International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

**Fourth North American, Central American and Caribbean Working Group Meeting
(NACC/WG/4)**
Ottawa, Canada, 24 to 28 March 2014

Agenda Item 3.	**Follow-up on the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (NAM/CAR RPBANIP) Progress** **3.3 ANI/WG and other regional group progress reports**

ANI/WG PROGRESS REPORT

(Presented by ANI/WG Chairman)

EXECUTIVE SUMMARY
This working paper presents the progress achieved by the ANI/WG since its creation in the First NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/1). This paper is complemented with the progress reports of the ANI/WG Task Forces. The paper presents the action Plan for developing the ANI/WG activities based on the RPBANIP and the actions for supporting the AN-CONF/12 recommendations.

Action:	The suggested action is presented in Section 3
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Environmental Protection
References:	• NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (NAM/CAR RPBANIP) Version 3.0 • First NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/1), Mexico City, Mexico, 29 July to 1 August 2013 • Twelfth Air Navigation Conference (AN-Conf/12), Montreal, Canada, 19 to 30 November 2012 recommendations • ANI/WG teleconferences…

1.   **Introduction**

1.1   The ANI/WG was established in response to NACC/DCA/4 Conclusion 4/9 - *Consolidation of Sub-Regional Working Groups in the CAR Region* and endorsed by all NAM/CAR Directors in 2012 through their respective sub-regional DCA Meetings.

1.2 The objective of the ANI/WG is to consolidate the existing sub-regional working groups, reduce the number of meetings, avoid duplication, expedite work progress, and improve regional harmonization focused on the Air Traffic Management (ATM), Communications, Navigation and Surveillance (CNS) and Aeronautical Information Management (AIM) air navigation fields.

2. ANI/WG Progress

ANI/WG/1 Meeting

2.1 An overview of the results and organization of the ANI/WG/1Meeting is shown in **Appendix A** to this paper.

2.2 The Terms of Reference (ToRs), methodology, and work programme of the Group are detailed in the final report of the ANI/WG Meeting, which was delivered to States through State Letter EMX0668, dated 23 September 2013. **Appendix B** presents the current ToR, methodology, and work programme of the ANI/WG.

ANI/WG Action Plans

2.3 Following the Decision ANI/WG1/4 - *ANI/WG Action Plans*, the ANI/WG reviewed the Regional Performance Objectives (RPOs) of the RPBANIP related to the AIM, ATM and CNS fields, and defined several proposed actions plans for the States/Territories to follow-up an ease implementation of the RPOs and the agreed Air Navigation targets.

2.4 Similarly, in relation to Conclusión ANI/WG/1/5 - *Follow-up on AN/CONF/12 recommendations* with the formation of an Ad-hoc group and Decision ANI/WG/1/6 - *Update the ANI/WG work programme to include AN/CONF/12 recommendations*, the ANI/WG also reviewed its work programme and determine that the necessary actions to support the AN.CONF/12 recommendations will be included in the Action Plans.

2.5 The Proposed Action Plans are presented in **Appendix C.**

Activities carried out

2.6 Since the ANI/WG/1 Meeting, the ANI/WG have conducted at least 1 Teleconference in following the assigned tasks and preparing for the NACC/WG/4 Meeting, highlighting:

- carried out a review of the 17 Conclusions/Decisions of the ANI/WG/1 Meeting. ICAO showed the Website for the ANI/WG. From this the following agreements were made:
- all TFs have carried out their coordination for reviewing their ToRs and develop their work programmes.
- preliminary review of proposed revised ToR and their work programmes of the AIM, ADS-B, AMHS and PBN TF
- ICAO will implement the ANI/WG website with all the TFs information by end of February
- the ANI/WG chairman will coordinate with the ANConf/12 Ad-hoc Groups and the ANI/WG members for developing the necessary actions plans to present to the NACC/WG/4 Meeting

- ICAO recalled the importance of the NACC/WG and the ANIWG as technical advising bodies to the Directors of Civil Aviation (DCAs) and so the need to present all the necessary proposal of conclusions for the approval of the DCAs.
- A half day working session for the ANI/WG and other implementation works is scheduled on afternoon Tuesday.
- It was also highlighted the deadlines for submission of papers for the NACC/WG/4 Meeting.
- All TF rapporteur will present their TF Progress report as a Working Paper for the NACC/WG/04 Meeting by 28 Feb 2014
- All TF Rapporteurs to inform ANI/WG Chairman their attendance to the NACC/WG/4 Meeting by 28 February as to know the papers to be presented and the intended results expected.
- ICAO informed on the 2014 workshops and the TF Meetings for all participants to attend such as: AIDC, AMHS, ADS-B, GOLD, ATFM and PBN TF Meeting together with a workshop.
- ICAO recalled that the NACC/WG/4 Meeting was supported by the CAR Project for fellowships for those project Member States.

2.7   With the support of the ICAO NACC Regional Office, a website for the operation of the ANI/WG under the sponsoring of ICAO has been implemented in the following address: http://www.icao.int/N<ACC/Pages/nacc-regionalgroups-aniwg.aspx

Deliverables and results

2.8   From the ANI/WG Action Plans developed, the States/Territories are invited to follow-up specific improvements foreseen with the RPBANIP:

a)   Reduction of converters in the processing of the ICAO FPL2012
b)   Report on the AMS VHF improvement according to Plan
c)   Improvement in radar Data Sharing agreements
d)   Commitment for NDB deactivation by 2018

2.9   Based on the progress and discussion of the ANI/WG TFs and the ANI/WG itself, the following draft conclusion is formulated:

DRAFT CONCLUSION
NACC/WG/4/XX   **APPROVAL OF ANI/WG ACTION PLANS AND ITS TASK FORCES TORS AND WORK PROGRAMME**

That in order to align the implementation activities with the regional NAM/CAR Air Navigation, and to optimize the coordination and results of the implementation working groups, the NAM/CAR States/ Territories:

a) Approve the ANI/WG Actions Plans and the revised ToRs and work programme of its Task forces; and

b) urge all the sub-regional working groups to align their work programme by Dec 2014 with the ANI/WG Action Plans and TF work programme.

2.10   Even though the ANI/WG has only conducted a first face-to-face meeting, effective teleconferences are being organized among the Taskforces; however the ANI/WG membership is not complete to all NAM/CAR Members and lack of participation has been faced.

2.11   The ANI/WG thanked ICAO for providing the support with the Website on ANI/WG, which will streamline the coordination and continuous reporting and exchange of ideas among the NAM/CAR States/territories.

3.   Suggested Actions

3.1   The Meeting is invited to:

a)   review and evaluate the ANI/WG progress;

b)   review and suggest changes if needed to the ANI/WG Tor and work programme;

c)   add new members as identified by the Meeting;

d)   approve the draft conclusion for approval of the Action Plans suggested by the ANI/WG; and

e)   propose any other action or task as deem necessary

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**APPENDIX /APÉNDICE A
ANI/WG/1 MEETING RESULTS**

1   Mr. Julio Mejia from Dominican Republic and Mr. Rohan Garib from Trinidad and Tobago were elected as Chairman and Vice Chairman of the ANI/WG, respectively.

2   The ANI/WG followed-up on the valid decisions and draft conclusions from the First Eastern Caribbean Civil Aviation Technical Group Meeting (E/CAR/CATG/1) held in June 2013. The Meeting considered all of the E/CAR/CATG conclusions as valid and for reference to be considered by the ANI/WG. In this same regard, the ANI/WG took note as a reference, of the conclusions/decisions from the 97th Central American and Panama DGCAs Meeting (DGAC/CAP/97); Twenty-fourth Meeting of Directors of Civil Aviation of the Eastern Caribbean (E/CAR/DCA/24); Thirteenth Meeting of Directors of Civil Aviation of the Central Caribbean (C/CAR/DCA/13); Second Meeting of the Programmes and Projects Review Committee (PPRC/2); Third North American, Central American and Caribbean Working Group Meeting (NACC/WG/3); and Fourth Meeting of North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/4); and the DGAC/CAP/95, C/CAR/DCA/11 and GREPECAS/16 Meetings.

3   The ANI/WG agreed that the actions derived from the conclusions and decisions from the meetings above will be included in the ANI/WG work programme in order to follow-up on the former CAR working group(s) activities, GREPECAS and the Directors of Civil Aviation conclusions.

4   The coordination scheme of the ANI/WG and the other regional bodies was agreed as follows:
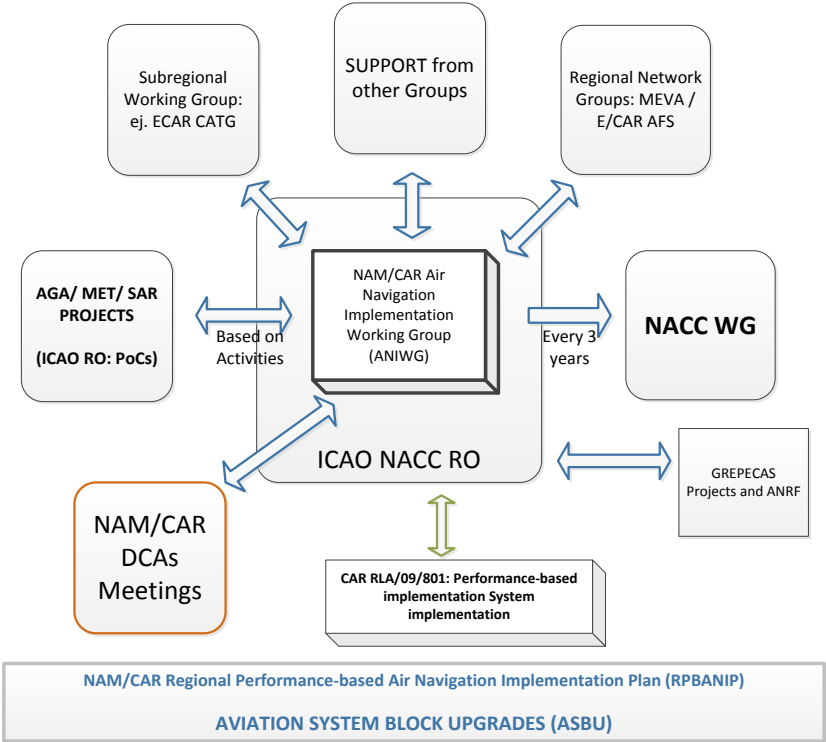
5.   The ANI/WG made a followed of the progress in the implementation of several regional priorities like PBN, FUA, ATFM, Data Link application/GOLD, ADS-B, AMHS, communication improvements, automation achievements, etc. In this regard, the ANI/WG defined its Terms of Reference (ToRs) and work programme supported by the establishment of several Task Forces aimed to specific operational improvements:

a)   Implementation of the Performance-Based Navigation (PBN) Airspace Concept Task Force
b)   Implementation of Air Traffic Flow Management (ATFM) Task Force
c)   Implementation of ATS Message Handling Systems (AMHS) Task Force
d)   Implementation of Automatic Dependent Surveillance – Broadcast (ADS-B) Task Force
e)   Implementation of Air Traffic Services Inter-Facility Data Communication (AIDC) Task Force
f)   Implementation of Aeronautical Information Management (AIM) Task Force
g)   Operational Analysis of the GOLD Document -Version 2 Task Force

6.   Since the ANI/WG represents the consolidation of the sub-regional working groups, it reviewed the list of valid Conclusions/Decisions of the Seventh Central American Air Navigation Experts Working Group (CA/ANE/WG/7) and the Ninth Central Caribbean Working Group Meeting (C/CAR/WG/9) held in 2012. As a result of the review, all Conclusions/Decisions of the CA/ANE/WG and C/CAR/WG were superseded or completed. Likewise, the review and consolidation of implementation activities of each sub-regional working group was carried out based on the presentations by the chairmen of the former regional implementation groups (E/CAR/WG, CA/ANE/WG and C/CAR/WG) reporting the progress achieved since their last meetings.

