International Civil Aviation Organization

WORKING PAPER

AN-Conf/13-WP/49
23/8/18
(Information Paper)
English only

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 COOPERATION IN EUROPE

(Presented by Austria on behalf of the European Union and its Member States[1], the other Member States of the European Civil Aviation Conference[2], and by EUROCONTROL)

EXECUTIVE SUMMARY

This paper presents the European best practices in bringing mutual benefits to both civil and military aviation by gradually moving from coordination to collaboration, and moving from the air traffic management (ATM) research and development stages to the implementation of the aviation system block upgrades (ASBUs) through appropriate military involvement in the European rulemaking performance-based environment. To implement a safe and more interoperable performance-based global network, the involvement of both civil and military stakeholders is a key requirement for success.

The global aim of such involvement is to enhance civil-military collaboration in ATM and communication, navigation and surveillance (CNS) to drive the civil-military cooperation to enhance the aviation performance, notably by sharing best practices and addressing challenges as well as opportunities related to digitalization, security, flexible use of airspace (FUA) and unmanned aircraft systems (UAS) integration.

European Union (EU) institutions and European organisations, in conjunction with European States, play a vital role in encouraging the continuation of the development of mechanisms for collaboration with the military communities to further minimize the gap between the civil requirement for predictability and the military need for flexibility.

1. INTRODUCTION

1.1. The *Convention on International Civil Aviation* (Chicago Convention, Doc 7300) became effective on 4 April 1947. Distinguishing civil aircraft operations from State aircraft operations was important enough to warrant the creation of Article 3, which states that the Convention shall not be

[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.

applicable to State aircraft used in military, customs and police services. For military aviation, the objective is to conduct operations and training related to security and defence[3].

1.2. In order for the international aviation market to operate and grow as a safe and harmonious system, States have agreed to collaborate on a common regulatory infrastructure and, inter alia, have agreed on the air traffic services (ATS) provided, and access to and use of airspace. It is considered that a safe and efficient use of airspace can be achieved through close cooperation between civil and military stakeholders from the outset to avoid any negative impact on the performance of the European Air Traffic Management Network (EATMN).

1.3. After the adoption of the Single European Sky (SES) package in 2004, and alongside with the States civil and military authorities, European institutions and organisations are actively involved in enhancing the civil-military cooperation processes towards collaborative decision-making processes at policy, management and technical levels, acknowledging the civil-military cooperation as a key enabler for the airspace optimization and management. The European Union advocates that what it considers to be best practices in these areas should be promoted by ICAO at global and regional levels.

1.4. Although ATM research and development programmes objectives are not directly applicable to the military, in practice the military are impacted by civil ATM research and development programs, e.g. the military may have to adapt their procedures and to upgrade their ground systems to identify all aircraft flying over the territory concerned.

1.5. As the required level of connectivity between civil and military ATM systems depends on the intensity and complexity of the civilian and military traffic operating in the same environment, cooperation and collaboration with the military is a necessity, firstly in the governance structures and secondly at the management and technical level.

2. A STRONG CIVIL-MILITARY COOPERATION EUROPEAN CULTURE

2.1. At the policy level

2.1.1. At the policy level, within the EU, military aspects can be taken into account through appropriate stakeholder consultation, as well as expertise contributed by EU Member States within the legislative process, i.e. as members of the Council. Other forms of involvement concern the Single Sky Committee (SSC) chaired by the European Commission, which plays an important role in the adoption of more detailed rules. The Committee is composed of Member States representatives, but is also important to note that the European Defence Agency[4] (EDA) has a status of observer. In this context, the agency facilitates coordination notably with the North Atlantic Treaty Organization (NATO) and the European Organisation for the Safety of Air Navigation (EUROCONTROL).

2.1.2. The involvement described introduces military input at the earliest possible stages of SES development. Such input is also insured within the European Aviation Safety Agency (EASA) Rulemaking groups, as well as in European Standardisation Organisations (ESO), e.g. in EUROCAE, be it in technical groups or in the European ATM Standardisation Coordination Group (EASCG).

2.1.3. From the point of view of ECAC, the military involvement is mainly ensured through EUROCONTROL, which is a civil-military pan-European intergovernmental organisation dealing with

[3] Source: Military Aviation Strategy (MAS) in the context of Single European Sky agreed by EDA and NATO member States

[4] EDA is an intergovernmental agency of the Council of the European Union (currently 27 countries) placed under the authority of the Council of the EU, to which it reports and from which it receives guidelines. EDA is the only EU Agency whose Steering Board meets at ministerial level.

air traffic management (ATM) and supporting the implementation of the SES, notably to sustain the civil and military developments at technical level. The best practices developed at the EUROCONTROL level include the provision of military and civil-military consultation mechanisms with its forty one Member States, developing civil-military solutions to enhance performance of the EATMN.

