**WORKING PAPER**

# CONFERENCE ON THE ECONOMICS OF AIRPORTS AND AIR NAVIGATION SERVICES

## Montréal, 15 to 20 September 2008

**Agenda Item 3:** **Specific issues related to air navigation services economics and management**
**3.4: Economic and organizational aspects related to implementation of the global air traffic management (ATM) concept**

## INSTITUTIONAL AND ECONOMIC ISSUES ASSOCIATED WITH THE TRANSITION FROM AIS TO AIM

(Presented by Australia)

### SUMMARY

States are beginning the transition from traditional aeronautical information services (AIS) to the Global Aeronautical Information Management (AIM) system envisaged in the ICAO global air traffic management concept. This paper discusses some broad policy guidance on issues that might be provided to the AIS-AIM Study Group established to assist the Secretariat with the development of a global strategy/roadmap for the transition from AIS to AIM plus SARPs and guidance material necessary to support AIM implementation.

Action by the Conference is in paragraph 4.

## 1.    INTRODUCTION

1.1        Present navigation systems, and other air traffic management (ATM) systems are data dependent, and all require access to global, broad-based aeronautical information. In the future the demand for higher quality and more timely information will be even greater than it is today.

1.2        The provision of aeronautical information is a core process that underpins all elements of ATM. To satisfy new requirements arising from the ATM operational concept, aeronautical information services (AIS) must transition to a broader concept of aeronautical information management (AIM), with a different method of information provision and management given its data centric nature as opposed to the product centric nature of AIS.[1]

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[1] See AN-WP/8309 ("Work Programme to Enable the Global Transition from AIS to AIM"), paragraph 1.1.

1.3        The data centric AIM will be dominated not by paper outputs, or even by electronic AIP products, but by information systems in which timely and reliable data is made available permanently and dynamically for use in applications that perform the required tasks, be it flight planning, flight management, navigation, separation assurance, Collaborative Decision Making (CDM) or any other strategic or tactical ATM activity.  It is the provision of services, based upon data, that will dominate AIM.

1.4        The purpose of this paper is to raise for discussion some options for the provision of high level policy guidance on matters that go to the responsibility of States and which may assist the work currently underway within ICAO on preparing guidance material for the transition from AIS to AIM.


2.        **DISCUSSION**

**Evolution of ICAO guidance on the transition from AIS to AIM**

2.1        The 11th Air Navigation Conference (AN-Conf/11), held in Montreal in 2003, endorsed the operational concept and recognized that, in the global ATM system environment envisioned by the operational concept, AIS would become one of the most valuable and important enabling services. As the global ATM system foreseen in the operational concept was based on a collaborative decision-making (CDM) environment, the timely availability from authorized sources of high-quality electronic aeronautical, meteorological (MET), airspace and flow management information would be necessary.

2.2        The Conference developed Recommendation 1/8 which called upon ICAO to: define requirements for safe and efficient global aeronautical information management; adopt a common aeronautical information exchange model; and develop new specifications for Annex 4 — Aeronautical Charts and Annex 15 — Aeronautical Information Services that would govern the electronic availability of aeronautical information and charts.

2.3        In June 2006, a Global AIS Congress was held in Madrid, Spain. The event was facilitated by the European Organization for Safety of Air Navigation (EUROCONTROL) in partnership with ICAO and considered the essential role of AIS in the evolving world of ATM. The Congress supported Recommendation 1/8 of the AN-Conf/11 and began to define a future high-level view as to the shape, nature and content of a strategy for the evolution of AIS to AIM.

2.4        Realizing the safety-critical nature of aeronautical information, the Congress agreed that, in order to prevent diverging developments in the future it was considered essential that ICAO take the lead at the global level with regard to the transition from AIS to AIM. Accordingly, the Congress developed ten recommendations calling for ICAO action or support from States and international organizations.        The        recommendations        of        the        Congress        are        available        at: http://www.eurocontrol.int/aim/public/standard_page/globalais_recommendations.html.

2.5        In September 2007, the 36th Session of the ICAO Assembly recognized the need for the Secretariat to support the recommendations of the Congress together with the need for further coordination and transparency (A36-WP/321 refers).

2.6        The Air Navigation Commission has established a new Aeronautical Information Services – Aeronautical Information Management Study Group (AIS-AIMSG) to assist the Secretariat with the development of a global strategy/roadmap for the transition from AIS to AIM, to be delivered in draft by early 2009, plus a review of SARPs and guidance material necessary to support AIM implementation.