7.   Full integration of NAM and CAR Regions with ANI/WG participation by Canada and United States was achieved, as well as the active involvement of IATA and other international organizations.

8.   The ANI/WG reviewed and supported the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (NAM/CAR RPBANIP) Version 3.0 after reviewing the RPBANIP alignment with the ICAO Aviation System Block Upgrade (ASBU) modules, and Nav Canada and United States Air Navigation (AN) National Plans. The ANI/WG recalled that by adopting the ASBUs, all air navigation regional plans and implementation activities will be updated during 2013, and further analysis on the Twelfth Air Navigation Conference (AN-Conf/12) Recommendations is being conducted to identify additional ANI/WG actions.

9.   The ANI/WG agreed on the need for States to provide active support to the ICAO position when developing their proposals and delegation briefs in preparation to the WRC-15 to ensure that decisions taken by the Conference are in favor of the aeronautical requirements (Assembly Resolution A36-25 refers).

10.   Also the ANI/WG recognized the value of Project RLA/09/801 — *Implementation of the Performance Based Air Navigation Systems in the CAR Region* as a tool to streamline air navigation matters in the CAR Region and considered that States and Territories, together with the users and the Civil Aviation Training Centres, should work together to enforce and improve training in the Region.

11.   The ANI/WG reviewed the proposed agenda of the Fourth North American, Central American and Caribbean Working Group Meeting (NACC/WG/4) to be held in March 2014, and provided comments and observations.

12.	The Second Meeting of ANI/WG shall be held in 2015, hosted by Costa Rica. The Meeting tentatively agreed to hold the ANI/WG/2 Meeting during the first week of June 2015.

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APPENDIX B
TERMS OF REFERENCE AND WORK PROGRAMME OF THE
NAM/CAR AIR NAVIGATION IMPLEMENTATION WORKING GROUP (ANI/WG)

1.   **Background**

The NAM/CAR Air Navigation Implementation Working Group (ANI/WG) was established in response to Conclusion 4/9 - *Consolidation of Sub-Regional Working Groups in the CAR Region* at the Fourth Meeting of North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/4) and endorsed by the 96th Meeting of Directors General of Civil Aviation of Central America and Panama (DGAC/CAP/96) held in Mexico City, Mexico, from 22 to 25 May 2012, the Twelfth Meeting of Directors of Civil Aviation of the Central Caribbean (C/CAR/DCA/12) held in Punta Cana, Dominican Republic, from 10 to 13 July 2012, and the Twenty-fourth Meeting of Directors of Civil Aviation of the Eastern Caribbean (E/CAR/DCA/24) held in Martinique, France, from 2 to 5 October 2012.

This objective of the ANI/WG is to consolidate the existing sub-regional working groups, reduce the number of meetings, avoid duplication, expedite work progress, and improve regional harmonization focused on the Air Traffic Management (ATM), Communications, Navigation and Surveillance (CNS) and Aeronautical Information Management (AIM) air navigation fields.

2.   **Terms of Reference**

a)   Promote development of operational initiatives and Aviation System Block Upgrades (ASBUs) related to the AIM, ATM and CNS fields according to ICAO Doc 9750 - *Global Air Navigation Plan*

b)   Support air navigation system(s) implementation and services identified in the CAR/SAM Air Navigation Plan, Air Navigation Plans (ANPs) of the NAM Region Air Navigation Service Providers (ANSPs), and potentially CAR/SAM and NAM Region e-ANPs related to the AIM, ATM and CNS fields according to ICAO Doc 9750 - *Global Air Navigation Plan*

c)   Harmonize operational improvements and associated implementation activities in accordance with the NAM/CAR Regional Performance-based Air Navigation Implementation Plan (NAM/CAR RPBANIP) and update the NAM/CAR RPBANIP as required

d)   Promote ICAO Strategic Objectives

e)   Report work programme progress to the NAM and CAR Directors of Civil Aviation and the North American, Central American and Caribbean Working Group (NACC/WG) Meetings

3.   **Work Programme**

The ANI/WG Work Programme is based on Regional Performance Objectives (RPO) activities/tasks contained in the NAM/CAR Regional Performance-based Air Navigation Implementation Plan (RPBANIP) for the AIM, ATM and CNS fields.
The ANI/WG will coordinate and be linked with other groups and projects as shown below:

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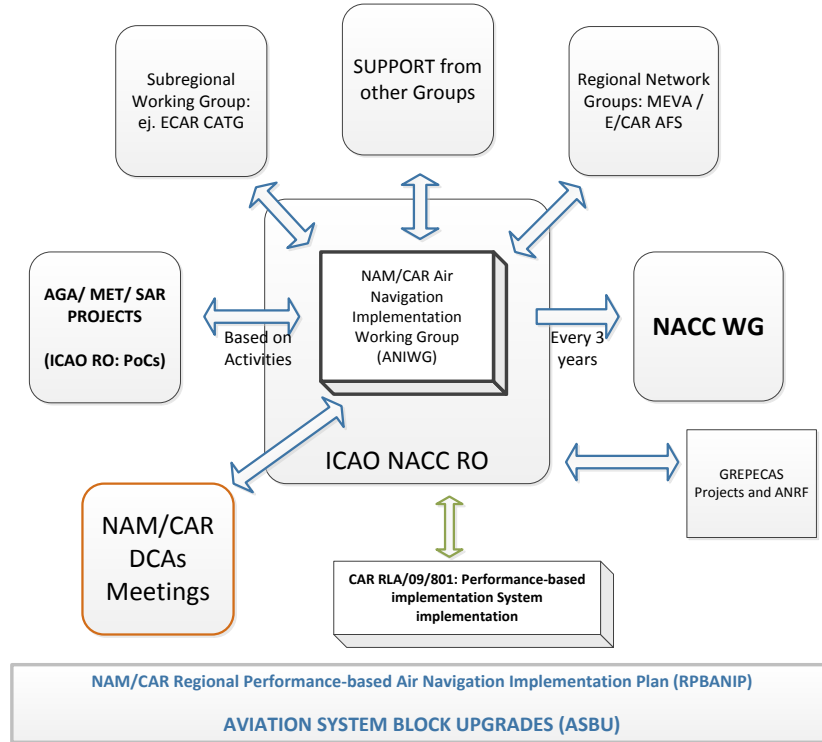
Representatives are expected to present their work progress and provide inputs to the NAM/CAR ANI/WG meetings on behalf of their State/Territory/International Organization according to the following:

a)   Associate implementation of operational improvements with the seven components of Doc 9854, (Airspace Organization and Management (AOM), Demand/Capacity Balancing (DCB), Aerodrome Operations (AO), Traffic Synchronization (TS), Conflict Management (CM), Airspace User Operations (AUO) ATM Service Delivery Management (ATMSDM)) as appropriate

b)   Provide recommendations to develop proposals for amendment to ICAO Doc 7030, Doc 8733 and the Air Navigation Plans of the NAM Region ANSPs to satisfy ATM community expectations

c)   Develop guidelines to assist States/Territories/International Organizations to develop and implement their Air Navigation Services (ANS) National Plans related to the AIM, ATM and CNS fields so as to align with the RPBANIP

d)   Monitor implementation of air navigation facilities and procedures and take appropriate action to resolve intraregional and interregional interoperability issues

e)   Coordinate contributions from the Aerodromes, and Ground Aids (AGA), Aeronautical Meteorology (MET), and Search and Rescue (SAR) fields through the respective Points-of-Contact, as required

f)   Promote close cooperation among States, Territories and International Organizations to optimize the use of available expertise and resources

g)   Provide recommendations to improve human resource planning and development in line with ICAO guidelines

h)   Quantify cost/benefit analysis of performance measurements, deadlines, stakeholders and results in terms of operational safety and environmental benefits for each implementation activity undertaken to address the RPBANIP
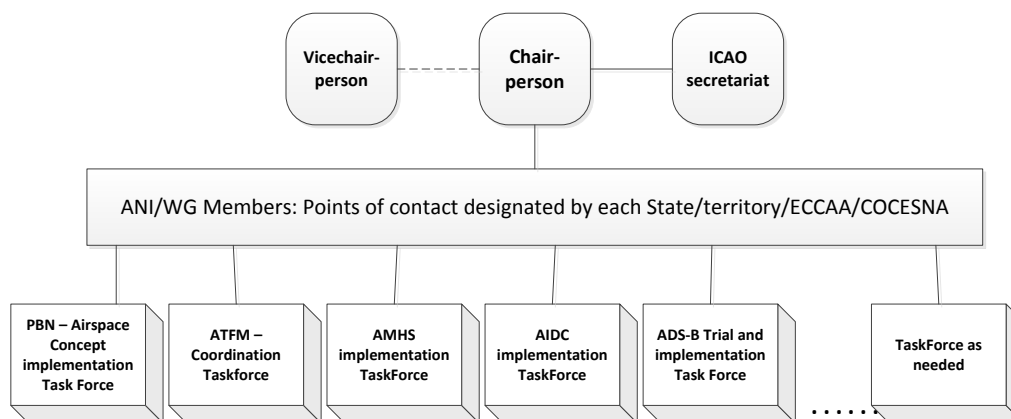
4.   Membership

All ICAO States, Territories and International Organizations to which the ICAO NACC Regional Office is accredited shall be members of the ANI/WG. Other States adjacent to the CAR and NAM Regions may be invited to participate in the ANI/WG.

