

AGREEMENT

between the European Community, the European Space Agency and the European Organisation for the Safety of Air Navigation on a European Contribution to the development of a global navigation satellite system (GNSS)

THE EUROPEAN COMMUNITY, hereafter referred to as the 'Community', represented by

and

THE EUROPEAN SPACE AGENCY, established by the Convention of the European Space Agency opened for signature in Paris on 30 May 1975 (hereafter referred to as 'ESA'), represented by Antonio Rodotà, Director-General,

and

THE EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION, established by the Convention relating to Cooperation for the Safety of Air Navigation of 13 December 1960, as amended by the Protocol of 12 February 1981 (hereafter referred to as 'Eurocontrol'), represented by Yves Lambert, Director-General,

(hereafter collectively referred to as 'the Parties'),

TAKING NOTE that studies on navigation by satellite are evolving from research to the definition of an operational application system and that these have reached a sufficient degree of maturity for a European contribution to a global navigation satellite system thereby enhancing the involvement of European industry in this field;

TAKING NOTE of the interest expressed by European Governments in a European contribution to satellite navigation as expressed on the occasion of the European Civil Aviation Conference meeting of 10 June 1994;

HAVING REGARD to the communication from the Commission of the European Communities (hereafter referred to as the 'Commission') on satellite navigation services of 14 June 1994, the European Parliament Resolution of 13 November 1994, the Resolution of the Council of the European Union of 19 December 1994 on the European contribution to the development of a Global Navigation Satellite System (GNSS), the conclusions of the Council of the European Union of 14 March 1995, inviting the European Commission to contribute to the implementation of the Global Navigation Satellite System (GNSS 1) by taking all necessary measures for the leasing of the AOR-E and IOR Inmarsat III transponders, and Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network;

HAVING REGARD to the ESA Council's approval of this Agreement on 24 June 1997 under Article 14(1) of the Convention of the European Space Agency;

HAVING REGARD to Measure 83/22 taken by the Eurocontrol Permanent Commission on 31 January 1995, pursuant to Article 11 of the Convention relating to Cooperation for the Safety of Air Navigation, as amended on 12 February 1981;

RECOGNIZING the necessity of coordinating further their activities in order to ensure the credibility and effectiveness of a European involvement in this domain, in particular with regard to the development of a satellite navigation system using Inmarsat III navigation payloads for which the Parties submitted a proposal entitled the European Geostationary Navigation Overlay Service (EGNOS) which was accepted by the Inmarsat Council on 21 November 1994 and also on 15 November 1995,

HAVE AGREED AS FOLLOWS:

*Article 1***Purpose**

The purpose of this Agreement shall be to establish cooperation between the Parties with a view to providing a European contribution to the development of a Global Navigation Satellite System. That concerted effort shall be aimed at placing Europe in a position to allow provision for a satellite navigation service which, as far as practicable, satisfies the requirements of civil users for operational use independently of other means of radio navigation and position.

*Article 2***Definitions**

For the purpose of this Agreement:

'Global Navigation Satellite System' hereafter referred to as 'GNSS' means a satellite-based worldwide position-, velocity-, and time-determination system which fulfils on a permanent basis potential user requirements for civil applications.

'GNSS 1': means an initial implementation of GNSS, based upon the existing United States of America and Russian military satellite navigation systems, augmented by civil systems, designed to provide the user with sufficient independent monitoring of the whole system.

'GNSS 2': means a worldwide civil navigation satellite system to be internationally controlled and managed, which meets the requirements of all categories of users for position, velocity and time determination.

'European Geostationary Navigation Overlay Service' (EGNOS): means a European augmentation of existing satellite navigation and positioning systems, using geostationary satellites with the aim of enhancing the performance of these systems over Europe and providing a capability over the whole geostationary broadcast areas. EGNOS is a European component of GNSS 1.

*Article 3***Scope**

The scope of cooperation between the Parties is covered by this Agreement and further detailed in Annexes I and II. It covers the following activities:

- (a) the development and validation of an operational capability of a European contribution to GNSS 1, using existing satellite systems and any appropriate augmentation to fulfil users requirements;
- (b) coordination of each Party's actions for the attainment of a full operational capability of GNSS 1;

- (c) in parallel with GNSS 1, preparatory work for the definition and design of GNSS 2.

