



**Brussels, 5 December 2017
(OR. en)**

14031/17

**Interinstitutional File:
2017/0271 (NLE)**

LIMITE

**AVIATION 153
RELEX 944
USA 55**

LEGISLATIVE ACTS AND OTHER INSTRUMENTS

Subject: Amendment 1 to Memorandum of Cooperation NAT-I-9406 between the
United States of America and the European Union

AMENDMENT 1
TO MEMORANDUM OF COOPERATION NAT-I-9406
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

MOC/USA/EU/en 1

MOC/USA/EU/en 2

WHEREAS the United States of America and the European Union desire to amend Memorandum of Cooperation NAT-I-9406 between the United States of America and the European Union signed at Budapest on 3 March 2011 (the "2011 Memorandum");

NOW, THEREFORE, the United States of America and the European Union agree as follows:

ARTICLE I

The 2011 Memorandum shall be deleted in its entirety, including all Annexes and Appendices to the 2011 Memorandum, and replaced with the addendum to this agreement, which includes Memorandum of Cooperation NAT-I-9406A, Annex 1 to Memorandum of Cooperation NAT-I-9406A, Appendices 1, 2 and 3 to Annex 1 to Memorandum of Cooperation NAT-I-9406A and Attachments 1,2,3,4, and 5 to Appendix 1 to Annex 1 to Memorandum of Cooperation NAT-I-9406A.

ARTICLE II

Entry into force and termination

- A. Pending its entry into force, this agreement, including its addendum, shall be applied provisionally from the date of signature.

- B. This agreement, including its addendum, shall enter into force when the United States of America and the European Union have notified each other in writing that their respective internal procedures for entry into force of the agreement have been completed and the agreement shall remain in force until terminated.

- C. Either Party may terminate this agreement, including its addendum, at any time by providing sixty (60) days' notice in writing to the other Party. Termination of this agreement shall terminate its addendum, including all Annexes, Appendices, and Attachments adopted by the Parties pursuant to the Memorandum of Cooperation.

ARTICLE III

Authority

The United States and the European Union agree to the provisions of this agreement as indicated by the signatures of their duly authorised representatives.

Done at on the, in duplicate, in the English language.

For the European Union

For the United States of America

ADDENDUM TO AMENDMENT 1
TO MEMORANDUM OF COOPERATION NAT-I-9406
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

MOC/USA/EU/en 6

MEMORANDUM OF COOPERATION
NAT-I-9406A
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION
ON AIR TRAFFIC MANAGEMENT MODERNISATION,
CIVIL AVIATION RESEARCH AND DEVELOPMENT
AND GLOBAL INTEROPERABILITY

WHEREAS the United States of America and the European Union have as a common purpose the promotion and development of cooperation in civil aviation; and

WHEREAS such cooperation will encourage the development, safety, and efficiency of civil aeronautics in the United States of America and in the European Union;

NOW THEREFORE, the United States of America and the European Union (collectively, the "Parties", and individually, a "Party") agree to undertake joint programs in accordance with the following terms and conditions:

ARTICLE I

Objective

A. This Memorandum of Cooperation (this "Memorandum"), and its Annexes, Appendices, and Attachments, establishes the terms and conditions for mutual cooperation in civil aviation research, development, and validation, and in all phases of air traffic management (ATM) modernisation. ATM modernisation shall include research, development, validation and deployment activities, with the goal of ensuring global interoperability. For this purpose the Parties may provide personnel, resources, and related services to cooperate to the extent called for in this Memorandum, and its Annexes, Appendices, and Attachments. All activities under this Memorandum and all Annexes, Appendices, and Attachments are subject to the availability of appropriated funds and other necessary resources for such purposes.

B. The objectives of this Memorandum may be achieved by cooperation in any of the following areas:

- (1) The exchange of information regarding programs and projects, research results, or publications;
- (2) The execution of joint analyses;
- (3) The coordination of civil aviation research, development and validation programs and projects, and the coordination of ATM modernisation activities and the Parties' respective execution thereof, based on shared effort;

- (4) The exchange of scientific and technical staff;
- (5) The exchange of specific equipment, software and systems for research activities and compatibility studies;
- (6) The joint organisation of symposia or conferences; and
- (7) Reciprocal consultations with the aim of establishing concerted action in appropriate international bodies.

C. Subject to applicable laws, regulations and policies, as may be amended or modified, the Parties shall foster, to the fullest extent practicable, the involvement of participants in cooperative activities under this Memorandum and its Annexes, Appendices and Attachments with a view to providing comparable opportunities for participation in their respective activities. The Parties shall involve participants in the cooperative activities, which shall be conducted on a reciprocal basis in accordance with the following principles:

- (1) Mutual benefit;
- (2) Comparable opportunities to engage in cooperative activities;
- (3) Equitable and fair treatment;
- (4) Timely exchange of information which may affect cooperative activities; and
- (5) Transparency.

D. Such cooperative activities shall take place pursuant to specific Annexes, Appendices, and Attachments defined in Article II.

ARTICLE II

Implementation

A. This Memorandum shall be implemented through specific Annexes, Appendices, and Attachments to this Memorandum. These Annexes, Appendices, and Attachments, which shall form an integral part of this Memorandum, shall describe, as appropriate, the nature and the duration of cooperation for a specific area or purpose, treatment of intellectual property, liability, funding, allocation of costs, and other relevant matters. Unless explicitly stated otherwise in this Memorandum or in an Annex thereto, in case of an incompatibility between a provision in an Annex, Appendix or Attachment and a provision in this Memorandum, the provision in this Memorandum shall have precedence.

B. The coordination and administration of cooperative activities under this Memorandum and its Annexes, Appendices and Attachments shall be accomplished on behalf of the Government of the United States of America by the Federal Aviation Administration and on behalf of the European Union by the European Commission.

C. The designated offices for the coordination and administration of this Memorandum, and where all requests for services under this Memorandum should be made, are:

1. For the United States of America:

Federal Aviation Administration
Office of International Affairs
Africa, Europe & Middle East Office, AEU
Wilbur Wright Bldg., 6th Floor, East
600 Independence Ave., S.W.
Washington, D.C.
20591 - USA
Telephone: + 1-202-267-1000
Facsimile: + 1-202-267-7198

2. For the European Union:

European Commission
Directorate-General for Mobility and Transport
Directorate for Aviation
Rue de Mot, 24
1040 Brussels - Belgium
Telephone: + 32-2-299-19-15

D. Technical program liaisons for specific activities shall be established as indicated in the Annexes, Appendices, and Attachments to this Memorandum.

ARTICLE III

Executive management

A. Executive management of this Memorandum

1. The Parties hereby establish a management process to be executed by representatives of:
 - (a) The United States of America, which shall be the Administrator of the Federal Aviation Administration (FAA); and
 - (b) The European Union, which shall be the Director-General of the European Commission's Directorate-General for Mobility and Transport (DG MOVE).

Hereafter referred to as the "Representatives of the Parties".

2. The Representatives of the Parties shall oversee the cooperation on the subjects addressed in the Annexes and the related Appendices and Attachments to this Memorandum.
3. The Representatives of the Parties shall:
 - (a) Adopt Annexes, and any amendments thereto; and
 - (b) Adopt proposals to otherwise amend this Memorandum.

4. The Representatives of the Parties shall address, within the scope of this Memorandum and its Annexes, Appendices, and Attachments:
 - (a) Issues that may arise and changes that may affect the implementation of this Memorandum and its Annexes, Appendices, and Attachments;
 - (b) Common approaches to the introduction of and transition to new technologies and procedures, including research, evaluation and ATM modernisation activities, and other areas of mutual interest; and
 - (c) Draft regulations and legislation by either Party that could affect the interests of the other Party, within the scope of this Memorandum and its Annexes, Appendices, and Attachments.
 5. The Representatives of the Parties shall not be required to hold regular meetings. Meetings may be called on an ad-hoc basis. These meetings may be conducted by telephone, video-conference or face-to-face. Decisions by the Representatives of the Parties shall be documented and shall be taken by consensus.
 6. The Representatives of the Parties may invite the participation of subject-specific experts on an ad-hoc basis, and may establish technical working groups as appropriate.
- B. Executive management of the Annexes
1. Each Annex to this Memorandum shall be governed by its own Executive Committee. Each Executive Committee shall be co-chaired by FAA and European Commission representatives at the appropriate operational level and designated in the applicable Annex.