5.   Working Methods

a)   The ANIWG will use the following classification/definitions to record recommendations in t meeting reports:

- Decisions: Internal actions of the ANI/WG
- Draft Conclusions: Actions requiring communication to States and Territories and/or endorsement by Meetings of the NAM and CAR DCAs

b)   The Vice-Chairperson, who will also be a representative from a CAR or NAM State or Territory, will be elected for the same period as the Chairman and will carry out the duties of the Chairperson when requested to do so by him/her. The duties of the Chairperson are the following:

- Chair ANI/WG meetings
- Coordinate fulfillment of tasks and action plans
- Closely coordinate with the Secretariat on development of agendas and planning, and conduct ANI/WG meetings
- Inform the CAR and NAM Region Directors of Civil Aviation meetings on ANI/WG meeting results

c)   The ANI/WG may form committees to analyze specific topics whose duration will be valid for the time of the meeting. Task forces and Ad hoc Groups will be valid until the completion of the assigned tasks or until disbanded by the ANI/WG. All tasks and activities should be clearly defined by time and deliverables. Nominations of committee rapporteurs and/or task forces may be made by any State, Territory, COCESNA or ECCAA. For illustration, consider the following functional structure of the ANI/WG:

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        ┌──────────┐      ┌──────────┐      ┌──────────┐
        │Vicechair-│┄┄┄┄┄┄│  Chair-  │──────│  ICAO    │
        │  person  │      │  person  │      │secretariat│
        └──────────┘      └──────────┘      └──────────┘
                                │
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│ ANI/WG Members: Points of contact designated by each State/territory/ECCAA/COCESNA │
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| PBN – Airspace Concept implementation Task Force | ATFM – Coordination Taskforce | AMHS implementation TaskForce | AIDC implementation TaskForce | ADS-B Trial and implementation Task Force | TaskForce as needed |

d)   The ANI/WG will avoid duplication of work and maintain close coordination with States/Territories/International Organizations

e)   The ANI/WG will conduct activities in the most efficient manner with a minimum of formality and documentation, using electronic tools and teleconferences to ensure timely exchange of information, as required

f)   The ANI/WG Members will conduct coordination of works as follows:

•   Via written correspondance, i.e., e-mail, fax, etc.
•   Via phone and teleconference calls
•   Via a dedicated page on the ICAO NACC Regional Office Website
•   Hold meetings when necessary

g)   The ANIWG will consider inputs from other regional implementation groups and States, as appropriate

h)   The ANI/WG meetings will be convened every year except in years when the NACC/WG meets, or whenever necessary

i)   The ICAO NACC Regional Office will provide Secretariat service

5. **Meeting Sites**

 a) The ICAO NACC Regional Office will convene the ANI/WG Meeting at least six months prior to holding it

 b) The ANI/WG will meet in accordance with the following rotational scheme: Central America, ICAO, North America, ICAO, Eastern Caribbean (E/CAR), ICAO and Central Caribbean (C/CAR)

 c) Any member may, at any time, offer to host an ANI/WG meeting

6. **Points-of-Contact**

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APPENDIX C
ANALYSIS FOR PROPOSED ACTION PLANS

RPO and ASBU Block 0 Relationship

ASBU \ RPO	PIA1 Airport Operations					PIA2 SWIM			PIA3 Global Collaborative ATM							PIA4 Trajectory-based Operations		
	B015 RSEQ	B0 65 APTA	B070 WAKE	B075 SURF	B0 80 ACDM	B025 FICE	B030 DAIM	B0105 AMET	B010 FRTO	B035 NOPS	B084 ASUR	B085 ASEP	B086 OPFL	B0101 ACAS	B102 SNET	B005 CDO	B020 CCO	B040 TBO
PBN Implementation		X							X							X	X	
FUA									X									
DCB	X									X								
ATM Situational Awareness	X			X							X			X				X
Improve SAR																		
Improve Cap/Efficiency Aerodrome Operations				X	X													
COM					X	X								X				X
AIM							X											
MET								X										

The ASBU acronyms

Old ASBU Modules Numbering System	New ASBU Modules Identifiers	
65	APTA	Airport Accessibility
70	WAKE	Wake Turbulence Separation
15	RSEQ	Runway Sequencing
75	SURF	Surface Operations
80	ACDM	Airport Collaborative Decision Making
81	RATS	Remote Air Traffic Services
25	FICE	FF/ICE
30	DATM	Digital Aeronautical Information Management
31	SWIM	System Wide Information Management
105	AMET	Advanced Meteorological Information
10	FRTO	Free Route Operations
35	NOPS	Network Operations
84	ASUR	Alternative Surveillance
85	ASEP	Airborne Separation
86	OPFL	Optimum Flight Levels
101	ACAS	Airborne Collision Avoidance Systems
102	SNET	Ground-Based Safety Nets
05	CDO	Continuous Descent Operations
40	TBO	Trajectory-Based Operations
20	CCO	Continuous Climb Operations
90	RPAS	Remotely Piloted Aircraft Systems

ACTIONS TAKEN FOR ANCONF/12 RECOMMENDATIONS

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 1/1 – The draft Fourth Edition of the Global Air Navigation Plan (Doc 9750, GANP) That States: a) agree in-principle, with the replacement of the introduction by the high level policy principles as shown in the appendix and inclusion of other proposed improvements made at this Conference, into the updated draft Fourth Edition of the GANP; b) should have the opportunity to provide any final comments on the updated draft GANP to ICAO before it is considered by the ICAO Assembly in 2013; That ICAO: c) include the key air navigation policy principles presented in the appendix under "Global Air Navigation Plan" into the Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); d) develop financial policies which support efficient acquisition and implementation of global air navigation services infrastructure and aircraft equipage; e) taking a total systems and performance-based approach, create a Standards and Recommended Practices development plan for the aviation system block upgrades including the establishment of agreed global priorities between the different blocks and modules; f) define a stable and efficient process for endorsement by the 38th Session of the ICAO Assembly, for updating the GANP that ensures stability in module timelines for any future updates; and g) ensure that the nature and status of the planning information in the various documents pertaining to the GANP are consistent and complete and allow due account to be taken of the inputs from ATM research, development and deployment programmes.	a) Completed b) Completed c) to g): Note
Recommendation 1/2 – Implementation That ICAO: a) through its regional offices, provide guidance and practical assistance to States and regions and subregions when they decide to implement individual blocks or modules of the aviation system block upgrades; b) establish a group and improved mechanism for interregional cooperation to ensure harmonization of air traffic management; and c) assist States and regions in training and capacity-building towards implementation of the relevant modules of the aviation system block upgrades.	a) to c): Note.
Recommendation 1/3 – Guidance on business cases That ICAO complete the development of guidance material on business case analysis, adopting such appropriate guidance material that may be already available or under development.	Note
Recommendation 1/4 – Architecture That ICAO: a) develop, for inclusion in the first update of the GANP after the 38th Session of the ICAO Assembly, a global ATM logical architecture representation in support of the GANP and planning work by States and regions; and b) develop a breakdown of the logical architecture of the ground system to the level needed to best address the global interoperability issues.	a) and b): Note.
Recommendation 1/5 – Time reference accuracy That ICAO define the accuracy requirements for the future use of a time reference and to prepare the necessary amendments to Standards and Recommended Practices.	Note
Recommendation 1/6 – Data communications issues That ICAO: a) organize a multidisciplinary review of air traffic control communication requirements and issues; and b) review the operation, management and modernization of a regional digital network technical cooperation project and other similar regional experiences with the aim that this efficient practice can be adapted for use in other ICAO regions; That States: c) explore multi-modal solutions when appropriate to overcome transition issues; and d) anticipate and accelerate the migration of air traffic management communication systems towards more efficient technologies to timely service the aviation system block upgrade modules.	a) and b): Note c) and d): Included in COM Action Plan through regional networks: MEVA, ECAR, AFS, etc.

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 1/7 – Automatic dependent surveillance — broadcast That States: a) recognize the effective use of automatic dependent surveillance — broadcast (ADS-B) and associated communication technologies in bridging surveillance gaps and its role in supporting future trajectory-based air traffic management operating concepts, noting that the full potential of ADS-B has yet to be fully realized; and b) recognize that cooperation between States is key towards improving flight efficiency and enhancing safety involving the use of automatic dependent surveillance — broadcast technology; That ICAO: c) urge States to share automatic dependent surveillance — broadcast (ADS-B) data to enhance safety, increase efficiency and achieve seamless surveillance and to work closely together to harmonize their ADS-B plans to optimize benefits.	a) to b): Note. c) Included in Situational Awareness Action Plan under ADS-B Plans
Recommendation 1/8 – Rationalization of radio systems That ICAO and other stakeholders to explore strategies for the decommissioning of some navigation aids and ground stations, and the rationalization of the on-board communications, navigation and surveillance systems while maintaining safety and coordinating the need for sufficient system redundancy.	Included in PBN Action Plan- NDB Deactivation Plan
Recommendation 1/9 — Space-based automatic dependent surveillance — broadcast That ICAO: a) support the inclusion in the Global Air Navigation Plan, development and adoption of space-based automatic dependent surveillance — broadcast surveillance as a surveillance enabler; b) develop Standards and Recommended Practices and guidance material to support space-based automatic dependent surveillance — broadcast as appropriate; and c) facilitate needed interactions among stakeholders, if necessary, to support this technology.	a) to c): Note.
Recommendation 1/10 – Automatic dependent surveillance — self-organizing wireless data networks That ICAO consider the use of self-organizing wireless data networks based on VDL Mode-4 technology taking into account: a) possible technical advantages; b) whether it satisfies any unmet operational need; and c) its impact of forward and retro-fit on the global air transport fleet.	a) to c): Note.
Recommendation 1/11 – Automation roadmap That ICAO: a) develop a global roadmap for the evolution of ground air traffic management automation systems in line with aviation system block upgrade implementation; and b) develop performance-based system requirements for air traffic management automation systems so that: 1) where necessary these systems are interoperable across States and regions; and 2) the function and operation of these systems will result in consistent and predictable air traffic management system performance across States and regions.	a) to b): Note.

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 1/12 – Development of the aeronautical frequency spectrum resource That States and stakeholders: a) recognize that a prerequisite for the deployment of systems and technologies is the availability of adequate and appropriate radio spectrum to support aeronautical safety services; b) work together to deliver efficient aeronautical frequency management and "best practices" to demonstrate the effectiveness and relevance of the industry in spectrum management; c) support ICAO activities relating to the aviation spectrum strategy and policy through relevant expert group meetings and regional planning groups; and d) support Assembly Resolution A36-25 and the requirement for sufficient State representation of aviation interests at World Radiocommunication Conferences (WRCs) and relevant International Telecommunication Union WRC preparatory meetings; That ICAO: e) develop and implement a comprehensive aviation frequency spectrum strategy to be referenced to the Global Air Navigation Plan (GANP), which includes the following objectives: 1) timely availability and appropriate protection of adequate spectrum to create a sustainable environment for growth and technology development to support safety and operational effectiveness for current and future operational systems and allow for the transition between present and next generation technologies; 2) demonstrate efficient use of the spectrum allocated through efficient frequency management and use of best practises; and 3) clearly state in the strategy the need for aeronautical systems to operate in spectrum allocated to an appropriate aeronautical safety service; f) establish timelines and methodologies to complement the GANP planning objectives with a frequency spectrum strategy; g) continue to allocate adequate resources with a far-sighted approach to its work programmes regarding aviation spectrum challenges; h) consider a methodology to enable ATM stakeholders to effectively share ICAO material on aviation frequency spectrum as a common guidance for securing the aviation position at World Radiocommunication Conferences; and i) consider structuring the *Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies* (Doc 9718) by using a web-based platform as appropriate, to further support States in their implementation of the spectrum strategy.	a) to d): Included in COM Action Plan e) to i): Note.
Recommendation 1/13 – Potential use of fixed satellite service spectrum allocations to support the safe operation of remotely piloted aircraft systems That ICAO support studies in the International Telecommunication Union Radio Communication Sector (ITU-R) to determine what ITU regulatory actions are required to enable use of frequency bands allocated to the fixed satellite service for remotely piloted aircraft system command and control (C2) links to ensure consistency with ICAO technical and regulatory requirements for a safety service.	Note
Recommendation 1/14 – Long-term very small aperture terminal spectrum availability and protection That: a) ICAO and Member States not support additional international mobile telecommunications spectrum allocations in the fixed satellite service C-band spectrum at the expense of the current or future aeronautical very small aperture terminal networks; and b) ICAO and Member States pursue this matter in the International Telecommunication Union Radio Communication Sector (ITU-R) and during the World Radiocommunication Conference (WRC-15), with a coordinated proposal to promote a solution where the international mobile telecommunications spectrum allocation does not compromise the availability of the aeronautical very small aperture terminal networks.	a) and b): Included in COM Action Plan
Recommendation 1/15 – Performance monitoring and measurement of air navigation systems That ICAO: a) establish a set of common air navigation service performance metrics supported by guidance material, building on existing ICAO documentation (e.g. Manual on Global Performance of the Air Navigation System (Doc 9883) and the Manual on Air Navigation Services Economics (Doc 9161)); b) promote the development and use of "leading safety indicators" to complement existing "lagging safety indicators" as an integral and key component to drive improvement in performance and in the achieved management of risk; and c) encourage the early and close involvement of the regulator and oversight bodies in the development, proving of concepts and implementation of the aviation system block upgrades and regional programmes.	a) and c): Note.

