdiction under Article 28 should be established.

7.3 Inadequacy of the current legal framework

7.3.1 The Group concluded that, while the substantive law governing liability may be reasonably adequate to determine or apportion liability from accidents involving failure or malfunction of GNSS system, the procedural rules and, in particular the applicable rules on jurisdiction, may not be adequate to bring all parties to the court in order to ensure prompt and equitable compensation in these cases. In particular, the application of the doctrine of sovereign immunity and related principles may in many cases render court action

against States or governmental entities providing ATC services by making use of GNSS signals, facilities and services difficult or impossible, when such action is brought abroad.

7.4 **Consideration of contractual framework**

7.4.1 Pursuant to the decision of the 33rd Session of the Assembly, the Group focussed on the consideration of a contractual framework, which may provide a link between the provider or providers of signals and the State having jurisdiction under Article 28 of the Chicago Convention as regards the terms and conditions, under which GNSS services are provided. The contractual framework may also provide the necessary provisions regarding the issue of liability. A set of clauses for this contractual framework, in the form of **Attachment F** to this report, was supported by the majority of the Group. Differences exist, however, with respect to the scope and mandatory nature of the contractual framework. Some Members regarded the framework as an optional, non-binding model contract, in respect of which States or other parties retain freedom to accept. Other Members maintained that the framework should contain a number of mandatory common elements binding upon the parties, which should take the form of an intergovernmental agreement, and which may gradually evolve in the future into an international convention.

7.5 **Consideration of an international convention**

7.5.1 With respect to the subject of an international convention, in spite of detailed discussions during several meetings of the Group, no consensus could be reached on this subject. When the issue of the international convention was on the agenda of the tenth meeting for final consideration by the Group, the majority view was that, at present, not enough experience had been gained with the implementation of CNS/ATM systems; and GNSS in particular, and that it was therefore premature at this point to elaborate and draft an international convention. Another view expressed was that an international convention was necessary and desirable.

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Appendix
Attachment A

ATTACHMENT A

STATEMENT OF ICAO POLICY ON CNS/ATM SYSTEMS IMPLEMENTATION AND OPERATION

STATEMENT OF ICAO POLICY ON CNS/ATM SYSTEMS IMPLEMENTATION AND OPERATION

Approved by the ICAO Council on 9 March 1994 and amended on 28 June 1996

In continuing to fulfil its mandate under Article 44 of the *Convention on International Civil Aviation* by, *inter alia*, developing the principles and techniques of international air navigation and fostering the planning and development of international air transport so as to ensure the safe and orderly growth of international civil aviation throughout the world, the International Civil Aviation Organization (ICAO), recognizing the limitations of the present terrestrial-based system, developed the ICAO communications, navigation and surveillance/air traffic management (CNS/ATM) systems concept, utilizing satellite technology. ICAO considers an early introduction of the new systems to be in the interest of healthy growth of international civil aviation.

The implementation and operation of the new CNS/ATM systems shall adhere to the following precepts:

1. UNIVERSAL ACCESSIBILITY

The principle of universal accessibility without discrimination shall govern the provision of all air navigation services provided by way of the CNS/ATM systems.

2. SOVEREIGNTY, AUTHORITY AND RESPONSIBILITY OF CONTRACTING STATES

Implementation and operation of CNS/ATM systems which States have undertaken to provide in accordance with Article 28 of the Convention shall neither infringe nor impose restrictions upon States' sovereignty, authority or responsibility in the control of air navigation and the promulgation and enforcement of safety regulations. States' authority shall be preserved in the co-ordination and control of communications and in the augmentation, as necessary, of satellite navigation services.

3. RESPONSIBILITY AND ROLE OF ICAO

In accordance with Article 37 of the Convention, ICAO shall continue to discharge the responsibility for the adoption and amendment of Standards, Recommended Practices and Procedures governing the CNS/ATM systems. In order to secure the highest practicable degree of uniformity in all matters concerned with the safety, regularity and efficiency of air navigation, ICAO shall co-ordinate and monitor the implementation of the CNS/ATM systems on a global basis, in accordance with ICAO's regional air navigation plans and global co-ordinated CNS/ATM systems plan. In addition, ICAO shall facilitate the provision of assistance to States with regard to the technical, financial, managerial, legal and co-operative aspects of implementation. ICAO's role in the co-ordination and use of frequency spectrum in respect of communications and navigation in support of international civil aviation shall continue to be recognized.

4. TECHNICAL CO-OPERATION

In the interest of globally co-ordinated, harmonious implementation and early realization of benefits to States, users and providers, ICAO recognizes the need for technical co-operation in the implementation and efficient operation of CNS/ATM systems. Towards this end, ICAO shall play its central role in co-ordinating technical co-operation arrangements for CNS/ATM systems implementation. ICAO also invites States in a position to do so to provide assistance with respect to technical, financial, managerial, legal and co-operative aspects of implementation.

5. INSTITUTIONAL ARRANGEMENTS AND IMPLEMENTATION

The CNS/ATM systems shall, as far as practicable, make optimum use of existing organizational structure, modified if necessary, and shall be operated in accordance with existing institutional arrangements and legal regulations. In the implementation of CNS/ATM systems, advantage shall be taken, where appropriate, of rationalization, integration and harmonization of systems. Implementation should be sufficiently flexible to accommodate existing and future services in an evolutionary manner. It is recognized that a globally co-ordinated implementation, with full involvement of States, users and service providers through, *inter alia*, regional air navigation planning and implementation groups, is the key to the realization of full benefits from the CNS/ATM systems. The associated institutional arrangements shall not inhibit competition among service providers complying with relevant ICAO Standards, Recommended Practices and Procedures.

6. GLOBAL NAVIGATION SATELLITE SYSTEM

The global navigation satellite system (GNSS) should be implemented as an evolutionary progression from existing global navigation satellite systems, including the United States' global positioning system (GPS) and the Russian Federation's global orbiting navigation satellite system (GLONASS), towards an integrated GNSS over which Contracting States exercise a sufficient level of control on aspects related to its use by civil aviation. ICAO shall continue to explore, in consultation with Contracting States, airspace users and service providers, the feasibility of achieving a civil, internationally controlled GNSS.

7. AIRSPACE ORGANIZATION AND UTILIZATION

The airspace shall be organized so as to provide for efficiency of service. CNS/ATM systems shall be implemented so as to overcome the limitations of the current systems and to cater for evolving global air traffic demand and user requirements for efficiency and economy while maintaining or improving the existing levels of safety. While no changes to the current flight information region organization are required for implementation of the CNS/ATM systems, States may achieve further efficiency and economy through consolidation of facilities and services.

8. CONTINUITY AND QUALITY OF SERVICE

Continuous availability of service from the CNS/ATM systems, including effective arrangements to minimize the operational impact of unavoidable system malfunctions or failure and achieve expeditious service recovery, shall be assured. Quality of system service shall comply with ICAO Standards of system integrity and be accorded the required priority, security and protection from interference.

9. COST RECOVERY

In order to achieve a reasonable cost allocation between all users, any recovery of costs incurred in the provision of CNS/ATM services shall be in accordance with Article 15 of the Convention and shall be based on the principles set forth in the *Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services* (Doc 9082), including the principle that it shall neither inhibit nor discourage the use of the satellite-based safety services. Cooperation amongst States in their cost-recovery efforts is strongly recommended.

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Appendix
Attachment B

ATTACHMENT B

EXCHANGE OF LETTERS BETWEEN ICAO AND THE UNITED STATES CONCERNING GPS



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Administrator

800 Independence Ave., S.W.
Washington, D.C. 20591

OCT 14 1994

Dr. Assad Kotaite
President of the Council
International Civil Aviation Organization
1000 Sherbrooke Street West
Montreal, Quebec, Canada H3A 2R2

Dear Dr. Kotaite:

This letter supersedes my letter of April 14, 1994.

I would like to commend, on behalf of the United States, the Committees on Future Air Navigation Systems (FANS) of the International Civil Aviation Organization (ICAO) for pioneering progress in the development of global satellite navigation for civil aviation. I note in this regard that the ICAO Council, on December 11, 1991, requested the Secretary General of ICAO to initiate an agreement between ICAO and Global Navigation Satellite System (GNSS) provider states concerning the duration and quality of the future GNSS.

I would like to take this opportunity to reiterate my Government's offer of the Standard Positioning Service (SPS) of the United States Global Positioning System (GPS) for use by the international community. As the United States made clear at the ICAO Tenth Air Navigation Conference and the 29th ICAO Assembly, the United States intends, subject to the availability of funds as required by United States law, to make GPS-SPS available for the foreseeable future, on a continuous, worldwide basis and free of direct user fees. This offer satisfies ICAO requirements for minimum duration of service (10 years) and freedom from direct charges. This service, which will be available as provided in the United States Government's technical sections of the Federal Radio Navigation Plan on a nondiscriminatory basis to all users of civil aviation, will provide horizontal accuracies of 100 meters (95 percent probability) and 300 meters (99.99 percent probability). The United States shall take all necessary measures to maintain the integrity and reliability of the service and expects that it will be able to provide at least 6 years notice prior to termination of GPS operations or elimination of the GPS-SPS.

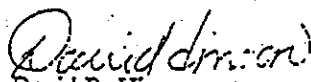
The GPS/SPS is a candidate component of the future GNSS as envisioned by FANS. The United States believes that making the GPS available to the international community will enable states to develop a more complete understanding of this valuable technology as a component of the GNSS. The availability of GPS-SPS, of course, is not intended in any

way to limit the rights of any state to control the operations of aircraft and enforce safety regulations within its sovereign airspace.

In the coming years, the international community must decide how to implement an international civil global navigation system based on satellite technology. The United States pledges its full cooperation in that endeavor and in working with ICAO to establish appropriate standards and recommended practices (SARP) in accordance with Article 37 of the Convention on International Civil Aviation (Chicago Convention). Consistent with this goal, the United States expects that SARP's developed by ICAO will be compatible with GPS operations and vice versa and that states will be free to augment GPS-SPS in accordance with appropriate SARP's. The United States will also undertake a continuing exchange of information with ICAO regarding the operation of the GPS to assist the ICAO Council in carrying out its responsibilities under the Chicago Convention.

I would be grateful if you could confirm that International Civil Aviation Organization is satisfied with the foregoing, which I submit in lieu of an agreement. In that event this letter and your reply will comprise mutual understandings regarding the Global Positioning System between the Government of the United States of America and the International Civil Aviation Organization.

Sincerely,


David R. Hinson
Administrator



INTERNATIONAL CIVIL AVIATION ORGANIZATION
ORGANISATION DE L'AVIATION CIVILE INTERNATIONALE
ORGANIZACIÓN DE AVIACIÓN CIVIL INTERNACIONAL
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ГРАЖДАНСКОЙ АВИАЦИИ
منظمة الطيران المدني الدولي

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THE PRESIDENT OF THE COUNCIL

Ref.: LE 4/49.1
(F.LEB0513)

27 October 1994

Sir,

I have the honour to acknowledge receipt of your letter dated 14 October 1994 which supersedes your letter of 14 April 1994.

The letter of 14 October 1994 reads as follows:

" I would like to commend, on behalf of the United States, the Committees on Future Air Navigation Systems (FANS) of the International Civil Aviation Organization (ICAO) for pioneering progress in the development of global satellite navigation for civil aviation. I note in this regard that the ICAO Council, on December 11, 1991, requested the Secretary General of ICAO to initiate an agreement between ICAO and Global Navigation Satellite System (GNSS) provider states concerning the duration and quality of the future GNSS.

I would like to take this opportunity to reiterate my Government's offer of the Standard Positioning Service (SPS) of the United States Global Positioning System (GPS) for use by the international community. As the United States made clear at the ICAO Tenth Air Navigation Conference and the 29th ICAO Assembly, the United States intends, subject to the availability of funds as required by United States law, to make GPS-SPS

Mr. David Hinson
Administrator, Federal
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Washington, D.C. 20591
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available for the foreseeable future, on a continuous, worldwide basis and free of direct user fees. This offer satisfies ICAO requirements for minimum duration of service (10 years) and freedom from direct charges. This service, which will be available as provided in the United States Government's technical sections of the Federal Radio Navigation Plan on a nondiscriminatory basis to all users of civil aviation, will provide horizontal accuracies of 100 meters (95 percent probability) and 300 meters (99.99 percent probability). The United States shall take all necessary measures to maintain the integrity and reliability of the service and expects that it will be able to provide at least 6 years notice prior to termination of GPS operations or elimination of the GPS-SPS.

The GPS-SPS is a candidate component of the future GNSS as envisioned by FANS. The United States believes that making the GPS available to the international community will enable states to develop a more complete understanding of this valuable technology as a component of the GNSS. The availability of GPS-SPS, of course, is not intended in any way to limit the rights of any state to control the operations of aircraft and enforce safety regulations within its sovereign airspace.

In the coming years, the international community must decide how to implement an international civil global navigation system based on satellite technology. The United States pledges its full cooperation in that endeavor and in working with ICAO to establish appropriate standards and recommended practices (SARP) in accordance with Article 37 of the Convention on International Civil Aviation (Chicago Convention). Consistent with this goal, the United States expects that SARP's developed by ICAO will be compatible with GPS operations and vice versa and that states will be free to augment GPS-SPS in accordance with appropriate SARP's. The United States will also undertake a continuing exchange of information with ICAO regarding the operation of the GPS to assist the ICAO Council in carrying out its responsibilities under the Chicago Convention.

I would be grateful if you could confirm that International Civil Aviation Organization is satisfied with the foregoing, which I submit in lieu of an agreement. In that event this letter and your reply will comprise mutual understandings regarding the Global Positioning System between the Government of the United States of America and the International Civil Aviation Organization. "

At the 12th Meeting of its 143rd Session on 26 October 1994, the Council of ICAO considered the offer contained in your letter, and I am pleased to inform you that the arrangements outlined in the offer are acceptable to the International Civil Aviation Organization. This offer will be communicated to all ICAO Contracting States.

Accept, Sir, the assurances of my highest consideration.



Assad Kotaite

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Appendix
Attachment C

ATTACHMENT C

EXCHANGE OF LETTERS BETWEEN ICAO AND RUSSIAN FEDERATION CONCERNING GLONASS

ENGLISH TRANSLATION

MINISTRY OF TRANSPORT
OF THE RUSSIAN FEDERATION

Moscow, 4 June 1996

Sir,

This letter supersedes my letter of 5 February 1996.

The introduction of satellite technologies into world civil aviation operations marks a new stage in the practical implementation of the future CNS/ATM concept developed by the International Civil Aviation Organization (ICAO). On behalf of the Russian Federation, I would like to congratulate ICAO on its great achievements in planning for the future air navigation system and express my hopes for its successful implementation in practice.

One of the most important parts of the future air navigation system is the global navigation satellite system (GNSS). At the Tenth ICAO Air Navigation Conference in 1991, the Government of the USSR offered the world aviation community free use of the GLONASS global satellite navigation system. It was guaranteed that the system would operate for at least 15 years from the time of its full deployment in 1995.

The Russian Federation has now completed the full deployment of the space constellation and ground control system for GLONASS, and the GLONASS system is operational, providing the intended aircraft position determination performance.

Using the powers conferred on me, I would like to confirm, on behalf of the Government of the Russian Federation, the proposal made at the Tenth Air Navigation Conference concerning the provision of a standard-accuracy GLONASS channel to the world aviation community on a non-discriminatory basis for a period of at least 15 years with no direct charges collected from users, subject to the allocation of resources, as required under the legislation of the Russian Federation. This channel will be accessible to all civil aviation users and will provide position information with an accuracy of up to 60 metres in the horizontal plane (with a probability of 0.997) and up to 75 metres in the vertical plane (with a probability of 0.997). It is not intended that any methods will be used to degrade accuracy.

The Russian Federation will take all necessary measures to maintain the integrity and reliability of the service and expects that it will be able to provide at least 6 years' notice prior to termination of services.

