EUROPEAN DEFENCE AGENCY

EXTERNAL NOTE

MILITARY ASSESSMENT ON THE CONTENT OF THE PILOT COMMON PROJECT

This document aims at providing the European Commission the military concerns regarding the implementation of the Pilot Common Project. It consolidates the States inputs through a consultation process put in place by the European Defence Agency, NATO and Eurocontrol.

The Consultation Process for the military

The three step consultation mechanism

In response to the European Commission (EC) consultation on the content of the Pilot Common Project (PCP) with the different stakeholders and following Commission's Implementing Regulation (CIR) 409/2013[1], the military have taken the initiative to put in place a three step consultation-mechanism.

This consultation-mechanism consisted of an initial staff-to-staff coordination between EDA, NATO and EUROCONTROL, consultation with their respective States and a final staff-to-staff consolidation as shown below:

- Step 1:
  - Early staff-to-staff coordination (EDA, NATO, ECTL) during September
  - Output: Common initial assessment on the content of the Pilot Common Project
- Step 2:
  - Coordinated delivery of initial paper to States on 14th October and request for comments
  - Military PCP Workshop on 21st October hosted by the European Defence Agency
  - Output: Collection of comments from States until 4th November
- Step 3:
  - Staff level coordination of a consolidated opinion
  - Output: "Military assessment on the content of the Pilot Common Project" to be delivered to EC by end November

SESAR Joint Undertaking's proposal[2] has been taken as the baseline for this consultation process as it remained the sole piece of documentation available at the time the consultation took place.

[1] Implementing Regulation on Common Projects, Governance & Incentives supporting the implementation of the European ATM, L123/1, 4.5.2013

[2] SJU proposal for the content of the Pilot Common Project delivered on 7 May in response to the European Commission's mandate received on 3 August 2012

This document is the final outcome of such process and delivers a consolidated assessment to the European Commission on behalf of the military. It is structured as follows:

- **Standing Military Operational Requirements**: This section provides general remarks on the specificities of military in the Single European Sky with specific emphasis on SESAR.

- **Implications of the Pilot Common Project (PCP) for the military:** This section provides for each ATM Functionality, a summary of the challenges for the military, an assessment on the cost as provided in the PCP proposal and recommendations to the European Commission to safeguard military interests.

STANDING MILITARY OPERATIONAL REQUIREMENTS

As they can be required to act as Airspace User, Air Navigation Service Provider, Airport Operator, Regulator, Supervisory Authority, and Policy Maker, military authorities are often unique in their contribution to SESAR. The diversity of roles and responsibilities, together with membership of complementary defence organisations, makes development of a coordinated States military position very challenging.

As provisioned in the "Statement by the Member States on military issues related to the Single European Sky" attached to Regulation (EC) No 549/2004 of 10.03.2004 laying down the framework for the creation of the Single European Sky, the safe and efficient use of airspace can however only be achieved through close cooperation between civil and military users of airspace.

In establishing the governance for SESAR deployment, military requirements or constraints shall therefore be duly considered, in order to guarantee a balanced consideration of economic as well as security and defence requirements. Privacy, National Defence Affairs and Security must be addressed when implementing the new ATM Functionalities.

Furthermore, military aviation is ensuring the security of airspace through air policing and air defence. These national tasks, in the main entrusted to NATO Air Command and Control by its member States, constitute for all States a mission for which the primacy over any air traffic shall be maintained.

In order to fulfill the missions deriving from national priorities and international commitments, the armed forces of member States and in particular military aviation have to be able to train and fly in accordance with the highest standards to keep their operational readiness and effectiveness to fulfil their missions.

A strong European Defence Technology and Industrial Base (EDTIB) also play an important role in the preservation and improvement of military capabilities. In that regard, the role of Industry in the standardisation of the technology to be deployed and in the definition of common projects needs to be further documented.

AF #1: Extended AMAN and PBN in high density TMAs

AF#1 Challenges

Although military implications of this AF were not reflected in the current proposal of SJU, it is understood that this AF will have consequences for whoever wants to transit (low or high), land and depart through these TMAs.

States will be affected by the major hubs from their own and neighbouring States due to the extended 180-200NM AMAN horizon. This could include changes to military air traffic and aerodrome procedures and infrastructure within the extended horizon.

In addition, the implementation of environmental friendly procedures for arrival/departure approach (e.g. RNP1, RNP APCH with APV Baro or SBAS) may have an impact on State aircraft[3], especially those primarily operating as General Air Traffic (GAT) in the same airspace as civil aviation in Europe. This is particularly the case for transport-type State aircraft, which will need the advanced navigation capabilities described in ICAO document 9613 (or equivalent) to comply with the provisions of the draft PBN regulation applicable to State aircraft.