*Article 4***The Parties' contributions to GNSS 1**

The Parties shall take the appropriate measures, in accordance with their respective rules and procedures, and shall use their best endeavours, to contribute in due time to GNSS 1 as specified in Annex II, as follows:

- (a) ESA shall contribute through the implementation of its Advanced Research in Telecommunication Systems (ARTES) Programme, in particular element 9, which includes the technical developments of EGNOS and its operation for testing and technical validation purposes;
- (b) Eurocontrol shall provide the civil-aviation user requirements and validate the resulting system in the light of these requirements. Eurocontrol shall also support the European efforts to ensure that GNSS 1 is operationally acceptable for civil aviation;
- (c) the Community shall contribute to the consolidation of the requirements of all users and to the validation of the resulting system in the light of such requirements, in particular in the framework of its Trans-European Networks and Research and Development actions, without prejudice to legislation on the technical harmonisation procedures such as those on aircraft and air traffic management equipment.

The Community shall, in particular, also provide for the establishment of EGNOS by taking all appropriate measures, including the leasing of geostationary transponders.

*Article 5***Working arrangements between the Parties**

1. To ensure progressive development of their cooperation, a Joint Tripartite Committee composed of the Parties is hereby set up with the objective of monitoring the implementation of this Agreement and formulating guidelines and coordinating common approaches towards the realisation of this Agreement. The Joint Tripartite Committee shall meet at least once a year or more frequently, if necessary, at the request of one of the Parties, and shall adopt its own rules of procedure.
2. The Joint Tripartite Committee shall be assisted by a Secretariat to provide day-to-day administrative support and, upon request, organise technical support. The Parties shall undertake, in accordance with their respective rules and procedures, to contribute jointly to such administrative support.
3. The Joint Tripartite Committee shall carry out the tasks specified in this Agreement, by:

- (a) exchanging information on the progress made in activities related to the scope of this Agreement and exchanging relevant documentation and results emanating from the contributions of the Parties under this Agreement;
 - (b) inviting representatives from each of the Parties to participate in meetings relating to those activities which form the basis of this Agreement;
 - (c) exchanging information and coordinating, as far as possible, before contacts with non-European third parties when such contacts are relevant to this Agreement;
 - (d) formulating proposals towards arrangements necessary for the future operational service of positioning and navigation;
 - (e) submitting proposals for the organisation of the Secretariat support.
4. Any modification or update on the technical contents of Annexes I and II which have no impact on the scope of this Agreement, especially on its financial and operational provisions, may be approved by the Joint Tripartite Committee, by a unanimous decision.

Article 6

Exchange of information and disclosure

1. Each Party shall exchange with the other Parties all information at its disposal which may be required for the implementation of this Agreement, subject to its own rules on exchange of information.
2. Except as otherwise provided, no Party shall disclose any information exchanged in connection with this Agreement to any person other than those employed by them or officially entitled to handle such information (including the Member States of each organisation) nor use it for commercial purposes. Such disclosure shall extend only so far as may be necessary for the purpose of this Agreement and shall be in strict confidence.

Article 7

Rights and properties

1. Each Party shall, in accordance with its own rules and procedures, administer or retain the property and commercial rights in the software, equipment and documentation which it has financed and developed within the framework of its own activities in implementing this Agreement.
2. Specific arrangements between the Parties may be required for joint developments made for the purpose of this Agreement.

Article 8

Financial arrangements

1. Each Party shall ensure that the appropriate financial arrangements are made in good time and in ac-

cordance with its own procedures, in order to discharge its own responsibilities under this Agreement and Annexes.

2. Upon completion of the EGNOS testing and technical validation, new financial arrangements shall be required to be in place.

Article 9

Contract authority and procedures

All contracts that are required for the implementation of this Agreement and are concluded by one party shall be concluded in accordance with the normal procedures of that Party, without prejudice to Article 7(2).

Article 10

Liability

1. The Parties hereby agree that, with respect to activities undertaken pursuant to this Agreement, no Party shall make any claim against any other Party with respect to injury or death of its employees, or any person acting on its behalf, or with respect to damage of any kind to or loss of its property, caused by any of the Parties, whether such injury, death, damage or loss arises through negligence or otherwise, except in the case of gross negligence or wilful misconduct.
2. In the event of a claim from a third party resulting from the Parties' implementation of their respective contributions as specified in Annex II, each Party shall be liable only to the extent that the claim relates to that Party's contribution.
3. The parties hereby agree that only the Party that has contracted with a third party in the context of the execution of the Parties' contributions as specified in Annex II shall be liable for any claims from that third party resulting from the contract in question.

