



WORKING PAPER

THIRTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 9 to 19 October 2018

COMMITTEE A

Agenda Item 3: Enhancing the global air navigation system

3.4: Civil/military cooperation

CIVIL-MILITARY COLLABORATION

(Presented by the Secretariat)

EXECUTIVE SUMMARY

In many areas of the world, limited access by civil and military air traffic to segregated airspace continues to add unnecessary miles to flights, resulting in capacity constraints and significant fuel consumption. Other challenges are the changes brought by modernization of the air navigation system in terms of procedures, regulations, technologies and organization. From the outset of any developments related to modernization, collaboration at the global level will be needed between civilian and military authorities to ensure that the requirements of both airspace users are considered when improving the current system and shaping the system of tomorrow. This collaboration will reduce the need for segregation, improve safety, provide States with means to protect their national security and defence capabilities, and enable cost-efficient operations.

Action: The Conference is invited to agree to Recommendation 3.4/x – Civil-military collaboration in paragraph 3.

<i>Strategic Objectives:</i>	This working paper relates to the Safety and Air Navigation Capacity and Efficiency Strategic Objectives.
<i>Financial implications:</i>	<i>Impact for the aviation community:</i> All aviation system users will benefit from the enhancement associated with coordination, cooperation and collaboration between civil and military stakeholders. <i>Impact for ICAO (relative to the current Regular Programme Budget resource levels):</i> The ICAO activities referred to in this working paper will continue over the next triennia, additional resources are required, both financial and human, to support ICAO's efforts in the highly specialized areas associated with civil-military cooperation and collaboration.
<i>References:</i>	Doc 9750, <i>Global Air Navigation Plan</i> Doc 9854, <i>Global Air Traffic Management Operational Concept</i> Doc 10007, <i>Report of the Twelfth Air Navigation Conference (AN-Conf/12)</i> Doc 10075, <i>Assembly Resolutions in Force (as of 6 October 2016)</i> Doc 10088, <i>Manual on Civil-Military Cooperation in Air Traffic Management</i>

1. INTRODUCTION

1.1 Civil and military aviation activities are tightly interlinked as ultimately they share the same continuum of airspace. For many years, coordination at a tactical, operational level was sufficient and only required basic tools such as radio, landline and transponder. The last twenty years, however, has witnessed increased cooperation aimed at managing airspace more efficiently while maintaining an acceptable level of safety.

1.2 ICAO recognizes the need to develop a strategic approach to ensure the safety, efficiency and performance of the future air navigation system with respect to civil-military interaction. This requires collaboration between civil and military stakeholders at the global, regional and national levels when defining air traffic management (ATM) modernization programmes and developing new provisions and guidance.

2. FROM COOPERATION TO COLLABORATION

2.1 The *Global Air Navigation Plan* (Doc 9750) (GANP), the *Global Air Traffic Management Operational Concept* (Doc 9854) and ATM modernization programmes highlight the need for a transformation in the air navigation system driven by emerging technologies and business models that will bring major performance benefits for all users during all phases of flight. This evolution will bring changes in terms of procedures, regulations, technologies and organization.

2.2 Military airspace needs will be impacted by the usage of new aircraft and technologies. Dynamic airspace management and trajectory-based operation (TBO) will result in capacity and efficiency benefits for all stakeholders, including military aircraft. The military will not only be a user, but also a technical and operational partner, particularly in system-wide information management (SWIM) and cyber protection and system resilience. As far as practical, military aircraft should have seamless and cost-efficient access to airspace in general, including the civil air navigation system. The lack of such access could result in decreased civil-military cooperation which would negatively impact performance of the air navigation system. Civil-military collaboration, cooperation and coordination are therefore critical for both national economies and security.

2.3 Interoperability

2.3.1 The concept that airspace is a common resource to be collectively managed calls for a systemic approach. It goes beyond ATM and requires interoperability considerations in future provisions and guidance to allow both civil and military aircraft to seamlessly access airspace at any time and with the least constraints possible. Given the systemic inefficiencies of State aircraft special handling and expected future technical performance requirements, State aircraft will face reduced possibility for special handling to operate in the civil route network.

2.3.2 In 2017, the world military fleet size was estimated at 53 500¹ aircraft (an increase of 3.5 per cent since 2015), which underlines the considerable impact that any new interoperability requirement may have on military budgets and, in turn, State budgets. Certification of military aircraft is, and will remain, a national prerogative. When compliance cannot be achieved with civil aviation requirements, performance equivalence² should be envisaged. Interoperability will gradually increase with military authorities applying performance equivalence, but also with ICAO developing more performance-based Standards. Dual use and re-use of military systems are ways for military authorities to meet interoperability and/or performance equivalence objectives.