In parallel, in the situation where there is a need for transport-type State aircraft to be cooperative with trajectory management operations, those State aircraft must be equipped with the appropriate VHF data link and associated FMS capability as required to support initial 4D applications. This capability will build upon baseline CPDLC requirements defined in Regulation 29/2009.

The impact on military aircraft also encompasses collective assets such as NATO Airlift (C-17) and Early Warning (AWACS) fleets amongst others.

AF#1 Cost Assessment

There is currently no military cost assessment for this AF.

AF#1 Recommendations to EC

Military will be affected by AF#1, therefore the implementation of this AF will require:

- Confirmation that due to the proposed extended 180-200NM AMAN horizon in the 25 selected airports, military operations when transiting in civil TMAs and for their own operations in military TMAs will not be hampered

[3] "Aircraft used in the military, customs and police services are deemed to be state aircraft" (ICAO Convention, art. 3 (b))

- Keeping conventional support (e.g. precision and non-precision approaches) in the transition period for transport-type State Aircraft
- Adoption of the draft PBN regulation in accordance with military needs
- Coordination of PBN implementation policies across EU
- Analysis for each military aircraft acquisition Programme on the impact of PBN regulation on the avionics
- A cost-benefit analysis for AF#1 which includes the military

AF #2: Airport Integration and Throughput Functionalities

This concept is mainly based on airport safety features in ground, departure, runway and arrival sequencing. The impact is perceived minimal however increased capacity (either way) in sequencing might also require additional SIDS and STARS as fallback or contingency. These SIDS and STARS might be related to AF#1

AF#2 Cost Assessment

There is currently no military cost assessment for this AF.

AF#2 Recommendations to EC

The impact of AF#2 is perceived as minimal

AF #3: Flexible Airspace Management and Free Route

AF#3 Challenges

The necessity for the military to adopt appropriate Airspace Management capabilities to support Advanced Flexible Use of Airspace and Free Route Airspace, in full interoperability with civilian organisation makes this ATM Functionality of paramount importance.

The PCP correctly recognises that where airspace and route structures will be dynamic and Free Route Airspace will be introduced, it is vital, from a safety and security point of view, that military ATC and Air Defence (AD) units (referred, hereafter, in this paper as 'military centres') work on the same information data, defining and delineating airspace reservations for military missions. While it is reassuring that the PCP recognises that, "…ASM, ATFCM and ATS systems shall interface to such [ATC and AD] systems in a way that allows their users to provide services based on a common understanding of the airspace and traffic environment", the costs to the military are likely to be significant. Moreover, national Air Command and Control (Air C2) units, together with the NATO Air Command and Control System (NATO ACCS) may need to be modified if they are to accept dynamic ASM inputs. However, by way of example, the NATO ACCS Programme does not currently accommodate this requirement.

Furthermore, certain State specificities need to be taken into consideration, e.g. Swedish Airspace system.

AF#3 Cost Assessment

Some States will bear limited costs as military and civil en-route ATC organisations are integrated and thus military do not require the development and installation of specific airspace management capabilities. Some have already developed and installed the required airspace management tools while others may make use of existing ASM tools such as LARA.

Based on similar work done by EUROCONTROL and some States, the development and installation cost of ASM tools has been estimated between 5-8 M€. The scenario presented in the SESAR JU proposal is based on the working assumption that 22 ECAC states would have to go through that process for a total cost of about 140 M€. The consultation process revealed that this figure seems to be underestimated. Some States have already confirmed more affected centres than those considered in the working assumption of the PCP Proposal with an estimated cost for only one State of an investment of 30 to 50 M€ for Military Coordination Centres (excluding Detection and Control Centres and Airspace Management Centres).

In addition, several States and NATO may have to meet the costs to upgrade the airspace management capabilities of their national Air Defence centres and of NATO ACCS.

AF#3 Recommendations to EC

Military will be affected by AF#3, therefore the implementation of this AF will require:

- Cyber-security and relevant security measures shall be well addressed in full cooperation with the military while preserving both the quality and integrity of data
- Civil-military interoperability shall not hamper the military-military interoperability while respecting States prerogatives and sovereignty
- Contingency plans are to be made available with the aim to always provide the military with data in case of technical failure or in case of strike
- National and/or regional arrangements shall be taken into account as well as generic military requirements
- A more detailed impact assessment of Free Route Airspace on civil-military ATC coordination
- Possible options to integrate the required functions into NATO ACCS should be addressed in order to facilitate future short term dynamic airspace allocation
- Review of the current cost-benefit analysis for AF#3 in accordance with States' feedback

AF #4: Network Collaborative Management (Flow & NOP)

AF#4 Challenges

The smooth integration of cross-border OAT (Operational Air Traffic) flights across the European ATM system is considered as an important step to achieve a collaborative management of the airspace. The investment made by EUROCONTROL to upgrade the Network Manager's "Initial Flight Plan Processing System" should be complemented, if and where required, by local investments to integrate the OAT Flight plans in each Flight Data Processing system, including that of NATO ACCS.