2.1.4. Within SESAR, military representation effected by the European Defence Agency (EDA) in both the Single European Sky ATM Research Programme Joint Undertaking (SESAR JU) Administrative Board and the SESAR Deployment Manager Boards. At the technical level, military requirements and subsequent civil-military coordination is conducted through the Military Engagement Plan for SESAR (MEPS), managed by EUROCONTROL in cooperation with its Member States and EDA. This ensures that the first reports to States on on-going and envisaged evolutions contain military views, helping to reach the right level of interoperability between the systems and to avoid potential adverse implications for defence.

2.1.5. From an operational point of view, the role of the network manager in Europe becomes more and more crucial as per described in European regulations. The EU States recognized the need for civil-military cooperation with the intention to increase the performance of the European route network, while ensuring the highest level of safety and preserving the effectiveness of the military missions. The military is represented with two voting members in the Network Management Board.

2.1.6. The most appropriate example for an effective civil-military cooperation is the implementation of the ICAO FUA concept in Europe. This consists in the common recognition of FUA basic principles: collaborative decision mechanism, common understanding on operational needs, common sharing of the same air space, flexibility in air space allocation and release procedures. At the European level, FUA became mandatory for EU states through Regulation (EC) 2150/2005. The implementation status and FUA effectiveness is annually reported to EC, based on specific key performance indicators. Since recently, FUA is considered a mature concept, fully adopted and implemented by EU states, the next stage – advanced FUA, based on a more dynamic air space architecture and usage principles, is planned to be applicable within the SES programme.

2.2. **At the management and technical level**

2.2.1. Comprehensive civil-military cooperation at management and technical levels permits a better integration of military requirements, and a better knowledge of what is at stake for civil aviation. Such cooperation in the end also benefits decision-making at policy level and allows the development of more pragmatic general orientations and concept of operation, e.g. the European ATM Master Plan, which is coordinated amongst all stakeholders, including with the military. The civil-military dimension is also represented within EASA advisory bodies as the Member States Advisory Board and the Technical Bodies, e.g. those for ATM/ANS and aerodromes.

2.2.2. In a "total aviation system" approach, and in order to achieve safety objectives to the full, both sides have to cooperate, rather than working separately. From a military point of view, the safety of air navigation will be promoted throughout the military community in line with international rules and regulations and without national bias regarding the regulation of State aircraft.

2.2.3. The involvement of the military in standardization, e.g. within the European ATM Standardisation Coordination Group (EASCG) and within the European Unmanned Aircraft Systems Standards Coordination Group Unmanned Aircraft Systems (EUSCG), both chaired by EUROCAE, helps the military to better know and implement civilian aviation standards and, in return, to inform civil aviation on potential standards currently being developed for the military aviation, e.g. detect and avoid systems developed with military funding and support to facilitate remotely piloted aircraft systems (RPAS) integration in controlled airspace.

2.2.4. The implementation of system wide information management (SWIM), a global ATM network, shall allow data sharing among all relevant civil and military stakeholders; thus, ensuring appropriate levels of interoperability, cyber resilience, cyber protection and confidentiality, integrity and availability of mission critical information according to local needs. For example, there is military collaboration in SWIM governance projects for SESAR deployment.

2.2.5. In a global ATM network, the involvement of the military at a technical level provides specific expertise to civil aviation and promotes the interoperability between systems. Furthermore, this could develop dual-use technologies and therefore reduce the acquisition costs.

2.2.6. Ad hoc technical measures, such as acknowledging that military systems may offer, in some specific cases, levels of performance that is equivalent to civilian systems, would guarantee a safe access to airspace for manned and unmanned State aircraft. A good example is the military involvement in airworthiness through the European Military Airworthiness Requirements (EMAR), and in the unmanned aircraft systems (UAS) domain thanks to their expertise in the operational domain validated by integration test flights.

2.2.7. The involvement of the military in SESAR deployment demonstrated a real opportunity to implement systems providing benefit to the performance of the network. In this, incentive through EU co-founding is a strong enabler for the military authorities. The close coordination between the EDA and the SESAR deployment manager allows information sharing and gains buy-in from the implementing partners.

2.2.8. The civil-military dimension in rulemaking is undertaken through the identification of both civilian and military experts and is seen as being crucial for the development of a robust SES, e.g. cyber, UAS, data link services. A best practice is on the way the 8.33 kHz voice channel spacing has been addressed, notably to identify the most efficient measure guaranteeing access to airspace to State aircraft while ensuring the best level of efficiency for the civil aviation. The main difficulty is to find the right consensus after a strong but sometimes very demanding coordination process, first launched at national before reaching the regional level.