2.7          The ICAO Worldwide Symposium on Enabling the Net-Centric Information Environment (Net-Centric Symposium), held 2-4 June 2008, highlighted that there were some key institutional and economic questions that needed to be addressed in the transition from AIS to AIM. These issues were cost recovery, and liability, copyright and ownership and the Secretariat has indicated that they should be examined by the AIS-AIMSG in the first instance.

### Current Guidance

2.8          Annex 15 currently provides some guidance on the issues identified in paragraph 2.7 above, but the changes in the nature of aeronautical information envisaged by the AIM concept, suggest that existing guidance will need to be updated.

2.9          The Annex needs to reflect the way aeronautical information is distributed around the world at present, and provide the guidance necessary for the transition to a net centric AIM. A key example is the lack of recognition of the role played by third party data redistributors who currently play a major role in transforming most State aeronautical data into digital form suitable for loading into the flight management systems of modern aircraft.  The Annex still envisages that this function – that of distributing data of other States to enable international airlines to access it – is still mainly performed by States themselves (see paragraph 3.3 of Annex 15).

2.10          In addition, the Annex should reflect the current reality of service provision as commercial providers make available numerous paper and digital products, including FMS data sets, as well as providing takeoff and landing performance tables, NOTAM briefings, paper and electronic charts, computerised flight plans, etc. All of these services are based, not so much on the official State Integrated Aeronautical Information Publication (IAIP), but on the underlying core aeronautical data. Commercial providers, sometimes in competition with official State providers, take the State obligatory data and add value to it so as to deliver specific services aligned to the needs of specific users.

2.11          Thus, the Annex needs to reflect how core aeronautical data is to be exchanged, created and maintained to a much higher standard in the future, supporting a much wider set of information services. In this respect, attention will need to be paid to the boundaries of the obligatory provision of data by States and commercial, competitive provision by third parties – as well as commercially focussed ANSPs.  These questions are likely to be key to many aspects of the transition from AIS to AIM.

### State Service Provision, Monopoly and/or Competition

2.12          The provision of State obligatory data, in accordance with Annex 15, bears many of the hallmarks of a natural monopoly in that the State is often in the best position to collect and manage core data necessary for aviation within the State – and, for reasons of efficiency and safety, there should be only one source of authorised aeronautical data for the State.

2.13          The significant expansion in the type and quality of aeronautical data envisaged by the Global AIM concept may place new pressures on many States and lead to a re-appraisal of the benefits of arranging for another State or a private sector provider to become involved in whole or in part. Annex 15 makes clear that how the information is collected, managed and distributed is a matter for the State, and that the State retains ultimate responsibility.

2.14          Many States may consider external provision in relation to the new information requirements of the Global AIM, particularly as there already exists a viable industry of third party providers of many of these information services. Regional data bases, such as EAD in Europe and proposed for parts of Africa, need also to be considered.

2.15        Care needs to be taken in managing the interface between a monopoly State provider of core State data and private sector distribution of that data and/or additional information sources, which will often rely upon State data as its base. The AIS-AIMSG should consider providing guidance for States in Annex 15 on the interface between a monopoly State provider and private providers.

### Extent of State Obligation

2.16        The AIS-AIMSG should address whether the current obligations on what States need to provide under Annex 15 (State obligatory data) are adequate. The future AIM will be constructed around a backbone or core of State provided, and guaranteed, aeronautical data and so there needs to be a clear definition of the extent of that obligation. This should extend to the form in which States should provide data to facilitate data exchange – most likely to be AIXM.

2.17        The AIM concept contemplates a range of providers of data and services relevant to international aviation. It will be the market (i.e., airlines) that determines what services are utilised, but there needs to be global agreement as to what are the core requirements that need to be delivered by all States.  The AIS-AIMSG should consider whether there would be benefits overall from a change in the burden on States as to their Annex 15 obligations – with higher value (and more costly) data, such as electronic terrain and obstacle data, being separated from the State obligation and subject to more commercial cost recovery arrangements. It may be that this approach will result in an overall better availability of higher value aeronautical data. However, States would need to accept that they would retain responsibility for the accuracy of such data.

2.18        The AIS-AIMSG should ensure, in examining this and other key issues, that it consults closely with CANSO, the body representing civil air navigation service providers.  The views of current AIS providers, whether they be part of Government, semi-autonomous or commercially oriented, will be important as we transition towards a Global AIM. However, the AIS-AIMSG needs to bear in mind that ICAO provides guidance to States about their obligations – how States implement that guidance will often depend upon their own internal arrangements for service provision.