2. The Parties shall, as appropriate, designate other Executive Committee members to represent their areas of responsibility.
3. An Executive Committee may invite the participation of subject-specific experts on an ad-hoc basis.
4. Executive Committees shall oversee the work of any committees, working groups, and any other groups established pursuant to their respective Annexes, and related Appendices and Attachments. Executive Committees shall develop and adopt internal governing procedures.
5. All decisions of an Executive Committee shall be taken by consensus of its co-chairs. These decisions shall be in writing and signed by the co-chairs.
6. Executive Committees may consider any matter related to the functioning of their respective Annexes, and the related Appendices and Attachments. In particular they shall be responsible for:
 - (a) Overseeing cooperation on the subjects addressed in their respective Annexes, and the related Appendices and Attachments, giving appropriate guidance to the staff working thereunder;
 - (b) Providing a forum for discussion, within the scope of their respective Annexes, and the related Appendices and Attachments, of
 - Issues that may arise and changes that may affect the implementation of the Annexes, Appendices, and Attachments;

- Common approaches to the introduction of new technologies and procedures, research, evaluation and ATM modernisation activities, and other areas of mutual interest; and
 - Draft regulations and legislation by either Party that could affect the interests of the other Party, within the scope of their respective Annex;
- (c) Approving and transmitting proposals to the Representatives of the Parties to amend their respective Annexes;
- (d) Adopting Appendices to their respective Annexes, after consulting with the Representatives of the Parties and any amendments thereto;
- (e) Adopting Attachments to the Appendices of their respective Annexes and any amendments thereto.

ARTICLE IV

Exchange of personnel

The Parties may exchange technical personnel as required to pursue the activities described in an Annex, Appendix, or Attachment to this Memorandum. All such exchanges shall be in accordance with the terms and conditions set forth in this Memorandum, its Annexes, Appendices, and Attachments. Technical personnel exchanged by the Parties shall perform work as specified in the Annex, Appendix, or Attachment. Such technical personnel may be from United States or European Union bodies or contractors, as mutually agreed.

ARTICLE V

Equipment loan arrangements

Equipment may be loaned by one Party (the "Lending Party") to the other Party (the "Borrowing Party") under an Annex, Appendix, or Attachment to this Memorandum. The following general provisions shall apply to all loans of equipment unless otherwise specified in an Annex, Appendix or Attachment:

- A. The Lending Party shall identify the value of the equipment that is to be loaned.
- B. The Borrowing Party shall assume custody and possession of the equipment at the Lending Party's facility as designated by the Parties in the Annex, Appendix, or Attachment. The equipment shall remain in the custody and possession of the Borrowing Party until it has been returned to the Lending Party in accordance with paragraph H below.
- C. The Borrowing Party shall, at its own expense, transport any equipment to the facility designated by the Parties in the Annex, Appendix or Attachment.
- D. The Parties shall cooperate in securing any authorisations, including export licenses, required for the shipment of the equipment.
- E. The Borrowing Party shall be responsible for installing the equipment at the facility designated by the Parties in the Annex, Appendix, or Attachment. The Lending Party shall, if necessary, provide assistance to the Borrowing Party for installing the equipment that is lent on the basis of terms agreed on by the Parties.

- F. During the period of the loan, the Borrowing Party shall operate and maintain equipment in proper condition, ensure the continued operability of the equipment, and permit inspection by the Lending Party at any reasonable time.
- G. The Lending Party shall assist the Borrowing Party in locating sources of supplies for common items and parts peculiar which are not readily available to the Borrowing Party.
- H. Upon the expiration or termination of the pertinent Annex, Appendix, or Attachment or this Memorandum, or when the use of the equipment is complete, the Borrowing Party shall return the equipment to the Lending Party at the Borrowing Party's expense.
- I. In the event of loss or damage of any equipment loaned under this Memorandum and for which the Borrowing Party assumed custody and possession, the Borrowing Party, at the Lending Party's discretion, shall repair or compensate the Lending Party for the value (as identified by the Lending Party in accordance with paragraph A above) of the lost or damaged equipment.
- J. Any equipment exchanged under this Memorandum shall be solely for research, developmental and validation purposes and shall not be used in any way whatsoever for active civil aviation or other operational use.
- K. Any transfers of technology, equipment or other items pursuant to this Memorandum shall be subject to the applicable laws and policies of the Parties.

ARTICLE VI

Funding

- A. Unless otherwise specified in an Annex, Appendix, or Attachment to this Memorandum, each Party shall bear the costs of the activities it performs pursuant to this Memorandum.
- B. Memorandum number NAT-I-9406A has been assigned by the United States to identify this cooperative program and shall be referenced in all correspondence related to this Memorandum.

ARTICLE VII

Release of information

- A. Except as required by applicable law or by prior written agreement between the Parties, neither Party shall release any information or material pertinent to the tasks or related to the agreed programs under this Memorandum and its Annexes, Appendices, or Attachments to third parties other than (i) contractors or subcontractors engaged in the tasks or programs insofar as they are necessary for the execution of those tasks and programs; or (ii) other governmental authorities of the Parties.
- B. If one of the Parties becomes aware that, under its laws or regulations, it will be, or may reasonably be expected to become necessary to release information within the scope of paragraph A of this Article, it shall inform the other Party and shall, to the greatest extent possible, do so immediately and prior to disclosure. The Parties shall thereafter consult to identify an appropriate course of action.

ARTICLE VIII

Intellectual property rights

- A. A Party providing intellectual property (which for purposes of this Memorandum includes analyses, reports, databases, software, know-how, technical and commercially sensitive information, data, and records, and associated documentation and materials, regardless of form or the media on which it may be recorded) to the other Party in accordance with the terms of an Annex, Appendix, or Attachment to this Memorandum shall retain such proprietary rights in the intellectual property as it had at the time of the exchange. The Party providing a document or other intellectual property pursuant to an Annex, Appendix, or Attachment to this Memorandum shall clearly mark the document or intellectual property as business confidential, proprietary, or a trade secret, as appropriate.
- B. Except as may be specified in an Annex, Appendix or Attachment to this Memorandum, the Party receiving intellectual property from the other Party under this Memorandum:
1. Shall not acquire any proprietary rights in the intellectual property by reason of its receipt from the other Party; and
 2. Shall not disclose the intellectual property to a third party, other than contractors or subcontractors engaged in a program related to an Annex, Appendix, or Attachment to this Memorandum, without the prior written consent of the other Party. In the case of a disclosure to a contractor or subcontractor engaged in the program, the Party making the disclosure shall:
 - (a) Limit the use of the intellectual property by the contractor or subcontractor to the purposes specified in the applicable Annex or Appendix or Attachment; and

(b) Prohibit the further disclosure of the intellectual property to third parties by the contractor or subcontractor except where the other Party consents in advance and in writing to the further disclosure.

C. Except as may be specified in an Annex, Appendix, or Attachment to this Memorandum, any intellectual property jointly developed by the Parties pursuant to this Memorandum and its Annexes, Appendices or Attachments shall be jointly owned by the Parties.

1. Each Party shall be entitled to a non-exclusive, irrevocable right in all countries to reproduce, prepare derivative works, publicly distribute, and translate such intellectual property, provided that such reproduction, preparation, distribution, and translation does not affect the protection of the intellectual property rights of the other Party. Each Party shall have the right to review a translation of such intellectual property prior to public distribution.
2. All publicly distributed copies of scientific and technical journal articles, non-proprietary scientific reports and books directly arising from cooperation under this Memorandum and its Annexes, Appendices, or Attachments shall indicate the names of the authors of the work unless an author explicitly declines to be named.

D. If a Party disagrees with the designation of a document or other intellectual property provided by the other Party pursuant to an Annex, Appendix or Attachment to this Memorandum as business confidential, proprietary, or a trade secret, then the Party disagreeing with the designation shall request consultations with the other Party to address the issue. The consultations may be held in conjunction with a meeting of the Representatives of the Parties or a meeting of the relevant Executive Committee or a meeting of such other committees as may be established under an Annex, Appendix or Attachment to this Memorandum.

ARTICLE IX

Immunity and liability

- A. The Parties shall address immunity and liability issues associated with activities under this Memorandum in the relevant Annex, Appendix, or Attachment, as appropriate.
- B. The Parties agree that all activities undertaken pursuant to this Memorandum and its Annexes, Appendices, and Attachments shall be performed with due professional care and that every reasonable effort shall be made to minimise potential risks to third parties and to fulfil all safety and oversight requirements.