2.2.9. In Europe, considering the foreseeable aviation technology changes, civil-military interoperability is a fundamental enabler to address the automation challenges and to ensure the required levels of civil-military connectivity and performance in a globally interoperable context, seamlessly accommodating military operations. In particular, civil-military and military-military interoperability is a paramount objective when trajectory-based operations are introduced, and satellite technologies become the norm with aircraft fully connected with the underlying ground infrastructure. Other important interoperability challenges for Europe are related to the integration of unmanned aircraft/drones in controlled airspace, increased automation support and enhanced data sharing through a secure and resilient network centric system-wide information management structure.

3. EXAMPLES OF BEST PRACTICES

3.1. A good example of the successful civil-military cooperation is the work done by the Baltic Sea Project Team (2015) and the ad-hoc civil military expert group for flight safety over the Baltic Sea (2017), hosted by Finland with support from ICAO Paris office and with participation from Baltic Sea coastal states (i.e. Denmark, Estonia, Germany, Latvia, Lithuania, Poland, Russia and Sweden, as well NATO, the European Aviation Safety Agency (EASA) and EUROCONTROl.

3.2. Prepared by the above-mentioned groups the following EUR-OPS, Bulletins have been published EUR OPS Bulletin 2015_002 “Guidelines to airspace users in order to raise their awareness

on State aircraft operations especially in the High Seas airspace over the Baltic Sea"[5] from 2015 (prepared by the Baltic Sea Project Team).

3.3. EUR OPS Bulletin 2017_001 "Principles and best practices in case of air encounters, especially in the High Seas airspace commonly shared by civil & military aviation over the Baltic Sea"[6] providing recommendations for operations in international airspace in the Baltic Sea region. The bulletin lists the general principles and best practices that should be followed in an airspace used by both civil and military aircraft. The purpose of these practices is to further enhance flight safety.

3.4. Examples for best practises at technical level developed by EUROCONTROL consist of the ASM handbook, the EUROAT[7], the future military airspace requirements determination and a wide variety of publications, informing the military on important civil developments in ATM and aviation matters, as well as specifications, guidelines and other relevant deliverables for practical execution of civil-military coordination and cooperation. Along with the deliverables, support systems for coordination and cooperation, like LARA[8], PRISMIL[9] and CIMACT[10] have been developed and deployed in many States with the aim to allow advanced-FUA by continuous data-sharing between civil and military.

3.5. On CNS, the civil-military interoperability roadmap, as well as dual approach, such as the reutilisation of military transponders to sustain automatic dependent surveillance — broadcast (ADS-B) and the re-use of military avionics to support key 4D trajectory management functions, are also best practices.

4. CONCLUSION

4.1. The global evolution of the ATM system as foreseen by the Global Air Navigation Plan requires a strong regional, and national cooperation between civil and military State aviation authorities. Gradually moving from civil-military coordination to greater collaboration is beneficial to both the civil and military aviation.

4.2. In order to implement a safer, more interoperable and performance-based global network, the collaborative involvement of both civil and military stakeholders at State, regional and global levels is no longer an option but a key for success.

4.3. The military can bring added-value to civil aviation under the condition that appropriate involvement is ensured at all stages, whether these pertain to policy making or technical issues. The expertise of the military is necessary in order to find dual-use solutions, in particular in areas where such expertise is very specific compared to expertise available to actors of civil aviation.

4.4 The Conference is invited to take note of European best practices related to civil-military cooperation presented in this information paper.

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[5] https://www.icao.int/EURNAT/EUR%20and%20NAT%20Documents/EUR%20Documents/EUR%20OPS%20BULLETINS/EUR%20OPS%20Bulletin%202015%20002%20final.pdf

[6] https://www.icao.int/EURNAT/EUR%20and%20NAT%20Documents/EUR%20Documents/EUR%20OPS%20BULLETINS/EUR%20OPS%20Bulletin%202017_001.pdf

7 Harmonized Rules for Operational Air Traffic (OAT) under Instrument Flight Rules (IFR) inside controlled Airspace of the ECAC Area

8 Local And sub-Regional Airspace Management Support System, which makes full use of B2B Services for seamless communication and coordination

9 Pan-European Repository of Information Supporting Civil-Military performance measurement, which facilitates the combined performance monitoring of civil-military airspace management processes in a transparent and consistent way

10 Civil-Military ATM Coordination Tool, which is an operational software package supporting the improvement of civil-military coordination and security