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 1/16 – Access and equity considerations That States: a) ensure, as part of the aviation system block upgrade implementation, the principles of access and equity are included in all airspace modernization and redesign efforts; and b) detail how they will monitor the service providers to ensure that they are providing fair, equitable, and efficient access to all aviation services including general aviation.	a) and b): Included in methodology and activities
Recommendation 2/1 – ICAO aviation system block upgrades relating to airport capacity That the Conference: a) endorse the aviation system block upgrade modules relating to airport capacity included in Block 1 and recommend that ICAO use them as the basis of its standards work programme on the subject; b) agree in principle to the aviation system block upgrade modules relating to airport capacity included in Blocks 2 and 3 as the strategic direction for this subject; c) recommend that the ICAO Council supports the implementation of the APEX in Safety Programme and asks the Secretary General to continue ICAO participation in safety reviews and sharing of relevant safety information, as provided for in the Memorandum of Cooperation between ACI and ICAO; That ICAO: d) include, following further development and editorial review, the aviation system block upgrade modules relating to airport capacity in the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); e) States and service providers ensure that airport capacity, including relevant airport planning and operational issues, are addressed and accounted for when planning for air traffic management capacity and system performance; f) work with the Airports Council International (ACI) and other interested parties on guidance material to promote the globally-harmonized implementation of airport collaborative decision-making, including best practices and global technical standards; and That States: g) according to their operational needs, implement the aviation system block upgrade modules relating to airport capacity included in Block 0.	c) Note d) Note e) to be included by AGA Group and included in DCB Action Plan f) Note g) Note
Recommendation 2/2 – Development of ICAO provisions for remotely operated air traffic services That ICAO provide: a) updates on additional guidelines for surveillance and air and ground communications systems; b) requirements for the use of sensors and display technologies to replace visual observation to air traffic in the provision of air traffic services; and c) requirements for air traffic services (ATS) personnel and flight crew training, ATS personnel licensing and related procedures for remotely operated air traffic services.	a) to c): Note
Recommendation 2/3 – Security of air navigation systems That ICAO: a) seek the support of States and stakeholders to complete its work in developing a robust, secure aeronautical telecommunication network; and b) establish, as a matter of urgency, an appropriate mechanism including States and industry to evaluate the extent of the cyber security issues and develop a global air traffic management architecture taking care of cyber security issues.	a) to b): Note
Recommendation 2/4 – Optimized management of wake turbulence That ICAO: a) accelerate the implementation of new ICAO wake turbulence categorization systems and to pursue development of dynamic wake turbulence separation provisions with supporting implementation guidance; b) support the continuation of the cooperative work on-going addressing the static pair wise separation, with a view to having revised global provisions in place in advance of Block 1 timescales; and c) develop the wake vortex flight safety system (WVSS) concept description along with a proposed system architecture with the possibility for WVSS to be included in the aviation system block upgrade Modules B1-70, B2-70, B1-85 and B2-85.	a) to c): Note

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 2/5 – Performance-based navigation for terminal and approach operations implementation That States and stakeholders: a) urgently implement, where appropriate, performance-based navigation for terminal and approach operations in accordance with Assembly Resolution A37-11; b) urgently adopt efficient operations approval procedures and support the mutual recognition of other States' operational approvals; c) share their best practices including required navigation performance authorization required implementation initiatives as well as relevant flight operational safety assessment documentation with other States; d) determine operational requirements in support of their airspace concept in accordance with the processes described in the *Performance-based Navigation (PBN) Manual* in order to select the appropriate PBN specification; e) including regulators, airport authorities, air navigation service providers, commercial operators, General Aviation and the military, work together at all levels and in close coordination to ensure successful performance-based navigation implementation; f) international organizations and industry continue to provide resources to support ICAO with the development of provisions, guidance and training material in support of performance-based navigation implementation; and g) States, when considering performance-based navigation routes arriving at and departing from airports, should ensure that air navigation service providers and aircraft operators involve airport operators from the outset so that they may consult fully with local communities in order to avoid adverse noise impact on those communities.	a) to e) Included in PBN Action Plan f) IOs provide resources to support ICAO with the development of provisions, guidance and training material in support of PBN implementation g) To consider in PBN activities for PBN routes arriving at and departing from airports, should ensure that air navigation service providers and aircraft operators involve airport operators from the outset so that they may consult fully with local communities in order to avoid adverse noise impact on those communities
Recommendation 2/6 – Development of ICAO provisions for performance-based navigation for en route terminal and approach operations That ICAO study and make appropriate additions where required to the ICAO provisions, including: a) required navigation performance authorization-required departure navigation specification; b) the application of performance-based navigation standard terminal arrival routes for en route independent simultaneous approaches; c) assessment of the need for ICAO provisions on the use of ground-based augmentation system to append standard instrument arrival and standard instrument departure procedures to approach and landing trajectory; d) development of separation minima to support all performance-based navigation specifications and which will also allow for operations where mixed performance requirements are in effect; e) advanced use of performance-based navigation to support aviation system block upgrade modules; f) continued development of provisions, guidance and training material in support of performance-based navigation implementation; and g) develop and make available the minimum qualification requirements for personnel to attend performance-based navigation procedure design training.	a) to g): Note.
Recommendation 3/1 – ICAO aviation system block upgrades relating to performance improvement through the application of system-wide information management That the Conference: a) endorse the aviation system block upgrade module relating to performance improvement through the application of system-wide information management included in Block 1, and recommend that ICAO use it as the basis of its work programme on the subject; b) agree in principle with the aviation system block upgrade module relating to performance improvement through the application of system-wide information management included in Block 2, as the strategic direction for this subject; That ICAO: c) include, following further development and editorial review, the aviation system block upgrade modules relating to performance improvement through the application of system-wide information management for inclusion in the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP).	c) Note

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 3/2 – Development of a global system-wide information management concept That ICAO: a) undertake further work to develop a global system-wide information management concept for air traffic management operations and related ICAO provisions that may be necessary; b) at the appropriate time coordinate information management principles and performance-based information management; c) perform additional work on the global implementation of those principles and framework for all air traffic management information through the development of appropriate information management/system-wide information management concepts to be ready in 2014 for subsequent system development work in Block 1 and to include in its work programme, specific activities tailored at coordinating system-wide information management deployment at a local, regional and global level; d) update the information management/system-wide information management (IM/SWIM) working arrangements; That States and stakeholders: e) work together to demonstrate how system-wide information management capabilities and functions will meet the needs of the future air traffic management system.	a) to d): Note. e) To be included in adopting B1 future modules
Recommendation 3/3 – Development of ICAO provisions relating to system-wide information management That: a) under the leadership of ICAO, develop detailed technical specifications for system-wide information management in close collaboration with the aviation community; b) detailed technical specifications for system-wide information management should be open and rely on generic international standards to the extent possible; and c) ICAO undertake work to identify the security standards and bandwidth requirements for system-wide information management.	a) to c): Note.
Recommendation 3/4 – State and industry and industry support of system-wide information management a) industry support the transition towards system-wide information management by providing appropriate systems supporting automation and the exchange of all relevant air traffic management data in a globally standardized manner; and b) States and all relevant stakeholders contribute to further development and harmonization of performance-based information management.	a) To be included in adopting future B1 Modules b) Included in AIM Action Plan
Recommendation 3/5 – Operational performance through flight and flow – information for a collaborative environment That the Conference: a) endorse the aviation system block upgrade module relating to flight and flow – information for a collaborative environment included in Block 1, and recommend that ICAO use it as the basis of its work programme on the subject; b) agree in principle with the aviation system block upgrade module relating to flight and flow – information for a collaborative environment included in Blocks 2 and 3, as the strategic direction for this subject; That ICAO: c) include, following further development and editorial review, the aviation system block upgrade modules relating to flight and flow – information for a collaborative environment for inclusion in the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); d) investigate, as part of the post-implementation review of the FPL2012, proposals for the implementation of all performance-based navigation codes and other capabilities into the flight plan, having regard to an impact assessment including cost benefit analysis and other factors; e) convene a symposium, as soon as possible, where interested partners would develop an end-to-end advanced system demonstrations of new air traffic management concepts to support a common understanding of concepts such as SWIM, FF-ICE trajectory-based operations and collaborative decision-making; That States: f) and industry work through ICAO to mature the flight and flow – information for a collaborative environment concept; g) support the development of a flight information exchange model; h) according to their operational needs, implement the aviation system block upgrade modules relating to improved operational performance through flight and flow – information for a collaborative environment included in Block 0.	c) and d): Note e) Noted. . f) States and IOs work through ICAO to mature the FF-ICE for a collaborative environment concept; g) to h) Included in COM Action Plan

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 3/6 – ICAO aviation system block upgrades relating to service improvement through aeronautical information management as well as digital air traffic management information That the Conference: a) endorse the aviation system block upgrade module relating to service improvement through the integration of digital air traffic management information included in Block 1 and recommend that ICAO use it as the basis of its work programme on the subject; That ICAO: b) include, following further development and editorial review, the aviation system block upgrade modules relating to service improvement through digital aeronautical information management as well as integration of digital air traffic management information in the draft in the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); That States: c) according to their operational needs, implement the aviation system block upgrade module relating to service improvement through digital aeronautical information management included in Block 0.	b) Note c) Included in AIM Action Plan
Recommendation 3/7 – ICAO provisions relating to service improvement through aeronautical information management as well as digital air traffic management information That ICAO: a) expedite the development of relevant Standards facilitating the transition of aeronautical information service to aeronautical information management and the implementation of system-wide information management taking into account the work accomplished in State programmes; and b) as a matter of urgency, to translate and make available the necessary Standards and guidance material to facilitate the global transition from aeronautical information service to aeronautical information management.	a)and b) :Note
Recommendation 3/8 – State actions relating to service improvement through aeronautical information management as well as digital air traffic management information That States: a) accelerate transition from aeronautical information service to aeronautical information management by implementing a fully automated digital aeronautical data chain; b) implement necessary processes to ensure the quality of aeronautical data and information from the origin to the end users; c) engage in intraregional and interregional cooperation for an expeditious transition from aeronautical information service (AIS) to aeronautical information management (AIM) in a harmonized manner and to using digital data exchange and consider regional or subregional AIS databases as an enabler for the transition from AIS to AIM; and d) review their NOTAM publication procedures, provide appropriate guidance to NOTAM originators and ensure adequate oversight of the NOTAM publication process is conducted.	a) To d) Included in AIM Action Plan
Recommendation 3/9 – Review of NOTAM system and development of options for replacement That ICAO initiate a review of the current NOTAM system, building further on the digital NOTAM activities, including the development of options for a replacement system that would enable web-based applications and compliant with the system-wide information management principles that are being developed for the air traffic management system.	Note.

