



WORKING PAPER

ASSEMBLY — 37TH SESSION

TECHNICAL COMMISSION

Agenda Item 35: The global air traffic management (ATM) system

Agenda Item 36: NextGen and SESAR as part of the Global ATM system

Agenda Item 38: Civil/military cooperation

Agenda Item 39: Transition from AIS to AIM

PLANNING OF ATM DEVELOPMENTS IN THE GLOBAL ATM SYSTEM

(Presented by Belgium, on behalf of the European Union and its Member States,¹ by the other States Members of the European Civil Aviation Conference² and by Eurocontrol)

EXECUTIVE SUMMARY

Since the last Assembly ICAO has undertaken several initiatives to implement new developments in ATM. This is highly welcomed. To this end, the development of an agenda for planning major activities for the medium- and long-terms, including priorities and adequate timelines is welcomed. From this agenda short-term and more detailed planning could be derived. The proposed agenda for future work, once developed, could be updated at Assemblies for the long-term and in the ICAO Council for the short-term.

The planning and working methods of ICAO have to increase transparency in what should be delivered and when. This provides a firm foundation for future cooperation with ICAO and its stakeholders, on which ICAO could coordinate these developments with input from States, regions, international organizations and industry. Some elements are highlighted to take this into account.

Action: The Assembly is invited to:

- a) agree that future ATM work of ICAO should be based on a strategic long-term agenda, with more details for the short-term, giving the highlights of new requirements, priorities and the timeframe to develop the relevant ICAO products. This activity should be based on a close cooperation with the regions, international organization, industry and with programmes like SESAR and NextGen (and others);
- b) urge ICAO to initiate work on a common information reference model, which is intended to specify information requirements in the different domains (i.e. flight and flow information, surveillance information, aeronautical information, meteorological information) and is due to be implemented over the next fifteen years through the system wide information management concept based on a close cooperation with the regions, international organizations, industry and with programmes such as SESAR and NextGen (and others);
- c) emphasize that meteorology should be more linked to ATM, the link with AIM is essential; the timeframe should be critically reviewed as new developments are necessary during the coming triennium;
- d) invite ICAO to continue to develop a performance-based approach for the future of the ATM system. This requires a vision of a performance approach, the planning of activities for the coming triennium and the development of indicators; and
- e) ask ICAO to deliver the guidance material on civil/military coordination and to encourage its Member States to implement the ICAO concept on the flexible use of airspace.

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

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

1. INTRODUCTION

1.1 Since the last Assembly ICAO has implemented several initiatives to focus on the evolution of the global air traffic management (ATM) system and establish the means by which interoperability can be assured at an early stage. To this end, it is developing an agenda for planning major activities and their priorities for the medium- and long-terms.

1.2 This is greatly welcomed and supported by Europe³ though due consideration should be given to the evolution of a more detailed agenda for the short-term.

1.3 The proposed agenda for future work, once developed, could be updated during future Assemblies for the medium- and long-terms and in the ICAO Council for the short-term.

1.4 Transparent planning and working methods of ICAO will increase transparency of what should be delivered and when. This will establish a firm foundation for future cooperation with ICAO and its stakeholders, for which ICAO could coordinate these developments with input from States, regions, international organizations and industry. ICAO has already taken good initiatives in that direction, which are complementary to the transition means of its business. These should be embedded in the ICAO working processes. This is especially important for technical issues, for instance in Annex 10 — *Aeronautical Telecommunications*.

1.5 The transition by ICAO to performance-based requirements will have significant impact on the scope of and means by which it discharges its global remit and these will need to be reflected in the ICAO *Global Air Traffic Management Operational Concept* (Doc 9854). Examples of such changes include but are not limited to: 4D trajectory management; performance-based navigation; system-wide information management (SWIM); and environmental mitigation. These elements are reflected in ATM programmes such as the research programme for the single European sky (SESAR); the United States NextGen initiative and other programmes in the world. These programmes have developed their planning schemes, for instance the ATM master plan for SESAR. It is noted and welcomed that ICAO hosted the ICAO Forum on Integration and Harmonization of NextGen and SESAR into the global ATM concept in November 2008 during which other State and regional initiatives were presented and that it has initiatives underway for the inclusion of these new concepts and requirements in its work.

1.6 It is further noted that ICAO is considering the organization of the Twelfth Air Navigation Conference (AN-Conf/12) in 2012. In this context, it is proposed that ICAO continue to address the suggestions made for planning and for the further evolution of its work and to use this as an input for the Global Air Navigation Plan and related documents.

2. PERFORMANCE DRIVEN IMPROVEMENTS

2.1 Improved safety, efficiency and capacity are among the goals that are driving changes. Improved performance of a gate-to-gate based ATM system should be the driving force for future developments. ICAO recognized this at the CEANS⁴ conference and other events thereafter adding further activities to the list. These developments should be initiated and promoted during the next triennium, to support the importance of the items for the proposed agenda for the future.

2.2 Included in these and essential for the transition to a performance-based system is the development of performance indicators. These will need to be developed in cooperation with the States, international organizations and industry. Europe has for a decade or more worked to transit to such a system of performance approach – including safety, capacity, (cost) efficiency and environmental

³ Europe – The term Europe in this paper is used to cover the States of the European Union and ECAC.

⁴ CEANS – Conference on the Economics of Airports and Air Navigation Services, Montreal, September 2008.

requirements – developed in line with ICAO requirements and this has recently resulted in an implementing rule for performance for the European Union Member States. Recognizing the global importance of the performance-based approach, Europe is willing to make this experience available to ICAO and its member States to facilitate the initial discussion on which ICAO can build.