To ensure GNSS use by world civil aviation, the Russian Federation is prepared to co-operate in every way with ICAO in preparing appropriate GNSS Standards and Recommended Practices (SARPs) in accordance with the provisions of Article 37 of the Chicago Convention, and also to keep ICAO constantly informed of the operational status of the GLONASS system.

The Russian Federation hopes that the SARPs developed by ICAO will be compatible with GLONASS system characteristics and, conversely, that the various States will be free to introduce the augmentations which they require to increase the effectiveness of GLONASS use, in accordance with the ICAO SARPs.

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The Russian Federation will also undertake a continuing exchange of information with ICAO regarding the operation of GLONASS to assist the ICAO Council in carrying out its responsibilities under the Chicago Convention.

The provision of the GLONASS system to the world aviation community is not intended in any way to limit the right of any State to control aircraft operations and enforce flight safety regulations in its sovereign airspace.

Since ICAO is to act as the international co-ordinating body for the global implementation of the future air navigation system, we are prepared to conclude an agreement with ICAO for the use of the GLONASS system by the world aviation community as an element of the GNSS with the above-mentioned characteristics.

I would be grateful if you would confirm that the International Civil Aviation Organization is satisfied with the positions set out above. If that is the case, this letter and your reply will constitute a mutual agreement between the Government of the Russian Federation and the International Civil Aviation Organization concerning the GLONASS satellite navigation system.

Yours truly,

N. P. Tsakh
Minister of Transport

Dr. Assad Kotaite
President of the Council of ICAO
Montreal

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ENGLISH TRANSLATION

Ref.: LE 4/49.1

29 July 1996

Sir,

I have the honour to acknowledge receipt of your letter dated 4 June 1996 which supersedes your letter of 5 February 1996.

The letter of 4 June 1996 reads as follows:

" This letter supersedes my letter of 5 February 1996.

The introduction of satellite technologies into world civil aviation operations marks a new stage in the practical implementation of the future CNS/ATM concept developed by the International Civil Aviation Organization (ICAO). On behalf of the Russian Federation, I would like to congratulate ICAO on its great achievements in planning for the future air navigation system and express my hopes for its successful implementation in practice.

One of the most important parts of the future air navigation system is the global navigation satellite system (GNSS). At the Tenth ICAO Air Navigation Conference in 1991, the Government of the USSR offered the world aviation community free use of the GLONASS global satellite navigation system. It was guaranteed that the system would operate for at least 15 years from the time of its full deployment in 1995.

The Russian Federation has now completed the full deployment of the space constellation and ground control system for GLONASS, and the GLONASS system is operational, providing the intended aircraft position determination performance.

Using the powers conferred on me, I would like to confirm, on behalf of the Government of the Russian Federation, the proposal made at the Tenth Air Navigation Conference concerning the provision of a standard-accuracy GLONASS channel to the world aviation community on a non-discriminatory basis for a period of at least 15 years with no direct charges collected from users, subject to the allocation of resources, as required under the legislation of the Russian Federation. This channel will be accessible to all civil aviation users and will provide position information with an accuracy of up to 60 metres in the horizontal plane (with a probability of 0.997) and up to 75 metres in the vertical plane (with a probability of 0.997). It is not intended that any methods will be used to degrade accuracy.

Mr. N.P. Tsakh
Minister of Transport
Ministry of Transport
of the Russian Federation
Sadovaja Samotechnaja, 10
101438 Moscow GSP-4

The Russian Federation will take all necessary measures to maintain the integrity and reliability of the service and expects that it will be able to provide at least 6 years' notice prior to termination of services.

To ensure GNSS use by world civil aviation, the Russian Federation is prepared to co-operate in every way with ICAO in preparing appropriate GNSS Standards and Recommended Practices (SARPs) in accordance with the provisions of Article 37 of the Chicago Convention, and also to keep ICAO constantly informed of the operational status of the GLONASS system.

The Russian Federation hopes that the SARPs developed by ICAO will be compatible with GLONASS system characteristics and, conversely, that the various States will be free to introduce the augmentations which they require to increase the effectiveness of GLONASS use, in accordance with the ICAO SARPs.

The Russian Federation will also undertake a continuing exchange of information with ICAO regarding the operation of GLONASS to assist the ICAO Council in carrying out its responsibilities under the Chicago Convention.

The provision of the GLONASS system to the world aviation community is not intended in any way to limit the right of any State to control aircraft operations and enforce flight safety regulations in its sovereign airspace.

Since ICAO is to act as the international co-ordinating body for the global implementation of the future air navigation system, we are prepared to conclude an agreement with ICAO for the use of the GLONASS system by the world aviation community as an element of the GNSS with the above-mentioned characteristics.

I would be grateful if you would confirm that the International Civil Aviation Organization is satisfied with the positions set out above. If that is the case, this letter and your reply will constitute a mutual agreement between the Government of the Russian Federation and the International Civil Aviation Organization concerning the GLONASS satellite navigation system."

At the 15th Meeting of its 147th Session on 14 March 1996, the Council of ICAO had considered this matter and the terms on which the offer of the Russian Federation should be accepted. Based on the decision of the Council at that meeting, I am pleased to inform you that the arrangements set forth in the offer are acceptable to the International Civil Aviation Organization. Accordingly, I confirm that your letter dated 4 June 1996 and my present letter of acceptance constitute a mutual agreement between the Government of the Russian Federation and the International Civil Aviation Organization concerning the GLONASS satellite navigation system. Your offer as well as my present letter of acceptance, will be communicated to all ICAO Contracting States.

Accept, Sir, the assurances of my highest consideration.

Assad Kotaite

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Attachment D

ATTACHMENT D

ASSEMBLY RESOLUTION A32-19: CHARTER ON THE RIGHTS AND OBLIGATIONS OF STATES RELATING TO GNSS SERVICES

A32-19: Charter on the Rights and Obligations of States Relating to GNSS Services

Whereas Article 44 of the *Convention on International Civil Aviation*, signed on 7 December 1944 (the "Chicago Convention"), mandates the International Civil Aviation Organization (ICAO) to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport;

Whereas the concept of the ICAO communications, navigation and surveillance/air traffic management (CNS/ATM) systems utilizing satellite-based technology was endorsed by States and international organizations at the ICAO Tenth Air Navigation Conference, and was approved by the 29th Session of the Assembly as the ICAO CNS/ATM systems;

Whereas the Global Navigation Satellite System (GNSS), as an important element of the CNS/ATM systems, is intended to provide worldwide coverage and is to be used for aircraft navigation;

Whereas GNSS shall be compatible with international law, including the Chicago Convention, its Annexes and the relevant rules applicable to outer space activities;

Whereas it is appropriate, taking into account current State practice, to establish and affirm the fundamental legal principles governing GNSS; and

Whereas the integrity of any legal framework for the implementation and operation of GNSS requires observance of fundamental principles, which should be established in a Charter;

The Assembly:

Solemnly declares that the following principles of this Charter on the Rights and Obligations of States Relating to GNSS Services shall apply in the implementation and operation of GNSS:

1. States recognize that in the provision and use of GNSS services, the safety of international civil aviation shall be the paramount principle.

2. Every State and aircraft of all States shall have access, on a non-discriminatory basis under uniform conditions, to the use of GNSS services, including regional augmentation systems for aeronautical use within the area of coverage of such systems.

3. a) Every State preserves its authority and responsibility to control operations of aircraft and to enforce safety and other regulations within its sovereign airspace.

b) The implementation and operation of GNSS shall neither infringe nor impose restrictions upon States' sovereignty, authority or responsibility in the control of air navigation and the promulgation and enforcement of safety regulations. States' authority shall also be preserved in the co-ordination and control of communications and in the augmentation, as necessary, of satellite-based air navigation services.

4. Every State providing GNSS services, including signals, or under whose jurisdiction such services are provided, shall ensure the continuity, availability, integrity, accuracy and reliability of such services, including effective arrangements to minimize the operational impact of system malfunctions or failure, and to achieve expeditious service recovery. Such State shall ensure that the services are in accordance with ICAO Standards. States shall provide in due time aeronautical information on any modification of the GNSS services that may affect the provision of the services.

5. States shall co-operate to secure the highest practicable degree of uniformity in the provision and operation of GNSS services.

States shall ensure that regional or subregional arrangements are compatible with the principles and rules set out in this Charter and with the global planning and implementation process for GNSS.

6. States recognize that any charges for GNSS services shall be made in accordance with Article 15 of the Chicago Convention.

7. With a view to facilitating global planning and implementation of GNSS, States shall be guided by the principle of co-operation and mutual assistance whether on a bilateral or multilateral basis.

8. Every State shall conduct its GNSS activities with due regard for the interests of other States.

9. Nothing in this Charter shall prevent two or more States from jointly providing GNSS services.

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Attachment E

ATTACHMENT E

**RECOMMENDATIONS 1 TO 8 BY THE PANEL OF EXPERT
ON THE ESTABLISHMENT OF A LEGAL FRAMEWORK
WITH REGARD TO GNSS (LTEP)**

LTEP Recommendation 1 to 8**Recommendation 1**

ICAO SARPs on GNSS should cover the system performance criteria of relevant satellite components, signal-in-space, avionics, ground facilities, training and licensing requirements, and the system as a whole.

Such ICAO SARPs should contain adequate system performance and failure mode information to enable States to reasonably determine the safety impact on their air traffic service.

Recommendation 2

With respect to all ICAO SARPs on GNSS, signal-in-space provider States and provider international organizations should be involved in the proposed ICAO verification and validation process so that SARPs and supporting ICAO documentation will be of high integrity.

Recommendation 3

States providing signals-in-space, or under whose jurisdiction such signals are provided, shall certify the signal-in-space by attesting that it is in conformity with SARPs.

The State having jurisdiction under the Chicago Convention should ensure that avionics, ground facilities and training and licensing requirements comply with ICAO SARPs.

Recommendation 4

States providing signals-in-space, or under whose jurisdiction such signals are provided, should ensure application of ongoing safety management processes which demonstrate continued compliance with signal-in-space SARPs.

Recommendation 5

States providing signals-in-space, or under whose jurisdiction such signals are provided, should produce a safety management system document using the ICAO forum referred to in Recommendation 8 below. To the extent possible, such document should be consistent as regards format and content. ICAO should distribute such signal-in-space safety management system documentation.

Recommendation 6

Each State should define and ensure the application of safety regulations for the use of the signal-in-space as part of air traffic services in its own airspace.

Recommendation 7

For the purpose of authorization by a State of the use of the signal-in-space in its airspace, additional information which may be required for such authorization should be made available and distributed through ICAO. Other sources for obtaining such information may be used, including, *inter alia*, bilateral and multilateral arrangements, Safety Case and NOTAMs.

Recommendation 8

States recognize the central role of ICAO in co-ordinating the global implementation of GNSS and in particular:

- a) establishing appropriate Standards, Recommended Practices and procedures in accordance with Article 37 of the Chicago Convention in the implementation and operation of GNSS;
- b) co-ordinating and monitoring the implementation of GNSS on a global basis, in accordance with ICAO's regional air navigation plans and global co-ordinated CNS/ATM systems plan;
- c) facilitating the provision of assistance to States with regard to the technical, financial, managerial, legal and co-operative aspects of the implementation of GNSS;
- d) co-ordinating with other organizations in any matter related to GNSS, including the use of frequency spectrum bands in which GNSS constituent elements operate in support of international civil aviation; and
- e) carrying out any other function related to GNSS within the framework of the Chicago Convention, including functions under Chapter XV of the Convention.

More specifically, the ICAO forum for exchange of information on GNSS certification could have the following functions:

- a) to provide liaison between State ATS providers, regulatory authorities, and signal-in-space providers;

- b) to provide liaison between signal-in-space providers and other States with respect to the format and contents of safety management system documents;
 - c) to identify the failure modes of the signal-in-space and their impact on the safety of air traffic services nationally, and to refer them to an appropriate body as determined by the Council;
 - d) to identify what States require from signal-in-space providers in order to be confident that performance and risks associated with the signal-in-space are adequately managed over the life cycle of the system;
 - e) to facilitate information-sharing between signal-in-space providers and other States as to the continued compliance with the relevant SARPs, in order to maintain confidence in the reliability of the system."
-

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Attachment F

ATTACHMENT F

DRAFT CONTRACTUAL FRAMEWORK RELATING TO THE PROVISION OF GNSS SERVICES

**DRAFT CONTRACTUAL FRAMEWORK
RELATING TO THE PROVISION OF GNSS SERVICES**

Whereas the Global Navigation Satellite System (GNSS), as an important element of the communications, navigation and surveillance/air traffic management (CNS/ATM) systems, is intended to provide worldwide coverage and is to be used for aircraft navigation;

Whereas the Parties are desirous to develop the long-term GNSS for civil aviation purposes in accordance with the principles enunciated in the *Charter on the Rights and Obligations of States Relating to GNSS Services*, adopted by the 32nd Session of the Assembly of the International Civil Aviation Organization (ICAO) (A32-19), as set out in the Appendix (hereinafter referred to as the "Charter");

Whereas the Parties aim at ensuring technical and operational accessibility, continuity, availability, integrity, accuracy and reliability of GNSS services;

Whereas the Parties to this contract which are States reaffirm their commitment to act in conformity with international law and the principles governing GNSS, in particular the *Convention on International Civil Aviation* (the Chicago Convention), its Annexes, the Charter and the relevant rules applicable to outer space activities; and the Parties which are not States are committed to act in accordance with applicable law;

Therefore, the Parties have agreed as follows:

Article 1 – Parties and Scope of Application

The present contract prescribes the rights and obligations of *[insert Name of Party]*, hereinafter "the Air Traffic Service (ATS) Provider", and *[insert Name of other Party]*, hereinafter "the GNSS Signal Provider", in respect of all services related to the GNSS signals for the purpose of air navigation. The contract is applicable to the airspace for which the ATS Provider is responsible in relation to its services.

Article 2 – GNSS Signal Provider

For the purposes of the present contract, the term "GNSS Signal Provider" may refer to either:

- a) a primary signal provider from the core satellite constellation; or
- b) an augmentation signal provider,

as the case may be.

Article 3 – Obligations of the GNSS Signal Provider

The GNSS Signal Provider undertakes to:

- a) provide the signals during the term of this contract with the required continuity, availability, integrity, accuracy and reliability, as specified in multilaterally agreed standards, in particular the minimum standards of ICAO;
- b) if the GNSS Signal Provider is not a State entity, obtain a licence as required by the State in the territory of which the signals are controlled;
- c) comply with any requirements arising from the safety management provisions of the relevant Standards and Recommended Practices and Procedures for Air Navigation Services of ICAO; and
- d) provide in due time aeronautical information on any modification of the GNSS Signals which may affect the services provided by the ATS provider.

Article 4 – Obligations of the ATS Provider

The ATS Provider undertakes to:

- a) if it is not a State entity, obtain from the relevant State the necessary authorization for the use of GNSS signals provided by the GNSS Signal Provider for air traffic services within the airspace under the jurisdiction of that State;
- b) coordinate with the GNSS Signal Provider with a view to facilitating the transmission of the signals and other matters relating to the operation of the GNSS;
- c) comply with any requirements arising from the safety management provisions of the relevant Standards and Recommended Practices and Procedures for Air Navigation Services of ICAO; and
- d) pay the service charges to the GNSS Signal Provider, if applicable.

Article 5 – Cost Recovery

Pursuant to Article 15 of the Chicago Convention and paragraph 6 of the Charter, the GNSS Signal Provider shall be entitled to establish a cost recovery mechanism, for the purpose of recovering the cost of such services from the users making use of GNSS signals so provided. Such mechanism shall ensure the reasonable allocation of costs among civil aviation users themselves and among civil aviation users and other system users.

Article 6 – Liability

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.

Article 7 – Recourse and Indemnification

Nothing in this contract shall prevent any of the Parties from exercising a right of recourse against, or from seeking indemnification from, the other Party or Parties to this contract pursuant to the applicable law.