Article 11

Force majeure

No Party shall be considered in breach of this Agreement if any failure to provide its contribution hereunder arises from or is caused by *force majeure*.

Article 12

Public relations

1. Each Party shall undertake to coordinate with the others in advance concerning its own or joint public-relations activities relating to subjects covered by this Agreement.
2. In all relevant media activities, the role of each Party in this Agreement shall be clearly identified and mentioned.
3. The detailed arrangements for implementing public-relations activities provided for in this Article shall be adopted jointly.

*Article 13***Amendments**

1. This Agreement shall be amended only by unanimous written agreement of the Parties.
2. Should any Party encounter problems in the course of its respective contribution, including financial contribution, the Parties agree to examine, in the framework of the Joint Tripartite Committee, ways of achieving the planned contributions and review, to the extent necessary, the objectives and the content of this Agreement.

*Article 14***Participation by third parties**

This Agreement may be opened to participation by other parties that are able to contribute to the fulfilment of the tasks under this Agreement. Amendments in accordance with the procedure laid down in Article 13 shall then be made for that purpose.

*Article 15***Settlement of disputes**

1. Any disputes which may arise between the parties relating to the interpretation or application of this Agreement or its Annexes shall be submitted for direct negotiations within the Joint Tripartite Committee.
2. If it is not possible to settle the dispute in accordance with paragraph 1, any Party may notify the others of the appointment of an arbitrator; the other Parties shall then each appoint their own arbitrator within two months.
3. The Joint Tripartite Committee shall appoint two additional arbitrators by unanimous decision.

4. The arbitrators' decisions shall be taken by majority vote.

5. Each party to the dispute shall take the appropriate steps required to implement the arbitrators' decisions.

*Article 16***Annexes**

This Agreement contains Annexes I and II which shall form an integral part hereto. Article 5(4) contains the procedure for the updating and modification of the Annexes.

*Article 17***Entry into force and termination**

1. This Agreement shall enter into force on the date on which the Parties sign it, and shall remain in force until completion of the activities specified in Annexes I and II or until such time as this Agreement is replaced by another cooperation agreement.
2. Notwithstanding paragraph 1, any Party may nevertheless terminate the Agreement upon completion of the EGNOS technical and operational validation, by notifying the other Parties of its intention six months in advance.
3. In the event of termination of the Agreement by one of the parties in accordance with paragraph 2, the Parties shall agree on all appropriate measures to be taken.

*Article 18***Authentic texts**

This Agreement is signed in three original copies in the Danish, Dutch, English, Finnish, French, German, Greek, Italian, Portuguese, Spanish and Swedish languages, each text being equally authentic.

En fe de lo cual, los abajo firmantes, debidamente facultados, han firmado el presente Acuerdo.

Til bekræftelse heraf har undertegnede befuldmægtigede underskrevet denne aftale.

Zu Urkund dessen haben die hierzu gehörig befugten Unterzeichneten dieses Übereinkommen unterzeichnet.

Προς πίστωση των ανωτέρω, οι υπογράφωντες, δεόντως εξουσιοδοτημένοι, υπέγραψαν την παρούσα συμφωνία.

In witness whereof, the undersigned, duly empowered to that effect, have signed this Agreement.

En foi de quoi, les soussignés, dûment habilités, ont signé le présent accord.

In fede di che, i sottoscritti, debitamente autorizzati, hanno firmato il presente accordo.

Ten blijke waarvan de ondergetekenden, daartoe naar behoren gemachtigd, deze overeenkomst hebben ondertekend.

Em fé do que, os abaixo assinados, devidamente autorizados para o efeito, assinam o presente acordo.

Tämän vakuudeksi alla mainitut täysivaltaiset edustajat ovat allekirjoittaneet tämän sopimuksen.

Till bevis härpå har undertecknade befullmäktigade undertecknat detta avtal.

Hecho en Luxemburgo, el dieciocho de junio de mil novecientos noventa y ocho.

Udfærdiget i Luxembourg, den attende juni nitten hundrede og otteoghalvfems.

Geschehen zu Luxemburg am achtzehnten Juni neunzehnhundertachtundneunzig.

Έγινε στο Λουξεμβούργο, στις δεκαοκτώ Ιουνίου χίλια εννιακόσια ενενήντα οκτώ.

Done at Luxembourg on the eighteenth day of June in the year one thousand nine hundred and ninety-eight.