ARTICLE X

Amendments

- A. The Parties may amend this Memorandum, its Annexes, Appendices, and Attachments by means of a written agreement signed by both Parties. Annexes, Appendices, and Attachments may also be amended as set forth in Article III.
- B. Amendments to this Memorandum or the Annexes, Appendices or Attachments to this Memorandum shall enter into force according to their terms.

ARTICLE XI

Resolution of disagreements

The Parties shall resolve any disagreement regarding the interpretation or application of this Memorandum or its Annexes, Appendices and Attachments in consultations between the Parties. The Parties shall not refer any such disagreement to an international tribunal or third party for settlement.

ARTICLE XII

Entry into force and termination of Annexes, Appendices, and Attachments

- A. Any individual Annex, Appendix or Attachment adopted pursuant to Article III after the entry into force of this Memorandum shall enter into force according to its terms.
- B. Either Party may terminate an Annex, Appendix, or Attachment at any time by providing sixty (60) days' notice in writing to the other Party. Each Party shall have one hundred and twenty (120) days to close out its activities following termination of an Annex, Appendix, or Attachment.
- C. Termination of this Memorandum shall not affect the rights and obligations of the Parties under Articles V, VII, VIII, and IX. Each Party shall have one hundred and twenty (120) days to close out its activities following the termination of this Memorandum.

TO MEMORANDUM OF COOPERATION
NAT-I-9406A
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

AIR TRAFFIC MODERNISATION AND GLOBAL INTEROPERABILITY

ARTICLE I

Purpose

The purpose of this Annex is to implement Memorandum of Cooperation NAT-I-9406A between the United States of America and the European Union (the "Memorandum") by setting forth the terms and conditions under which the Parties shall establish cooperation between their respective air traffic management (ATM) modernisation activities, NextGen and the Single European Sky, with the goal of ensuring global interoperability of their ATM systems, taking into account the interests of civil and military airspace users.

ARTICLE II

Principles

Within the framework of the Parties' ATM modernisation activities and in accordance with the principles set out in Article I.C of the Memorandum, the Parties shall:

- A. As appropriate, allow participation by each other's governmental and industrial entities in their relevant consultative bodies and industrial initiatives, in accordance with applicable laws and regulations, and the governing rules of such bodies and initiatives;
- B. Endeavour to provide opportunities to each other's industry stakeholders to contribute to work programs and access information on, and results of, equivalent ATM modernisation activities;
- C. Through the Executive Committee established pursuant to Article IV of this Annex, mutually identify, in Appendices or Attachments, the domains that allow specific opportunities for participation in each Party's consultative bodies, initiatives, programs and projects, and
- D. Through the Executive Committee, monitor the implementation of this Annex and adopt, as appropriate, new Appendices and Attachments, or amendments to existing Appendices and Attachments, in accordance with Article III.B of the Memorandum.

ARTICLE III

Scope of work

- A. The scope of the work is to contribute to each Party's ATM modernisation efforts with the goal of ensuring global interoperability through mutual cooperation, including, but not limited to, cooperation in the following areas:
- High-level system definition, operational concepts, architecture definition and technical baseline;
 - Roadmap and standardisation activities;
 - Research and development related to SESAR and NextGen ATM initiatives;
 - Trajectory-Based Operations;
 - Global interoperability and harmonisation, including support for International Civil Aviation Organization (ICAO) initiatives;
 - Information management;
 - Communication, Navigation and Surveillance initiatives;
 - Deployment of ATM systems and capabilities;
 - Harmonisation of standards implementation;

- Performance metrics related to ATM systems and modernisation initiatives;
- Aviation operational performance metrics;
- Economic modelling and analysis;
- Traffic flow information;
- ATM safety initiatives;
- Integration into ATM of new air vehicles, including Unmanned Aircraft Systems (UAS);
- Cybersecurity related to the ATM domain;
- Incentive mechanisms;
- Human factors;
- Airport improvement activities.

B. The Parties shall, as necessary, produce on a reciprocal basis, either individually or jointly for exchange between them, reports describing concepts of use, models, prototypes, evaluations, validation exercises, and comparative studies related to the technical and operational aspects of ATM. Evaluations and validations may use a range of tools such as simulations and live trials or demonstrations.

ARTICLE IV

Management

The Parties shall establish an Executive Committee (ExComm), in accordance with Article III.B of the Memorandum, which shall:

- A. Be co-chaired by the Federal Aviation Administration (FAA) Chief NextGen Officer, or his or her designee, and the Head of the Single European Sky (SES) Unit of DG MOVE from the European Commission, or his or her designee.
- B. Be composed of other committee members, designated by the Parties, based on their areas of ATM responsibility.
- C. Meet at least once a year to:
 - 1. Monitor and review the progress of on-going joint projects and activities defined in the Appendices and Attachments;
 - 2. Assess the achieved results;
 - 3. Monitor and ensure the effective implementation of this Annex and, as necessary, consult on industry participation mechanisms or refer questions to the Representatives of the Parties referred to in Article III.A of the Memorandum.
- D. Consider any matter related to the implementation of this Annex and the related Appendices and Attachments. In particular, consistent with Article III.B of the Memorandum, the ExComm shall be responsible for:

1. Overseeing cooperation on the subjects addressed in this Annex and the related Appendices and Attachments, giving appropriate guidance to the staff working thereunder;
 2. Providing a forum for discussion, within the scope of this Annex and the related Appendices and Attachments, of:
 - Issues that may arise and changes that may affect the implementation of this Annex, its Appendices, and Attachments;
 - Common approaches to the introduction and transition of new technologies and procedures including research, evaluation and deployment activities, and other areas of mutual interest; and
 - Draft regulations and legislation by either Party that could affect the interests of the other Party, within the scope of this Annex;
 3. Approving and transmitting proposals to the Representatives of the Parties to amend this Annex;
 4. Adopting Appendices to this Annex, after consulting with the Representatives of the Parties, and any amendments thereto;
 5. Adopting Attachments to the Appendices to this Annex and any amendments thereto.
- E. Establish its working procedures. All decisions shall be taken by consensus between the co-chairs. These decisions shall be in writing and signed by the co-chairs.

- F. Promote synergies and consistency and avoid duplication of the work done under Appendices or Attachments to this Annex.
- G. Coordinate with other Executive Committees established under the Memorandum, as appropriate, to promote synergies and consistency and avoid duplication of work done under other Annexes to the Memorandum.
- H. Report to the Representatives of the Parties, as necessary.

ARTICLE V

Immunity and liability

The Parties shall address immunity and liability issues associated with activities under this Annex in the relevant Appendices or Attachments, as appropriate.

ARTICLE VI

Implementation

- A. All work provided under this Annex shall be described in Appendices or Attachments, which, upon their entry into force, shall become part of this Annex.

- B. Each Appendix and Attachment shall be numbered sequentially and contain a description of the work to be performed by the Parties or the entities they designate to carry out the work, including: the location and planned duration of the work; the personnel and other resources required to accomplish the work; the estimated costs; and any other pertinent information concerning the work.

ARTICLE VII

Financial provisions

Unless otherwise specified in an Appendix or Attachment, each Party shall bear the costs of the activities it performs.

ARTICLE VIII

Points of contact

The designated offices for the coordination and management of this Annex are:

1. For the United States of America:

Federal Aviation Administration
Office of International Affairs
Africa, Europe & Middle East Office, AEU
Wilbur Wright Bldg., 6th Floor, East
600 Independence Avenue, S.W.
Washington, D.C. 20591 - USA
Telephone: + 1 202-267-1000
Facsimile: + 1 202-267-7198

2. For the European Union:

Single European Sky Unit
Directorate-General for Mobility and Transport
Directorate for Air Transport
European Commission
Rue de Mot 24
1040 Brussels - Belgium
Telephone: + 32-2-299-19-15

ARTICLE IX

Termination

Termination of this Annex shall terminate all Appendices and Attachments adopted pursuant to this Annex.