### Cost Recovery

2.19        Paragraph 3.5 of Annex 15 in relation to cost recovery is quite clear although the provision remains a recommended practice and not a standard. Many States follow this guidance and recover the cost of collecting and maintaining their AIS from en route or airport charges, and then make their AIS data available to third party redistributors for the cost of a subscription and/or at cost of provision. This is often on the basis that third party redistributors are more efficient at disseminating State data to global users, and they have generally been the means by which State data is transformed into digital form suitable for entering the data chain that eventually leads to uploading to aircraft flight management systems.

2.20        Some ANSPs, through a variety of models, have established arrangements to both protect intellectual property and/or provide a commercial revenue stream in relation to their investment associated with AIS data.

2.21        A clear policy position will need to be reached on appropriate cost recovery arrangements for core aeronautical data vital for the safety of air navigation as well as being the bedrock upon which the Global AIM will be built. As part of this consideration, a position needs to be established on what constitutes core data and services and State intellectual property and similarly what are value-added services and commercial intellectual property.  The AIS-AIMSG should consider whether recommended practice 3.5 should be clarified and raised to the status of a standard.

2.22        A further relevant consideration for the AIS-AIMSG should be the effect of any significant change to cost recovery practices on general aviation which relies heavily on State published data and should benefit from the development of a vigorous Global AIM.

**Liability, copyright and ownership**

2.23        Paragraph 3.1.1.1 of Annex 15 provides that "the State concerned shall remain responsible for the information published" (in its AIS). This responsibility applies regardless of how the State chooses to fulfil its Annex 15 obligations.  There should also be no doubt as to ultimate ownership of State obligated data – it is the State, although individual State laws may deliver a different result.

2.24        Concerns have arisen, however, over the involvement of third party data republishers who take State data, transform it into digital form and pass it on through the "data chain" where it, eventually, is loaded into aircraft flight management systems. This process may often mean that State data passes through the hands of numerous value added service providers before it reaches its end user, making it difficult to trace where or how errors in data might have occurred.

2.25        It will be in the interests of States to act to ensure that the integrity of its data is maintained through the data chain.  Section 3.2 of Annex 15 lays out some standards in respect to quality systems which are most relevant here and some regions (eg Europe) have made significant advances in this important area. The AIS-AIMSG should consider whether additional guidance should be provided for States in relation to the means by which States might be able to influence or assure data integrity.

2.26        The AIS-AIMSG should also examine the issue of liability, noting that liability should always be related to action and/or non-action. To base liability on a concept of "ownership" implies either that the owner of the data needs to maintain control right through the data chain, or ownership passes to whomever has control of the data or is manipulating it.

2.27        Neither approach offers a practical solution. If data is corrupted through its manipulation to fit a particular purpose, it is the manipulator of the data who should be liable, not the originator. Also, an agency that passes on incorrect or corrupted data without instituting steps to check its validity should assume a share of the liability with the agency that caused the error in the first place.

2.28        States need to institute regimes that require all participants to take responsibility for their actions or non action in relation to data integrity and the AIS-AIMSG, should consider the provision of necessary guidance.

2.29        Paragraph 3.4 of Annex 15 addresses copyright but the AIS-AIMSG should review this provision in order to provide States with practical advice about the value of copyright protection of State obligatory data in a net centric AIM.

2.30        Copyright protection should not be used to restrict the availability, or otherwise hinder the exchange, of State AIS data.  However, commercial interest in value added services, based upon State data, or on services from data originating from other suppliers, should be protected by normal commercial arrangements.

3.        **CONCLUSIONS**

3.1        This paper has canvassed a number of key institutional and economic issues that are considered to be central to the transition from AIS to AIM.

3.2         The positions put forward in the paper are based on a recognition of the role and responsibility of the State in relation to core aeronautical or State obligatory data; a recognition of the current and likely future role played by third party data providers and commercial service providers plus a desire to see the development of a Global AIM network, based around the efficient distribution of services, rather than paper products. The positions in this paper also reflect a State view of the future Global AIM and, in order to ensure a full range of views is properly considered, the AIS-AIMSG will need to consult service providers, through CANSO, in its work.


4.         **ACTION BY THE CONFERENCE**

4.1         The Conference is invited to:

a)  review the policy issues raised in this paper; and

b)  consider providing advice to the AIS-AIMSG to be taken into account in its work on the development of a global strategy/roadmap for the transition from AIS to AIM plus SARPs and guidance material necessary to support AIM implementation.

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