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 4/1 –Efficient management of airspace and improved flow performance through collaborative decision-making That the Conference: a) endorse the aviation system block upgrade modules relating to network operations included in Block 1 and recommend that ICAO use them as the basis of its work programme on the subject; b) agree in principle with the aviation system block upgrade modules relating to network operations included in Blocks 2 and 3 as the strategic direction for this subject; That ICAO: c) include, following further development and editorial review, the aviation system block upgrade modules relating to network operations in the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); d) include in its work programme the future standardization of all elements to support the collaborative decision-making process underlying the air traffic control (ATC)-air traffic flow management (ATFM) integration as well as of the technical exchanges between ATFM and ATC; e) develop and incorporate into the ICAO *Manual on Collaborative Air Traffic Flow Management* (Doc 9971) implementation guidance on Airport-CDM and provisions on air traffic flow management data exchange format including trajectory information; f) develop and execute global communications, roll-out and training plan for the ICAO *Manual on Collaborative Air Traffic Flow Management* (Doc 9971); and g) develop further provisions and guidance on flexible use of airspace principles for future use and in preparation for future 4D trajectory-based airspace management. That States: h) accelerate the implementation of collaborative decision-making processes in the provision of services at the regional level, being guided by the principles set forth in the *Manual on Collaborative Air Traffic Flow Management* (Doc 9971) and the *Manual on Flight and Flow – Information for a Collaborative Environment* (Doc 9965); i) according to their operational needs, implement the aviation system block upgrade modules relating to network operations included in Block 0.	c) to g): Note. h) Included in PBN and DCB Action Plans i) included
Recommendation 4/2 – ICAO aviation system block upgrades relating to ground surveillance using automatic dependent surveillance – broadcast/multilateration, air traffic situational awareness, interval management and airborne separation. That the Conference: a) endorse the aviation system block upgrade modules relating to interval management included in Block 1 and recommend that ICAO use them as the basis of its work programme on the subject; b) agree in principle to the aviation system block upgrade modules relating to airborne separation included in Block 2 as the strategic direction for this subject; That ICAO: c) include, following further development and editorial review, the aviation system block upgrade modules relating to airborne separation in the Appendices to the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); d) agree in principle to review the concepts and terminology of the "airborne separation" concepts involving controllers assigning tasks to flight crews, with controllers able to apply different, risk-based separation minima for properly equipped ADS-B IN aircraft; e) in the development of provisions, acknowledge the relationship between airborne separation and airborne collision avoidance system; f) modify aviation system block upgrade (ASBU) Module B2-85 to reflect d) and e), modify ASBU Module B2-101 to reflect f); and g) agree in principle to review the concepts and terminology supporting B2-85 "airborne separation" and amend the module accordingly. That States: h) according to their operational needs, to implement the aviation system block upgrade modules relating to ground surveillance, improved air traffic situational awareness and improved access to optimum flight levels included in Block 0.	c) to g): Note. h): Included in Situational Awareness Action Plan

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 4/3 – ICAO aviation system block upgrades relating to airborne collision avoidance systems and ground-based safety nets That the Conference: a) endorse the aviation system block upgrade module relating to ground-based safety nets included in Block 1 and recommend that ICAO use it as the basis of its work programme on the subject; b) agree in principle to the aviation system block upgrade module relating to airborne collision avoidance systems included in Block 2, as the basis of the strategic direction for this subject; That ICAO: c) include, following further development and editorial review, the aviation system block upgrade modules relating to airborne collision avoidance systems and ground-based safety nets in the Appendices to the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); d) adopt a coordinated approach towards reviewing and developing as necessary Standards and Recommended Practices, Procedures for Air Navigation Services and guidance material for ground-based and airborne safety nets, taking into account careful evaluation and validations of the effects on safety and performance of downlinking airborne collision avoidance system (ACAS) Resolution Advisories (RAs) to controllers; e) when considering Standards and Recommended Practices for airborne collision avoidance system (ACAS) downlink, to emphasize the significant amount of training material already existing and the importance of increased pilot and air traffic controller training on the responsibilities and requirements to reacting correctly to ACAS RA events and then communicating; f) develop an ICAO Manual for Ground-based Safety Nets, which includes provision for tools for validation and certification of these; g) incorporate the new generation of airborne collision avoidance system (ACAS X) into its work programme; h) encourage the Federal Aviation Administration to work with other States with the capacity and capability to do so, in the development of new generation of airborne collision avoidance system (ACAS X); That States: i) according to their operational needs, to implement the aviation system block upgrade modules relating to airborne collision avoidance systems and ground based safety nets included in Block 0.	c) to h): Note. i): Included in Situational Awareness Action Plan
Recommendation 4/4 – Positioning and tracking over oceanic and remote areas, and flight data triggered transmission That ICAO: a) continue the evaluation of the necessary changes in the field of transmission of flight data, bearing in mind the cost associated with any of these changes as well as the need to improve search and rescue operations; and b) develop suitable proposals for the amendment of ICAO documents, as necessary.	a) and b): Note.
Recommendation 4/5 – Civil/military coordination/cooperation and sharing of airspace That States: a) planning and implementation regional groups, and ICAO to analyse the benefits that could be achieved through improved civil/military cooperation and sharing of the airspace serving international traffic flows and express the results of this analysis in terms of: 1) capacity increases and reduction in routine delays as measured by traffic volumes on major traffic flows; 2) document fuel savings and emission reductions through the use of the fuel savings estimation tools; and 3) other additional benefits; b) based on the analysis made by States, planning and implementation regional groups, and ICAO, urge States to develop plans to implement improvements for the cooperative use of airspace related to the top areas of opportunity and establish concrete targets using tools already available for this purpose; c) in relation to international traffic flows, for each ICAO region urge the planning and implementation regional groups and their associated States to identify the top areas of opportunity that could benefit the most from improvements in civil/military cooperation and sharing of the airspace and develop concrete targets for improvement; That ICAO: d) develop a set of criteria or metrics to enable objective measurement of progress in civil/military cooperation; and e) continue to develop guidance material for States on the flexible use of their airspace, airspace design, interoperability and integration of humanitarian assistance flights in crisis response scenarios in their airspaces to facilitate integrated use of the airspace.	a) – b) Included in FUA Action Plan c): PIRGs and States to identify the top areas of opportunity that could benefit the most from improvements in civil/military cooperation and sharing of the airspace and develop concrete targets for improvement d) and e): Note.

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 4/6 – ICAO aviation system block upgrades relating to integration of remotely piloted aircraft into non-segregated airspace That the Conference: a) endorse the aviation system block upgrade module relating to remotely piloted aircraft included in Block 1 and recommend that ICAO use it as the basis of its work programme on the subject; b) agree in principle to the aviation system block upgrade modules relating to remotely piloted aircraft included in Blocks 2 and 3 as the strategic direction for this subject; That ICAO: c) as a matter of urgency, develop the necessary regulatory framework in its entirety to support the integration of remotely piloted aircraft into non-segregated airspace and at aerodromes including and clearly showing the scope of such regulation; d) investigate the need for and scope of oversight of datalinks related to command, control and air traffic control communications for remotely piloted aircraft systems; e) include, following further development and editorial review, the aviation system block upgrade modules relating to the integration of remotely piloted aircraft into non segregated airspace in the Appendices to the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); That States: f) be cognizant of the recent amendments to Annexes 2 — *Rules of the Air* and 7 — *Aircraft Nationality and Registration Marks* related to remotely piloted aircraft systems and to support the continuation of this work at ICAO; g) work closely with ICAO and each other to ensure harmonization of provisions if they have an urgent need to accommodate remotely piloted aircraft system operations.	c) to e): Note. f):Note g) To be included in adopting future B1 Modules
Recommendation 4/7 – ICAO aviation system block upgrades relating to meteorological information That the Conference: a) endorse the aviation system block upgrade module relating to meteorological information included in Block 1, including the addition of the provision of information on space weather, and recommend that ICAO uses it as the basis of its work programme on the subject; b) agree in principle the aviation system block upgrade module relating to meteorological information included in Block 3 as the strategic direction for this subject; That ICAO: c) include, following further development and editorial review, the aviation system block upgrade modules relating to meteorological information in the draft Fourth edition of the *Global Air Navigation Plan* (Doc 9750, GANP); d) undertake the development of the air traffic management meteorological information integration plan and an associated roadmap by a cross-disciplinary group of experts; e) work on defining the meteorological information exchange model as an enabler for system-wide information management; f) invite the next Meteorology Divisional Meeting, held in coordination with the World Meteorological Organization, to develop initial provisions in Annex 3 — *Meteorological Service for International Air Navigation* relating to the aviation system block upgrade modules concerning meteorological information and f) above, and to develop a long-term strategy to support their further development and full implementation; That States: g) according to their operational needs, to implement the aviation system block upgrade module relating to meteorological information included in Block 0, including the addition of the provision of OPMET information; h) work together in the implementation of the aviation system block upgrades relating to meteorological information and to increase investment in education and training.	c) to f): Note. g) – h) T be included by the MET Group
Recommendation 4/8 – Crisis coordination arrangements and contingency plans That ICAO: a) consider how crisis coordination arrangements for potentially disruptive events, similar to that used for volcanic eruptions, could be established on a regional basis; and b) and regional offices continue to support the development, promulgation, maintenance of contingency plans, including the holding of practical exercises, in preparedness for potentially disruptive events, including those events that may adversely impact aviation safety.	a) and b): Note.