TO MEMORANDUM OF COOPERATION
NAT-I-9406A
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

SESAR-NEXTGEN COOPERATION FOR RESEARCH,
DEVELOPMENT, VALIDATION AND GLOBAL INTEROPERABILITY

ARTICLE I

Purpose

The purpose of this Appendix is to implement Annex 1 to Memorandum of Cooperation NAT-I-9406A between the United States of America and the European Union (the "Memorandum") by setting forth the terms and conditions under which the Parties shall establish cooperation in research and development and validation with the goal of ensuring global interoperability between their respective air traffic management (ATM) modernisation programs, NextGen and SESAR, taking into account the interests of civil and military airspace users.

ARTICLE II

Definitions

For the purpose of this Appendix, the term "validation" means to confirm, throughout the development lifecycle, that the proposed solution, including concept, system, and procedures, complies with stakeholders' needs.

ARTICLE III

Principles

The cooperative activities under this Appendix shall be conducted on a reciprocal basis in accordance with the principles set out in Article I.C of the Memorandum.

A Coordination Committee (CCOM), established under Article V of this Appendix, shall monitor the implementation of this Appendix and identify the domains that allow specific opportunities for participation in each Party's consultative bodies, initiatives, and research, development and validation activities, in particular those domains that provide for a contribution to high-level system definition, such as interoperability, architecture definition and technical baseline. The CCOM may propose, pursuant to Article V of this Appendix, Attachments with respect to the domains identified.

ARTICLE IV

Scope of work

A. The scope of the work is to contribute to ATM research, development, and validation for global interoperability. The work may include, but is not limited to, the activities set out in paragraphs 1 to 5 of the present Article.

1. Transversal Activities

Transversal activities cover those tasks that are not specific to any one operational or technical development, but have interdependencies across the SESAR and NextGen programs. These activities are of particular importance to the cooperation, as any diverging approach potentially has wide-reaching material implications for harmonisation and interoperability. In this area, the Parties intend to address:

- (a) Operations concept and roadmap;
- (b) Separation provision;
- (c) Road-mapping including standardisation and regulation with a view to facilitating implementation synchronisation;
- (d) Business case and investment planning;
- (e) Environment;

- (f) The coordination of technical efforts in support of global and ICAO standardisation activities in the field of ATM modernisation;
- (g) The synchronisation and consistency of avionics roadmaps, in order to ensure best economic efficiency for airspace users; and
- (h) Coordinated delivery of technical and operational changes that achieve/maintain seamless operations from an airspace user's perspective.

2. Information Management

The key focus on Information Management is to ensure timely distribution of accurate and relevant ATM-related information across the stakeholder community in a manner that is seamless (interoperable), secure and supportive of collaborative decision making. In this area, the Parties intend to address:

- (a) System Wide Information Management (SWIM) interoperability;
- (b) Aeronautical Information Management (AIM) interoperability; and
- (c) Meteorological information exchange.

3. Trajectory Management

Trajectory Management encompasses air/air and air/ground exchange of four-dimensional (4D) trajectories requiring a consistent approach to terminology, definition and exchange of flight information at all times and in all flight phases. In this area, the Parties intend to address:

- (a) Common trajectory definition and exchange;
- (b) Flight planning and dynamic flight plan updates;
- (c) Traffic management (including trajectory integration and prediction);
- (d) Unmanned Aircraft Systems (UAS) integration into ATM; and
- (e) The convergence of the SESAR and NextGen concepts of operations, the service definitions and their applications including the 4D trajectory definition and exchange format operations.

4. Communications, Navigation, Surveillance (CNS) & Airborne Interoperability

CNS and airborne interoperability includes planning airborne equipage and the development of mutually interoperable air/air and air/ground applications and systems. In this area, the Parties intend to address:

- (a) Airborne interoperability, including:
 - (i) Airborne Collision Avoidance System (ACAS);
 - (ii) Avionics roadmap; and
 - (iii) Airborne Separation Assistance Systems (ASAS) for air/air and air/ground separation assistance.

- (b) Communications, including:
 - (i) Data-link services and technology; and
 - (ii) Flexible communication architecture.

- (c) Navigation, including:
 - (i) Performance-Based Navigation; and
 - (ii) Global Navigation Satellite System (GNSS) applications for en route and approach, including approach with vertical guidance.

- (d) Surveillance, including:
 - (i) Automatic Dependent Surveillance (ADS) services and technology; and
 - (ii) Ground surveillance.

5. Collaborative Projects

Collaborative Projects include ad-hoc projects for which the Parties agree that focused coordination and collaboration is needed.

- B. The Parties shall, as necessary, produce on a reciprocal basis, either individually or jointly for exchange between them, reports describing concepts of use, models, prototypes, evaluations, validation exercises, and comparative studies related to the technical and operational aspects of ATM. Evaluations and validations may use a range of tools such as simulations and live trials.

ARTICLE V

Management

Subject to the availability of funds, the Parties shall establish and manage projects and activities and ensure that the work in progress remains result-oriented, pragmatic and timely, creating synergies while avoiding duplications. To this end, a Coordination Committee (CCOM) shall be established, which shall:

- A. Be co-chaired by one representative each from the Federal Aviation Administration (FAA) and the European Commission or their respective designees;

- B. Be composed of an equal number of participants designated by the FAA and the European Commission;
- C. Meet at least twice per year to:
 - 1. Monitor and review the progress of ongoing joint projects and activities defined in the Attachments and executed by Working Groups established pursuant to paragraph F of this Article;
 - 2. Assess the achieved results;
 - 3. Propose the launch of new projects and activities, as appropriate;
 - 4. Develop proposals for Attachments or amendments to Attachments to this Appendix, which the CCOM shall submit to the Executive Committee for adoption; and
 - 5. Monitor and ensure the effective implementation of this Appendix and, as necessary, consult on industry participation mechanisms or refer questions to the Executive Committee.
- D. Establish its working procedures. All decisions shall be taken by consensus between the co-chairs. These decisions shall be in writing and signed by the co-chairs or their respective designees.
- E. Report to the Executive Committee established pursuant to Article IV of Annex 1 to the Memorandum.

- F. Establish Working Groups dedicated to specific projects or activities under this Appendix, as appropriate. Each Working Group shall be composed of an appropriate and limited number of participants of the Parties. The Working Groups shall meet as necessary, shall comply with instructions given by the CCOM, and shall report to it on a regular basis.

ARTICLE VI

Immunity and liability

The Parties may address immunity and liability issues associated with activities under this Appendix in the relevant Attachment, as appropriate.

ARTICLE VII

Implementation

- A. All work provided under this Appendix shall be described in Attachments, which, upon their entry into force, shall become part of this Appendix.
- B. Each Attachment shall contain a description of the work to be performed by the Parties or the Working Groups they designate to carry out the work, including the location and planned duration of the work; the personnel and other resources required to accomplish the work; the estimated costs; and any other pertinent information concerning the work.

ARTICLE VIII

Financial provisions

Unless otherwise specified in an Attachment to this Appendix, each Party shall bear the costs of the activities it performs.

ARTICLE IX

Points of contact

A. The designated offices for the coordination and management of this Appendix are:

1. For the United States of America:

Federal Aviation Administration
Office of International Affairs
Africa, Europe & Middle East Office, AEU
Wilbur Wright Bldg., 6th Floor, East
600 Independence Avenue, S.W.
Washington, D.C. 20591 - USA
Telephone: + 1 202-267-1000
Facsimile: + 1 202-267-7198

2. For the European Union:

Single European Sky Unit

Directorate-General for Mobility and Transport

Directorate for Air Transport

European Commission

Rue de Mot 24

1040 Brussels - Belgium

Telephone: + 32 2 296 84 30

- B. Technical program liaisons for specific activities shall be established as indicated in the Attachments to this Appendix.

ARTICLE X

Termination

Termination of this Appendix shall terminate all Attachments adopted by the Parties pursuant to this Appendix.