Fait à Luxembourg, le dix-huit juin mil neuf cent quatre-vingt-dix-huit.

Fatto a Lussemburgo, addì diciotto giugno millenovecentonovantotto.

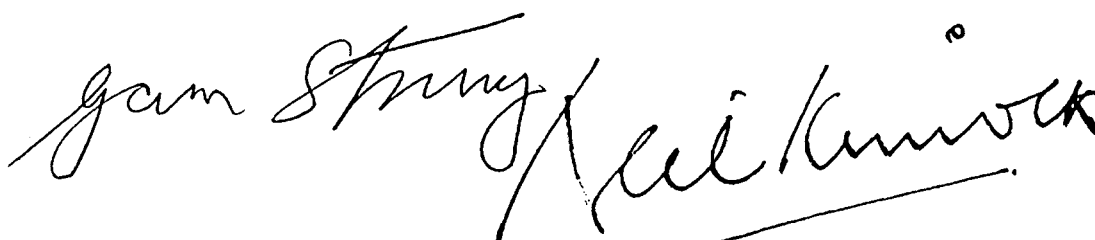
Gedaan te Luxemburg, de achttiende juni negentienhonderd achtennegentig.

Feito no Luxemburgo, em dezoito de Junho de mil novecentos e noventa e oito.

Tehty Luxemburgissa kahdeksantentoista päivänä kesäkuuta vuonna tuhatyhdeksänsataayhdeksänkymmentäkahdeksan.

Som skedde i Luxemburg den artonde juni nittonhundra nittioåtta.

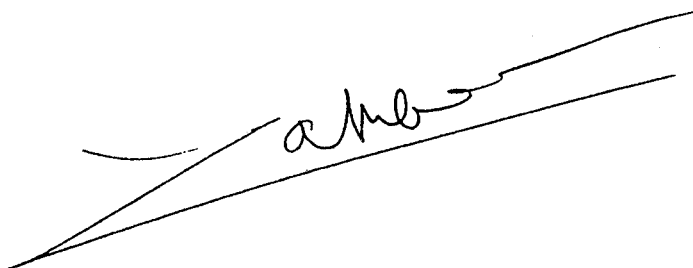
Por la Comunidad Europea
 For Det Europæiske Fællesskab
 Für die Europäische Gemeinschaft
 Για την Ευρωπαϊκή Κοινότητα
 For the European Community
 Pour la Communauté européenne
 Per la Comunità europea
 Voor de Europese Gemeenschap
 Pela Comunidade Europeia
 Euroopan yhteisön puolesta
 För Europeiska gemenskapen



Por la Agencia Espacial Europea
 For Den Europæiske Rumorganisation
 Für die Europäische Weltraumorganisation
 Για την Ευρωπαϊκή Υπηρεσία Διαστήματος
 For the European Space Agency
 Pour l'Agence spatiale européenne
 Per l'Agenzia spaziale europea
 Voor het Europees Ruimteagentschap
 Pela Agência Espacial Europeia
 Euroopan avaruusjärjestön puolesta
 För Europeiska rymdorganisationen



Por la Organización Europea para la Seguridad de la Navegación Aérea
 For Den Europæiske Organisation for Luftfartssikkerhed
 Für die Europäische Organisation zur Sicherung der Luftfahrt
 Για τον Ευρωπαϊκό Οργανισμό για την Ασφάλεια της Αεροναυτιλίας
 For the European Organisation for the Safety of Air Navigation
 Pour l'Organisation européenne pour la sécurité de la navigation aérienne
 Per l'Organizzazione europea per la sicurezza della navigazione aerea
 Voor de Europese Organisatie voor de veiligheid van de luchtvaart
 Pela Organização Europeia para a Segurança da Navegação Aérea
 Euroopan lentoturvallisuusjärjestön puolesta
 För Europeiska organisationen för luftfartssäkerhet



*ANNEX I***1. Introduction**

The scope of cooperation between the Parties, as set out in Article 3 of this Agreement, is detailed in the activities below.

2. European contribution to GNSS 1: Article 3(a)

This contribution involves the development of augmentation systems to the current satellite-based radio-navigation and positioning systems in order to meet civil user requirements (land, sea, air, and other non-transport user requirements) over Europe and over the whole geostationary broadcast areas.