If the loss or damage has been caused by the acts or omissions of more than one Party, 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.

Article 8 – Waiver of Sovereign Immunity

Any Party to this contract which is a State or State entity, hereby agrees to waive its sovereign immunity with respect to any arbitral proceedings in accordance with Article 9 of this contract.

Article 9 – Settlement of Disputes

The Parties shall use their best efforts to settle any dispute, disagreement or claim arising from or relating to the interpretation or performance of this contract by negotiation. Any dispute, disagreement or claim which cannot be settled by negotiation shall be submitted to conciliation in accordance with the UNCITRAL Conciliation Rules.

Any such dispute, disagreement or claim which cannot be settled under the preceding paragraph shall, upon the request of one Party, be referred to arbitration in accordance with the UNCITRAL Arbitration Rules then prevailing. The place of arbitration shall be [...] and it shall be conducted in the [...] language.

Article 10 – Applicable Law

The law of [...] shall govern this contract.

Article 11 – Duration of the Contract

This contract shall enter into force at the date of signature for a term of [...] years and shall be automatically renewable for the same term. Each Party may, however, give notice of termination of [...] months to the other Party, which shall become effective at the end of the term of the Contract.

Article 12 – Registration of the Contract

Pursuant to Article 83 of the Chicago Convention, if at least one Party to this contract is a Contracting State of ICAO, the contract shall be registered with ICAO.

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Appendix
Attachment G

ATTACHMENT G

Framework Agreement between the Governments of
.....
Concerning the Implementation, Provision, Operation
and Use of a Global Navigation Satellite System
for Air Navigation Purposes

1. OBJECTIVES

1.1 The objective of this Agreement is to establish a legal framework for the implementation, provision, operation and use of GNSS for the purpose of air navigation over the territory of Contracting Parties, as well as to regulate the relationships between the entities and persons involved in such GNSS activities.

1.2 This Agreement aims at ensuring technical and operational accessibility, continuity, availability, integrity, accuracy and reliability of GNSS services world-wide. The Contracting Parties reaffirm their commitments to act in conformity with international law and the principles governing GNSS, in particular the Chicago Convention, its Annexes, the Charter on the Rights and Obligations of States Relating to GNSS Services and the relevant rules applicable to outer space activities.

1.3 This Agreement addresses the conditions under which GNSS services, including signals-in-space, can be safely used for air navigation purposes over the territory of Contracting Parties. It also aims at clarifying the obligations of the parties involved.

2. DEFINITIONS

2.1 For the purpose of this Agreement, the terms listed below are used with the following meanings:

Certification: The process which results in a formal attestation that a specified system, element thereof or service complies with pre-determined requirements.

Damage: Loss of life, injury, damage to property [...].

GNSS Entity: A public or private body/organisation, or public-private partnership, created for the purpose of managing, or mandated to manage, by means of contractual arrangements, relationships between GNSS system operators and GNSS service providers involved in the operation of a GNSS system for air navigation purposes.

GNSS service: An added value service to support air navigation, based upon signals emitted by a GNSS system.

GNSS service provider: An entity engaged in the activity of providing a GNSS service for air navigation purposes.

GNSS signal: A signal emitted by an element forming part of a GNSS system.

GNSS system: An infrastructure comprising satellites and other space and/or ground based facilities, capable of supporting air navigation based on signals-in-space.

GNSS system element: Any individual component of a GNSS system.

GNSS system operator: A body/organisation engaged in the operation and/or maintenance of a GNSS system or elements thereof.

GNSS user: An aircraft which uses GNSS signals or GNSS services for air navigation purposes.

Local augmentation system: A GNSS system, the purpose of which is to enhance the accuracy, reliability, continuity and integrity of a primary GNSS signal at a given location.

Primary signal system: A GNSS system, the purpose of which is to produce a primary signal-in-space.

Regional augmentation system: A GNSS system, the purpose of which is to enhance the accuracy, reliability, continuity and integrity of a primary signal within a given region.

3. SCOPE

3.1 The provisions of this Agreement shall apply to the Contracting Parties implementing, providing, operating and/or using GNSS for air navigation purposes.

3.2 This Agreement governs the creation of the GNSS Entity or the mandate to an existing entity to perform such function. It addresses, inter alia, the relationships of the Entity with the GNSS system operators and GNSS service providers operating from the territory of a Contracting State or having a registered office on the territory of a Contracting State.

3.3 When Contracting Parties have agreed to undertake responsibilities in respect of providing Air Navigation Services over parts of the high seas, this Agreement shall also apply to the exercise of those responsibilities over those parts of the high seas.

4. SOVEREIGNTY

4.1 This Agreement does not affect in any way the complete and exclusive sovereignty of Contracting Parties in respect of the airspace over their territory.

4.2 The Contracting Parties recognise that the implementation, provision, operation and use of GNSS shall neither infringe nor limit State's authority or responsibility in the control of air navigation and the promulgation and enforcement of safety regulations. States' authority shall also be preserved in the

co-ordination and control of communications and in the augmentation, as necessary, of satellite-based Air Navigation Services.

5. CONTRACTING PARTIES RESPONSIBILITIES

5.1 Contracting Parties shall define, in accordance with the provisions of this Agreement, the conditions under which a GNSS system or element thereof may be used for air navigation purposes over their territories.

5.2 Contracting Parties may authorise any public, private or public-private organisations, including foreign bodies, to provide GNSS signals or services to support air navigation over their territory, provided these bodies/organisations operate in accordance with the requirements set forth in this Agreement.

5.3 It remains the responsibility of each Contracting Party to ensure that GNSS signals and services are provided and used over its territory in accordance with the relevant provisions of the Chicago Convention.

5.4 Contracting Parties shall establish appropriate processes:

- a) to ensure that organisations engaged in the implementation, provision, operation and use of a GNSS system or elements thereof, comply with the requirements of this Agreement; and
- b) to ensure that the activities performed by the GNSS Entity established or mandated in accordance with article 6 of this Agreement comply with the requirements of this Agreement.

6. GNSS ENTITY

6.1 An Entity shall be established under this Agreement and will be referred to as the GNSS Entity. It shall be made up of an Administrator supported by a Secretariat.

Contracting Parties may mandate an already established organisation or body to undertake the tasks of the GNSS Entity described in this Agreement.

6.2 The GNSS Entity shall have legal personality. It shall enjoy in the territory of its Contracting Parties such legal capacity as may be necessary for the performance of its tasks.

6.3 The GNSS entity shall be charged with facilitating and [managing] [establishing], by means of contractual arrangements, the relationships between the various GNSS system operators and GNSS service providers falling under the scope of this Agreement.

6.4 The GNSS Entity may be entrusted with, inter alia, the following tasks, upon decision by the Contracting Parties:

- a) specification of GNSS signals and services;

- b) drafting, negotiation, implementation of contractual and service level agreements between the GNSS entity, GNSS system operators and GNSS service providers, in accordance with Article 8 of this Agreement;
- c) definition of processes for the allocation of responsibilities among GNSS parties;
- d) management of a compensation GNSS fund if set up in accordance with article 9.2 of this Agreement; and
- e) definition of applicable risk coverage requirements.

6.5 The financial and institutional consequences of the establishment of the GNSS Entity shall be addressed by the Contracting Parties.

7. ROLE OF ICAO

7.1 Contracting Parties recognise the central role of ICAO in co-ordinating the global implementation of GNSS and in particular:

- a) establishment of the SARPs;
- b) collection, processing, management and distribution of relevant aeronautical information pertaining to the GNSS systems and services falling within the scope of this Agreement;
- c) co-ordination of the activities of the GNSS Entity or body/organisation mandated to undertake its tasks with those of other entities created under similar Agreements and/or with similar functions in other regions; and
- d) monitoring of compliance by GNSS system operators and/or service providers with the applicable technical, operational and legal requirements, including the terms of relevant contractual arrangements.

8. CONTRACTUAL AGREEMENTS

8.1 Contracts referred to in Articles 6.3 and 6.4 of this Agreement shall be concluded in conformity with the requirements of this article and the terms of this Agreement.

8.2 Contracting Parties undertake that the contracts entered into in pursuance to this Agreement shall contain the following mandatory elements:

- a) compliance with SARPs;
- b) compliance with the Charter with regard to continuity, availability, integrity, accuracy and reliability;
- c) liability shall be based on fault;

- d) compulsory risk coverage;
- e) mandatory recourse to arbitration; and
- f) recognition that State organisations/bodies are subject to the same rules as private parties.

9. RISK COVERAGE

9.1 The Contracting Parties shall ensure that GNSS system operators and service providers provide adequate insurance or other risk coverage to compensate for loss or damage that may arise out of or in relation to the non-performance of their activities.

9.2 Contracting Parties may set-up a dedicated fund to compensate for any loss or damage that may arise from the non-performance of the activities of system operators or service providers to the extent of a shortfall in the recovery from the body/organisation who is liable.

10. INCIDENT/ACCIDENT INVESTIGATION

10.1 Investigations pertaining to air navigation incidents or accidents involving a possible malfunction, failure or improper use of GNSS shall be conducted in accordance with the provisions of Annex 13 to the Chicago Convention. In this regard, system operators shall ensure that signals shall be recorded for the purposes of evidence.

11. CERTIFICATION

11.1 Contracting Parties shall ensure that GNSS systems and elements including avionics as well as GNSS services shall be certified prior to entry into operation.

11.2 Contracting Parties and their regulators shall ensure, through their established safety management system that GNSS is safe for use. Integrity of the national safety management systems shall be monitored by ICAO [through its Universal Safety Oversight Audit Programme].

12. LIABILITY

12.1 In the event of loss or damage arising out of a failure, malfunction or improper use of GNSS, each entity or person involved shall be liable to the extent it has contributed to the occurrence of the loss or damage.

12.2 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.

12.3 Contracting Parties and other public parties shall submit themselves to arbitration and be subject to the same rules as private partners.

12.4 In the event that loss or damage can be attributed to a GNSS failure, malfunction or improper use, but cannot clearly be traced to a specific defendant, the defendants involved in the chain of 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.

13. ARBITRATION

13.1 All liability claims shall be consolidated and brought to arbitration, in accordance with the rules of arbitration established under this Agreement and detailed in Annex [X]. The consolidated claims shall include those against the concerned GNSS Entity, GNSS system operators, GNSS service providers, aircraft operators, air carriers, Air Navigation Services Providers, equipment manufacturers and regulators.

13.2 Nothing in this Agreement shall prejudice the rights of any individuals with regard to the Warsaw/Montreal Conventions.

13.3 Decisions of the arbitration panel shall be final and binding on the Parties to the arbitration procedure.

14. ICAO REGISTRATION

14.1 This Agreement shall be registered with the ICAO Council, in accordance with the provisions of Article 83 of the Chicago Convention.

15. AMENDMENT

15.1 Any proposed amendment to this Agreement shall be subject to the approval of [two-thirds] of its Contracting Parties.

16. ADMISSION OF OTHER PARTIES

16.1 This Agreement is opened for admission to other Parties [...]

17. TERMINATION

17.1 This Agreement may be terminated [...]

Effect on GNSS Entity established under this Agreement [...]

18. ENTRY INTO FORCE

18.1 This Agreement shall enter into force at the date of signature.

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Appendix
Attachment H

ATTACHMENT H

**Proposal by Certain Members of the Group relating to
Main Elements for inclusion in a draft Convention**

Preamble

The Preamble refers to the relevant legal basis for the convention, in particular the Chicago Convention and its Annexes, and recalls the need for GNSS to be compatible with them and other relevant international law rules applicable to outer space activities. The Charter on the Rights and Obligations of States Relating to GNSS Services, adopted by the 32nd Session of the ICAO Assembly (1998), established certain fundamental principles that need to be elaborated in an international convention, in order to make them binding.

Definitions

In view of the legal consequences of GNSS, it will be necessary to define certain terms for the purposes of the convention. Such terms as "GNSS service", "GNSS service provider", "GNSS system", "GNSS System operator", "GNSS user", "primary signal provider", "regional augmentation system" and "local augmentation system" will need to be defined, in line with state-of-the-art working terminology.

Scope

The convention should apply to activities employing satellites and ground-based equipment, technologies and systems.

Safety of Air Navigation

Safety of air navigation should be the paramount principle in the implementation and operation of GNSS systems and the provision and use of GNSS services. Commercial considerations should not be allowed to override safety requirements. Provision should be made to respect this principle in the case of war and emergency conditions.

Universal Accessibility

Every aircraft registered in the territory of the Contracting Parties should have access on a non-discriminatory basis and under uniform conditions to the use of regional augmentation systems for aeronautical use within the area of coverage of such systems. The article should also propose means of achieving universality.

State Sovereignty

The implementation and operation of GNSS systems and the provision and use of GNSS services should neither infringe nor limit a State's authority or responsibility in the control of air navigation or the promulgation and enforcement of safety regulations. The article should provide for the delegation of the provision of services to other suitable parties, should a State wish to do so.

GNSS Elements Performance Specifications

A party providing GNSS services should ensure that those services meet the system performance requirements with regard to accuracy, integrity, continuity, availability, including effective arrangements to minimise the operational impact of system malfunctions or failures.

The Contracting Parties should ensure that the systems comply, at least, with ICAO SARPS, including but not limited to Annex 10, which should be of mandatory application.

The necessity to record GNSS signals and to retain such recordings for use as evidence in accident investigations should also be included in the convention to ensure legal effect. Inclusion in Annex 10 may not be adequate.

Uniformity

Contracting Parties should work together to ensure uniformity in the provision and operation of GNSS services. This could entail ensuring that systems are interoperable in the interests of global aviation safety.

Charges

Provision should be made to cater for the situation that some (future) systems may be subject to charges. In that event, a charging mechanism should ensure the reasonable allocation of costs among civil aviation users and among civil aviation users, as a group, and other system users. The work of ANSEP should be taken into account.

Cooperation and Mutual Assistance and role of ICAO

In order to facilitate global planning and worldwide implementation of GNSS in an effective manner, Contracting Parties should conduct their activities with due regard for the interests of other Parties. ICAO could play an essential role in this regard by

- Co-ordinating with regional bodies or other entities which are managing, facilitating or otherwise co-ordinating relationships between system operators or service providers
- Monitoring, through the Universal Oversight Audit Programme, compliance by GNSS system operators and service providers with the applicable technical standards, operational and legal requirements
- Facilitating the provision of assistance to States with regard to the technical, financial, managerial, legal and co-operative aspects of GNSS.

Certification

GNSS systems, services and elements thereof, including avionics and ground facilities, should be certified against the applicable technical requirements prior to entry into operation and training and licensing requirements should comply with ICAO SARPS.

Unlawful interference

Provision should be made for measures to prevent and protect against harmful interference.

Liability

Provision should be made for a strict liability up to a certain determined limit and fault based thereafter, in line with the Montreal Convention of 1999 for loss or damage caused by the failure, malfunction or improper use of a GNSS system or service. In the event that the loss or damage was caused by more than one systems or services, the providers thereof should be jointly and severally liable, to the extent to which they were at fault. An alternative solution could be a fault-based liability regime but with the burden of proof reversed.

Force majeure

Provision could be made to exclude liability in situations which were beyond the control of a party such as Act of God, war, etc.

Sovereign immunity

Provision should be made for the conditions under which sovereign immunity could not be invoked, to avoid situations where parties would be unable to seek redress due to this rule.

Recourse and indemnification

The convention should allow any entity or person found liable for loss or damage to have a right of recourse against any other person or entity.

Competent jurisdiction / Arbitration

GNSS-related events present the characteristic of possibly involving a multiplicity of parties in a variety of actions in several jurisdictions. The convention could propose a single jurisdiction to neutralise the complexity of all the liability claims.

As an alternative to the single jurisdiction and to overcome the principles of foreign jurisdiction immunity, recourse to arbitration mechanisms could be considered which could follow established UNCITRAL Rules or the Rules of the Permanent Court of Arbitration in The Hague.

