



WORKING PAPER

TWELFTH AIR NAVIGATION CONFERENCE

Montréal, 19 to 30 November 2012

Agenda Item 1: Strategic issues that address the challenge of integration, interoperability and harmonization of systems in support of the concept of “One Sky” for international civil aviation

1.1: Global Air Navigation Plan (GANP) – framework for global planning

- a) ASBU methodology and contents
- b) Communications roadmap
- c) Navigation roadmap
- d) Surveillance roadmap
- e) Avionics roadmap
- f) Aeronautical information management (AIM) roadmap

REVISED GLOBAL AIR NAVIGATION PLAN – FRAMEWORK FOR GLOBAL PLANNING

(Presented by the Secretariat)

EXECUTIVE SUMMARY

The 37th Session of the ICAO Assembly directed ICAO to increase its efforts to meet global requirements for airspace interoperability while maintaining its focus on safety. ICAO engaged in comprehensive consultations with States and stakeholders in order to establish a flexible, practical strategic approach that addresses related operational improvements and technology and provides greater air navigation planning and investment certainty.

The draft fourth edition of the *Global Air Navigation Plan* (Doc 9750, GANP) presents a high-level summary of the new aviation system block upgrade (ASBU) methodology while establishing deeper policy and framework linkages with ICAO's Strategic Objectives.

Action: The Conference is invited to agree to the recommendation in paragraph 3.

<i>Strategic Objectives:</i>	This working paper relates to the 2010–2012 Safety, and Environmental Protection and Sustainable Development of Air Transport Strategic Objectives.
<i>Financial implications:</i>	Air transport plays a major role in driving sustainable economic and social development worldwide. It directly and indirectly supports the employment of almost 60 million people today, while contributing over \$2 trillion to global gross domestic product (GDP) and carrying over 2.5 billion passengers and \$5.3 trillion worth of cargo annually. The evolution of the <i>Global Air Navigation Plan</i> (GANP) to a strategic policy-level document will provide greater levels of transparency and investment certainty to States and industry as they continue to address capacity and sustainability challenges over the coming decades. The GANP's close strategic links to the policies and priorities established by ICAO for Safety, Air Transport Economy and Environment will also ensure closer integration between related work programmes, minimizing duplication and enabling new efficiencies.
<i>References:</i>	Doc 9958, <i>Assembly Resolutions in Force (as of 8 October 2010)</i> Doc 9750, <i>Global Air Navigation Plan</i> (Third Edition)

1. INTRODUCTION

1.1 Understanding the need for global harmonization in air navigation modernization plans worldwide and to assist investment certainty, ICAO has revised the *Global Air Navigation Plan* (Doc 9750, GANP) to serve a worldwide policy establishing clear linkages between operational benefits and technological developments.

1.2 This next edition of the GANP will be submitted to the Council of ICAO for approval, who will then present it to the ICAO Assembly in 2013 for endorsement as the future strategic direction for ICAO. The draft GANP, and the aviation system block upgrade (ASBU) methodology it establishes, proposes that future air navigation technology and procedure improvements are organised and based on a consultative strategic approach that coordinates specific global performance capabilities and the flexible upgrade timelines associated with each component.

1.3 The draft GANP provides highlights of the work programmes, based on policy, standardization, implementation, monitoring, analysis and reporting stages, consistent with ICAO's proposed budget framework. Every three years the GANP will be reviewed more substantially and revised. This process will also ensure ICAO's high-level strategic planning continues to link directly to its budget framework.

2. THE AVIATION SYSTEM BLOCK UPGRADE METHODOLOGY

2.1 Following the 37th Session of the ICAO Assembly, ICAO increased its efforts to meet global needs for airspace interoperability while maintaining its focus on safety. To this end, a planning framework for global harmonization and interoperability named the aviation system block upgrade (ASBU) is proposed to the Conference for incorporation into the Fourth Edition of the *Global Air Navigation Plan*. The ASBU framework includes modules describing operational improvements over a series of blocks, supported by technology roadmaps, which serve to progressively enhance many aspects of civil aviation operations.

2.2 The ASBU modules are organized into flexible and scalable building blocks that can be implemented depending on the operational needs, while recognizing that implementation of a particular module is not mandatory in all areas or circumstances. The approach adopted is not limiting and recognizes that deployment in addition to the material described in the ASBUs may also take place or be necessary. The broad timescales associated with the ASBU framework (Block 0 = 2013, Block 1 = 2018, Block 2 = 2023, Block 3 = 2028) are intended only to depict the initial readiness of all components, including ICAO Standards and Recommended Practices (SARPs), needed for deployment and do not imply a mandated State or regional implementation timeframe. The ASBU framework with supporting technology roadmaps ensures that State and regional implementation planning and deployment activities can be undertaken with the confidence that all components necessary for a particular deployment will be available within the ASBU dates mentioned.

3. FROM GANP THIRD EDITION TO FOURTH EDITION

3.1 The draft fourth edition of GANP and the block upgrade methodology it contains are a direct evolution from previous GANP editions and preceding technical documents and operational concepts that have been driving aviation toward its one sky, global ATM goal since the notion first emerged in the early 1990s.

3.2 The third edition of the GANP was a significant step in the evolution towards performance based planning and provided a set of Global Plan Initiatives (GPIs) related to ATM Operational Concept components. In the fourth edition of the GANP, the GPI's are fulfilled by the ASBU modules. The modules incorporate all necessary elements to deliver identified operational improvements. Such consistency between GANP editions has been retained to ensure the smooth transition from the former planning methodology to the ASBU methodology.

