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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.

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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).

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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.

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.

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

- C Coordinating with regional bodies or other entities which are managing, facilitating or otherwise coordinating relationships between system operators or service providers
- C Monitoring, through the Universal Oversight Audit Programme, compliance by GNSS system operators and service providers with the applicable technical standards, operational and legal requirements
- C 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 —