Applicable law

The convention could provide that the competent court or arbitration tribunal applies the liability regime applicable in accordance with existing international and internal rules.

Period of limitation

The convention could provide that the right to take legal action would be extinguished if an action was not brought within a specified number of years from the date of the act or event which caused the damage for which the compensation was sought.

Compulsory risk coverage

Contracting Parties should ensure that their system operators and service providers maintain adequate insurance or have other means of risk coverage in respect of their liability. As an aviation-related GNSS accident could have significant liability consequences, the possibility of setting up a dedicated fund to compensate for any shortfall in recovery from the persons held to be liable ought to be considered.

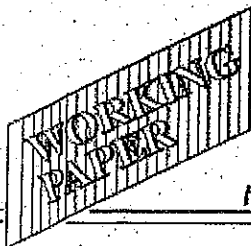
Joint operation of GNSS services

The convention should not prevent two or more Contracting Parties from jointly providing services using GNSS.

Other Provisions

The Convention should contain the standard procedural provisions with respect to Amendments, Settlement of Disputes, Entry into Force and Denunciation.

— END —



Appendix 2

A35-WP/125*
LE/11
21/9/04

INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASSEMBLY — 35TH SESSION

LEGAL COMMISSION

Agenda Item 36: Report on the establishment of a legal framework with regard to CNS/ATM systems including GNSS

DEVELOPMENT OF A CONTRACTUAL FRAMEWORK LEADING TOWARDS A LONG-TERM LEGAL FRAMEWORK TO GOVERN THE IMPLEMENTATION OF GNSS

(Presented by the 41 Contracting States¹, Members of the European Civil Aviation Conference)

SUMMARY

The technical and operational development of GNSS is now well advanced. The time has come to implement an appropriate GNSS legal and institutional framework. This paper proposes a comprehensive contractual framework as a step towards a convention in the long term. This paper has been elaborated and co-ordinated by EUROCONTROL, in coordination with the European Commission.

Action by the Assembly is in paragraph 8.

1. INTRODUCTION

1.1 Further to the Assembly Resolution A32-20, a Secretariat Study Group was set up to elaborate proposals for a GNSS legal framework. This group reported to the 33rd Assembly that some of its Members were of the view that the current legal regime could cope with the advent of GNSS, while others believed that a global instrument of international law would be required as the long-term solution to the legal and institutional issues raised by GNSS. In order to provide a realistic stepping stone towards such a solution, a middle ground was considered, namely the development of a contractual framework, for the short to medium-term.

* English, French, Spanish and Russian versions provided by ECAC.

¹ Albania, Armenia, Austria*, Azerbaijan, Belgium*, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus*, Czech Republic*, Denmark*, Estonia*, Finland*, France*, Germany*, Greece*, Hungary*, Iceland, Ireland*, Italy*, Latvia*, Lithuania*, Luxembourg*, Malta*, Moldova, Monaco, Netherlands*, Norway, Poland*, Portugal*, Romania, Serbia and Montenegro, Slovakia*, Slovenia*, Spain*, Sweden*, Switzerland, The former Yugoslav Republic of Macedonia, Turkey, Ukraine, United Kingdom*.

Member States of the European Union are indicated with an asterisk in the above list.

1.2 The 33rd General Assembly mandated the Study Group to finalise the concept of a "Contractual Framework", as an interim framework, while further work should include the consideration of an international convention. The Secretariat of the Study Group presented its final report of the deliberations of that Group and the results of this activity (C-WP/12197) to the Council in March 2004.

1.3 That report highlights that divergent views continue to exist between legal experts as to the concept of a contractual framework as well as on the need for the timely elaboration of an international convention. The objective of this paper is to explain the need to urgently implement a comprehensive contractual framework. It also underlines the growing support expressed for a convention.

2. THE NEED FOR A COMPREHENSIVE FRAMEWORK

2.1 The current regime regarding satellite-based CNS/ATM does not represent a satisfactory solution for dealing with the legal issues arising from an evolving technology. While annexes to the Chicago Convention (principally Annex 10) have kept pace with technological and operational advances, the legal and institutional issues thrown up by such advances have largely remained frozen in time.

2.2 The need for a comprehensive framework arises from the implications of global navigation systems, with their multimodal dimensions and multiplicity of stakeholders. States wish to understand in particular how their Article 28 Chicago Convention responsibilities work in this environment, the liability issues that arise, and the means by which they can be assured that the system or systems are safe and reliable. In a global environment they consider that reliance on domestic laws and procedures is insufficiently robust or effective to deal with the requirements of such systems.

2.3 Clarity and legal certainty are key issues that need to be addressed. The responses of the current regime at State level to the legal challenges of GNSS often cannot fully meet the new requirements that have been identified. A global operating environment therefore may need global solutions through international law instruments. And beyond the legalities involved is the importance of confidence building measures to help generate global support for the use of such systems.

3. CURRENT AND FORESEEN SYSTEMS

3.1 In addition to GPS and GLONASS, several initiatives are under development in order to provide improved navigation services and complement systems. Developments regarding WAAS, EGNOS and GALILEO² underline the global nature of GNSS and the need for continued cooperation and complementarities in this field.

3.2 In particular, the GALILEO Satellite Navigation Programme is the first major programme that brings major entities such as the European Union and the European Space Agency together in the technological, economical, political, legal and institutional domains. The GALILEO system provides, alongside an open service similar to the GPS civilian service, new features to improve and guarantee services, thereby creating the conditions for responding to obligations imposed by critical, safety of life, or commercial applications. GALILEO Services are required to be fully compatible and interoperable at user level with other

² GALILEO is a worldwide system which will ensure complementarity with the current GPS system. GALILEO will be based on a constellation of 30 satellites and ground stations.

GNSS services, with no common failure mode between systems. This combined use of the GALILEO system and other GNSS will offer high performances in terms of reliability, availability, coverage and other essential navigation characteristics.

3.3 GALILEO, as a global civilian system, is subject to a set of international cooperation agreements, to ensure the maximum benefits for users.

3.4 Europe has already embarked on setting up institutional arrangements to ensure interoperability with other navigation systems; a technical agreement has been signed with the United States (GPS). Europe has entered into other bilateral and regional agreements to develop technical and scientific collaboration.

3.5 Deployment and commercial operation of GALILEO will be entrusted to a concession holder. To ensure that essential public interests are adequately defended and represented, a structure, called "the European GNSS Supervisory Authority", is being set up by a European Council regulation for the management of the European satellite radio navigation programme³.

3.6 As underlined in A35-WP/155 EC/22, on the Importance of GNSS Cost Allocation presented by the Netherlands on the behalf of the European Community and its Member States, the contractual framework proposed in this paper is supported by the European Commission. The European Commission is dedicated to developing and structuring the service provision of GALILEO in such a way that the contractual framework binds the different stakeholders involved in the provision of aeronautical services based on GNSS.

4. THE CONTRACTUAL FRAMEWORK

4.1 A contractual framework which addresses GNSS must provide a unified structure capable of addressing both public law and private law arrangements between the various stakeholders. It needs to be comprehensive in coverage, addressing the full range of issues that concern those stakeholders. The contractual framework as proposed by the ECAC States is attached at **Appendix B**. It is not new. It was already presented and discussed at the 33rd Assembly, which asked for its completion as an interim step towards the development of a possible Convention.

4.2 It is based on a two-tier approach. On one level, it offers a regulatory agreement dealing with public law matters including certification, liability and jurisdictional matters. The other level is private contractual arrangements between the various stakeholders in which they would have a very large degree of autonomy subject to certain mandatory elements determined by the regulatory agreement. These mandatory elements would focus on inter alia, compliance with SARPs with regard to continuity, availability, integrity, accuracy, reliability, recognition of (strict) liability, compulsory risk coverage, recourse to arbitration, waiver of right to invoke sovereign immunity. Harmonisation of these essential parts of the contracts would help achieve a framework where the roles and responsibilities of all players involved are clear to all and where relationships are defined.

4.3 The two main elements of this contractual framework, therefore, are the private law contracts to be concluded between the parties involved in the chain of implementation, operation, provision

³ At the meeting of the EU Council held on 11 June 2004, the Council adopted the EC Regulation setting up the European GNSS Supervisory Authority.

and use of GNSS signals and systems and the public law agreement between the States involved to ensure that these contracts are harmonised in order to contain the same essential provisions on safety, certification, liability, etc. In this way, the necessary distinction between the public and private law elements of this proposed contractual framework will be ensured.

4.4 The contractual framework being proposed by ECAC States in this paper is not a GNSS Convention. While it includes binding elements, it also creates a flexible and readily available framework to cover all legal and institutional elements related to GNSS at the regional level and harmonises contractual relationships between the parties involved, providing clarity and legal certainty. It may, however, provide experience and know-how and represents a first step, which could evolve into a long-term focussed and precise global instrument of international law under the aegis of ICAO.

5. CONSIDERATION OF AN INTERNATIONAL CONVENTION

5.1 It was part of the mandate of the Secretariat Study Group to consider an international Convention for the purpose of elaborating a long-term legal framework for CNS/ATM systems. The Secretariat Report concludes that it is premature at this point to draft an international convention. The papers submitted to the recent Air Navigation Conference⁴, respectively by African States, ASECNA, the European Community and Japan do however illustrate that a substantial number of States in the Assembly are in favour of developing an international convention. With this in mind, the European members of the Study Group presented a first draft convention for consideration. A list of the main elements to be contained in such a convention is attached at **Appendix C**.

5.2 The objective would be to achieve a dedicated Convention limited to the essential common elements for legally and institutionally adequate provision of GNSS services. It would address, in particular, liability, including the issue of third party liability which can not be adequately addressed through the contractual framework solution. The Convention is foreseen to be the most appropriate way to address all parties affected by such a global system in the long term.

5.3 Like other similar instruments developed in ICAO, such an instrument could be drafted and discussed in a reasonable time frame and could already enter into force after relatively few ratifications, as it would be designed to "grow" in the course of its application. It would provide for an important role for ICAO with respect to, *inter alia*, global coordination.

6. CONCLUSION

6.1 As indicated above, strong support has been consistently expressed by those who consider that the status quo does not provide sufficient answers to the legal and institutional aspects of the GNSS system within a new CNS service. Most importantly, the vast majority of States, other GNSS providers and users of GNSS services will require legal certainty as to who is responsible for any particular aspect of the system and what the eventual liability and burden of proof will be. The elaboration of a convention does not detract in any way from the benefits of a contractual framework as an interim solution. An efficient interim arrangement that addresses all the major issues would adequately compensate for the fact that a convention would be some years off. Indeed, an effective and readily available contractual framework, which

⁴ ANConf 11: WP/143 presented by 54 African States and WP/153 presented by 41 ECAC/EUROCONTROL States.

harmonises contractual relationships between the parties involved in GNSS implementation, while being responsive to the evolution of the satellite-based CNS/ATM system, could ease the way for a convention and promote its faster adoption.

7. RECOMMENDATION

7.1 In the light of the above, it is proposed that the General Assembly of ICAO progresses the implementation of the contractual framework as set out in this paper and in parallel continues the work on a convention, on the basis of the proposals contained in this paper.

8. ACTION BY THE ASSEMBLY

8.1 The Assembly is invited to:

- a) adopt the draft Assembly resolution as set out in **Appendix A** to this paper;
 - b) note the overall contractual framework approach as set out in **Appendix B** to this paper; and
 - c) note the elements for a GNSS convention as set out in **Appendix C** to this paper.
-

APPENDIX A

DRAFT RESOLUTION

IMPLEMENTATION OF A CONTRACTUAL FRAMEWORK WITH A VIEW TOWARDS A LONG-TERM GNSS INSTITUTIONAL SOLUTION

Whereas the Global Navigation Satellite System (GNSS), as an important aspect of the ICAO CNS/ATM systems, is intended to provide safety-critical services for aircraft navigation with worldwide coverage;

Whereas GNSS should be compatible with the international law, including the Convention on International Civil Aviation of 1944 (hereafter the Chicago Convention), its Annexes and the relevant rules applicable to outer space activities;

Whereas in its Resolution A32-19, the Assembly adopted the Charter on the Rights and Obligations of States Relating to GNSS Services setting out the fundamental principles applicable to the implementation of GNSS;

Whereas in its Resolution A32-20, the Assembly instructed the Council and the Secretariat to establish a Secretariat Study Group to ensure the follow up of the recommendations of the Rio Conference and the Panel of Legal and Technical Experts on GNSS (LTEP), in particular with respect to institutional issues and question of liability, as well as considering the elaboration of a longer-term framework to govern the operation of GNSS systems;

Whereas in its 33rd Session, the Assembly decided that further work on the legal aspects of CNS/ATM system be carried out so as to finalise the concept of a contractual framework for CNS/ATM as an interim framework and provide a path towards its implementation, including the consideration of an international convention.

Whereas technical and operational activities towards the implementation of GNSS are now well advanced and the need to establish a proper legal and institutional framework for the same implementation is now imminent.

Whereas the global nature of GNSS for aviation purposes requires a global solution and concrete actions reflecting the urgent need for States to improve their legal and institutional framework;

The Assembly:

1. *Reconfirms* the urgent need to take concrete initiatives towards the implementation of an appropriate GNSS legal and institutional framework;
2. *Reconfirms* the need for an appropriate short and long-term legal and institutional framework to govern the effective implementation of GNSS, namely a contractual framework evolving into an international convention; and

3. *Instructs* the Council and the Secretary General, within their respective competencies, to take the necessary steps to:

- a) Validate and then adopt a contractual framework as a step towards the long-term objective of a global instrument of international law, on the basis of the structure and comprehensive model proposed in Appendix B to A35-WP/125;
 - b) draft a dedicated Convention addressing the legal and institutional aspects of GNSS, taking into account the elements contained in Appendix C to A35-WP/125; and
 - c) ensure, in particular, the active role of ICAO with respect to this development and implementation of the approaches described in a) and b).
- _____

APPENDIX B

FRAMEWORK AGREEMENT BETWEEN THE GOVERNMENTS OF CONCERNING THE IMPLEMENTATION, PROVISION, OPERATION AND USE OF A GLOBAL NAVIGATION SATELLITE SYSTEM FOR AIR NAVIGATION PURPOSES

1. OBJECTIVES

1.1 The objective of this Agreement is to establish a legal framework for the implementation, provision, operation and use of GNSS for the purpose of air navigation over the territory of Contracting Parties, as well as to regulate the relationships between the entities and persons involved in such GNSS activities.

1.2 This Agreement aims at ensuring technical and operational accessibility, continuity, availability, integrity, accuracy and reliability of GNSS services world-wide. The Contracting Parties reaffirm their commitments to act in conformity with international law and the principles governing GNSS, in particular the Chicago Convention, its Annexes, the Charter on the Rights and Obligations of States Relating to GNSS Services and the relevant rules applicable to outer space activities.

1.3 This Agreement addresses the conditions under which GNSS services, including signals-in-space based thereupon, can be safely used for air navigation purposes over the territory of Contracting Parties. It also aims at clarifying the obligations of the parties involved.

2. DEFINITIONS

2.1 For the purpose of this Agreement, the terms listed below are used with the following meanings:

Certification: The process which results in a formal attestation that a specified system, element thereof or service complies with pre-determined requirements.

Damage: Loss of life, injury, damage to property [...].

GNSS Entity: A public or private body/organisation, or public-private partnership, created for the purpose of managing, or mandated to manage, by means of contractual arrangements, relationships between GNSS system operators and GNSS service providers involved in the operation of a GNSS system for air navigation purposes.

GNSS service: An added value service to support air navigation, based upon signals emitted by a GNSS system.

