

## **ELEVENTH AIR NAVIGATION CONFERENCE**

**Montreal, 22 September to 3 October 2003**

**Agenda Item 1: Introduction and assessment of a global air traffic management (ATM) operational concept**

**1.2 Enabling concepts in support of the global ATM operational concept**  
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### **AIRSPACE ORGANIZATION AND MANAGEMENT**

(Presented by IFATCA)

#### **SUMMARY**

The International Federation of Air Traffic Controllers' Associations (IFATCA) is supportive of the work of ICAO in defining a global ATM Operational Concept. IFATCA considers that there are particular issues, including global versus regional needs, arising from Airspace Organization and Management that need highlighting.

Action by the Conference is in paragraph 4.

## **1. INTRODUCTION**

1.1 IFATCA supports the ATM Operational Concept (“the concept”) and its holistic approach that starts with all airspace as a useable resource and proceeds from there. However, this does not necessarily mean one global air traffic control centre, and this paper discusses the concept of virtual air traffic control centres.

1.2 The ATM Operational Concept (“the concept”), AN-Conf/4, Appendix, in paragraph 2.2.3 discusses both a single airspace continuum free of discontinuities and inconsistencies, and the requirement to meet the needs of different types of users. IFATCA considers that this requires further discussion as to what is intended.

## 2. DISCUSSION

2.1 The concept paragraph 2.2.1 states, “all airspace will be the concern of ATM and will be a useable resource”. This is a valid starting point and, if the ATM system is correctly designed, should not compromise the sovereignty or security of States, nor the freedoms of citizens.

2.2 While acknowledging that ICAO is responsible for civil aviation, IFATCA takes this opportunity to bring to the attention of States the considerable effect of discretionary military activities on civilian operations. What constitutes discretionary activity, is of course, open to debate, but at the very least the military should be aware of the impact of its operations on the management of civilian traffic, and where possible, adjust the times and locations of military activities to minimise the detrimental effects on civilian aviation. If the concept’s approach to safety cases and business cases is adopted, then the impact of military activities on civilian aviation should be able to be expressed in terms of safety and business (for example, financial) consequences. States are responsible for the management of all airspace activities, civilian and military, therefore IFATCA requests that States find ways of improving the balancing of military and civilian airspace use.

2.3 In the concept’s paragraph 2.2.2 and 2.2.3 there are references to “airspace will be organized globally”, “consolidating adjacent areas”, “objective a single airspace continuum”, “free of operational discontinuities or inconsistencies”, etc., which can be over-emphasised into meaning a single global system, applied from the top down. However, in the concept’s paragraph 2.2.3 it also states, “to meet the needs of different types of users” and in paragraph 1.12 different regional expectations is discussed. The concept also discusses collaborative decision-making, which is, at least in part, a bottom-up process. This indicates that a balance is required that provides a global safety and interoperability framework while still allowing regional or local adaptation to efficiently and effectively meet regional or local needs. There are valid reasons for local variations that exist now and will continue into the future.

2.4 If local and regional variations are permitted, then it is still appropriate for those users who regularly transit between areas, that the “transitions be transparent to the users at all times”. For other users, there should be interoperability but not necessarily transparency. This should be an acceptable trade-off for local or regional efficiencies. Note that this is not done in some ad hoc manner, but instead via the processes defined in the concept, that is by collaborative decision-making, safety cases and business cases.

2.5 Another issue that IFATCA wishes to caution against is the concept that the single airspace continuum means consolidating flight information regions (FIRs) or air traffic control centres. This is not necessarily so, for the inefficiencies that are sought to be addressed can exist within a single FIR or a single centre. The change in structure does not necessarily address the problems. For example, good or bad coordination facilities between adjacent sectors can exist whether the consoles are in the same room, the same country or opposite sides of an ocean.

2.6 As this concept is advanced to the next stage of definition of requirements, IFATCA recommends that, where applicable, the requirements be expressed in terms that are applicable within a centre as between centres. For example, a requirement could be along the lines of a requirement to exchange 4-d trajectory information in real time between adjacent sectors (whether or not those sectors are in the same room or not). Local or regional implementations may achieve this by aeronautical fixed telecommunication

network (AFTN) voice or electronically, as determined appropriate by ATM design. Note: This generic approach is also useful in addressing the information exchange between different members of the ATM community, and so is not just related to service provider sectors.

2.7 Once the fundamental issues of information sharing etc., have been addressed, including some users' requirements for seamlessness and the ATM system's need for interoperability, IFATCA considers that there will be valid safety and business cases for "virtual" ATC centres. In other words, the sectors making up a centre may be in different geographical locations, but to the airspace user they appear to be a single centre. This may also address the needs of some users for regional and local variations in an effective manner.

2.8 Another interoperability issue is mandatory equipage requirements for particular airspace. The concept's paragraph 2.2.5.5 states that airspace "should not be organized in a manner that permanently precludes the possibility of mixed usage/mixed equipage operations". This paragraph should not be used out of context with the rest of concept, especially the need for safety cases and consideration of human factors. In other words, mixed equipage operations must not be some ad hoc additional item but only accommodated as part of sound ATM system design. All efforts must be made to avoid the human operator becoming the sole mitigation factor for insufficient equipage.

2.9 Already today we have airspace arrangements where a part of the sovereign airspace of one State has air traffic control services provided from another State. In the cases of accident and incident investigations, this may mean that individuals are subject to the prosecution in other than the State in which they are based. The legal systems can be quite different, and there may even be simultaneous prosecution in both States.

### 3. CONCLUSIONS

3.1 The ATM Concept should be supported as a sound basis for further work.

3.2 States are reminded that discretionary military activities can have a significant effect on civilian air traffic management, and that processes should be put in place to minimise safety and business impacts from discretionary military activities.

3.3 A balance is required between the need for global safety and interoperability requirements and regional and local needs.

3.4 Consideration should be given to virtual air traffic control centres during development of safety and business cases for creating combined centres.

3.5 Before establishing a single airspace continuum over different States, all legal issues regarding the protection of staff should be addressed.

3.6 ICAO should develop, wherever possible, ATM interoperability requirements that are as applicable within air traffic control centres as between air traffic control centres.

#### **4. ACTION BY THE CONFERENCE**

4.1 The Conference is invited to task ICAO to continue work on progressing the concept and, as part of that task, to address the issues raised in this paper.

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