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 5/1 – Improved operations through enhanced airspace organization and routing Considering that performance-based navigation (PBN) is one of ICAO's highest air navigation priorities and the potential benefits achievable through creation of additional capacity with PBN: That States: a) implement performance-based navigation in the en-route environment; b) fully assess the operational, safety, performance and cost implications of a harmonization of transition altitude and, if the benefits are proven to be appropriate, undertake further action on a national and (sub) regional basis a first step towards a globally harmonized transition altitude; c) take advantage of improved models for inter-regional coordination and collaboration to achieve seamless air traffic management and more optimum routes through the airspace; d) through the planning and implementation regional groups improve their methods of coordination to increase implementation of en-route performance-based navigation in order to achieve more optimum routes through the airspace; That ICAO: e) encourage the planning and implementation regional groups to support the early deployment of performance-based navigation in accordance with Assembly Resolution 37-11; f) support, through development of a framework that capitalizes, builds on, and promotes demonstration activities which confirm the benefits of performance-based navigation as an enabler of more efficient operations in the en-route phase of flight; and g) that avionics incorporate fixed radius transition functionality to support closer spacing of performance-based navigation routes and improve airspace capacity.	a) – d) Included in PBN Action Plan e) and f): Note. g): Note
Recommendation 5/2 – ICAO aviation system block upgrades relating to trajectory based operations That the Conference: a) endorse the aviation system block upgrade module relating to trajectory-based operations included in Block 1 and ICAO use it as the basis of its work programme on the subject; b) agree in principle with the aviation system block upgrade module relating to 4D trajectory-based operations included in Block 3 as the strategic direction for this subject; That ICAO: c) include, following further development and editorial review, the aviation system block upgrade module relating to 4D trajectory-based operations in the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); That States: d) support development by ICAO of Standards and Recommended Practices and guidance material related to trajectory-based operations; and e) implement, according to their operational needs, the aviation system block upgrade module relating to trajectory-based operations included in Block 0.	c): Note. d): support development by ICAO of SARPs and guidance material related to TBO <mark>e): To be analyze for more detailed actions for COM and Situational Awareness Action Plans</mark>
Recommendation 5/3 – Increased flexibility and efficiency in descent and departure profiles That the Conference: a) endorse the aviation system block upgrade module relating to continuous descent operations included in Block 1; b) agree in principle to the aviation system block upgrade module relating to continuous descent operations included in Block 2; That ICAO: c) include, following further development and editorial review, the aviation system block upgrade modules relating to continuous climb operations and continuous descent operations in the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP); d) incorporate the point merge technique as an interim continuous descent operations measure in Block B0-05; That States: e) as supported by their operational requirements and a positive business case, implement according to their operational needs as a matter of urgency, the aviation system block upgrade modules relating to continuous climb operations and continuous descent operations included in Blocks 0 and 1; and f) as supported by their operational requirements and a positive business case, use point merge technique as an application towards achieving full continuous descent operations, when developing performance-based navigation standard instrument arrivals (STARs).	c) and d): Note e) to f) Included in PBN Action Plan

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 6/1 – Regional performance framework – planning methodologies and tools That States and PIRGs: a) finalize the alignment of regional air navigation plans with the Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP) by May 2014; b) focus on implementing aviation system block upgrade Block 0 Modules according to their operational needs, recognizing that these modules are ready for deployment; c) use the electronic regional air navigation plans as the primary tool to assist in the implementation of the agreed regional planning framework for air navigation services and facilities; d) involve regulatory and industry personnel during all stages of planning and implementation of aviation system block upgrade modules; e) develop action plans to address the identified impediments to air traffic management modernization as part of aviation system block upgrade planning and implementation activities; That ICAO: f) considers how the continuous monitoring approach to safety oversight maps to the evaluation of Member States' safety oversight capabilities concerning aviation system block upgrades g) review the current amendment process to the Regional Air Navigation Plans (ANPs) and recommend improvements to increase efficiencies related to the approval and maintenance of the data in the regional ANPs; h) develop guidance material, on the basis of best practices employed worldwide, for the regional/local deployment of new ATM technologies, required procedures, operational approvals and continue to support States in the implementation of the aviation system block upgrades; i) identify the issues, funding, training and resource requirements necessary to support a safety framework that would lay the foundation for successful implementation the aviation system block upgrades; j) develop, together with industry and stakeholders, an engagement strategy to address the economic and institutional impediments to implementation of the aviation system block upgrades; k) develop a mechanism for sharing of best practices for the aviation system block upgrade implementation; and l) define a methodology to ensure interregional and global harmonization of air navigation services through ANRF reporting in an effective and timely manner, and consider the employment of interregional and multi-regional fora.	a): States and PIRGs finalize the alignment of regional air navigation plans with the Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP) by May 2014; b) States and PIRGs focus on implementing ASBU Block 0 Modules according to their operational needs. c): States, PIRGs, IOs, use the electronic regional air navigation plans as the primary tool to assist in the implementation of the agreed regional planning framework for air navigation services and facilities; d) States and PIRGs involve regulatory and industry personnel during all stages of planning and implementation of ASBU modules; e) States and PIRGs develop action plans to address the identified impediments to air traffic management modernization as part of aviation system block upgrade planning and implementation activities; f) to l): Note j): Note
Recommendation 6/2 – Guidelines on service priority That: a) ICAO develop an appropriate set of operational and economic incentive principles to allow early benefits of new technologies and procedures, as described in the aviation system block upgrade modules, to support operational improvements, while maximizing safety, capacity and overall system efficiency; and b) States and international organizations contribute to this work.	a) and b): Note
Recommendation 6/3 – Assessment of economic, financial and social implications of air traffic management modernization and aviation system block upgrades deployment That ICAO: a) undertake work toward developing a network-wide operational improvement level assessment for global use, which should include the development of standard values and processes for economic evaluations; b) take the relevant conclusions from the AN-Conf/12, regarding economic, financial and social aspects of the aviation system block upgrades, to the Sixth Air Transport Conference with the aim of developing solutions which would support a safe and sustainable air navigation system; That States: c) conduct their economic, financial and social analyses in a closely coordinated manner with relevant ATM stakeholders in view of their diverse position of involvement in the implementation of aeronautical systems.	a) and b): Note c): States conduct their economic, financial and social analyses in a closely coordinated manner with relevant ATM stakeholders in view of their diverse position of involvement in the implementation of aeronautical systems

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 6/4 – Human performance That ICAO: a) integrate human performance as an essential element for the implementation of ASBU modules for considerations in the planning and design phase of new systems and technologies, as well as at the implementation phase, as part of a safety management approach. This includes a strategy for change management and the clarification of the roles, responsibilities and accountabilities of the aviation professionals involved; b) develop guidance principles, guidance material and provisions, including SARPs as necessary, on ATM personnel training and licensing including instructors and assessors, and on the use of synthetic training devices, with a view to promoting harmonization, and consider leading this effort with the support of States and industry; c) develop guidance material on using field experience and scientific knowledge in human performance approaches through the identification of human-centred operational and regulatory processes to address both current safety priorities and the challenges of future systems and technologies; d) assess the impact of new technologies on competencies of existing aviation personnel, and prioritize and develop competency-based provisions for training and licensing to attain global harmonization; e) establish provisions for fatigue risk management for safety within air traffic services operations; f) develop guidance material on different categories of synthetic training devices and their respective usage; That States: g) provide human performance data, information and examples of operational and regulatory developments to ICAO for the benefit of the global aviation community; h) support all ICAO activities in the human performance field through the contribution of human performance expertise and resources; i) adopt airspace procedures, aircraft systems, and space-based/ground-based systems that take into account human capabilities and limitations and that identify when human intervention is required to maintain optimum safety and efficiency; and j) investigate methods to encourage adequate numbers of high quality aviation professionals of the future and ensure training programmes are in line with the skills and knowledge necessary to undertake their roles within a changing industry.	a) to f): Note. g): States provide human performance data, information and examples of operational and regulatory developments to ICAO. h) States support all ICAO activities in the human performance field through the contribution of human performance expertise and resources. i) States adopt airspace procedures, aircraft systems, and space-based/ground-based systems that take into account human capabilities and limitations and that identify when human intervention is required j) States investigate methods to encourage adequate numbers of high quality aviation professionals of the future and ensure training programmes are in line with the skills and knowledge necessary.
Recommendation 6/5 – ICAO work programme to support global navigation satellite system evolution That ICAO undertake a work programme to address: a) interoperability of existing and future global navigation satellite system constellations and augmentation systems, with particular regard to the technical and operational issues associated with the use of multiple constellations; b) identification of operational benefits to enable air navigation service providers and aircraft operators to quantify these benefits for their specific operational environment; and c) continued development of Standards and Recommended Practices and guidance material for existing and future global navigation satellite system elements and encouraging the development of industry standards for avionics.	a) to c): Note
Recommendation 6/6 – Use of multiple constellations That States, when defining their air navigation strategic plans and introducing new operations: a) take advantage of the improved robustness and availability made possible by the existence of multiple global navigation satellite system constellations and associated augmentation systems; b) publish information specifying the global navigation satellite system elements that are approved for use in their airspace; c) adopt a performance-based approach with regard to the use of global navigation satellite system (GNSS), and avoid prohibiting the use of GNSS elements that are compliant with applicable ICAO Standards and Recommended Practices; d) carefully consider and assess if mandates for equipage or use of any particular global navigation satellite system core constellation or augmentation system are necessary or appropriate; That aircraft operators: e) consider equipage with GNSS receivers able to process more than one constellation in order to gain the benefits associated with the support of more demanding operations.	Task included in PBN Action Plan a): States take advantage of the improved robustness and availability made possible by the existence of multiple GNSS constellations and associated augmentation systems; b) States publish information specifying the GNSS elements that are approved for use in their airspace; c) States adopt a performance-based approach with regard to the use of GNSS, and avoid prohibiting the use of GNSS elements that are compliant with applicable ICAO SARPs d) States carefully consider and assess if mandates for equipage or use of any particular global navigation satellite system core constellation or augmentation system are necessary or appropriate; e) IOs consider equipage with GNSS receivers able to process more than one constellation in order to gain the benefits associated with the support of more demanding operations

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 6/7 – Assistance to States in mitigating global navigation satellite system vulnerabilities That ICAO: a) continue technical evaluation of known threats to the global navigation satellite system, including space weather issues, and make the information available to States; b) compile and publish more detailed guidance for States to use in the assessment of global navigation satellite system vulnerabilities; c) develop a formal mechanism with the International Telecommunication Union and other appropriate UN bodies to address specific cases of harmful interference to the global navigation satellite system reported by States to ICAO; and d) assess the need for, and feasibility of, an alternative position, navigation and timing system.	a) to d): Note.
Recommendation 6/8 – Planning for mitigation of global navigation satellite system vulnerabilities That States: a) assess the likelihood and effects of global navigation satellite system vulnerabilities in their airspace and apply, as necessary, recognized and available mitigation methods; b) provide effective spectrum management and protection of global navigation satellite system (GNSS) frequencies to reduce the likelihood of unintentional interference or degradation of GNSS performance; c) report to ICAO cases of harmful interference to global navigation satellite system that may have an impact on international civil aviation operations; d) develop and enforce a strong regulatory framework governing the use of global navigation satellite system repeaters, pseudolites, spoofers and jammers; e) allow for realization of the full advantages of on-board mitigation techniques, particularly inertial navigation systems; and f) where it is determined that terrestrial aids are needed as part of a mitigation strategy, give priority to retention of distance measuring equipment (DME) in support of inertial navigation system (INS)/DME or DME/DME area navigation, and of instrument landing system at selected runways.	Action Included in PBN Action Plan a) States assess the likelihood and effects of GNSS vulnerabilities in their airspace and apply, as necessary, recognized and available mitigation methods. b) States provide effective spectrum management and protection of GNSS frequencies to reduce the likelihood of unintentional interference or degradation of GNSS performance. c) States report to ICAO cases of harmful interference to global navigation satellite system that may have an impact on international civil aviation operations. d) States develop and enforce a strong regulatory framework governing the use of global navigation satellite system repeaters, pseudolites, spoofers and jammers. e) States allow for realization of the full advantages of on-board mitigation techniques, particularly inertial navigation systems. f) States where it is determined that terrestrial aids are needed as part of a mitigation strategy, give priority to retention of DME in support of inertial navigation system (INS)/DME or DME/DME area navigation, and of instrument landing system at selected runways
Recommendation 6/9 – Ionosphere and space weather information for future global navigation satellite system implementation That ICAO: a) coordinate regional and global activities on ionosphere characterization for global navigation satellite system implementation; b) continue its effort to address the global navigation satellite system (GNSS) vulnerability to space weather to assist States in GNSS implementation taking into account of long-term GNSS evolution as well as projected space weather phenomena; c) study the optimum use of space weather information that is globally applicable from low to high magnetic latitude regions for enhanced global navigation satellite system performance at a global context; That States: d) consider a collaborative approach to resolve ionospheric issues including ionospheric characterization for cost-effective, harmonized and regionally suitable global navigation satellite system implementation.	Action Included in PBN Action Plan a) to c): Note. d): States consider a collaborative approach to resolve ionospheric issues including ionospheric characterization for cost-effective, harmonized and regionally suitable global navigation satellite system implementation