GNSS service provider:	An entity engaged in the activity of providing a GNSS service for air navigation purposes.
GNSS signal:	A signal emitted by an element forming part of a GNSS system.
GNSS system:	An infrastructure comprising satellites and other space and/or ground based facilities, capable of supporting air navigation based on signals-in-space.
GNSS system element:	Any individual component of a GNSS system.
GNSS system operator:	A body/organisation engaged in the operation and/or maintenance of a GNSS system or elements thereof.
GNSS user:	An aircraft which uses GNSS signals or GNSS services for air navigation purposes.
Local augmentation system:	A GNSS system, the purpose of which is to enhance the accuracy, reliability, continuity and integrity of a primary GNSS signal at a given location.
Primary signal system:	A GNSS system, the purpose of which is to produce a primary signal-in-space.
Regional augmentation system:	A GNSS system, the purpose of which is to enhance the accuracy, reliability, continuity and integrity of a primary signal within a given region.

3. SCOPE

3.1 The provisions of this Agreement shall apply to the Contracting Parties implementing, providing, operating and/ or using GNSS for air navigation purposes.

3.2 This Agreement governs the creation of the GNSS Entity or the mandate to an existing entity to perform such function. It addresses, inter alia, the relationships of the Entity with the GNSS system operators and GNSS service providers operating from the territory of a Contracting State or having a registered office on the territory of a Contracting State.

3.3 When Contracting Parties have agreed to undertake responsibilities in respect of providing Air Navigation Services over parts of the high seas, this Agreement shall also apply to the exercise of those responsibilities over those parts of the high seas.

4. SOVEREIGNTY

4.1 This Agreement does not affect in any way the complete and exclusive sovereignty of Contracting Parties in respect of the airspace over their territory.

4.2 The Contracting Parties recognise that the implementation, provision, operation and use of GNSS shall neither infringe nor limit State's authority or responsibility in the control of air navigation and the promulgation and enforcement of safety regulations. States' authority shall also be preserved in the co-ordination and control of communications and in the augmentation, as necessary, of satellite-based Air Navigation Services.

5. CONTRACTING PARTIES RESPONSIBILITIES

5.1 Contracting Parties shall define, in accordance with the provisions of this Agreement, the conditions under which a GNSS system or element thereof may be used for air navigation purposes over their territories.

5.2 Contracting Parties may authorise any public, private or public-private organisations, including foreign bodies, to provide GNSS signals or services to support air navigation over their territory, provided these bodies/organisations operate in accordance with the requirements set forth in this Agreement.

5.3 It remains the responsibility of each Contracting Party to ensure that GNSS signals and services are provided and used over its territory in accordance with the relevant provisions of the Chicago Convention.

5.4 Contracting Parties shall establish appropriate processes:

- a) to ensure that organisations engaged in the implementation, provision, operation and use of a GNSS system or elements thereof, comply with the requirements of this Agreement; and
- b) to ensure that the activities performed by the GNSS Entity established or mandated in accordance with article 6 of this Agreement comply with the requirements of this Agreement.

6. GNSS ENTITY

6.1 An Entity shall be established under this Agreement and will be referred to as the GNSS Entity. It shall be made up of an Administrator supported by a Secretariat. Contracting Parties may mandate an already established organisation or body to undertake the tasks of the GNSS Entity described in this Agreement.

6.2 The GNSS Entity shall have legal personality. It shall enjoy in the territory of its Contracting Parties such legal capacity as may be necessary for the performance of its tasks.

6.3 The GNSS entity shall be charged with facilitating and [managing] [establishing], by means of contractual arrangements, the relationships between the various GNSS system operators and GNSS service providers falling under the scope of this Agreement.

6.4 The GNSS Entity may be entrusted with, *inter alia*, the following tasks, upon decision by the Contracting Parties:

- a) specification of GNSS signals and services;
- b) drafting, negotiation, implementation of contractual and service level agreements between the GNSS entity, GNSS system operators and GNSS service providers, in accordance with Article 8 of this Agreement;
- c) definition of processes for the allocation of responsibilities among GNSS parties;
- d) management of a compensation GNSS fund if set up in accordance with article 9.2 of this Agreement; and
- e) definition of applicable risk coverage requirements.

6.5 The financial and institutional consequences of the establishment of the GNSS Entity shall be addressed by the Contracting Parties.

7. ROLE OF ICAO

7.1 Contracting Parties recognize the central role of ICAO in coordinating the global implementation of GNSS and in particular:

- a) establishment of the SARPs;
- b) collection, processing, management and distribution of relevant aeronautical information pertaining to the GNSS systems and services falling within the scope of this Agreement;
- c) co-ordination of the activities of the GNSS Entity or body/organisation mandated to undertake its tasks with those of other entities created under similar Agreements and/or with similar functions in other regions; and
- d) monitoring of compliance by GNSS system operators and/or service providers with the applicable technical, operational and legal requirements, including the terms of relevant contractual arrangements.

8. CONTRACTUAL AGREEMENTS

8.1 Contracts referred to in Articles 6.3 and 6.4 of this Agreement shall be concluded in conformity with the requirements of this article and the terms of this Agreement.

12. LIABILITY

12.1 In the event of loss or damage arising out of a failure, malfunction or improper use of GNSS, each entity or person involved shall be liable to the extent it has contributed to the occurrence of the loss or damage.

12.2 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.

12.3 Contracting Parties and other public parties shall submit themselves to arbitration and be subject to the same rules as private partners.

12.4 In the event that loss or damage can be attributed to a GNSS failure, malfunction or improper use, but cannot clearly be traced to a specific defendant, the defendants involved in the chain of 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.

13. ARBITRATION

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13.2 Nothing in this Agreement shall prejudice the rights of any individuals with regard to the Warsaw/Montreal Conventions.

13.3 Decisions of the arbitration panel shall be final and binding on the Parties to the arbitration procedure.

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14.1 This Agreement shall be registered with the ICAO Council, in accordance with the provisions of Article 83 of the Chicago Convention.

15. AMENDMENT

15.1 Any proposed amendment to this Agreement shall be subject to the approval of [two-thirds] of its Contracting Parties.

16. **ADMISSION OF OTHER PARTIES**

16.1 This Agreement is opened for admission to other Parties [...]

17. **TERMINATION**

17.1 This Agreement may be terminated [...]
Effect on GNSS Entity established under this Agreement [...]

18. **ENTRY INTO FORCE**

18.1 This Agreement shall enter into force at the date of signature.

APPENDIX C

PROPOSAL RELATING TO MAIN ELEMENTS FOR INCLUSION IN A DRAFT CONVENTION

Preamble

The Preamble refers to the relevant legal basis for the convention, in particular the Chicago convention and its Annexes, and recalls the need for GNSS to be compatible with them and other relevant international law rules applicable to outer space activities. The Charter on the Rights and Obligations of States Relating to GNSS Services, adopted by the 32nd Session of the ICAO Assembly (1998), established certain fundamental principles that need to be elaborated in an international convention, in order to make them binding.

Definitions

In view of the legal consequences of GNSS, it will be necessary to define certain terms for the purposes of the convention. Such terms as "GNSS service", "GNSS service provider", "GNSS system", "GNSS System operator", "GNSS user", "primary signal provider", "regional augmentation system" and "local augmentation system" will need to be defined, in line with state-of-the-art working terminology.

Scope

The convention should apply to activities employing satellites and ground-based equipment, technologies and systems.

Safety of Air Navigation

Safety of air navigation should be the paramount principle in the implementation and operation of GNSS systems and the provision and use of GNSS services. Commercial considerations should not be allowed to override safety requirements. Provision should be made to respect this principle in the case of war and emergency conditions.

Universal Accessibility

Every aircraft registered in the territory of the Contracting Parties should have access on a non-discriminatory basis and under uniform conditions to the use of regional augmentation systems for aeronautical use within the area of coverage of such systems. The article should also propose means of achieving universality.

State Sovereignty

The implementation and operation of GNSS systems and the provision and use of GNSS services should neither infringe nor limit a State's authority or responsibility in the control of air navigation or the promulgation and enforcement of safety regulations. The Article should provide for the delegation of the provision of services to other suitable parties, should a State wish to do so.

GNSS Elements Performance Specifications

A party providing GNSS services should ensure that those services meet the system performance requirements with regard to accuracy, integrity, continuity, availability, including effective arrangements to minimise the operational impact of system malfunctions or failures. The Contracting Party should ensure that the systems comply, at least, with ICAO SARPS, including but not limited to Annex 10, which should be of mandatory application.

The necessity to record GNSS signals and to retain such recordings for use as evidence in accident investigations should also be included in the convention to ensure legal effect. Inclusion in Annex 10 may not be adequate.

Uniformity

Contracting Parties should work together to ensure uniformity in the provision and operation of GNSS services. This could entail ensuring that systems are interoperable in the interests of global aviation safety.

Charges

Provision should be made to cater for the situation that some (future) systems may be subject to charges. In that event, a charging mechanism should ensure the reasonable allocation of costs among civil aviation users and among civil aviation users, as a group, and other system users. The work of ANSEP should be taken into account.

Cooperation and Mutual Assistance and role of ICAO

In order to facilitate global planning and worldwide implementation of GNSS in an effective manner, Contracting Parties should conduct their activities with due regard for the interests of other Parties. ICAO could play an essential role in this regard by

- Coordinating with regional bodies or other entities which are managing, facilitating or otherwise coordinating relationships between system operators or service providers
- Monitoring, through the Universal Oversight Audit Programme, compliance by GNSS system operators and service providers with the applicable technical standards, operational and legal requirements
- Facilitating the provision of assistance to States with regard to the technical, financial, managerial, legal and cooperative aspects of GNSS.

Certification

GNSS systems, services and elements thereof, including avionics and ground facilities, should be certified against the applicable technical requirements prior to entry into operation and training and licensing requirements should comply with ICAO SARPS.

Unlawful interference

Provision should be made for measures to prevent and protect against harmful interference.

Liability

Provision should be made for a strict liability up to a certain determined limit and fault based thereafter, in line with the Montreal Convention 1999 for loss or damage caused by the failure, malfunction or improper use of a GNSS system or service. In the event that the loss or damage was caused by more than one system or service, the providers thereof should be jointly and severally liable, to the extent to which they were at fault. An alternative solution could be a fault-based liability regime but with the burden of proof reversed.

Force majeure

Provision could be made to exclude liability in situations which were beyond the control of a party such as Act of God, war, etc.

Sovereign immunity

Provision should be made for the conditions under which sovereign immunity could not be invoked, to avoid situations where parties would be unable to seek redress due to this rule.

Recourse and indemnification

The convention should allow any entity or person found liable for loss or damage to have a right of recourse against any other person or entity.

Competent jurisdiction/Arbitration

GNSS-related events present the characteristic of possibly involving a multiplicity of parties in a variety of actions in several jurisdictions. The convention could propose a single jurisdiction to neutralise the complexity of all the liability claims.

As an alternative to the single jurisdiction and to overcome the principles of foreign jurisdiction immunity, recourse to arbitration mechanisms could be considered which could follow established UNCITRAL Rules or the Rules of the Permanent Court of Arbitration in The Hague.

Applicable law

The convention could provide that the competent court or arbitration tribunal applies the liability regime applicable in accordance with existing international and internal rules.

Period of limitation

The convention could provide that the right to take legal action would be extinguished if an action was not brought within a specified number of years from the date of the act or event which caused the damage for which the compensation was sought.

Compulsory risk coverage

Contracting Parties should ensure that their system operators and service providers maintain adequate insurance or have other means of risk coverage in respect of their liability. As an aviation-related GNSS accident could have significant liability consequences, the possibility of setting up a dedicated fund to compensate for any shortfall in recovery from the persons held to be liable ought to be considered.

Joint operation of GNSS services

The convention should not prevent two or more Contracting Parties from jointly providing services using GNSS.

Other provisions

The Convention should contain the standard procedural provisions with respect to Amendments, Settlement of Disputes, Entry into Force and Denunciation.

— END —



International Civil Aviation Organization

WORKING PAPER

A36-WP/140

LE/7

6/9/07

(Information paper)

English only

ASSEMBLY — 36TH SESSION

LEGAL COMMISSION

Agenda Item 47: Work Programme of the Organization in the legal field

REPORT ON THE ESTABLISHMENT OF A LEGAL FRAMEWORK WITH REGARD TO
CNS/ATM SYSTEMS INCLUDING GNSS

(Presented by the 42 Contracting States¹, Members of the European Civil Aviation Conference
This paper has been elaborated and co-ordinated by EUROCONTROL)

EXECUTIVE SUMMARY

A contractual framework to govern implementation of GNSS, an initiative of the ECAC States, was presented at the 35th ICAO Assembly². This paper was discussed at the Assembly and was addressed in Resolution A35-3³, adopted by the Assembly (see Appendix).

The Assembly recognised the importance of the establishment of a legal framework with regard to CNS/ATM systems including GNSS and directed the Secretary General to monitor and, where appropriate, assist in the development of contractual frameworks to which parties may accede. Further, Contracting States were invited to transmit regional initiatives to the Council.

This information paper appraises the General Assembly of the progress made in implementing Resolution A35-3.

<i>Strategic Objectives:</i>	Not Applicable
<i>Financial implications:</i>	Not Applicable
<i>References:</i>	

¹ Albania, Armenia, Austria, Azerbaijan, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Moldova, Monaco, Netherlands, Norway, Poland, Portugal, Romania, Serbia and Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland, The former Yugoslav Republic of Macedonia, Turkey, Ukraine, and the United Kingdom.

² Please see : A35-WP/125* LE/11 21/9/04 ASSEMBLY — 35TH SESSION LEGAL COMMISSION
Agenda Item 36: Report on the establishment of a legal framework with regard to CNS/ATM systems including GNSS
DEVELOPMENT OF A CONTRACTUAL FRAMEWORK LEADING TOWARDS A LONG-TERM LEGAL FRAMEWORK TO GOVERN THE IMPLEMENTATION OF GNSS (Presented by the 41 Contracting States, Members of the European Civil Aviation Conference)

³ A35-3 : A Practical Way Forward on Legal and Institutional Aspects of Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) Systems

1. INTRODUCTION

1.1 The development of a legal framework to govern the implementation of GNSS has been on the Work Programme of the Legal Committee since 1992. First of all, a committee of legal and technical experts (LTEP) was established by the ICAO Council in December 1995 which led to the adoption of a Charter on the Rights and obligations of States relating to GNSS Services at the 32nd Assembly in 1998. However, this alone was not considered adequate as several aspects related to certification, operating structures, administration, cost recovery and most importantly, liability were not addressed. The liability aspects in particular were found to merit further examination. On the basis of the recommendations made by the LTEP, the 32nd Assembly set up a new study group, the Secretariat Study Group or SSG which reported to the 33rd Assembly, which mandated the ICAO Secretariat Study Group to finalise a contractual framework, focusing predominantly on model clauses.

1.2 The main purpose of the contractual framework is to provide for a number of legal and institutional provisions that are deemed necessary for addressing GNSS at regional level. The Contractual Framework is based on a two-tier approach. On one level, it offers a regulatory agreement dealing with public law matters including certification, liability and jurisdictional matters. The other level consists of private contractual arrangements between the various stakeholders in which they would have a very large degree of autonomy subject to certain mandatory elements determined by the regulatory agreement.

1.3 While it includes binding elements, it also creates a flexible and readily available framework to cover all legal and institutional elements related to GNSS at the regional level and harmonises contractual relationships between the parties involved, providing clarity and legal certainty. It may, however, provide experience and know-how and represents a first step, which could evolve into a long-term focused and precise global instrument of international law under the aegis of ICAO.

1.4 This initiative of the ECAC States was embraced by the 35th ICAO Assembly which adopted Resolution A35-3.⁴ As can be seen, the contractual framework has figured on the Work Programme of the Legal Committee over several years and has consistently been recognised as being of high priority. Recent developments around the world indicate that work on this matter should continue as a priority on the work programme of the Legal Committee.

2. DEVELOPMENTS IN EUROPE

2.1 Since the ECAC states presented the Contractual framework for GNSS in 2004, many developments regarding ATM at European Level have occurred. The developments which have an impact on GNSS are resulting in further refinements of the Contractual framework model. Many of these developments serve to confirm the ongoing need for a legal framework for GNSS. Some of the recent European Developments in ATM which affect GNSS are outlined briefly hereunder.