TO MEMORANDUM OF COOPERATION
NAT-I-9406A
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

SESAR-NEXTGEN COOPERATION
ON TRANSVERSAL ACTIVITIES FOR GLOBAL INTEROPERABILITY

ARTICLE I

Purpose

- A. This Attachment 1 to Appendix 1 to Annex 1 ("Appendix 1") to Memorandum of Cooperation NAT-I-9406A (the "Memorandum") between the United States of America ("United States") and the European Union ("EU") sets forth the terms and conditions for cooperation on activities of a transversal nature ("Transversal Activities") for the global interoperability of the NextGen and SESAR programs.
- B. This Attachment shall:
1. Describe the work to be performed; and

2. Specify any exception to the provisions on intellectual property rights set forth in Article VIII of the Memorandum.

ARTICLE II

Scope of work

- A. The United States and the EU ("the Parties") agree to coordinate, as appropriate, on a number of Transversal Activities, in particular with regard to the activities described below. The Federal Aviation Administration ("FAA") shall implement this Attachment on behalf of the United States. The European Commission shall implement this Attachment on behalf of the EU and may, for that purpose, designate the SESAR Joint Undertaking to execute cooperative activities under this Attachment.
- B. The Parties shall work toward the development of a common definition of the Concept of Operations in areas where this is needed to ensure optimum performance and interoperability for airspace users as well as aim to agree on a common implementation timeline. This work shall include specific coordination activities covering methods of separation and on the definition of related Air Traffic Management ("ATM") services. In undertaking these coordination activities, the Parties shall consider:
 1. The important role the activities will play in providing support to other coordination activities covered under this Attachment and other attachments to Appendix 1; and

2. The need to: (i) establish a coordinated view and achieve a shared understanding of the fundamental elements of SESAR and NextGen, especially regarding achieving appropriate operational, environmental, safety and security targets; (ii) develop complementary regulations; and (iii) establish the means of achieving and maintaining interoperability during planned deployments.
- C. The Parties shall coordinate their respective standardisation and regulatory roadmap developments associated with the Transversal Activities described in Appendix 1 in order to avoid any major interoperability issues due to a lack of synchronisation in adopting new standards and regulations at a global level. For the same reason, the Parties shall endeavour to define and promote a harmonised approach to international regulation and standards on future operational and technical capabilities at the International Civil Aviation Organization.
 - D. The Parties shall coordinate their approach to deployment actions, means, and planning in order to facilitate a seamless transition of technical and operational changes to United States and EU ATM systems, and to achieve an alignment of operational deployment timelines and dates where interoperability needs are paramount.
 - E. The Parties shall coordinate their approach on operational changes for best performance outcome in the areas of safety, security, environment, human factors and business cases. In this area, best modelling practices and improvement methods shall be sought and coordinated, in particular with regard to achieving complementary target setting and understanding of the underlying justifications in order to make valid comparisons of the performance elements and impacts of SESAR and NextGen.

ARTICLE III

Management and implementation

- A. The work conducted under this Attachment shall be managed under the terms and conditions of Article V of Appendix 1. The more detailed administration of the Transversal Activities shall be defined by the Parties in a joint Administration Document approved by the Coordination Committee established under Appendix 1. This document shall describe the means, roles, responsibilities and participants for each particular undertaking as well as the working processes for the Transversal Activities.
- B. The work to be performed under this Attachment shall be further broken down into individual or groups of related Transversal Activities. A working document approved by the Coordination Committee established under Appendix 1 shall: detail the scope of work of each individual or group of Transversal Activities; identify the Technical Program Liaisons for both Parties; and describe the relationship of each activity with other activities.

ARTICLE IV

Funding

Each Party shall assume the cost of the work performed by it under this Attachment.

ARTICLE V

Intellectual property rights

The terms and conditions set forth in Article VIII (Intellectual Property Rights) of the Memorandum shall apply. However, if a Party needs access to intellectual property owned by the other Party in order to use intellectual property jointly developed by the Parties under this Attachment, such access shall be granted by the owner under the conditions detailed in Article VIII.B of the Memorandum unless stricter conditions for such access rights, on an exceptional basis, have been agreed by the Parties.

ARTICLE VI

Points of contact

The Parties shall inform each other of their respective points of contact for the technical coordination and management of the Transversal Activities to be carried out under this Attachment.

TO MEMORANDUM OF COOPERATION
NAT-I-9406A
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

SESAR-NEXTGEN COOPERATION
ON INFORMATION MANAGEMENT FOR GLOBAL INTEROPERABILITY

ARTICLE I

Purpose

- A. This Attachment 2 to Appendix 1 to Annex 1 ("Appendix 1") to Memorandum of Cooperation NAT-I-9406A (the "Memorandum") between the United States of America ("United States") and the European Union ("EU") sets forth the terms and conditions for cooperation on Information Management for the global interoperability of the NextGen and SESAR programs.
- B. This Attachment shall:
1. Describe the work to be performed; and
 2. Specify any exception to the provisions on intellectual property rights set forth in Article VIII of the Memorandum.

ARTICLE II

Scope of work

- A. The United States and the EU ("the Parties") agree to coordinate, as appropriate, on a number of activities within the domain of Information Management, in particular with regard to the exchange of information that supports a Net-Centric interoperable Air Traffic Management ("ATM") capability utilising the System-Wide Information Management ("SWIM") concept (collectively, the "Information Management Activities"), further described in the paragraphs below. The Federal Aviation Administration ("FAA") shall implement this Attachment on behalf of the United States. The European Commission shall implement this Attachment on behalf of the EU and may, for that purpose, designate the SESAR Joint Undertaking to execute cooperative activities under this Attachment.

- B. The Parties shall collaborate on defining and implementing an interoperable SWIM technical infrastructure. This work shall encompass defining interoperable SWIM technical infrastructure core capabilities such as, but not limited to: common message exchange patterns; Registry Services (including Catalogue and Discovery); Security Services; the consistent design of key information being exchanged, including its attributes; and enabling optimum ATM operational performance across the SESAR and NextGen regions. Common information management functions shall be defined as needed. The Parties shall consider the integration of aircraft and airports as part of the SWIM technical infrastructure.

- C. The Parties shall develop consistent terminology for the timely, accurate and secure distribution of information supporting ATM collaborative decision making for both ground and air operations where such terminology would enhance and/or maintain interoperability in support of high performance operations. In the course of developing consistent terminology, the Parties shall consider how such terminology will support the other coordination activities covered under this Attachment and other attachments. The Parties also shall promote a shared understanding of the fundamental elements of one of the key capabilities of both the SESAR and NextGen operational concept: helping to achieve delivery of the right information to the right people at the right time to support making the right operational decisions.

- D. The Parties shall coordinate their respective Information Management Activities to achieve the consistent management of information within and across Aeronautical Information Management ("AIM"), meteorological information exchange, and flight planning, as set out in Attachment 3 to Appendix 1, taking into account common operational scenarios requiring information: (i) to support in strategic planning, execution, and post flight phases; and (ii) to achieve interoperable and common information performance requirements.

- E. The Parties shall extend the scope of information management to other areas of information exchange as necessary to improve the performance elements and impacts of SESAR and NextGen.

ARTICLE III

Management and implementation

- A. The work conducted under this Attachment shall be managed under the terms and conditions of Article V of Appendix 1. The more detailed administration of the Information Management Activities shall be defined by the Parties in a joint Administration Document approved by the Coordination Committee established under Appendix 1. This document shall describe the means, roles, responsibilities and participants for each particular undertaking as well as the working processes for the Information Management Activities.
- B. The work to be performed under this Attachment shall be further broken down into individual or groups of related Information Management Activities. A working document approved by the Coordination Committee established under Appendix 1 shall: detail the scope of work of each individual or group of Information Management Activities; identify the Technical Program Liaisons for both Parties; and describe the relationship of each activity with other activities.

ARTICLE IV

Funding

Each Party shall assume the cost of the work performed by it under this Attachment.

ARTICLE V

Intellectual property rights

The terms and conditions set forth in Article VIII (Intellectual Property Rights) of the Memorandum shall apply. However, if a Party needs access to intellectual property owned by the other Party in order to use intellectual property jointly developed by the Parties under this Attachment, such access shall be granted by the owner under the conditions detailed in Article VIII.B of the Memorandum unless stricter conditions for such access rights, on an exceptional basis, have been agreed by the Parties.

ARTICLE VI

Points of contact

The Parties shall inform each other of their respective points of contact for the technical coordination and management of the Information Management Activities to be carried out under this Attachment.

TO MEMORANDUM OF COOPERATION
NAT-I-9406A
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

SESAR-NEXTGEN COOPERATION
ON TRAJECTORY MANAGEMENT FOR GLOBAL INTEROPERABILITY

ARTICLE I

Purpose

- A. This Attachment 3 to Appendix 1 to Annex 1 ("Appendix 1") to Memorandum of Cooperation NAT-I-9406A (the "Memorandum") between the United States of America ("United States") and the European Union ("EU") sets forth the terms and conditions for cooperation on activities within the area of trajectory management ("Trajectory Management Activities") for the global interoperability of the NextGen and SESAR programs.
- B. This Attachment shall:
1. Describe the work to be performed; and
 2. Specify any exception to the provisions on intellectual property rights set forth in Article VIII of the Memorandum.