3.3 The draft fourth edition of GANP is supported by several existing documents in order to form a comprehensive basis for ATM modernization worldwide:

- a) Third Edition of the *Global Air Navigation Plan* (present Doc 9750);
- b) *Global Air Traffic Management Operational Concept* (Doc 9854);
- c) *Manual on Air Traffic Management System Requirements* (Doc 9882); and
- d) *Manual on Global Performance of the Air Navigation System* (Doc 9883).

4. GANP FRAMEWORK CONSIDERATIONS

4.1 The GANP is limited at this time to general considerations on the financial aspects of aviation system modernization, given the short time available to prepare for the Twelfth Air Navigation Conference. The development and agreement on operational and financial policies supporting efficient implementation of global Air Navigation services infrastructure and aircraft equipage is proposed as a priority for the next triennium and will be part of the agenda of the Air Transport Conference in May 2013. The ASBU methodology contains elements to facilitate cost benefit analyses of the various operational and technology improvements.

4.2 The GANP aims to ensure interoperability and global harmonisation of the future aviation system. Based on increased data sharing and automation, efficient collaboration between the various actors should support the performance of the global system. It is proposed to convene a symposium on new ATM concepts in 2014 where States and manufacturers will be invited to provide end-to-end system demonstrations of new ATM concepts. This will facilitate evaluation of modules in relation to human factors, new standards and operational efficiency.

4.3 Although the GANP has a global perspective, it is not intended for all block modules to be applied all around the globe. Using a 'think global – act local' planning concept, many of the ASBU modules contained in the GANP are specialized packages that should be applied where the specific operational requirement or corresponding benefits exist. However the GANP strategy will only provide full benefits to the aviation community and by extension to the economy and wider society when implemented harmoniously. All efforts will be accomplished by ICAO at a global and a regional scale to facilitate implementation taking in account existing operational requirements and constraints.

4.4 Proper linkage between operational improvements and technology enablers forms the basis for the efficiency objectives of the GANP. Implementation is also facilitated by the clear understanding of technological constraints in relation to a specific operational improvement. Therefore, after the Conference, technology roadmaps will be further developed in alignment with the ASBU modules for communication, navigation, surveillance and information management. An avionics roadmap and frequency spectrum strategy will also be developed to ensure full coherence of global strategy and support synchronized implementation.

5. COLLABORATION DRIVING STRATEGIC PROGRESS

5.1 The ASBU methodology contained in the draft fourth edition of GANP has been developed with input from States and industry. This process has permitted ICAO to document a strategic solution to near-, mid- and long-term (through 2030) air traffic and airspace management modernization featuring tailored operational improvements and infrastructure for Member States, in addition to flexible implementation requirements and timelines.

5.2 Block upgrades have been designed to support operational improvement capacity demands of different States while conforming to a harmonized global system. The ASBU framework has been formalized along the way through events such as the Global Air Navigation Industry Symposium (GANIS), the very first of its kind, held in late 2011. Over 500 participants attended the GANIS and the contributions of these and other experts have been invaluable to the finalization of the block upgrade framework.

5.3 The technology roadmaps contained in the GANP contains both current and emerging technology and describe capability improvements that provide performance benefits. Like the ASBU modules, the more detailed technical information relating to the communications, navigation, surveillance (CNS) and information management (IM) roadmaps will be available through the GANP as hyperlinked-content that evolves in line with new technological and operational developments.

6. VALIDATION AND MAINTENANCE OF THE GLOBAL AIR NAVIGATION PLAN

6.1 It is requested that the Conference consider the attached draft Fourth Edition of the GANP, which includes the ASBU framework document, the technology roadmaps as well as supporting documentation, and agree to the recommendation in paragraph 7.3.

6.2 After the Conference, a finalized version of the GANP will be submitted to the ICAO Council for acceptance and then proposed to the 38th Session of the ICAO Assembly for endorsement as the future strategic direction for ICAO. This enables the ICAO Council to ensure full coherence between the GANP, other ICAO policies and the Strategic Objectives of ICAO.

6.3 It is anticipated that the GANP will be a dynamic document with a rolling fifteen year planning horizon. Therefore the update mechanism will include a three year cycle for revision of the Plan including all related material: ASBU document, technology roadmap document and supporting material. Progress on the GANP work programme and module implementation will be reported annually to the Air Navigation Commission.

6.4 The Commission will review GANP progress reports as part of the annual air navigation work programme. The Commission will also deliver proposals for amendment to the GANP to the Council one year in advance of each ICAO Assembly.

7. CONCLUSION

7.1 The proposed new edition of the GANP represents an evolution from a focused technical publication to a policy document reflecting ICAO's strategic approach to complementary air transport progress in line with the Organization's Strategic Objectives.

7.2 The ASBU methodology presented in the GANP is the result of extensive State and industry consultation and represents an integrated approach to addressing aviation's capacity, environmental and profitability challenges through 2030.

7.3 The Conference is invited to agree to the following recommendation:

Recommendation 1/x – The draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750)

That the Conference:

- a) endorse in-principle, following final development and editorial review, the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750), including the supporting aviation system block upgrade modules, technology roadmaps and GANP supporting documentation;
- b) recommend to the Council to accept the draft Fourth Edition of the *Global Air Navigation Plan* (Doc 9750, GANP), following final development and editorial review, and decide to present the Fourth Edition of the GANP to the 2013 Assembly for endorsement as the future strategic direction for ICAO;
- c) request ICAO to develop the regulatory framework supporting Block1 Upgrade modules;
- d) request ICAO to establish timelines and methodologies to complement the GANP planning objectives with a frequency spectrum strategy;
- e) request ICAO to convene a symposium in 2014 where States and manufacturers will be invited to provide end-to-end system demonstrations of new ATM concepts; and
- f) request ICAO to coordinate the development and agreement on operational and financial policies supporting efficient implementation of global Air Navigation services infrastructure and aircraft equipage.

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