3. NEW CONCEPTUAL APPROACH STEMMING FROM SESAR/NEXTGEN

3.1 Since the ICAO conference on new ATM systems, where inter alia SESAR and NextGen were discussed, further steps have been taken for cooperation. As programmes such as SESAR and NextGen will deliver new input to ATM in the short-, medium- and long-terms, adequate planning of activities is required. In order to define the requirements for harmonization and standardization cooperation with ICAO is essential as is the inclusion of an appropriate timetable. For this reason the European Union and the US-FAA have established a Memorandum of Cooperation to conclude working on this. SESAR has developed its ATM master plan whilst other programmes will have developed comparable documents. This type of planning shall be made more visible in the planning of the ICAO work on ATM for the coming years. ICAO is invited to deliver the medium- and long-term agendas, focussing on the conceptual level of ATM, with further elaboration of key aspects of ATM for a more detailed planning for short-term focus.

3.2 In addition to this, the development of concrete technical standards could be coordinated with technical rulemaking bodies from international organizations and industry, as part of the implementation of the agenda. ICAO is invited to make use of input from other rulemaking organizations complementary to the traditional working methods of ICAO. The clear planning, transparent to the aviation community, will be instrumental in making best use of available resources within the context of the global picture of future needs. Research can take benefit from the holistic approach on performance for the whole aviation system, also beyond ATM.

4. SYSTEM-WIDE INFORMATION MANAGEMENT (SWIM)

4.1 Information management is vital for the development of the new ATM concepts and its development is also important for air traffic flow management. It is also essential for the implementation of SESAR and NextGen and it is welcomed that ICAO has recognized this. The future is a Net-centric information environment which will evolve from SWIM. The first steps are the development from aeronautical information service (AIS) to aeronautical information management (AIM) and then to SWIM which could be made more visible in the ICAO work and reflected in broadening the scope of Annex 15 — *Aeronautical Information Services*.

4.2 An element of information management is the relation between meteorology and ATM. Although both are regulated by ICAO, the direct interaction between them could be strengthened. Recognizing the accelerating pace of change, it is recommended that ICAO consider the means by which harmonization of the work of the AISAIMSG⁵ and the AMOFSG⁶ can be established. The objective should be to ensure the information is made available to information systems to ensure that ATM makes better use of meteorological information to plan flights and manage air traffic. This interaction should be strengthened and the implementation of the new developments should be tailored to define operational needs and associated timelines.

4.3 The need for interaction between MET and ATM was well demonstrated by the impact of a recent volcanic eruption in Iceland.

⁵ AISAIMSG – Aeronautical Information Services (AIS) and Aeronautical Information Management (AIM) Study Group

⁶ AMOFSG – Aerodrome Meteorological Observation and Forecast Study Group

5. CIVIL/MILITARY COOPERATION

5.1 It should be recalled that under the Chicago Convention, States have a responsibility for the regularity and safety of the air traffic in their airspace. Due to the expansion of civil air traffic, the demand for additional airspace capacity is growing. Recognizing this, ICAO has established under the Global Air Navigation Plan an initiative which recommends the introduction of the flexible use of airspace (FUA) for the sharing of airspace between civil and military communities. This is essential to cope with the forecast growth of civil aviation, to guarantee safety for airspace users and to enhance the efficiency of the ATM system.

5.2 What is currently missing is guidance material on outlining the means by which a State can introduce the FUA concept and can translate these requirements into applicable rules and/or regulations. It is recommended that ICAO should consider the means by which some material can be expeditiously developed. Perhaps the experience gained in Europe could provide the catalyst for debate. Regional cooperation between States should be encouraged to make better use of the available airspace at the regional level. In Europe civil/military cooperation is a politically agreed strategic enabler for the Single European Sky and it is elaborated in SESAR, in need of support of future technological developments. Civil/military cooperation is sought as well for interoperability. ICAO is requested to take this in account when developing the long-term agenda.

6. CONCLUSIONS

6.1 It is recommended that the future ATM work of ICAO should be based on a strategic long-term agenda, with a more detailed elaboration for the short-term. Included should be highlights of new requirements, priorities and the timeframe to develop the relevant ICAO products. This activity should be based on close cooperation with the regions, international organizations and industry, for which the European input will be based on SES and SESAR. Through its high-level monitoring and global responsibilities ICAO can ensure the establishment of requirements necessary for programmes such as SESAR, NextGen and others.

6.2 It is recommended that ICAO is encouraged to continue to develop a performance-based approach for the future of the ATM system. This requires a vision of a performance approach, a planning of activities for the coming triennium and the development of indicators. The European States will cooperate with ICAO to develop this approach starting at the regional level but also as contribution for global implementation.

6.3 Moreover, ICAO should initiate, undertake and quickly complete work on a common information reference model, which will specify information requirements in the different domains, i.e. flight and flow information, surveillance information, aeronautical information, meteorological information. The model will be progressively implemented over the next fifteen years through the SWIM concept.

6.4 It is recommended that meteorology should be more integrated into ATM. The link with AIM is essential; the timeframe should be critically reviewed as new developments are needed during the coming triennium. The issue of crisis management, as a result of the volcanic eruption in Europe, is dealt with in a separate European working paper.

6.5 ICAO is encouraged to deliver the guidance material on civil/military coordination and to encourage its Member States to implement the ICAO concept on flexible use of aircraft.