



WORKING PAPER

THIRTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 9 to 19 October 2018

COMMITTEE A

Agenda Item 1: Air navigation global strategy

1.1: Vision and overview of the sixth edition of the GANP

1.2: Air navigation performance improvement and measurement through the aviation system block upgrades (ASBUs) and basic building blocks (BBBs) framework

1.3 Air navigation roadmaps

PROPOSALS FOR THE FURTHER DEVELOPMENT OF THE GANP

(Presented by Austria on behalf of the European Union and its Member States¹, the other Member States of the European Civil Aviation Conference²; and by EUROCONTROL)

EXECUTIVE SUMMARY

This paper supports the Global Aviation Navigation Plan (GANP) as a crucial strategic document, and calls upon a number of actions from ICAO to steer and nurture the transformation of air traffic management (ATM) enabled by the digitalisation of aviation.

Action: The Conference is invited to agree to the recommendations in paragraph 8.

1. INTRODUCTION

1.1 As air traffic is forecast to continue growing steadily in the decades to come, bringing global economic growth, prosperity and social development; aviation actors need to address the challenges of such growth through adequate modernization of their systems and infrastructures. In addition, they now also need to face and address the new challenges - and also opportunities - generated by the emergence of potentially hundreds of thousands of highly connected and automated air vehicles. All this must be achieved whilst at least maintaining safety and ensuring adequate security measures are in place; aviation's highest priorities. Only a proactive worldwide strategy, manifested by the Global

¹ Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

² Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Iceland, Republic of Moldova, Monaco, Montenegro, Norway, San Marino, Serbia, Switzerland, The former Yugoslav Republic of Macedonia, Turkey and Ukraine.

Aviation Navigation Plan (GANP) and the Global Aviation Safety Plan (GASP), building on the agile development and deployment of new technologies will bring everyone along together, deliver performance improvements and realise the “promise of twenty-first century air traffic management”³.

1.2 This paper supports the Global Aviation Navigation Plan (GANP) as a crucial strategic document, and calls upon a number of actions from ICAO to steer and nurture the transformation of ATM enabled by the digitalisation, built through an iterative process aligned with regional initiatives and through strong stakeholder interaction, and strengthened by robust implementation monitoring and maintenance processes.

2. **NEED FOR A CLEAR VISION AND A CONCEPTUAL ROADMAP ON THE TRANSFORMATION OF ATM**

2.1 The digital transformation that affects almost all domains of industry is also increasingly changing the aviation world. In fact, because of its global dimension, aviation should be in the vanguard of delivering this transformation, encouraging global deployment of existing digital technologies and fostering new digital enhancements.

2.2 The vision for the future is therefore the digital transformation of aviation that will allow the delivery of high-performing air navigation services in a context of long-term traffic growth whilst successfully accommodating new entrants and improving or at least maintaining safety and an adequate level of ATM security. This evolution and its deployment should be mastered by the GANP, aligned with the GATMOC and allow for regional or local adaptations to specific contexts.

2.3 The path towards this digital transformation vision should be built on improved information sharing (SWIM accessible to all aviation stakeholders, but protected against unlawful interference); gradual transfer of routine tasks to automation; interoperability of systems across borders and optimised use of airborne equipment for aircraft usage in different regions of the world; use of open connectivity technologies (cellular and satellite); modular and scalable systems, safe, secure and smooth integration of all air vehicles (including unmanned aircraft systems (UAS)); flight-centric Trajectory Based Operations (TBO) and a performance-based approach, with a civil-military dimension as required.

3. **A PERFORMANCE-BASED APPROACH**

3.1 The delivery of high-performing air navigation services requires a performance-based approach, built on the endorsement of the vision and the critical path to achieve it, while leaving room for regional or local requirements, specificities and needs, to make sure that “no country is left behind” whilst the overall goal is still pursued. Such approach should also include the establishment of ICAO Standards and Recommended Practices (SARPs) that are not too prescriptive.

3.2 To achieve this, progress towards the vision should be monitored through base lining, benchmarking and, where appropriate, target setting. Performance targets could be either of qualitative or quantitative nature, based on the existing ICAO indicators, adapted or completed at regional or local level as necessary.

³ GANP 2016-2030, Executive Summary.

4. ACHIEVING THE VISION WHILST ENSURING CONTINUOUS SAFETY IMPROVEMENT: THE GANP/GASP CONSISTENCY

4.1 The GANP needs to be developed in conjunction with the GASP. Both documents promote coordination of international, regional and State ATM modernisation programmes aimed at delivering an interoperable, scalable, safe, environmentally-friendly and efficient international civil aviation system. Alignment of these two documents is crucial to ensure that air navigation modernisation and continuous safety improvement progress in close coordination.