ARTICLE II

Scope of work

- A. The United States and the EU ("the Parties") agree to coordinate, as appropriate, on a number of Trajectory Management Activities. This domain is one of the key capabilities of the SESAR and NextGen operational concept, and coordination is necessary to ensure there is a common understanding of the trajectory, the relationship to flight planning, strategic planning, execution and post flight phases and with regard to all airspace users including Unmanned Aircraft Systems ("UAS"). These activities are described more specifically in the paragraphs below. The Federal Aviation Administration ("FAA") shall implement this Attachment on behalf of the United States. The European Commission shall implement this Attachment on behalf of the EU and may, for that purpose, designate the SESAR Joint Undertaking to execute cooperative activities under this Attachment.
- B. The Parties shall cooperate in the development of a common definition of the four dimensional (4D) trajectory for different operational scenarios describing the future Air Traffic Management environment, as well as the exchange format (supporting air-ground, air-air and ground-ground data exchange as well as the transition to System-Wide Information Management formats) leading to an interoperable and performance-oriented solution that can be formalised through the appropriate standardisation activities of EUROCAE, RTCA, and the International Civil Aviation Organization, as contemplated under Attachment 1 to Appendix 1.

- C. The Parties shall, in the context of 4D trajectory operations, coordinate on the development of concepts for: flight planning and operational strategic planning; planning during flight execution; dynamic updating of the trajectory during flight execution; and post flight analysis and archiving. The objective of such coordination shall be globally interoperable and common performance requirements.

- D. The Parties shall coordinate on the concepts for demand and capacity balancing, traffic synchronisation, and conflict management applications. Such coordination shall include the exchange of information on underlying air- and ground-based trajectory prediction and its integration in systems and operational procedures leading to globally interoperable and common performance solutions.

- E. The Parties shall coordinate on the development of operational methods, procedures, and technology requirements for integrating UAS operations into civil instrument flight rules airspace leading to globally interoperable and common performance solutions. The goal of such coordination shall be ensuring the safe integration of UAS operations in airspace where manned civil operation occur.

ARTICLE III

Management and implementation

- A. The work conducted under this Attachment shall be managed under the terms and conditions of Article V of Appendix 1. The more detailed administration of the Trajectory Management Activities shall be defined by the Parties in a joint Administration Document approved by the Coordination Committee established under Appendix 1. This document shall describe the means, roles, responsibilities and participants for each particular undertaking as well as the working processes for the Trajectory Management Activities.
- B. The work to be performed under this Attachment shall be further broken down into individual or groups of related Trajectory Management Activities. A working document approved by the Coordination Committee established under Appendix 1 shall detail the scope of work of each individual or group of Trajectory Management Activities; identify the Technical Program Liaisons for both Parties; and describe the relationship of each activity with other activities.

ARTICLE IV

Funding

Each Party shall assume the cost of the work performed by it under this Attachment.

ARTICLE V

Intellectual property rights

The terms and conditions set forth in Article VIII (Intellectual Property Rights) of the Memorandum shall apply. However, if an Party needs access to intellectual property owned by the other Party in order to use intellectual property jointly developed by the Parties under this Attachment, such access shall be granted by the owner under the conditions detailed in Article VIII.B of the Memorandum unless stricter conditions for such access rights, on an exceptional basis, have been agreed by the Parties.

ARTICLE VI

Points of contact

The Parties shall inform each other of their respective points of contact for the technical coordination and management of the Trajectory Management Activities to be carried out under this Attachment.

TO MEMORANDUM OF COOPERATION
NAT-I-9406A
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

SESAR-NEXTGEN COOPERATION
ON CNS AND AIRBORNE INTEROPERABILITY FOR GLOBAL INTEROPERABILITY

ARTICLE I

Purpose

- A. This Attachment 4 to Appendix 1 to Annex 1 ("Appendix 1") to Memorandum of Cooperation NAT-I-9406A (the "Memorandum") between the United States of America ("United States") and the European Union ("EU") sets forth the terms and conditions for cooperation on Communication, Navigation, and Surveillance ("CNS") and Airborne Interoperability Activities ("CNS & Airborne Interoperability Activities") for the global interoperability of the NextGen and SESAR programs.
- B. This Attachment shall:
1. Describe the work to be performed; and

2. Specify any exception to the provisions on intellectual property rights set forth in Article VIII of the Memorandum.

ARTICLE II

Scope of work

The United States and the EU ("the Parties") agree to coordinate, as appropriate, on activities covering CNS & Airborne Interoperability Activities, in particular with regard to the activities set out in the paragraphs below. The Federal Aviation Administration ("FAA") shall implement this Attachment on behalf of the United States. The European Commission shall implement this Attachment on behalf of the EU and may, for that purpose, designate the SESAR Joint Undertaking to execute cooperative activities under this Attachment.

A. Communications

1. The Parties shall work to ensure the interoperability of future communication technologies, including:
 - (a) Air/Ground and Air/Air datalink services;

- (b) Sub-networks, including a terrestrial system (e.g. L-band Digital Aeronautical Communication System), a short-range high-bandwidth airport-centred system (i.e., the Aeronautical Mobile Airport Communication System), future satellite communication solutions, and communication system management functions (e.g. multilink management, quality of service management, security); and
 - (c) Possible interconnection of military aircraft to the air traffic management system through military datalink.
2. The Parties shall coordinate to ensure efficient use of the radio frequency spectrum and that the new technologies are free of harmful interference.
 3. The Parties shall also coordinate their approach to avionics development, in particular the development of a flexible communications architecture using for example software defined radios for use on board aircraft.

B. Navigation

The Parties shall work to ensure interoperable navigation infrastructures in support of Performance-Based Navigation Procedures in En-Route and the Terminal Maneuvring Area, giving consideration to the potential for rationalising ground-based navigation infrastructure (e.g. VOR). Coordination by the Parties on the interoperability of navigation infrastructures shall:

1. Base solutions on the Global Navigation Satellite System constellation;

2. Address common solutions for Precision Approaches and Non-Precision Approaches using ground-based or satellite-based augmentation systems; and
3. Include coordination of approaches for Multi-Mode Receiver avionics development.

C. Surveillance

1. The Parties shall work to ensure their respective Automatic Dependent Surveillance-Broadcast ("ADS-B") evolution plans are consistent, while supporting the needs of both ground surveillance applications and airborne separation assistance systems ("ASAS") through the development of the "ADS-B Out/In" capability.
2. The Parties may consider options for (i) extending the usable lifetime of the enabling 1090 ADS-B system; and (ii) establishing a new system for ADS-B.

D. Airborne Interoperability

1. The Parties shall work to ensure the harmonisation of avionics road mapping activities in SESAR and NextGen with the objective of establishing consistent avionics standards that meet the needs of both SESAR and NextGen.
2. The Parties shall coordinate on establishing a functional architecture that supports both SESAR and NextGen concept elements (e.g. four-dimensional operations, Airborne Collision Avoidance System ("ACAS"), and ASAS functions) as well as their enablers (e.g. CNS) and can be instantiated in multiple physical aircraft platforms (e.g. mainline, regional, general aviation, military) when considering both future fit and retrofit aspects.

E. Spectrum

The Parties shall:

1. Coordinate on the development of spectrum efficient CNS systems; and
2. Collaborate on preserving the aeronautical radio frequency spectrum free of harmful interference as well as ensuring the availability of the necessary spectrum for the operation of the current and future CNS systems.

ARTICLE III

Management and implementation

- A. The work conducted under this Attachment shall be managed under the terms and conditions of Article V of Appendix 1. The more detailed administration of the CNS & Airborne Interoperability Activities shall be defined by the Parties in a joint Administration Document approved by the Coordination Committee established under Appendix 1. This document shall describe the means, roles, responsibilities and participants for each particular undertaking as well as the working processes for the CNS & Airborne Interoperability Activities.

- B. The work to be performed under this Attachment shall be further broken down into individual or groups of related CNS & Airborne Interoperability Activities. A working document approved by the Coordination Committee established under Appendix 1 shall detail the scope of work of each individual or group of CNS & Airborne Interoperability Activities; identify the Technical Program Liaisons for both Parties; and describe the relationship of each activity with other activities.