It is composed of the following major activities:

- identification of user requirements,
- development, testing, technical and operational validation of the European Geostationary Navigation Overlay Service (EGNOS), which is a wide-area augmentation of existing satellite-based radio-navigation and positioning systems, relying on the use of geostationary satellites, providing additional satellite-ranging capability, integrity and wide-area differential information to users,
- additional augmentation (e.g. local area augmentation, receiver autonomous integrity monitoring, etc.),
- development, testing and validation of user equipment,
- certification of European GNSS 1 elements.

A more detailed description of the European contribution to GNSS 1 is provided in Annex II.

3. Transition to a full operational capability of GNSS 1: Article 3(b)

The Parties undertake to identify mechanisms to accommodate possible further inputs to attain a full operational capability of GNSS 1, which will require in particular additional space capacity.

4. Preparatory work for GNSS 2: Article 3(c)

The parties will liaise on preparatory work for the definition and design of GNSS 2, including studies for the preparation of an in-orbit demonstration to be undertaken in the time-frame 1997-2000. Candidate system configurations shall be studied to subsequently identify and initiate critical research and technology developments and carry out early trials of selected GNSS 2 concepts.

The preparatory work for GNSS 2 includes the following:

- mission definition (identification of additional user requirements, signal design requirements, demonstration system applications definition),
- system definition (system options, demonstration system design, definition of demonstration programme),
- predevelopment activities in preparation of the GNSS 2 technology,
- development of an experimental navigation payload and the performance of system simulation tests and in-orbit flight demonstrations,
- GNSS 2 architectural design (design of a complete navigation satellite system including its logistic and operational aspects).

*ANNEX II***1. Introduction**

This Annex provides a breakdown of the contributions of the Parties referred to in Article 4. They are related to the design, development and implementation of EGNOS up to the completion of a first implementation phase involving the use of at least two geostationary navigation transponders. A description of EGNOS is given below.

The EGNOS system is an augmentation of existing satellite-based radio-navigation and positioning systems using geostationary satellites that will enhance the performance of these systems over Europe and more generally over the whole geostationary broadcast area(s).

By using navigation transponders on geostationary satellites and processing data from a network of terrestrial monitoring stations, EGNOS shall provide additional satellite ranging capability, service integrity and wide area differential (WAD) correction data. The aim of the WAD service is to improve the accuracy of existing satellite-based radio-navigation systems, in particular over Europe. The EGNOS system will improve the overall satellite navigation service availability.

The EGNOS infrastructure will consist of:

- mission control centres (MCCs),
- navigation transponders on geostationary satellites,
- navigation land earth stations (NLEs) for accessing the navigation transponders,
- ranging and integrity monitoring stations (RIMSs),
- upgraded RIMSs for accurate orbit determination of the geostationary satellites hosting the navigation transponders,
- a network of reference stations for verifying the integrity of the WAD corrections computed by EGNOS. Simplified RIMSs will be used as reference stations.

2. ESA contribution

ESA shall contribute through the implementation of its ARTES programme, in particular Element 9 thereof.

In particular, ESA shall undertake the following activities:

- EGNOS project management,
- mission analysis and system definition,
- early trials,
- test and simulation,
- ranging-system development,
- integrity-system development,
- WAD system development,
- testing and technical validation of EGNOS, including provisions for ground communications and MCCs running costs during the testing and validation period.

3. Eurocontrol contribution

Eurocontrol shall undertake, in the context of its satellite navigation applications activities and in close cooperation with the International Civil Aviation Organisation (ICAO), the following:

- provision of civil aviation user requirements,
- operational testing and validation for civil aviation GNSS 1 users. This will include static ground measurements, dedicated flight trials and data recording campaigns on commercial airliners,
- support to the European activities to ensure that GNSS is operationally acceptable for civil aviation. This work shall be carried out with the widest cooperation possible within the civil aviation environment, including the Joint Aviation Authorities (JAA).

4. Community contribution

The Community shall undertake, in accordance with its relevant procedures in the context of the Trans-European Network and the framework programmes on research and development, to contribute to the following tasks:

- consolidation of user requirements relative to GNSS 1,
 - design, development and support of the standardization effort of GNSS 1 user equipment, for all types of application (maritime, civil aviation, land transport),
 - analysis of the integration aspects in the user vehicles, in preparation of validation trials,
 - provision of at least two satellite links for the implementation of EGNOS (in particular lease of AOR-E and IOR Inmarsat III transponders and of necessary facilities in corresponding NLESs),
 - performance of trials in operational conditions to validate user requirements and user equipment prototypes.
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