¹ Flight International – Special Report : World Air Forces 2018 and 2016 editions

² For military aircraft, performance equivalence could be defined as the ability to meet the required functional attributes of ATM/communication, navigation, surveillance systems against the performance, safety, security and interoperability requirements of regulated airspace. This includes measurable and non-measurable functional requirements, demonstrated through the evaluation of accuracy, integrity, continuity of function and availability.

2.4 Strategic approach

2.4.1 Given the evolving security (including cyber threats) and air navigation challenges and to achieve seamless airspace access by all stakeholders, it is crucial to take into account the military dimension in the development of new provisions and guidance. Civil and military stakeholders together conceptualizing tomorrow's system from the outset will ensure that all requirements are considered, that interoperability increases, and that a safer and more efficient air navigation system is achieved. All this must be accomplished while avoiding any adverse impact on safety, national security and defence capabilities, while also leveraging the economies of scale benefits and cost-efficient solutions.

2.4.2 Civil-military collaboration should, at all levels — globally, regionally and nationally— recognize each other's requirements, allow for military participation in the development of future provisions and guidance, and create forums for military authorities to voice their unique requirements. At the global level, ICAO should play a key role in this collaboration.

2.4.3 ATM system performance gains from civil-military cooperation can be maximized and risks associated with any reduction of civil-military cooperation can be minimized through the following overall strategic approach:

- a) collaboration with military authorities at a global, regional and national level;
- b) incorporation of the military aviation aspects in future editions of the *Global Air Navigation Plan* (Doc 9750) and involvement of the military community from the beginning when developing new provisions and guidance; and
- c) joint civil-military development of interoperable solutions and promotion of performance-based Standards development.

2.5 Putting civil-military cooperation into practice

2.5.1 Air navigation system performance is impacted by inefficiencies resulting from lack of civil-military cooperation. Tactical coordination is required for the safety of all airspace users and the efficiency of operations; while cooperation at a strategic level, supported by political will, is a pre-condition for pursuing solutions yielding benefits for both civil and military stakeholders. States are encouraged to work on developing a mutual understanding, communication and trust as these form the basis of successful cooperation at all levels between civil and military airspace users.

2.5.2 To achieve the objectives stipulated at the 38th Session of the ICAO Assembly (Assembly Resolution A38-12 refers), ICAO has been developing the *Manual on Civil-Military Cooperation in Air Traffic Management* (Doc 10088). This document provides an enhanced set of guidance for putting into practice civil-military cooperation. ICAO recommends States to engage with their military authorities and use the principles set forth in the document. ICAO will continue to develop guidance and support States in implementing cooperation.

3. CONCLUSION

3.1 Modernization will transform the air navigation system, radically changing its operating concept and increasing the need for interoperability between civil and military ground-ground and air-ground infrastructures. Collaboration, publication of performance-based Standards, usage of performance equivalence, joint development of requirements and conceptualization of interoperable systems should be encouraged to increase civil-military interoperability, increase air navigation system performance, bring cost efficiencies, guarantee safety and ensure military mission effectiveness.

3.2 More than ever, civil-military coordination, cooperation and collaboration are crucial for civil aviation growth, and for national security and defence. The conference is invited to agree to the following recommendation:

Recommendation 3.4/x – Civil-military collaboration

That the Conference:

- a) request ICAO to identify potential threats to civil-military cooperation and to develop a mechanism to collaborate with the military community early in the development of provisions and guidance;
- b) request ICAO to incorporate the military aviation aspects in future editions of the *Global Air Navigation Plan* (Doc 9750) and in new provisions and guidance where necessary;
- c) request ICAO to provide forums and other opportunities for States to exchange best practices;
- d) urge States to:
 - 1) establish basic civil-military coordination to ensure flight safety, and accelerate the implementation of civil-military cooperation;
 - 2) actively collaborate with their military authorities and encourage greater civil-military interoperability and usage of performance equivalence;
 - 3) continuously inform the military authorities of ICAO's work in improvements to air navigation capacity and efficiency, safety, cyber threats and system resilience, and advocate collaboration with ICAO; and
 - 4) actively participate in ICAO forums and share best practices.

— END —