2.2 A new scheme of Governance for Galileo and EGNOS has emerged. A GNSS Supervisory Authority has been established to ensure that essential public interests in this field are adequately defended and represented. The Authority is a European Community Agency and will be the owner of the EGNOS and Galileo infrastructure. This Authority could potentially fulfil the role as foreseen for the GNSS Entity in the Contractual Framework.

⁴ Please see : A35-WP/125* LE/11 21/9/04 ASSEMBLY — 35TH SESSION LEGAL COMMISSION
Agenda Item 36: Report on the establishment of a legal framework with regard to CNS/ATM systems including GNSS
DEVELOPMENT OF A CONTRACTUAL FRAMEWORK LEADING TOWARDS A LONG-TERM LEGAL
FRAMEWORK TO GOVERN THE IMPLEMENTATION OF GNSS (Presented by the 42 Contracting States¹, Members of
the European Civil Aviation Conference)

2.3 EGNOS signals are now available and it is foreseen that the final system deployment activities, the qualification of the operator and the appointment of the EGNOS Service provider will be finalised in 2008 allowing the start of the certification process.

2.4 The European Commission has launched its single European sky (SES) initiative in late 1999 to reform air traffic management in Europe. The Single European Sky is being achieved and governed by means of a regulatory package. Further implementation measures are flowing from these foundation regulations, for example on a common charging scheme, common requirements for air navigation service providers, and airspace and interoperability measures. The EC Regulations on the SES (in particular the interoperability regulation) will necessitate the certification of GNSS related equipment and the certification of the GNSS service provider.

2.5 While the Single European Sky Regulations do not directly address military operations, they address civil-military cooperation to use airspace in a safe and efficient manner. In a general statement which is part of the SES package, Member States declare that they will facilitate co-operation between their armed forces in all matters of air traffic management.

2.6 The SES Initiative is complemented by the SESAR Programme (the Single European Sky ATM Research Programme). SESAR starts with a Definition Phase. By early 2008, a joint funded EUROCONTROL and European Community study, conducted primarily by Industry, will deliver a European ATM Master Plan based on future aviation requirements, and will identify the actions needed to achieve the objectives of SESAR. The Development Phase will run from 2008 to 2013. During this phase, the necessary research, development and validation work will be conducted and the regulatory measures will be prepared in order to implement the European ATM Master Plan. This phase will be managed by a SESAR Joint Undertaking, an entity set up by a EU Council regulation, which is a public-private partnership in which the European Community and Eurocontrol are founding members, and in which other stakeholders such as ANSPs or manufacturing industry, including from non European countries, can become members. The comprehensive inclusion of GNSS into ATM operational processes is foreseen in the SESAR programme, therefore the issues of global interoperability, liability and oversight mechanisms will assume ever increasing importance.

2.7 The issue of liability has been widely debated in the context of the Galileo and EGNOS programmes over the past three years. The most important topics have been Third party liability, Design risk, liability associated to the system operations and the Allocation of Liability. This illustrates the need for a framework as presented by the ECAC states in order to channel liability.

3. CONCLUSIONS

3.1 The contractual framework proposed by ECAC States has already been recognised by ICAO in Assembly Resolution A35-3 as a mechanism to create a flexible and readily available framework to cover all legal and institutional elements related to GNSS at the regional level and harmonises contractual relationships between the parties involved, providing clarity and legal certainty.

3.2 Developments in Europe with regard to EGNOS and Galileo confirm the need for such a contractual framework and highlight the need to align the said framework to take on board, the need for harmonisation of, inter alia, international standards, certification, interoperability, liability allocation in a multi-State environment, particularly in the context of the Single European Sky legislation.

3.3 The contractual framework will be refined in the light of these developments and presented as soon as possible to the ICAO Secretary General and Council, as foreseen in the Resolution. It is envisaged that the framework will satisfy the needs widely voiced in ICAO regarding GNSS and will assist in clarifying many of the difficult issues faced and serve as a useful basis for ongoing discussions in the Legal Commission.

3.4 The European initiative will be forthcoming in the near future and in line with Resolution A35-3, proposals will be submitted to the Secretary General in due course and the Council for subsequent validation as a model for global use.



Appendix 4

A36-WP/297
LE/14
21/9/07

ASSEMBLY — 36TH SESSION

LEGAL COMMISSION

**DRAFT TEXT FOR THE REPORT
ON
AGENDA ITEMS 46 AND 47**

The attached material on Agenda Items 46 and 47 is submitted for consideration by the Legal Commission.

Agenda Item 46: Acts or offences of concern to the international aviation community and not covered by existing air law instruments

46.1 This item was considered on the basis of A36-WP/12 presented by the Council, which provided a progress report on the work carried out to address the new and emerging threats to civil aviation. Through a survey conducted among the Member States and the work of the Secretariat, the Study Group and the Special Sub-Committee of the Legal Committee, it had been recognized that the existing aviation security conventions could be amended to cover certain new and emerging threats, such as the use of civil aircraft as a weapon, the use of civil aircraft to unlawfully spread biological, chemical and nuclear substances, and the attacks against civil aviation using such substances. It had also been considered necessary to incorporate certain common provisions in more recent UN conventions on counter-terrorism, such as the "military exclusion clause", which expressly specifies that these conventions do not govern the activities of armed forces during an armed conflict, and the activities undertaken by military forces of a State in the exercise of their official duties. Two draft protocols were proposed by the Sub-Committee for these purposes. Some delegations had proposed at the meeting of the Sub-Committee in July this year to include provisions prohibiting the intentional and unlawful transport by air of particularly dangerous goods and fugitives. The Sub-Committee had decided to seek the guidance of the Council on this issue and on the need for an additional meeting.

46.2 While applauding the work so far accomplished, one delegation wished to reiterate its reservations in the Sub-Committee with regard to the military exclusion clause. This delegation could perhaps accept the exemption of armed forces activities during armed conflict, which would be in line with Article 89 of the Chicago Convention, but could not accept a total military exemption even during peacetime, since it viewed that such an exemption would constitute a violation of the principles set out in the preambles of The Hague and Montreal Conventions and also of the principles and provisions of the Chicago Convention, particularly Article 44. Moreover, it viewed that it would also constitute a violation of a number of UN and ICAO resolutions, particularly ICAO Resolution A35-9, which condemns all acts of unlawful interference against civil aviation wherever and by whomsoever and for whatever reason they are perpetrated. It was not yet convinced that the inclusion of such a military exclusion clause could be justified by the sole reason that the same clause already exists in other conventions. It was concerned that the result of this clause would be that armed officers guilty of unlawful seizure of civil aircraft or using an aircraft in the service of a third State as a weapon of mass destruction would be immune from criminal prosecution.

46.3 The same delegation referred to the difficulty which may be encountered in the integration of the rules of "international humanitarian law" with civil aviation regulations. As neither the consequences of such integration nor those of the military exclusion clause had been addressed by the Rapporteur to the Sub-Committee, it proposed that a study on the subject should be carried out by the Rapporteur or the ICAO Secretariat. It also suggested that the Legal Commission invite the Council to request the Sub-Committee or the Legal Committee to reconsider the military exclusion clause in the light of such a study.

46.4 Three delegations supported, but one delegation was opposed to the reservations and proposal expressed at paragraphs 46.2 and 46.3. Two delegations emphasized the need for States to apply consistently the conventions and Assembly resolutions concerning acts of unlawful interference against

civil aviation in order to prosecute and condemn severely the persons who execute, are involved with or support criminal acts against civil aviation, including acts against aircraft, airport facilities and passengers.

46.5 In response to an inquiry by a delegation, the Vice-Chairman of the Sub-Committee clarified that the Sub-Committee recommended inclusion of the military exclusion clause on the clear understanding that military activities were governed by other international rules regarding State actions. The Sub-Committee had noted that other views on this issue would be reflected in its report, with the expectation that such views would be debated in future fora. The Vice-Chairman also clarified that, regarding the mere transport of certain prohibited material, it was considered by a number of delegations that this issue exceeded the Sub-Committee's mandate and it would therefore be necessary to seek further guidance from the Council. Another delegation, in supporting the Vice-Chairman's statement and the contents of A36-WP/12, encouraged the future work on amending the conventions without undue delay.

46.6 In summarizing the discussion, the Chairperson concluded that the Commission commended the work of the Secretariat, the Study Group and the Sub-Committee, and supported that the work should proceed to the next stage. It also noted the serious concerns expressed by certain delegations, in particular with regard to the military exclusion clause, which should be noted in this Report and referred to the Council for consideration when it convenes to consider the report of the Sub-Committee and determines whether to convene a further meeting of the Sub-Committee.

Agenda Item 47: Work Programme of the Organization in the legal field

47.1 The Commission considered this item on the basis of A36-WP/8 presented by the Council, A36-WP/134, presented by India, A36-WP/140, presented by the Members of the European Civil Aviation Conference, A36-WP/230, presented by Colombia, A36-WP/234, presented by Saudi Arabia, and A36-WP/256, presented by Republic of Korea.

47.2 A36-WP/8 outlined the work programme of the Legal Bureau, legal matters in the Council, the Work Programme of the Legal Committee and a plan of legal meetings for the period 2008-2010. The working paper listed the subjects on the Work Programme of the Legal Committee in their order of priority and provided information on the work status of individual items on the Work Programme.

47.3 A36-WP/134, presented by India, provided information in relation to various space-based augmentation systems and advised the Commission of the development of the GAGAN Satellite system in India which is expected to become operational in 2010. Based on Resolution A35-3, which directed the Secretary General to monitor and, where appropriate, assist in the development of contractual frameworks, the paper called for the development of guidelines for a regional legal framework.

47.4 A36-WP/230, presented by Colombia, proposed to include the element of regional multinational organisms in the future consideration of the legal framework for CNS/ATM systems, including GNSS, and to modify the wording of Item No. 3 on the Work Programme in this respect.

47.5 A36-WP/234, presented by Saudi Arabia, invited States who have not yet ratified the Cape Town Convention and the Protocol to do so for the benefit of both debtors and creditors.

47.6 A36-WP/256, presented by the Republic of Korea, contained a proposal by Korea to host an additional regional legal seminar in 2009, with the joint sponsorship of the Legal Bureau of ICAO. The proposed regional seminar would be aimed at States to which the ICAO Asia and Pacific Office is accredited.

47.7 In relation to Item No. 1 on the Work Programme (Compensation for damage caused by aircraft to third parties arising from acts of unlawful interference or from general risks), one delegation recalled the earlier deliberations which had taken place under Agenda Item 45 of the Commission, where two delegations had expressed the sentiment that the draft convention on general risks appeared to have attracted less interest than the draft convention dealing with unlawful interference. The delegation queried whether it was necessary to consider this point in the context of the work programme, as the Commission had envisaged to refer the outcome of the entire work of the Special Group, i.e. both draft conventions, for further consideration to the Legal Committee. On this point, one delegation considered that there could be room for further reflection in case it was assessed that a priority between the two draft conventions was needed. In this context, another delegation remarked that due to the expected heavy workload for the Legal Committee and the desire for a successful outcome of its deliberations, it would be upon the Council of ICAO to make a political decision as to which texts ought to be considered by the Legal Committee. In the ensuing discussion, a number of delegations expressed the view that both draft conventions ought to be referred to the Legal Committee on equal terms, and that both drafts should

receive the same attention by the Legal Committee without conferring any priority of one text over the other. In summarizing the discussion on this point, the Chairperson noted that the majority of delegations supported the submission of both draft texts to the Legal Committee and stated that there appeared to be no complete consensus regarding the issue of priority. She suggested that the Council could carefully consider the allocation of items to be considered by the Legal Committee, in the light of the availability of time and resources.

47.8 In discussing Item No. 3 of the General Work Programme of the Legal Committee, several delegations supported the inclusion of the regional multinational organisms as suggested in A36-WP/230. These delegations considered it of utmost importance to devise clear rules and guiding principles regarding the involvement of regional bodies in the implementation of CNS/ATM systems. One delegation also underlined the need for a clear global framework. The Delegation of the United States reiterated that its government had renewed its offer to make the Global Positioning System (GPS) available for the use by civil aviation. The delegation further stated that its government had adopted a policy of not resorting to selective availability for different users, and that the new generation of the hardware did not even contain the feature of selective availability. Another delegation recalled paragraphs 4 and 5 of Resolution A35-3 and emphasized the importance of providing technical and financial assistance to developing countries.

47.9 The Commission **agreed** to modify Item No. 3 of the General Work Programme of the Legal Committee to include the regional multinational organisms in the consideration of a legal framework. The Commission noted its understanding that once a model of a regional legal framework is developed by the Members of the European Civil Aviation Conference, such model could be distributed through ICAO to its Member States, and interested States may use the information as guidance material to develop their own regional legal framework as appropriate.

47.10 In relation to Item No. 4, the Commission noted A36-WP/234.

47.11 Consequently, the Work Programme of the Legal Committee was established as follows:

- 1) Compensation for damage caused by aircraft to third parties arising from acts of unlawful interference or from general risks;
- 2) Acts or offences of concern to the international aviation community and not covered by existing air law instruments;
- 3) Consideration, with regard to CNS/ATM systems including global navigation satellite systems (GNSS) and the regional multinational organisms, of the establishment of a legal framework;
- 4) International interests in mobile equipment (aircraft equipment);
- 5) Review of the question of the ratification of international air law instruments; and

- 6) *United Nations Convention on the Law of the Sea* – Implications, if any, for the application of the Chicago Convention, its Annexes and other international air law instruments.

47.12 The Commission also noted with appreciation the regional legal seminar proposed in
A36-WP/256.



European GNSS

Initiative for an EU Regulation on Third
Party Liabilities (TPL)

December 2006

Appendix 5

04/03/2008



FINMECCANICA

Scope

The Regulation on civil liability for damage resulting from the performing of Galileo services will:

- set out the TPL regime necessary for the successful development of Galileo services and applications in Europe, by ensuring appropriate and effective protection to the GOC and its licensees on the one hand and all users and the community on the other hand

Main principles are:

- Liability of licensee under contract with GOC (*)
- Limitation of licensee's liability up to a cap
- Compulsory Insurance Certificate to be obtained by the licensee
- Supplementary Compensation by Member States
- GOC subject to licensee's rules when providing services to end-users

(*) first-level service providers to be licensed on exclusive basis per geographical area, sector or type of business

Stakeholders

Italian Government, as originator:

- WG includes various pre-eminent Professors/Consultants and Finmeccanica Legal Department

MC, as promoter:

- All MC levels (SC, LWG...) will be involved in line with the plan

GJU/GSA, as supporter:

- Regulation is welcome, as early as possible (in the context of HoT v2)

EU Commission, as owner:

- Very well disposed and ready to receive the proposal of regulation

Member States

- Initiative taken by Italian Government ...other Governments to join?

Process

Proposal by Italian Government/Finmeccanica

- Draft Regulation – finalised on Dec 8, 06
- Commentary on each provision – to be finalised by Dec 20, 06

Preliminary assessment (legal/insurance) for harmonisation of Regulation with HoT

- Freshfields - met on Dec 12, 06
- PC+ISB/Marsh – conf call on Dec [18], 06

Presentation of the initiative general terms to SC and GJU/GSA (this document)

- SC – on Dec 13, 06
- GJU/GSA - by Dec 06

Involvement at operational level of MC (mainly LWG/IWG) and GJU/GSA experts

- Draft Regulation + Commentary - to be issued by Dec 06
- Galileo Liability Regime Workshop - Jan 11 (MC only) and 12 (MC+GSA/Commission), 07

Release of Draft Regulation/Commentary to EU Commission

- Communication - by Dec 06
- Meetings and works at Commission level – from January...