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 6/10 – Rationalization of terrestrial navigation aids That, in planning for the implementation of performance-based navigation, States should: a) assess the opportunity for realizing economic benefits by reducing the number of navigation aids through the implementation of performance-based navigation; b) ensure that an adequate terrestrial navigation and air traffic management infrastructure remains available to mitigate the potential loss of global navigation satellite system service in their airspace; and c) align performance-based navigation implementation plans with navigation aid replacement cycles, where feasible, to maximize cost savings by avoiding unnecessary infrastructure investment.	Action included in PBN Action Plan a): States assess the opportunity for realizing economic benefits by reducing the number of navigation aids through the implementation of PBN; b) States ensure that an adequate terrestrial navigation and air traffic management infrastructure remains available to mitigate the potential loss of global navigation satellite system service in their airspace; and c) States align performance-based navigation implementation plans with navigation aid replacement cycles, where feasible, to maximize cost savings by avoiding unnecessary infrastructure investment.
Recommendation 6/11 – Regional performance framework – alignment of air navigation plans and regional supplementary procedures That ICAO initiate a formal amendment process in accordance with normal procedures to align the areas of applicability of the air navigation plans and the regional supplementary procedures, observing the following principles: 1) there will be no change to the current accreditation of the ICAO regional offices to Contracting States; 2) there will be no change to the obligation of individual States to provide services in accordance with ICAO Annex 11 — *Air Traffic Services*, 2.1; 3) there will be no change to the governance responsibilities of the ICAO Council, including approval of amendments to air navigation plans and regional supplementary procedures; 4) there will be no change to the current requirements for services and facilities and or to the current supplementary procedures for a given airspace as listed in current air navigation plans and regional supplementary procedures; 5) there will be no change to the principle that a planning and implementation regional group is composed of the Contracting States providing air navigation service in the air navigation region and that other Contracting States can participate in the activities with observer status; 6) there will be no change to ICAO's assistance to planning and implementation regional groups from the regional offices; 7) the responsibilities of the performance framework management for an air navigation region will now be integrated and will rest with the planning and implementation regional group established for the region; and 8) to the extent possible, the main traffic flows will be accommodated within homogeneous airspaces in order to minimize changes between different air navigation systems and different operational procedures during flight.	Note
Recommendation 6/12 – Prioritization and categorization of block upgrade modules That States and PIRGs: a) continue to take a coordinated approach among air traffic management stakeholders to encourage effective investment into airborne equipment and ground facilities; b) take a considerate approach when mandating avionics equipage in its own jurisdiction of air navigation service provision, taking into account of burdens on operators including foreign registry and the need for consequential regional/global harmonization; That ICAO: c) continue to work on guidance material for the categorization of block upgrade modules for implementation priority and provide guidance as necessary to planning and implementation regional groups and States; d) modify the block upgrade module naming and numbering system using, as a basis, the intuitive samples agreed by the Conference; and e) identify modules in Block 1 considered to be essential for implementation at a global level in terms of the minimum path to global interoperability and safety with due regard to regional diversity for further consideration by States.	Already adopted a): States, PIRGS and IOs continue to take a coordinated approach among air traffic management stakeholders to encourage effective investment into airborne equipment and ground facilities b) States , PIRGs and IOs, take a considerate approach when mandating avionics equipage in its own jurisdiction of air navigation service provision, taking into account of burdens on operators including foreign registry and the need for consequential regional/global harmonization c): Note d): Note e): Note

Recommendations adopted by an-CONF/12	Action taken by ANIWG/ comments for its implementation
Recommendation 6/13 – Development of Standards and Recommended Practices, procedures and guidance material That ICAO: a) improve its project management and coordination of contributing ICAO panels, study groups and other expert groups, including task forces and other specialized teams tasked with the development of ICAO provisions and related work, through: 1) consistent application of the *Directives for Panels of the Air Navigation Commission* (Doc 7984); 2) receiving regular reports from the expert groups against agreed terms of reference and work programmes; 3) mandating strong coordination between all expert groups developing ICAO provisions to ensure efficient management of issues and avoidance of duplication; 4) application of the principles of accountability, geographical representation, focus, efficiency, consistency, transparency and integrated planning to the operation of all the expert groups; 5) developing documented procedures for other expert groups, including task forces and other specialized teams as well; and 6) better use of today's communication media and internet to facilitate virtual meetings, thereby increasing participation and reducing costs to States and ICAO; b) continue to coordinate with the other recognized standards-making organizations (Assembly Resolution A37-15 refers) in order to make the best use of the capabilities of these other recognized standards-making organizations and to make reference to their material, where appropriate; c) initiate studies to improve the verification and validation process required within ICAO before material developed by recognized standards-making organizations can be referenced in ICAO documentation; and d) consider a methodology by which ICAO can capture the regional implementation and challenges, and to reflect them in a standardized process to effectively support the aviation system block upgrade deployment.	a) to d): Note
Recommendation 6/14 – Guidelines for conducting aeronautical studies to assess permissible penetration of obstacle limitation surfaces That ICAO develop comprehensive guidelines for States in the uniform application in conducting aeronautical studies to assess the permissible penetration of obstacle limitation surfaces (OLS).	Note

ACTIONS PLANS
ACTION PLAN FOR PBN IMPLEMENTATION

Task Name	Start	Finish	Deliverables/ Entregables	Responsibles/ Responsables	Observations/ Comments- Observaciones/Comentarios
a) Implement Collaborative Decision-Making (CDM) process in coordination with stakeholders	Abril 2014	Dec 2016	CDM implementation	PBN TF States, Territories, Int. Orgs	
b) Implement PBN airspace concept for oceanic, continental and terminal areas in accordance with the ICAO PBN Manual	Abril 2014	Dec 2016	PBN Airspace concept implementation	PBN TF States, Territories, Int. Orgs	
c) Update Letters of Agreement between ATC units	Abril 2014	Dec 2016	Updates LOAs	States, Territories, Int. Orgs	
d) Publish regulations and procedures for PBN operational approval	Abril 2014	Dec 2016	PBN operational approval implemented	States, Territories, Int. Orgs	
e) Evaluate and implement PBN requirements for ATC automated systems, as required	Abril 2014	Dec 2016	Identify and implement PBN related automated features	PBN TF States, Territories, Int. Org	
f) Analyze and enhance air communication, navigation (ground navaids GNSS) and surveillance infrastructure in accordance with PBN requirements	Abril 2014	Dec 2018	Navaids infrastructure review Introduction of GNSS (GBAS and SBAS-Ionosphere matters)	SACCSA Project support / WAAS States, Territories, Int. Orgs	NDB Deactivation Target: 2018 Navigation Infrastructure Plan- CAR/SAM ANP Related to surveillance (Situational Awareness) and COM Plans
GNSS mitigations Plannings	Jan 2015	Dec 2018	Mitigation means	States, Territories, Int. Orgs	
g) Develop and implement PBN training programme for pilots, ATCOs, operators and regulators, as well as implementation of GNSS technologies	Abril 2014	Dec 2018	Identify training needs and Support training centers and Train Air Plus	Training Centers Working Group States, Territories, Int. Orgs	
h) Optimize the ATS route structure through implementation of RNAV routes between major city pairs with navigation specification RNAV-5 /2 for en-route operations	Abril 2014	Dec 2016	Optimize the ATS route structure with RNAV 5/2	PBN TF States, Territories, Int. Orgs	
i) Implement CDOs/CCOs for SIDs/STARS in terminal areas based on RNAV 1-2 and RNP 1-/2 navigation specification, as required	Abril 2014	Dec 2016	CDOs/CCOs	PBN TF States, Territories, Int. Org	
j) Design and implement PBN APV in accordance with Assembly Resolution A37-11	Abril 2014	Dec 2016	PBN Procedures implementations (APV, etc.)	PBN TF States, Territories, Int. Orgs	
k) Conduct PBN safety assessment based ATC simulations (fast time and/or real time), live trials, etc., as required	Abril 2014	Dec 2016	PBN safety assessment	PBN TF States, Territories, Int. Orgs	
l) Develop performance measurement programme	Abril 2014	Dec 2016	performance measurement programme	States, Territories, Int. Orgs	
m) Develop post-implementation PBN Safety Assessment Programme	Abril 2014	Dec 2016	post-implementation PBN Safety Assessment Programme	States, Territories, Int. Orgs	
n) Monitor implementation progress	Abril 2014	Dec 2018		ICAO, States, Territories, Int. Orgs	

ACTION PLAN FOR DEMAND AND CAPACITY MANAGEMENT

Task Name	Start	Finish	Deliverables/ Entregables	Responsibles/ Responsables	Observations/ Comments- Observaciones/Comentarios

a)	Identify key stakeholders (ATC service providers and users, military authorities, airport authorities, aircraft operators and relevant organizations) for purposes of coordination and cooperation - using a CDM process	Apr 2014	Dec 2016	CDM implementation	ATFM TF States, Territories, Int. Orgs	Coordination with PBN
b)	Analyze traffic flow problems and develop methods for improving efficiencies on a gradual basis, as needed for: i. Aerodrome capacity ii. ATS capacity iii. ATS letters of agreement	Apr 2014	Dec 2016	traffic flow problems analysis	ATFM TF States, Territories, Int. Orgs	
c)	Define common elements of situational awareness between FMUs: i. Common traffic displays ii. Common weather displays iii. Communications (teleconferences, web) iv. Daily teleconference/messages methodology advisories	Apr 2014	Dec 2016	common elements of situational awareness between FMUs	ATFM TF States, Territories, Int. Orgs	
d)	Develop methods to establish demand/capacity forecasting	Apr 2014	Dec 2016	methods to establish demand/capacity forecasting	ATFM TF States, Territories, Int. Orgs	
e)	Define common electronic information and minimum databases required for decision support and alerting systems for interoperable situational awareness between centralized ATFM units	Apr 2014	Dec 2016	ATFM common electronic information and minimum databases required for decision support and alerting systems	ATFM TF States, Territories, Int. Orgs	
f)	Develop regional procedures for efficient and optimum use of aerodrome and runway capacity	Apr 2014	Dec 2016	regional procedures for efficient and optimum use of aerodrome and runway capacity	ATFM TF States, Territories, Int. Orgs	
g)	Develop a national ATFM Procedures Manual to manage demand/capacity balancing	Apr 2014	Dec 2016	national ATFM Procedures Manual	GREPECAS	
h)	Develop regional coordination for implementation of ATFM units	Apr 2014	Dec 2016	regional coordination	ATFM TF States, Territories, Int. Orgs	
i)	Develop operational agreements between ATFM units for interregional demand/capacity balancing	Apr 2014	Dec 2016	ATFM LOAs	States, Territories, Int. Orgs	
j)	Monitor implementation progress	Apr 2014	Dec 2016		ICAO	