ARTICLE IV

Funding

Each Party shall assume the cost of the work performed by it under this Attachment.

ARTICLE V

Intellectual property rights

The terms and conditions set forth in Article VIII (Intellectual Property Rights) of the Memorandum shall apply. However, if a Party needs access to intellectual property owned by the other Party in order to use intellectual property jointly developed by the Parties under this Attachment, such access shall be granted by the owner under the conditions detailed in Article VIII.B of the Memorandum unless stricter conditions for such access rights, on an exceptional basis, have been agreed by the Parties.

ARTICLE VI

Points of contact

The Parties shall inform each other of their respective points of contact for the technical coordination and management of the CNS and Airborne Interoperability Activities to be carried out under this Attachment.

TO MEMORANDUM OF COOPERATION
NAT-I-9406A
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

SESAR-NEXTGEN COOPERATION
ON COLLABORATION PROJECTS FOR GLOBAL INTEROPERABILITY

ARTICLE I

Purpose

- A. This Attachment 5 to Appendix 1 to Annex 1 ("Appendix 1") to Memorandum of Cooperation NAT-I-9406A (the "Memorandum") between the United States of America ("United States") and the European Union ("EU") sets forth the terms and conditions for cooperation on Collaboration Projects for the global interoperability of the NextGen and SESAR programs.
- B. This Attachment shall:
1. Describe the work to be performed; and

2. Specify any exception to the provisions on intellectual property rights set forth in Article VIII of the Memorandum.

ARTICLE II

Scope of work

The United States and the EU ("the Parties") agree to coordinate, as appropriate, on a number of Collaboration Projects, in particular but not restricted to activities set out in the paragraphs below. The Federal Aviation Administration ("FAA") shall implement this Attachment on behalf of the United States. The European Commission shall implement this Attachment on behalf of the EU and may, for that purpose, designate the SESAR Joint Undertaking to execute cooperative activities under this Attachment.

- A. The Parties agree that the objective of the Collaboration Projects under this Attachment shall be to improve the performance of transatlantic flights, with a focus on the deployment of technologies and procedures for aviation users. This cooperation will also permit data collection enabling the standardisation of analysis and metrics.
- B. The Parties shall cooperate on the Atlantic Interoperability Initiative to Reduce Emissions (AIRE agreement) to accelerate the deployment of environmentally friendly air traffic management solutions. The scope of cooperation may include, but shall not be limited to, exchanges of information on best practices, joint program planning, and where possible the execution of joint or coordinated pre-operational validation projects.

ARTICLE III

Management and implementation

- A. The work conducted under this Attachment shall be managed under the terms and conditions of Article V of Appendix 1. The more detailed administration of the Collaboration Projects shall be defined by the Parties in a joint Administration Document approved by the Coordination Committee established under Appendix 1. This document shall describe the means, roles, responsibilities and participants for each particular undertaking as well as the working processes for the Collaboration Projects.
- B. The work to be performed under this Attachment shall be further broken down into individual or groups of related Collaboration Projects. A working document approved by the Coordination Committee established under Appendix 1 shall detail the scope of work of each individual or group of Collaboration Projects; identify the Technical Program Liaisons for both Parties; and describe the relationship of each activity with other activities.

ARTICLE IV

Funding

Each Party shall assume the cost of the work performed by it under this Attachment.

ARTICLE V

Intellectual property rights

The terms and conditions set forth in Article VIII (Intellectual Property Rights) of the Memorandum shall apply. However, if a Party needs access to intellectual property owned by the other Party in order to use intellectual property jointly developed by the Parties under this Attachment, such access shall be granted by the owner under the conditions detailed in Article VIII.B of the Memorandum, unless stricter conditions for such access rights, on an exceptional basis, have been agreed by the Parties.

ARTICLE VI

Points of contact

The Parties shall inform each other of their respective points of contact for the technical coordination and management of the Collaboration Projects to be carried out under this Attachment.

TO MEMORANDUM OF COOPERATION
NAT-I-9406A
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

COLLABORATION ON AIR TRAFFIC MANAGEMENT
PERFORMANCE MEASUREMENT

ARTICLE I

Purpose

The purpose of this Appendix is to implement Annex 1 to Memorandum of Cooperation NAT-I-9406A between the United States of America and the European Union (the "Memorandum") by setting forth the terms and conditions for cooperation to develop comparable operational performance measures, including measures concerning gate-to-gate operational performance and cost-efficiency, as well as the influence of the Air Traffic Management (ATM) system on fuel efficiency. Comparable measures and methodologies are a key element of industry consensus and collaboration. This work is a continuation of the U.S./Europe Comparison of ATM-related operational performance reports produced by the Federal Aviation Administration (FAA) and the European Organisation for the Safety of Air Navigation (EUROCONTROL) and first published in 2009.

ARTICLE II

Principles

The cooperative activities under this Appendix shall be conducted on a reciprocal basis in accordance with the principles set out in Article I.C of the Memorandum.

A Performance Analysis Review Committee (PARC), established under Article IV of this Appendix, shall monitor the implementation of this Appendix. The PARC may propose, pursuant to Article IV of this Appendix, Attachments with respect to the domains identified.

ARTICLE III

Scope of work

- A. The scope of work is to contribute to a common performance measurement framework for ATM. The work may include, but is not limited to, the activities set out in paragraphs A1 and A2 of the present Article:
1. Developing common definitions and data to facilitate an educational exchange of information on the challenges and successes of each Party's ATM performance measurements;
 2. Establishing a standard methodology for assessing operational performance that supports common focus areas. The current performance frameworks applied in the European Union and the United States shall be an input to this development.

- B. The Parties shall, as necessary, produce, on a reciprocal basis, either individually or jointly for exchange between them, analyses and reports focused on common methodologies to produce comparable results per the following guidelines:
1. Results shall build on the 2009 joint FAA and EUROCONTROL report comparing ATM operational performance;
 2. Analyses shall include detailed breakouts of delays and fuel efficiencies by phase of flight (gate, taxi, departure, cruise, and descent);
 3. Results shall include facility level performance to the extent both Parties deem appropriate, consistent with current FAA and EUROCONTROL reports;
 4. During the process of completing analyses, data and detailed methods shall be shared between the Parties to assure consistency in methods; and
 5. Analyses shall identify causal factors driving differences in performance, as appropriate, including weather, scheduling practices, and ATM technologies and procedures.
- C. The Parties agree that future areas of cooperation may include Air Navigation Services cost breakdowns and related cost-efficiency metrics.
- D. The Parties expect the execution of joint analyses or the preparation of periodic reports of achieved performance to be a continuous process. The Parties agree to make the results of this work publicly available, unless otherwise jointly decided by the Parties, to the extent consistent with applicable law.

ARTICLE IV

Management

Subject to the availability of funds, the Parties shall establish and manage projects and activities and ensure that the work in progress remains result-oriented, pragmatic and timely, creating synergies while avoiding duplications. To this end, a Performance Analysis Review Committee (PARC) shall be established which shall:

- A. Be co-chaired by one representative each from the FAA and the European Commission or their respective designees.
- B. Be composed of an equal number of participants designated by the FAA and the European Commission.
- C. Meet at least once a year to:
 - 1. Oversee the activities set out in Article III of this Appendix;
 - 2. Assess the achieved results;
 - 3. Develop proposals for new projects or joint activities to be established as Attachments to this Appendix, or as amendments to Attachments, which the PARC shall submit to the Executive Committee established pursuant to Article IV of Annex 1 to the Memorandum for adoption;

4. As necessary, consult on industry participation mechanisms or refer questions concerning the activities under this Appendix to the Executive Committee established pursuant to Article IV of Annex 1 to the Memorandum; and
 5. Approve periodic analyses and reports described in Article III of this Appendix before publication or distribution.
- D. Establish its working procedures. All decisions shall be taken by consensus between the co-chairs. These decisions shall be in writing and signed by the co-chairs or their respective designees.
- E. Report to the Executive Committee.
- F. Establish Working Groups dedicated to specific projects or activities under this Appendix, as appropriate. Each Working Group shall be composed of an appropriate and limited number of participants of the Parties. The Working Groups shall meet as necessary, shall comply with instructions given by the PARC, and shall report to it on a regular basis.

ARTICLE V

Immunity and liability

The Parties may address immunity and liability issues associated with activities under this Appendix in the relevant Attachment, as appropriate.