General Remarks	
<ul style="list-style-type: none"> The regulation envisages and is based on a system of licensees, probably but not necessarily, exclusively marketing Galileo Services in the area of a Member State. At the current state, there has not yet been a decision on such a system, neither on the Concessionaire nor the GSA level. Obviously, the GOC as concessionaire having the right to commercially exploit the Galileo System should carefully consider whether the licensee system, which currently is the main pivot of the regulation draft, is compliant with its business model or at least can be easily adopted (also ref. Specific Remarks on Definition of Licensee). 	
<ul style="list-style-type: none"> Due to the nature of the legal instrument, the regulation will only deal with the issue of liability for services rendered in the geographical scope mentioned under Article 3, i.e. the territory of the Member States. It will not and cannot deal with the liability issues which may arise with regard to services provided in other states. For territories outside of the Member States and with the legislative approach, this matter could only be dealt with in form of bilateral/multilateral (international) contracts e.g. with the proposed UNIDROIT convention. <p>In this respect the GOC should consider that, while Galileo is a commercial project, and an adequate and affordable 3rd party liability system will be a major aspect for the marketing success of the system, the legislative process under the EU is already a rather lengthy undertaking. Transferring this process to the international level via a convention is likely to exponentiate the time aspect even further. This is likely to further slow the implementation of a solution for the important liability issue and may endanger the commercial success of the system.</p> <p>Consequently, the long considered concept of a (two tier) private-public compensation fund should not be easily abandoned.</p>	
<ul style="list-style-type: none"> Providers of low-risk services will experience the compulsive insurance/compensation requirement as a high threshold for entering the service market and could be deterred. The requirements for compulsive insurance/compensation should be more flexible in order to take this into account. The currently envisaged possibility for Member States to lower the threshold by increasing their own liability to stop the resulting compensation gap may not be a commercially viable approach, especially as it calls for additional financial support by the Members States (ref. also Specific Remark on Article 7 No. 2). 	
<ul style="list-style-type: none"> While Article 4 identifies the geographical scope of the regulation it should be helpful to also explicitly define the personal scope which currently has to be derived from the implications expressed by the other provisions of the regulation. 	
<ul style="list-style-type: none"> The licensee will want the possibility of recourse against equipment manufacturers. Article 6 paragraph 5 would currently bar such a possibility. 	
<ul style="list-style-type: none"> The terms "space segment" and "ground control segment" in Article 6 require a definition under Article 3 	
Specific Remarks	
Provision	Comments / Reasons for proposed change

Whereas [...] (9) In compliance with the principle of subsidiarity, action at Community level is desirable to create a single set of rules	<ul style="list-style-type: none"> The regulation will have a massive impact on the Member States' own civil liability regimes, effectively superseding substantive law and in certain areas also procedural law of the Member States'. Consequently the regulation mentions the need for compliance with the principle of subsidiarity. Being a main requirement for EU-legislative acts, the concept, as it is elaborated in the Amsterdam Treaty Protocol on the application of the principles of subsidiarity, will have to be paid close attention to in achieving a watertight liability regime.
Article 3 (Definitions) [...] Licensee [...] and a) having its principal place of business, central administration and, if any, its registered office, located in a Member State and [...] b) [...] It is at all times effectively controlled by such States of nationals.	<ul style="list-style-type: none"> The envisaged liability regime has to be commercially attractive to the licensee – especially with regard to affordability of the compulsory financial security in comparison to the probable liability risks. Otherwise this definition may deter a future service provider from having administrative ties to the EU-Member States, drive him to establishing his principal base of business elsewhere and eventually damage the EU's industrial interests in the commercialisation of Galileo.
Article 3 (Definitions) [...] Incident [...] in connection with Article 7 No. 1 – limitation of liability to {300} SDR per incident.	<ul style="list-style-type: none"> In connection with the definition of incident the limitation of liability fails to provide for a minimal liability. In the event of severe accidents, victims could end up with an unacceptable low apportionment of damages. This could meet heavy resistance in the legislative process. The GDC should be prepared for an amendment which provides for a minimum of damages for each victim of an incident (which would of course require the restructuring of the limitation of liability concept, possibly with a combined fund and insurance security).
Article 6 No. 5 e)	<ul style="list-style-type: none"> The terms "space segment" and "ground control segment" require a definition under Article 3.
Article 6 No. 3 d) [...] act by any Government authorities <i>acting in the exercise of its functions.</i>	<ul style="list-style-type: none"> Erase the part in italics. The licensee/GDC should not be liable for <i>any</i> negligent or other wrongful act by a Government. Especially for Government acts outside their functions should liability of the licensee/GDC be excluded.
Article 7 No. 2	<ul style="list-style-type: none"> As has been discussed in Rome, the provision could pose a conflict with the

	<p>general prohibition on state aid under Article 87 EC-Contract. It should be ascertained, whether possible conflicts are already avoided in case state aids are foreseen as a funding possibility by way of an EU regulation. For legal certainty, the regulation should explicitly state that any support of an individual Member State to its registered licensees in accordance with Article 7 No. 2 shall not qualify as state aid under Article 87 EC-Contract.</p>
Article 7 No. 4	<ul style="list-style-type: none"> • Some legal systems in Europe allow for a limitation of liability even in case of reckless behaviour as described under Article 7 No. 4. This concept should also apply in this regulation. Otherwise the licensee and GOC would have to close this liability gap with additional means.
Article 9 No. 1	<ul style="list-style-type: none"> • Is the licensee obliged to constitute the fund only in case there is no insurance certificate in accordance with Article 8 covering his liability? Should be stated more clearly:
Article 12.3	<ul style="list-style-type: none"> • Of the three options given, public funding as per total turnover of the licensees controlled by the Member State seems a reasonable solution, adequately linking liability to a commercial interest.

DRAFT

REGULATION N...

on civil liability and compensation for damage resulting from the performing of Galileo services

Having regard to the Treaty establishing the European Community and in particular articles

Having ..

Whereas:

- (1) The conclusions of the European Council in Cologne (3 and 4 June 1999), Feira (19 and 20 June 2000), Nice (7 to 11 December 2000), Stockholm (23 and 24 March 2001), Laeken (14 and 15 December 2001), Barcelona (15 and 16 March 2002) and Brussels (20 and 21 March 2003) have stressed the strategic nature of the Galileo satellite radionavigation programme which is cofinanced by the European Union and the European Space Agency.
- (2) Galileo is the first European space programme to be financed and managed by the European Union in association with the European Space Agency (ESA). It is expected to contribute to the development of numerous applications in areas that are associated, directly or indirectly, with Community policies, such as transport (positioning and measurement of the speed of moving bodies), insurance, motorway tolls, law enforcement (surveillance of suspects, measures to combat crime), customs and excise operations (investigations on the ground, etc.), agriculture (grain or pesticide dose adjustments depending on the terrain, etc.), fisheries (monitoring of boat movements).
- (3) A European satellite navigation system will have also a positive impact on information and telecommunication industries developing a European market.
- (4) User requirements and user demands should be of key importance in deciding on the development of a European satellite navigation system and its characteristics, taking into account requirements developed by other relevant international bodies, such as the International Civil Aviation Organisation (ICAO), the International Maritime Organisation (IMO), the International Telecommunication Union (ITU) as well as the World Trade Organisation (WTO);
- (5) Galileo will offer several service levels, from open access to restricted access of various levels and all services are directly accessible worldwide. However, local bodies may have to make some adaptations to specific environments or user communities (tunnels, airports, ports, etc.). In addition, the satellite infrastructure can be complemented by regional and local components, particularly for producing the integrity message. The services offered by Galileo will cover the whole planet, particularly areas at a geographical disadvantage and the outermost regions of the European Union
- (6) Satellite navigation enables a user to determine his position in time and space to an unprecedented degree of precision at very little cost, thus explaining why it is widely used in all sorts of areas. However, open signals are extremely sensitive to interference or to deliberate - potentially hostile - manipulation. The need for a Public Regulated Service (PRS) is conditioned by the vulnerability of satellite navigation

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signals, the special features of the service and the very sensitive nature of the anticipated applications.

Disrupting or jamming the Galileo signal by the intelligent use of sources of interference in the hands of economic terrorists, criminals, hostile agents could prevent continuous signal reception over a wide geographical area, seriously impairing the efficiency of national security and police forces, or of economic activities, and even leading to the complete shutdown of services in some areas. The PRS, which secure service encrypted and resistant to jamming interference, must be reserved principally for the public authorities responsible for civil protection, national security and law enforcement which demand high level of continuity, especially in situation of crisis or presence of threats, and therefore deserve a specific discipline.

- (7) A number of other countries have expressed a wish to be involved in the programme in some way. Moreover, the Commission regards the Galileo programme as being of world importance and, as such, of interest to all third countries.
- (8) The Concil Regulation No 1321/2004 has established the European Global Navigation Satellite System (GNSS) Supervisory Authority (GSA) to give the strategic nature of the European satellite radio navigation programmes and the need to ensure that essential public interests are adequately defended and represented, in accordance with the relevant political orientations of the Council and financial decisions of the budgetary authorities. The Authority assists the Commission in matters involving satellite radio-navigation, particularly in cases where legislative and regulatory measures prove necessary.
- (9) In compliance with the principle of subsidiarity, action at Community level is desirable in order to create a single set of rules governing the civil liability of all Community Galileo services providers.
- (10) The supply of Galileo system services could result in serious damage to persons and assets if malfunctions affect the signal or end-user equipment. In particular, this might occur in the supply of services to such economic activities as the provision of air and sea transportation. Accordingly, it is appropriate to guarantee an adequate level of compensation for the victims of such damage, in order to strengthen the protection available to them and others with associated rights. The existence of a clear civil liability regime in the event of losses represents, in fact, a competitive advantage for the provision of the services and will facilitate their commercial development.
- (11) Consistent with current international regimes, in order to guarantee an adequate level of compensation it is appropriate to establish a strict liability system combined with a two-tier liability system, thus assuring victims of potentially full compensation.
- (12) In the event of incidents where the responsibility lies with several parties, it can be very difficult and onerous for the victims to determine who is actually responsible and to take action against them. Accordingly, it is appropriate to identify with certainty, via the application of simple and clear rules, just one party who is required to pay the compensation. This mechanism for the channelling of liability is routinely used by international civil liability regimes, in order to guarantee and strengthen the legal position of those who have suffered losses.
- (13) In the context of the Galileo system, it is appropriate to channel responsibility to the party that provided in the marketplace the Galileo service involved in the incident, since such party is easily identifiable by the victims. In principle, the supplier is either the Licensee or GOC, if the latter offers services directly and not via the Licensee.
- (14) The Galileo system is a partnership between Member States and European private industry that provides both commercial services and services of considerable public

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interest. Accordingly, in order to ensure full compensation for the victims of incidents, is it appropriate that the two-tier liability system comprises a first tier of compulsory financial security, arranged by the supplier of the service, and a second tier of public funds made available by the Member States. On the one hand, this cooperation allocates the charges and insurance costs for the reimbursement of losses fairly between Member States and private industry, while ensuring that they do not represent a barrier to the competitive supply of services, while, on the other, it strengthens the guarantees offered to the victims concerned.

- (15) The responsibility limit envisaged by the Regulation may turn out to be excessive for certain types of service, considering the real risks involved or the financial strength of the Licensee. Accordingly, it is desirable to allow States to set a lower responsibility limit, on condition that they guarantee the availability of sufficient public funds to offset such reduction.
- (16) Open services (OS) are offered free of user charges and without the characteristics of safety and precision afforded by the other services. Consumers are aware of this; accordingly, it is appropriate to exclude such services from the responsibility regime envisaged in the Regulation.
- (17) The Galileo system is only able to guarantee the provision of services with the characteristics and performance for which it was designed via the use of advanced technology and suitable equipment. In particular, the equipment available to end users is at risk of unauthorised modifications or falsifications, or may be produced without regard for the technical specifications needed to ensure that it functions correctly. The use of this type of equipment considerably increases the risk that performance does not comply with the required standards. Accordingly, in order to establish responsibility for the malfunctioning of end-user equipment, it is appropriate that such equipment be certified by a competent authority.

HAS ADOPTED THIS REGULATION:

Article 1

(Purpose of the regulation)

- 1. This Regulation lays down the rules concerning the civil liability and compensation for damage resulting from the performing of Galileo services.
- 2. This Regulation does not affect the application of the Convention on International Liability for Damage caused by Space Objects done in London, Moscow, Washington on March 29, 1972.
- 3. The Council Directive 85/374/EEC on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products as amended by Directive 1999/34/EC of the European Parliament and of the Council of 10 May 1999 does not apply in the field covered by this Regulation.

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Article 2

(Fields for action by the Community)

1. This Regulation establishes a harmonised regulatory framework for thein conjunction with:

(a) Regulation (EC) No. of the Europeanon the provision of Galileo services in Europe (and regulation for the certification of the licensee)

2. The measures referred to in paragraph 1 shall apply subject to the provisions of this Regulation.

(b) Regulation (EC) No. of the European....

Article 3

(Definitions)

For the purpose of this Regulation and of the measures of Article 4, the following definitions shall apply:

Augmentation means regional or local mechanisms such as the European Geostationary Navigation Overlay System (EGNOS). They provide the users of satellite-based navigation and timing signals with input information, extra to that derived from the main constellation(s) in use, and additional range/pseudo-range inputs or corrections to, or enhancements of, existing pseudo-range inputs. These mechanisms enable users to obtain enhanced performance such as increased accuracy, availability, integrity, continuity and reliability.

Certified end user equipment means any civil equipment designed to transmit, receive, or process satellite-based navigation and timing signals to provide value added services, or to operate with an augmentation, certified by.....

Damage means:

i. loss of life or personal injury;

ii. loss of or damage to property;

and each of the following to the extent determined by the law of the competent court:

iii. economic loss arising from loss or damage referred to in sub-paragraph (i) or (ii), insofar as not included in those sub-paragraphs, if incurred by a person entitled to claim in respect of such loss or damage;

iv. the costs of measures of reinstatement of impaired environment, unless such impairment is insignificant, if such measures are actually taken or to be taken, and insofar as not included in sub-paragraph (ii);

v. the costs of preventive measures, and further loss or damage caused by such measures.

End user means any private or public person that has entered into a contract with the licensee for the usage of the Galileo signal.

ESA means European Space Agency.

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Galileo (GNSS) means an autonomous civil European global satellite based navigation and timing system under civil control, for the provision of GNSS (Global Navigation Satellite System) services, designed and developed by the Community, its Member States, the European Space Agency and other entities.

Galileo local components means additional stations that through the use of augmentations, provide differential levels of accuracy and stringent integrity time-to-alarm requirements (within 1 second) of the Galileo services.

Galileo local elements are local mechanisms that provide the users of GALILEO satellite-based navigation and timing signals with input information, extra to that derived from the main constellation in use. Local elements may be deployed for additional performance around airports, seaports and in urban or other geographically challenging environments like in-door scenarios. Galileo will provide generic models for local elements.

Galileo regional components means an additional network of stations to oversee the integrity of the signals and a processing centre to provide the Galileo services.

Galileo signal means the electromagnetic signal generated by the GNSS which is formed by the space segment and the ground control segment. The ground control segment includes the regional and local components.

Galileo Services are¹:

- i) The **Open Service (OS)** that results from a combination of open signals, free of user charge, provides position and timing performances competitive with other GNSS systems.
- ii) The **Safety of Life Service (SoL)** that improves the open service performances providing timely warnings to the user when it fails to meet certain margins of accuracy (integrity). It is envisaged that a service guarantee will be provided for this service.
- iii) The **Commercial Service (CS)** that provides access to two additional signals, to allow for a higher data rate throughout and to enable users to improve accuracy. It is envisaged that a service guarantee will be provided for this service. This service also provides a limited broadcasting capacity for messages from service centers to users.
- iv) The **Public Regulated Service (PRS)** that provides, for governmental uses, position and timing to specific users requiring a high continuity of service, with controlled access. Two PRS navigation signals with encrypted ranging codes and data will be available.
- v) The **Search and Rescue Service (SAR)** that broadcasts globally the alert messages received from distress emitting beacons. It will contribute to enhance the performances of the international COSPAS-SARSAT Search and Rescue system.