AF#4 Cost Assessment

Costs to integrate OAT Flight plans in local Flight Data Processing systems and their interface with the "Initial Flight Plan Processing System" have not been estimated yet.

AF#4 Recommendations to EC

Military will be affected by AF#4, therefore the implementation of this AF will require:

- local investments to integrate the OAT Flight plans in each Flight Data Processing system, including that of national Air C2 systems and NATO ACCS
- A cost-benefit analysis for AF#4 which includes the military

AF #5: iSWIM functionality

AF#5 Challenges

Though some specific military security requirements have been identified by SESAR JU on SWIM (WP 14.1.3), a close dialogue should be maintained on the consistency between SWIM, legacy ATC and C2 systems including ACCS.

Military Air C2 centres that are (will be) connected to ATC networks will also have to become iSWIM compliant or adequately interfaced taking into account any security and interoperability/Quality of Service implications.

AF#5 Cost Assessment

The initial estimated cost for the military presented in the PCP proposal, is based on an initial working assumption. The assumptions taken was a unitary cost of 3-5 M€ (as estimated by ANSPs) and 22 military centres to be fitted with a resulting total cost of c.100M €. The consultation process revealed that this figure seems to be underestimated. Some States have estimated that 50 M€ are needed for the single step 1 of IP gateway. Moreover, each safety study is evaluated at up to 0,5 M€ for each military centre.

In addition, NATO ACCS and other National Air C2 centres will need to develop new information exchange capabilities to match this new data-communication interface, for which the costs are

unclear at this time and, consequently, no adaptation to the NATO ACCS or National Air C2 is currently provisioned.

AF#5 Recommendations to EC

Military will be affected by AF#5, therefore the implementation of this AF will require:

- Validation of the "mature technology" at national level as regards safety and INFOSEC, in particular for initial System Wide Information Management
- Investigation of the security and cyber-security impact on the interfaces between iSWIM and Air Defence/C2 Systems and its effect on the planning
- The development of new information exchange capabilities for NATO ACCS and other National Air C2 centres to match this new data-communication interface
- Contingency plans to be made available with the aim to always provide the military with data in case of technical failure or in case of strike
- Review of the current cost-benefit analysis for AF#5 in accordance with States feedback

AF #6: Initial Trajectory Information Sharing (Towards i4D)

AF#6 Challenges

AF6 deals with i4D and requires communications which may not be fitted on military aircraft.

It is understood that i4D will have impact on State aircraft[4], especially those primarily operating as General Air Traffic (GAT) in the same airspace as civil aviation in Europe. This is particularly the case for Transport-type State aircraft which will need an ATN-compliant VHF data link and a FMS capable of processing i4D data, starting from the baseline provided by EC Regulation 29/2009 (DLS). The impact on military aircraft also encompasses NATO Airlift (C-17) and Early Warning (AWACS) fleets, which are assimilated to transport type aircraft.

For State aircraft other than transport aircraft, the declaration of compliance could depend on the ability to demonstrate that the existing avionics reaches the level of performance specified for communication, navigation and surveillance although this process has yet not been identified.

AF#6 Cost Assessment

There is currently no cost assessment for this AF.

[4] "Aircraft used in the military, customs and police services are deemed to be state aircraft" (ICAO Convention, art. 3 (b))

AF#6 Recommendations to EC

Military will be affected by AF#6, therefore the implementation of this AF will require:

- State aircraft exemption for i4D functionality based on CPDLC augmented by ADS-C applications, which does not comply with some State's doctrine of use
- Analysis for each aircraft acquisition Programme on the impact of Data Link regulation augmented by ADS-C applications on the avionics
- A cost-benefit analysis for AF#6 which includes the military

Access to EU Funding

Access to EU funding is a strong incentive for the military, as military cost benefit analysis for the implementation of the Pilot Common Project is negative.

Appropriate mitigation measures should be put in place for those categories of stakeholders that have negative CBAs.

It is understood that eligibility of projects of military relevance to EU financing shall therefore be ensured.

Standardisation

SESAR JU Pilot Common Project Proposal contains standardisation and regulatory needs for the implementation of each ATM Functionality.

The European Commission is refining this information together with SESAR JU and EUROCAE.

EDA, NATO and EUROCONTROL shall be involved in this process in order to assist in providing a consolidated military view of their respective States. Furthermore, as far as feasible, these organisations shall cooperate with EUROCAE to explore the opportunities of certifying the equivalence of military systems with SESAR requirements.