ARTICLE VI

Implementation

- A. All work provided under this Appendix shall be described in Attachments, as necessary, which, upon their entry into force, shall become part of this Appendix.
- B. Each Attachment shall contain a description of the work to be performed, including the location and planned duration of the work; the personnel and other resources required to accomplish the work; the estimated costs; and any other pertinent information concerning the work.

ARTICLE VII

Financial provisions

Unless otherwise specified in an Attachment to this Appendix, each Party shall bear the costs of the activities it performs.

ARTICLE VIII

Points of contact

The designated offices for the coordination and management of this Appendix are:

A. For the United States of America:

Federal Aviation Administration
Office of International Affairs
Africa, Europe & Middle East Office, AEU-10
Wilbur Wright Bldg., 6th Floor, East
600 Independence Avenue, S.W.
Washington, D.C. 20591 - USA
Telephone: + 1 202-267-1000
Facsimile: + 1 202-267-7198

B. For the European Union:

Directorate for Aviation and International Transport Affairs
Directorate-General for Mobility and Transport
European Commission
Rue de Mot 24
1040 Brussels - Belgium
Telephone: + 32 2 296 84 30

ARTICLE IX

Termination

Termination of this Appendix shall terminate all Attachments adopted by the Parties pursuant to this Appendix.

TO MEMORANDUM OF COOPERATION
NAT-I-9406A
BETWEEN THE UNITED STATES OF AMERICA
AND THE EUROPEAN UNION

SESAR-NEXTGEN COOPERATION FOR
DEPLOYMENT ACTIVITIES AND GLOBAL INTEROPERABILITY

ARTICLE I

Purpose

The purpose of this Appendix is to implement Annex 1 to Memorandum of Cooperation NAT-I-9406A between the United States of America and the European Union (the "Memorandum") by setting forth the terms and conditions under which the Parties shall establish cooperation with the goal of ensuring global interoperability in deployment programs and projects between their respective air traffic management (ATM) modernisation programs, NextGen and SESAR, taking into account the interests of civil and military airspace users.

ARTICLE II

Principles

The cooperative activities under this Appendix shall be conducted on a reciprocal basis in accordance with the principles set out in Article I.C of the Memorandum. A Deployment Coordination Committee (DCOM) established under Article IV of this Appendix, shall monitor implementation of this Appendix and identify the domains that allow specific opportunities for participation in each Party's consultative bodies, initiatives, and deployment programs and projects. The DCOM may propose, pursuant to Article IV of this Appendix, Attachments with respect to the domains identified.

ARTICLE III

Scope of work

- A. The scope of the work is to contribute to the promotion of global interoperability with respect to the ATM deployment activities of the Parties. The work may include, but is not limited to, the activities set out in paragraphs A.1 to A.3 of the present Article.
1. Broad Areas of Collaboration:
 - (a) Sharing of information and views in the field of global harmonisation of standards and procedures required for ATM deployment (implementation);

- (b) Sharing of information regarding NextGen and SESAR implementation plans, with the aim of identifying implementation priorities and synergies;
- (c) Harmonising operational procedures, operational training and technical requirements;
- (d) Harmonisation of standards implementation;
- (e) Synchronising implementation activities relevant to interoperability when feasible;
- (f) Identifying potential gaps and needs in terms of industry standards;
- (g) Identifying potential gaps, risks, issues and opportunities on interoperability and global harmonisation, and exchanging information on potential recommended actions for mitigation;
- (h) Identifying risks, issues, priorities and opportunities to timely program implementation and sharing potential mitigation strategies;
- (i) Monitoring risks, issues and opportunities and then sharing the findings of the respective actions between the Parties;
- (j) Defining what constitutes success in ATM modernisation and harmonisation and then monitoring the status of activities to ensure that success;

- (k) Sharing best practices and lessons learned, both in operations and project management, during the course of implementation activities;
- (l) Business cases and investment decisions;
- (m) Sharing information on transversal issues on relevant deployment matters; including but not limited to International Civil Aviation Organization (ICAO) implementation issues. Coordination of technical efforts in support of global and ICAO provision and implementation activities in the field of ATM; and
- (n) Assessment of full life cycle view and development of full life cycle strategies from deployment perspective.

2. Programmatic Focus Areas of Collaboration:

- (a) Communications, Navigation and Surveillance (CNS), including Data Communication (U.S.) / Datalink Services (EU);
- (b) Information Management including System Wide Information Management interoperability (SWIM) (U.S.) / (EU), which shall include:
 - SWIM governance
 - SWIM standards usage
 - SWIM services usage

(c) Arrival Management including Time-Based Flow Management (TBFM – U.S.) / Arrival Management (AMAN – EU);

(d) Program Performance Assessment; and
incentive mechanisms supporting implementation.

For each of the Programmatic Focus Areas, harmonisation risks, issues and opportunities shall be identified and reported and, where feasible, proposals for addressing these areas shall be developed. The DCOM may identify new areas of future collaboration under Article IV of this Appendix.

3. Collaborative Projects:

Collaborative Projects include areas deemed necessary for mitigating interoperability and harmonisation risks for implementation. Collaborative projects can include ad-hoc projects for which the Parties decide that focused coordination or synchronisation is needed.

B. The Parties shall, as necessary, share or produce on a reciprocal basis, either individually or jointly for exchange between them, analysis and reports describing their deployment programs, projects, and activities related to the technical and operational aspects of ATM.

ARTICLE IV

Management

Subject to the availability of funds, the Parties shall establish and manage projects and activities and ensure that the work in progress remains result-oriented, pragmatic and timely, creating synergies while avoiding duplications. To this end, a Deployment Coordination Committee (DCOM) shall be established, which shall:

- A. Be co-chaired by one representative each from the Federal Aviation Administration (FAA) and from the European Commission or their respective designees.
- B. Be composed of an appropriate number of participants designated by the FAA and the European Commission.
- C. Meet at least twice per year to:
 - 1. Oversee the activities set out in Article III of this Appendix;
 - 2. Assess the achieved results;
 - 3. Propose the launch of new projects and activities, as appropriate;

4. Develop proposals for Attachments or amendments to Attachments to this Appendix which the DCOM shall submit to the Executive Committee established pursuant to Article IV of Annex 1 to the Memorandum for adoption; and
 5. Monitor and ensure the effective implementation of this Appendix and, as necessary, consult on industry participation mechanisms or refer questions to the Executive Committee.
- D. Establish its working procedures. All decisions shall be taken by consensus between the co-chairs. These decisions shall be in writing and signed by the co-chairs or their respective designees.
- E. Report to the Executive Committee.
- F. Establish Working Groups dedicated to specific projects or activities under this Appendix, as appropriate. Each Working Group shall be composed of an appropriate and limited number of participants of the Parties. The Working Groups shall meet as necessary, shall comply with instructions given by the DCOM, and shall report to it on a regular basis.

ARTICLE V

Immunity and liability

The Parties may address immunity and liability issues associated with activities under this Appendix in the relevant Attachment, as appropriate.

ARTICLE VI

Implementation

- A. All work provided under this Appendix shall be described in Attachments, which, upon their entry into force, shall become part of this Appendix.
- B. Each Attachment shall contain a description of the work to be performed by the Parties or the Working Groups they designate to carry out the work, including: the location and planned duration of the work; the personnel and other resources required to accomplish the work; the estimated costs; and any other pertinent information concerning the work.

ARTICLE VII

Financial provisions

Unless otherwise specified in an Attachment to this Appendix, each Party shall bear the costs of the activities it performs.

ARTICLE VIII

Points of contact

A. The designated offices for the coordination and management of this Appendix are:

1. For the United States of America:

Federal Aviation Administration
Office of International Affairs
Africa, Europe & Middle East Office, AEU
Wilbur Wright Bldg., 6th Floor, East
600 Independence Avenue, S.W.
Washington, D.C. 20591 - USA
Telephone: + 1 202-267-1000
Facsimile: + 1 202-267-7198

2. For the European Union:

European Commission
Directorate-General for Mobility and Transport
Directorate for Aviation
Single European Sky Unit
Rue de Mot 24
1040 Brussels - Belgium
Telephone: + 32 2 296 84 30

- B. Technical program liaisons for specific activities shall be established as indicated in the Attachments to this Appendix.

ARTICLE IX

Termination

Termination of this Appendix shall terminate all Attachments adopted by the Parties pursuant to this Appendix.