GOC means Galileo Operating Company, the private company in charge to operate the Galileo system. It assures the commercial exploitation of the Galileo system either by contracts with licensees or by directly providing services in the marketplace.

¹ Communication from the Commission to the European Parliament and the Council - State of progress of the Galileo programme /* COM/2002/0518 final */ *Official Journal* 248, 15/10/2002 P. 0002 - 0022.

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GSA is the Community Agency (European GNSS Supervisory Authority) that manages the public interests relating to, and to be the regulatory authority for, the European GNSS programmes set up by Council Regulation (EC) n. 1321/2004².

Incident means any occurrence, or series of occurrences having the same origin, which causes damage or creates a grave and imminent threat of causing such damage; where an incident consist of a series of occurrence it shall be treated as having occurred on the date of the first such occurrence.

Licensee means any natural person, any legal person, whether profit-making or not, or any official body whether having its own legal personality or not, providing Galileo Services on an exclusive basis (for the relevant area and sector or type of activity) under contract stipulated with GOC and

- a) having its principal place of business, central administration and, if any, its registered office located in a Member State, and
- b) owned and continue to be owned directly or through majority ownership by Member States and/or nationals of Member States. It shall at all times be effectively controlled by such States or such nationals.

Licensee's State means the Member State where the licensee has its registered office, central administration or principal place of business, in accordance with the law of that Member State.

Malfunctioning of the Galileo end users equipment.....

Malfunctioning of the Galileo signal means absence of the Galileo signal, errors in the Galileo signal and/or degradation of the performances under the thresholds defined by the KPI's.

Personal injury means any physical damage with the exclusions of any psychological damage.

Preventive measures means any reasonable measures taken by any person after an incident has occurred to prevent or minimise damage.

Producer means the manufacturer of a finished product, the producer of any raw material or the manufacturer of a component part and any person who, by putting his name, trade mark or other distinguishing feature on the product presents himself as its producer. For the purpose of this Regulation it also includes any person who conceive, invent, formulate plans or device of a finished product.

Product means all movables even though incorporated into another movable or into an immovable.

Special Drawing Right, hereinafter referred to as SDR, means the unit of account defined by the International Monetary Fund and used by it for its own operations and transactions.

Article 4

(Geographical scope)

This Regulation shall apply exclusively to damage that occurs:

- (a) in the territory, including the territorial sea, of the Member States,

² O.J. L 246/1, 20.7.2004.

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(b) in the exclusive economic zone of the Member States, established in accordance with international law, or, if a Member State has not established such a zone, in an area beyond and adjacent to the territorial sea of that State determined by that State in accordance with international law and extending not more than 200 nautical miles from the baselines from which the breadth of its territorial sea is measured, and

(c) in the airspace above the territory and the territorial sea of the Member States.

Article 5

(Relationship to applicable International Convention)

This Regulation shall not apply to damage arising from an incident in respect of which liability of compensation falls within the scope of any of the relevant International Convention including any future amendments thereof, which is in force in the Member State concerned.

Article 6

(Liability of the licensee)

1. The licensee shall be the sole liable for damage deriving from an incident that occurs in the areas indicated in article 2 belonging to the State for which it has obtained its license and upon proof that such incident has been caused by the malfunctioning of the Galileo signal, whichever may be the reason of, or a malfunctioning of a certified end user equipment.

2. Where the damage engages the liability of more than one licensee, the licensees involved shall, in so far as the damage attributable to each licensee is not reasonably separable, be jointly and severally liable.

3. In any case no liability for damage shall attach to the licensee if it proves that the damage:

- a) results from an act of armed conflict, hostilities, terrorism, civil war, insurrection or
- b) results from a natural phenomenon of an exceptional, inevitable and irresistible character, or
- c) was wholly caused by an act or omission done with the intent to cause the damage by a third party or
- d) was wholly caused by the negligence or other wrongful act of any Government authorities acting in the exercise of its functions.

4. If the licensee proves that the damage resulted wholly or partially either from an act or omission done with the intent to cause damage by the person who suffered the damage or from the negligence of that persons, the licensee may be exonerated wholly or partially from their liability to such person.

5. No claim for compensation for damage under this Regulation or otherwise may be made against:

- (a) the servants, agents or any other persons who performs services for the licensee;

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(b) any person performing salvage operations on the instructions of a competent public authority;

(c) any person taking preventive measures;

(d) all servants or agents of persons mentioned in subparagraphs (b) and (c);

(e) the producer of the products used for the space segment and for the ground control segment

unless the damage resulted from their personal act or omission, committed with the intent to cause such damage, or recklessly and with knowledge that such damage would probably result.

6. In no case the licensee shall be liable if the damage was caused by a malfunctioning of the Galileo Signal or an end user equipment, whether or not certified, provided for an open service (OS).

Article 7

(Limitation of liability)

1. The licensee shall be entitled to limit his liability under this regulation in respect of any one incident to an amount of [300] million SDRs.

2. Notwithstanding paragraph 1, the licensee's State, having regard to the nature of the services provided and to the likely consequences of an incident originating therefrom, may establish a lower amount of liability of the licensee, provided that in no event shall any amount so established be less than [50] million SDRs, and provided that the licensee's State ensures that public funds shall be made available up to the amount established pursuant to paragraph 1. The amounts established by the licensee's State in accordance with this paragraph shall apply wherever the incident occurs.

3. Interest and costs awarded by a court in actions for compensation of damage shall be payable in addition to the amounts referred to paragraphs 1 and 2.

4. The licensee shall not be entitled to limit its liability under this Regulation if it is proved that the damage resulted from his personal act or omission committed with the intent to cause such damage, or recklessly and with knowledge that such damage would probably result.

5. Taking into account, *inter alia*, the risk of damage resulting from a incident, changes in the monetary values, and the capacity of the insurance market, the GSA may propose to the Member States to amend the limits of liability referred to in paragraphs 1 and 2.

Article 8

(Financial Security)

1. The licensee shall be required to maintain insurance or other financial security covering his liability for damage to not less than the amount established in paragraph 1 or in paragraph 2 of Article 7.

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2. A compulsory insurance certificate attesting that insurance or other financial security is in force in accordance with the provisions of this Regulation shall be issued to each licensee after the [GSA] has determined that the requirements of Article 8 have been complied with.

3. This compulsory insurance certificate shall be in the form of the model set out in Annex I and shall contain the following particulars:

[(a).....

(b) name and principal place of business of insurer or other person giving security and, where appropriate, place of business where the insurance or security is established; and

(f) period of validity of certificate, which shall not be longer than the period of validity of the Insurance or other security].

4. An insurance or other financial security shall not satisfy the requirements of this article if it can cease, for reasons other than the expiry of the period of validity of the insurance or security specified in the certificate under paragraph 2, before thirty days have elapsed from the date on which notice of its termination is given to the authority referred to in paragraph 2, unless the compulsory insurance certificate has been surrendered to this authority or a new certificate has been issued within the said period. The foregoing provisions shall similarly apply to any modification which results in the insurance or security no longer satisfying the requirements of this article.

5. The funds provided by insurance, by other financial security or by the State of licensee pursuant to paragraph 1 of this article or paragraph 2 of article 7 shall be exclusively available for compensation due under this Regulation.

6. No insurer or other financial guarantor shall suspend or cancel the insurance or other financial security provided pursuant to paragraph 1 of this article or paragraph 2 of article 7, without giving notice in writing of at least two months to the competent public authority.

Article 9

(Constitution of the Fund)

1. For the purpose of benefiting from the limitation provided for in paragraph 1 of Article 7, the licensee shall constitute a fund with the court or other competent authority of any one of the Member States in which action is brought under Article 14 or, if no action is brought, with any court or other competent authority in any one of the Member States in which the action can be brought under Article 14. The fund shall be constituted for the total sum representing the licensee's financial security established according to Article 8 or for a lower amount if it is so decided by the court or by the competent authority.

2. The State that, in accordance with article 8, paragraph 1, has established that the Licensee shall maintain an insurance or other financial security of a lower amount in respect of the its liability, shall contribute to the fund up to the limit of liability of the licensee.

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3. The fund can be constituted either by depositing the sum or by producing a bank guarantee or other guarantee, acceptable under the law of the Member States where the fund is constituted, and considered to be adequate by the court or other competent authority.
4. The fund shall be distributed among the claimants in proportion to the amounts of their established claims.
5. Notwithstanding paragraph 4, claims in respect of death or personal injury have priority over other claims save to the extent that the aggregate of such claims exceeds (two thirds) of the total financial security of the licensee.
6. If, before the fund is distributed, the licensee or any person providing him insurance or other financial security has, as a result of the incident in question, paid compensation for damage, such person shall, up to the amount it has paid, acquire by subrogation the rights which the person so compensated would have enjoyed under this Regulation.
7. The right of subrogation provided for in paragraph 6 may also be exercised by a person other than those mentioned therein in respect of any amount of compensation for damage which he may have paid by only to the extent that such subrogation is permitted under the applicable national law.
8. Where the licensee or any other person establishes that it may be compelled to pay at a later date in whole or in part any such amount of compensation, with regard to which such person would have enjoyed a right of subrogation under paragraphs 6 or 7 of this Article, had the compensation been paid before the fund was distributed, the Court or other competent authority of the State where the fund has been constituted may order that a sufficient sum shall be provisionally set aside to enable such person at such later date to enforce his claim against the fund.
9. Claims in respect of expenses reasonably incurred or sacrifices reasonably made by the licensee voluntarily to prevent or minimize damage shall rank equally with other claims against the fund.
10. The insurer or other person providing financial security shall be entitled to constitute a fund in accordance with this Article on the same conditions and having the same effect as if it were constituted by the licensee. Such a fund may be constituted even if, under the provisions of paragraph 4 of Article 7, the licensee is not entitled to limit its liability, but its constitution shall in that case not prejudice the rights of any claimant against the licensee.

Article 10

(Claim against the insurer)

1. Any claim for compensation for damage may be brought directly against the insurer or other person providing financial security for the liability of the licensee for damage. In such case the defendant may benefit from the limit of liability prescribed in accordance Article 7.
2. The defendant may further invoke the defences (other than the bankruptcy or winding up of the licensee) which the licensee would have been entitled to invoke. Furthermore, the defendant may invoke the defence that the damage resulted from the recklessness of the licensee, but the defendant shall not invoke any other defence which the defendant might have been entitled to invoke in proceedings brought by the

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licensee against the defendant. The defendant shall in any event have the right to require the licensee to be joined in the proceedings.

Article 11

(Supplementary Compensation)

1. A supplementary compensation shall be paid to any person suffering damage if such person has been unable to obtain full and adequate compensation because:
 - (a) the damage exceeds the licensee's liability as limited under Article 7, paragraph 1,
 - (b) no liability arises under article 6, paragraph 1, in so far as the damage is a consequence of one or more circumstances listed in paragraph 3 of such article.
 - (c) the licensee liable for the damage under this regulation is financially incapable of meeting his obligations in full and any financial security that may be provided under article 8 does not cover or is insufficient to satisfy the claims for compensation for the damage.
2. The licensee shall be considered financially incapable of meeting its obligations and a financial security shall be treated as insufficient if the person suffering the damage has been unable to obtain full satisfaction of the amount of compensation due under this Regulation after having taken all reasonable steps to pursue the legal remedies available to him.
3. Expenses reasonably incurred or sacrifices reasonably made by the licensee voluntarily to prevent or minimize damage shall be treated as damage for the purposes of this Article.

Article 12

(Contribution to the Supplementary Compensation)

1. In the case the damage exceeds the licensee liability under art. 7, paragraph 1, Member States shall make available public funds up to a total amount equal to the difference between the amount of the damage and such liability. In any case the total amount of public funds shall not exceed [600] millions SDRs per incident.
2. If the supplementary compensation shall be paid because no liability arises under article 11, paragraph 1, lett. b), or the licensee is financially incapable according to article 11, lett. c) the total amount of public funds made available by Member States shall not exceeds [900] millions SDRs per incident.
3. Member States will contribute to the amounts under paragraphs 1 e 2 proportionally to
4. Compensation for damage in accordance with paragraph 1 and 2, shall be distributed equitably without discrimination on the basis of nationality, domicile or residence.
5. If the damage to be compensated does not require the total amount under paragraph 1 and 2, the contributions shall be reduced proportionally.

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6. The interest and costs awarded by a court in actions for compensation of damage are payable in addition to the amounts awarded pursuant to paragraphs 1 and 2 shall be proportionate to the actual contributions made by the Member States.

Article 13

(Notification of Damage and call for funds)

1. The Member State whose courts have jurisdiction shall inform the other Member States as soon as it appears that the damage caused by the incident exceeds, or is likely to exceed, the amount available under Article 7 and that contributions under Article 11 may be required.

2. Member States shall without delay make all the necessary arrangements to settle the procedure for their relations in this connection.

3. Following the notification referred in paragraph 1, the Member State whose courts have jurisdiction shall request the other Member States to make available the public funds required under Article 11 to the extent and when they are actually required and shall have exclusive competence to disburse such funds.

Article 14

(Jurisdiction)

1. Except as otherwise provided in this Article, jurisdiction over actions for damages under this Regulation shall lie with the courts of the Member States within whose territory the incident occurred.

2. Where a incident occurs within the areas defined by Article 2, a, ii) and iii) jurisdiction over actions concerning damage from that incident shall, for the purposes of this Regulation, lie only with the courts of that State concerned. Nothing in this paragraph shall be interpreted as permitting the exercise of jurisdiction in a manner which is contrary to the international law of the sea, including the United Nations Convention on the Law of the Sea.

3. Where a incident does not occur within the territory of any Member State, or within an area as defined in Article 2, a, ii) and iii) or where the place of the incident cannot be determined with certainty, jurisdiction over such actions shall lie with the courts of the Licensee State of the Licensee liable.

Article 15

(Basis of claims)

Any action for damages against the Licensee can only be brought subject to the conditions and such limits of liability as are set out in this Regulation, without prejudice to the question as to who are the persons who have the right to bring suit and what are their respective rights. In any such action, punitive, exemplary or any other non-compensatory damages shall not be recoverable.

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Article 16 (Disbursements, proceeding)

1. Each Member States shall ensure that persons suffering damage may enforce their rights to compensation without having to bring separate proceedings according to the origin of the funds provided for such compensation.
2. If the courts having jurisdiction are those of a Member States other than the State of the Licensee, the public funds required under Article 11, as well as interest and costs awarded by a court, may be made available by the first-named Member State.
3. The State of Licensee shall reimburse to the other Member State any such sums paid under paragraph 2. These two Member States shall agree on the procedure for reimbursement.
4. If the courts having jurisdiction are those of a Member State other than the Licensee State, the Member State whose courts have jurisdiction shall take all measures necessary to enable the Licensee State to intervene in proceedings and to participate in any settlement concerning compensation.

Article 17 (Limitation of action)

1. Rights of compensation under this Regulation shall be extinguished unless an action is brought thereunder within [three years] from the date when the claimant knew or ought reasonably to have known of the damage.
2. In no case, however shall an action be brought later then [six years] from the date of the incident which caused the damage.
3. Where the incident consists of a series of occurrences having the same origin, the six years period mentioned in paragraph 2 shall run from the date of the last of such occurrences. Where the incident consists of a continuous occurrence, such period shall run from the end of that continuous occurrence.

Article 18 (Application of the Regulation to the GOC)

1. In the case of one or more Galileo services are provided by the GOC to the end users, the provisions of this Regulation will apply also to the latter.
2. Notwithstanding paragraph 1, the previsions laid down in article 7, paragraph 2, will not apply to the GOC.
3. For the purpose of article 14, paragraph 3, the jurisdiction shall lie with the French courts.