ACTION PLAN FOR FLEXIBLE USE OF AIRSPACE

	Task Name	Start	Finish	Deliverables/ Entregables	Responsibles/ Responsables	Observations/ Comments-Observaciones/Comentarios
a)	Establish civil/military coordination bodies	Apr 2014	Dec 2016	civil/military coordination bodies	States, Territories	
b)	Arrange for permanent liaison and close cooperation between civil ATS units and appropriate air defence units	Apr 2014	Dec 2016	Permanent liasons	States, Territories	
c)	Conduct a regional review of Special Use Airspace: i. assess use of airspace management processes; ii. improve current national airspace management to adjust dynamic changes in tactical stage to traffic flows; and iii. introduce improvements in ground support systems and associated procedures for the extension of FUA with dynamic airspace management processes	Apr 2014	Dec 2016	Special use of Aispace review	States, Territories, Int. Orgs, ICAO	
d)	implement dynamic ATC sectorization in order to provide the best balance between demand and capacity to respond in real-time to changing situations in traffic flows and to accommodate the preferred routes of users in short-term	Apr 2014	Dec 2018	dynamic ATC sectorization	States, Territories, Int. Orgs, ICAO	
e)	Develop performance measurement programme	Apr 2014	Dec 2016	performance measurement programme	States, Territories, Int. Orgs	
f)	Monitor implementation progress	Apr 2014	Dec 2016		ICAO	

ACTION PLAN FOR SITUATIONAL AWARENESS IMPROVEMENTS

Task Name	Start	Finish	Deliverables/ Entregables	Responsibles/ Responsables	Observations/ Comments- Observaciones/Comentarios
a) Identify the automation level required according to the ATM service provided in airspace and international aerodromes, assessing: i. Operational architecture design ii. Characteristics and attributes for interoperability iii. Data bases and software iv. Technical requirements	Abril 2014	Dic 2018	Review status of automation	States, Territories, Int. Orgs	
b) Implement flight plan data processing systems and electronic transmission tools	Abril 2014	Dic 2018	Full FPL2012 processing/ no converters Reduced lack/duplicate FPLs	AIDC TF States, Territories, Int. Orgs	ICAO Model 2012 FPL – converters removal plan Lack/duplicate FPL Action Plan
c) Implement radar data sharing programmes where benefits can be obtained	Abril 2014	Dic 2017	Radar Data Sharing in all continental areas	States, Territories, Int. Orgs	Bilateral agreements ECAR Radar Data Sharing Project
d) Develop situational awareness training programmes	Abril 2014	Dic 2018	Identify and inform of training needs	Training Centers Working Group States, Territories	
e) Identify and implement additional ATM surveillance systems to improve accuracy and coverage of traffic situational information (ADS-B, MLAT, etc.) and associated procedures	Abril 2014	Dic 2018	MLAT implementation ADS-B Implementation	ADS-B TF States, Territories	ADS-B Implementation Plan
f) Implement ATS automated message exchanges as required (FPL, CPL, CNL, DLA, etc.)	Abril 2014	Dic 2015	AIDC implementation- initial phase	AIDC TF States, Territories, Int. Orgs	Regional AIDC Plan
g) Implement automated radar handoffs where possible	Enero 2016	Dic 2017	AIDC implementation- second phase	AIDC TF States, Territories, Int. Orgs	Regional AIDC Plan
h) Implement ground and air electronic warnings as needed: i. Conflict prediction ii. Terrain proximity iii. MSAW iv. DAIW v. Surveillance system for surface movement	Abril 2014	Dic 2017	Improvement in electronic alarms / warnings	GREPECAS C Project States, Territories, Int. Orgs	
i) Implement data link surveillance technologies and applications as required: ADS , CPDLC, AIDC	Abril 2014	Dic 2018	CPDLC/ ADS-C Implementation	GOLD TF States, Territories	CPDLC implementation Plan IDEM COM g)
Implement additional/advanced automation support tools to increase aeronautical information sharing i. ETMS or similar ii. MET information iii. AIS/NOTAM dissemination iv. Surveillance tools to identify airspace sector constraints	Abril 2014	Dic 2018	Increase Automation applications	States, Territories, Int. Orgs	Needs from ATFM, MET and AIS
Training in the application and implementation of automated surveillance technologies and ATS system automation	Abril 2014	Dic 2018	Identify and inform of training needs	States, Territories	
Enhance the training infrastructure of the region and the training programmes related to surveillance and automated systems	Abril 2014	Dic 2018	Support training centers and Train Air Plus	Training Centers Working Group States, Territories	
l) Implement ACAS 7.1	Abril 2014	Dic 2018	ACAS 7.1 implementation	States, Territories	
n) Monitor implementation progress	Abril 2014	Dic 2018		ICAO	

COM ACTION PLAN

Task Name	Start	Finish	Deliverables/ Entregables	Responsibles/ Responsables	Observations/ Comments- Observaciones/Comentarios
a) Review the performance status of current AFS services and identify deficiencies or improvements (AFTN, oral ATS services, A/G communications)	April 2014	Dec 2015	Improvements to A/G Communications Plan	States, Territories in Plan	Identify improvements into Regional AMS Communication Improvement Plan
b) Implement communication service improvements as required to support current and planned Air Navigation applications, including Required Communication Performance (RCPs).	April 2014	Dec 2018	Improvements to A/G Communications Plan RCP application- 2015	States, Territories	Follow-up Regional AMS Communication Improvement Plan
c) Develop regional ATN planning documents	April 2014	Dec 2015	ATN and applications documents	GREPECAS Project D AMHS TF	
d) Coordinate and test ATN G-G application implementation aspects (AMHS, AIDC, etc.)	April 2014	Dec 2018	Test G-G Applications	AMHS TF AIDC TF States, Territories	Regional AMHS Plan Regional AIDC Plan
e) Conduct planning, trial and implementation activities for A-G data applications (DCL, D-ATIS, etc.)	April 2014	Dec 2018	Update regional plan D-ATIS implementation	GREPECAS Project D States, Territories	CAR/SAM ANP CNS TABLE 1Bc
f) Carry out technical review of regional telecommunication networks for ATN implementation	April 2014	Dec 2015	MEVA III implementation	MEVA TMG States, Territories	
g) Implement available technologies in order to facilitate ground and airborne applications (CPDLC, ADS-C, ADS-B)	April 2014	Dec 2018	CPDLC/ ADS-C Implementation	GOLD TF States, Territories	CPDLC implementation Plan
h) Implement the necessary communications network for ACDM	April 2015	Dec 2018	Communications for ACDM	States, Territories	Need to de define by AGA
i) Support ICAO position during the ITU WRC and ensure regional coordination for the protection of the aviation spectrum	April 2014	Dec 2018	WRC-2015 support WRC-2018 support Support for C- Band	States, Territories	
j) Ensure participation of civil aviation experts in State delegations to ITU WRC meetings	April 2014	Dec 2018	Participation by States	States, Territories	
k) Disseminate ICAO policy statements on aeronautical radio frequency spectrum requirements	April 2014	Dec 2018	CAA and National Spectrum Authority coordination	States, Territories	
l) Implement frequency spectrum management for protection and new services	April 2014	Dec 2018	• Optimum use of frequencies • No interferences	States, Territories	COM Lists
m) Support training on the application and implementation of advanced communication related technologies and ATN	April 2014	Dec 2018	Identify and inform of training needs	States, Territories	
n) Enhance the regional training infrastructure and training programmes related to communications	April 2014	Dec 2018	Support training centers and Train Air Plus	Training Centers Working Group States, Territories	
o) Monitor implementation and improvement of telecommunications and ATN application issues	April 2014	Dec 2018	ATN implementation	ICAO	

ACTION PLAN FOR IMPLEMENTATION OF AERONAUTICAL INFORMATION MANAGEMENT (AIM)

	Task Name	Start	Finish	Deliverables/ Entregables	Responsibles/ Responsables	Observations/ Comments-Observaciones/Comentarios
a)	Comply with the process to introduce and implement Annex15 and 4 amendments to the Chicago Convention	April 2014	Dec 2015	Implementation of the Annexes referred AIS and MAP Standards and Requirements	States / Territories	Comply with all Steps from Phase 1 for the transition to AIM according with ICAO Raodmap for the transition to AIM
b)	Periodically report on the generation and distribution of Integrated IAIP aeronautical information that improves the safety of ATS in the Region to the ICAO NACC Office	April 2014	Dec 2016	Provide the proper Report requested	States / Territories	Implement AIM QMS
c)	Develop a method to measure the performance and outcomes from States, Territories and international organizations with distribution of quality aeronautical information to improve recognition of ATM requirements, safety, and effectiveness related to the electronic distribution of information	April 2014	Dec 2016	Survey to States / Territories	ICAO, GREPECAS	Consider AIXM implementation as basic requirement
d)	Assist States, Territories and international organizations to improve decision making related to their transition to AIM	April 2014	Dec 2016	Provide respective guidance material on AIM issues	ICAO	ANConf/12 Rec 3/6
e)	Assist States, Territories and international organizations with the AIM, in order to implement ICAO Standards for aeronautical information products, services, and technologies in electronic format, as required	April 2014	Dec 2018	Identify training needs and Support training centers and Train Air Plus	ICAO, GREPECAS	Development and implementation of AUTO AIS/AIM project
f)	Support AIM developments to achieve the ATM system improvements in the *Global Air Traffic Management Operational Concept*; including NOTAM contingency plans	April 2014	Dec 2018	Complete implementation of all AIM Transition phases (1 to 3)	States / Territories	Including all AIM developments associated with SWIM for ASBU Block 1 module B-31
g)	Ensure that AIM requirements harmonize and integrate at a regional and international level, on-board electronic management of aeronautical information for the requirements or the use of ground systems	April 2014	Dec 2018	Complete implementation of all AIM Transition phases (1 to 3)	ICAO States / Territories	Including all AIM developments associated with SWIM for ASBU Block 1 module B-31
h)	Share experience and resources with implementation of e-TOD through establishment of an e-TOD regional working group	April 2014	Dec 2018	Prepare and Establish LoAs	GREPECAS States / Territories	-------
i)	Implement ICAO Doc 9881 technical requirements as required	April 2014	Dec 2018	Identify personnel and training needs and prepare a Report to ICAO for assistance	States / Territories	-------
j)	Report requirements to the ICAO NACC Regional Office and monitor implementation status of e-TOD using electronic media	April 2014	Dec 2018		States / Territories	-------
k)	Develop a high-level agreement for the management of a national e-TOD programme	April 2014	Dec 2018	Establish permanent liasons and coordination among all bodies involved	States / Territories	-------

END