4.2 In line with its total system approach to aviation safety, Europe has been striving to ensure a common vision and alignment of objectives for the European ATM Master Plan and the European plan for Aviation Safety. A consistent and complementary approach to ATM, safety and security related matters, involving all civil and military aviation components, is deemed to provide greater efficiency in reaching safety and efficiency goals and may prepare the grounds for a unified aviation risk management framework.

4.3 Europe therefore invites ICAO to initiate a smooth alignment of the GASP and the GANP, starting with a smooth integration of RPAS and the mitigation of cyber threats. Furthermore, with the development of the Global Aviation Security Plan (GASeP), alignment is also necessary with global developments in security and the evolution of the threat picture in civil aviation.

5. ROLE OF THE HUMAN

5.1 The success of digital transformation of aviation also relies on the support by the professional staff that will have to operate it. Operations using increased automation and connectivity, will require different skills resulting more on the management than on execution of tasks.

5.2 A generic automation model would cater for clearly identifying the human operator element and would ease the transition towards the digitalisation and automation in aviation as foreseen in the GANP vision and conceptual roadmap.

5.3 Staff should be involved in this digital transformation to ensure technology serves their needs rather than becoming a barrier to progress. This will enable the early identification of social and change risks and opportunities that would feed change management strategy from the outset; the development of related ICAO guidance material supporting the development of change management and training policies is thus required to address the expected changes in competencies.

6. MAINTENANCE OF THE GANP AND STANDARDISATION NEEDS

6.1 The implementation and industrialisation of improved operation and digital transformation stemming from the GANP should be reinforced by the efficient maintenance of the GANP, ASBUs and basic building blocks (BBBs) framework. ICAO should establish an efficient system that defines and amends the ICAO provisions (SARPs, PANS and ICAO technical guidance material) in a manner that can support the GANP evolution and the ASBUs in a timely manner without being too prescriptive. ICAO provisions should be developed ensuring pooling of adequate resources to develop coherent and global standards.

6.2 Furthermore, ICAO Assembly Resolution A39-22: Formulation and implementation of Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS) and

notification of differences instructs the Council, inter alia, to utilize, to the maximum extent appropriate and subject to the adequacy of a verification and validation process, the work of other recognized industry standards developing organizations in the development of ICAO provisions. The currently applied verification and validation process as requested by A39-22 is considered not sufficient and needs to be expanded and reinforced to ensure that technical specifications on a particular subject developed by different standards making organizations are interoperable, improve harmonization and consolidate development resources.

7. GLOBAL AERONAUTICAL DISTRESS AND SAFETY SYSTEM (GADSS)

7.1 The Global Aeronautical Distress and Safety System (GADSS) is the response to the tragedies of Malaysia 370 and Air France 447. Through the three main functions of GADSS the global effectiveness of SAR will be enhanced. The urgent evolutionary implementation of the GADSS functions is supported by ICAO provisions (Annex 6 — *Operation of Aircraft* and related guidance material) and should be included as available means to enhance SAR effectiveness in a new GADSS thread in the sixth edition of the GANP.

8. CONCLUSION

8.1 The Conference is invited to agree on the following recommendations:

That the Conference:

- a) support the work of ICAO in developing the next edition of the GANP in coordination with States and industry, with a clear vision and conceptual roadmap on how to address the challenges and opportunities for the future, including the civil-military dimension as required;
- b) call upon ICAO to reinforce the performance-based approach development including provisions, with clear objectives or ambitions to allow States and industry to collaboratively develop, validate and deploy new technologies in a coordinated and cooperative way towards the common vision, including enhanced civil-military interoperability;
- c) request ICAO to intensify efforts in establishing a common vision for the alignment between the GASP, the GANP and the newly developed GAsEP as well as to ensure the GANP and GASP are consistent and complementary, especially in the light of the planned ASBU evolution;
- d) recognise the rapid onset of digitalisation and automation of aviation and ATM, call upon ICAO to incorporate into the GANP change management principles noting the role of the human and to establish, in collaboration with States, regions and industry, a generic automation model based on experience from other industries for incorporation into the GANP;
- e) call upon ICAO to develop and implement a transparent and efficient maintenance process of the GANP and of the ICAO provisions and related industry standards, and to expand and reinforce its verification and validation process.;
- f) call upon ICAO to include a GADSS thread in the GANP in line with the ICAO provisions and the GADSS ConOps, Volume 6.
- g) encourage ICAO to continue and further reinforce an iterative approach where global strategic objectives feed, and are fed by, State and regional ATM modernisation programmes, experience and best practices.