



WORKING PAPER

ASSEMBLY — 40TH SESSION

TECHNICAL COMMITTEE

Agenda Item 30: Other issues to be considered by the Technical Commission

**NO COUNTRY LEFT BEHIND FOR AERONAUTICAL INFORMATION
MANAGEMENT (AIM) PRIORITY AREA**

(Presented by the United Arab Emirates)

EXECUTIVE SUMMARY

This paper describes the role of the *No Country Left Behind* (NCLB) programme in assisting all States complying with the technological-driven “new generation” of Standards and Recommended Practices (SARPS). It is further analysing the aeronautical information service (AIS) historical evolution emphasizing the particular SARPS challenges experienced by aeronautical information management (AIM) today compared to the adjoining domains. The AIM role is considerably augmented as high quality aeronautical data is a prerequisite for the new technologies and tools ingested by aircraft and air traffic management (ATM) systems. Accordingly, it encourages the International Civil Aviation Organization (ICAO) NCLB to provide special attention and assistance priority to States’ AIM. Based on productively United Arab Emirates (UAE) experience, this paper presents some specific proposals for NCLB activities focus on AIM. UAE is prepared to be an active part in support of NCLB initiative.

Action: The Assembly is invited to:

- a) call upon ICAO to intensify the NCLB supportive efforts given priority to AIM SARPS implementation; and
- b) urge Contracting States to support the AIM global modernization by sustaining each other with expert assistance, knowledge transfer and training.

<i>Strategic Objectives:</i>	This working paper relates to all Strategic Objectives and all Supporting Implementation Strategies (SIS).
<i>Financial implications:</i>	The activities referred to in this paper should be carried out subject to the resources available in the ICAO 2020 – 2022 Regular Programme Budget and/or from extra budgetary contributions.
<i>References:</i>	Resolution A39-23, <i>No Country Left Behind</i> (NCLB) Initiative. A40-WP/49, Report on ICAO’s <i>No Country Left Behind</i> (NCLB) Initiative. 16 th Annex 15 “AIS” and 1 st edition Doc.10066 “ <i>Procedures for Air Navigation Services – Aeronautical Information Management</i> ” (PANS-AIM).

1. INTRODUCTION

1.1 Definitively, one of the most estimable milestone and objective of the International Civil Aviation Organization (ICAO) in recent civil aviation history is the establishment back in December 2014 of the *No Country Left Behind* (NCLB) initiative.

1.2 The ICAO NCLB program is an effort to promote greater (technical) vicinity between the most developed countries in civil aviation with those that are facing excessive challenges of systems modernization and interoperability.

1.3 The long term aim of the initiative is to reduce any irregularities amongst the aviation systems, especially on the implementation level of ICAO Standards and Recommended Practices (SARPS).

2. DISCUSSION

2.1 In the effect, the NCLB initiative highlights ICAO's efforts to assist States in implementing SARPs as they play a key role in promoting safety, regularity and efficiency in civil aviation.

2.2 While SARPSs have a vital role in promoting safety, regularity and efficiency, they are not always compatible with the domestic realities. However, the challenges associated with SARPSs implementation are not new.

2.3 Due to rapid changes in SARPS during the recent years, developing nations which are lacking human, technical and financial resources will continue to struggle to keep pace with the changes and may risk further falling behind.

2.4 States' implementation work of the "new generation" SARPSs is now implying a large number of activities never exercised before e.g. cost benefit analysis, risk and impact assessment, project management (type of) procedures, developing or modifying legislation, regulations and policies, etc.

2.5 The NCLB initiative is the "right answer" and imperatively necessary in order to keep enabling all States with support for facilitating a data-driven decision process and reaching out to progressing countries with expert assistance and knowledge transfer while taking into account financial and resource constrains.

3. WHY AIM PRIORITY NOW?

3.1 Certainly, the Internet era has dramatically impacted every human activity domain including the aviation sector. Among the traditional civil aviation domain, the "former" aeronautical information service (AIS) has been undergoing a fundamental change into the AIM concept.

3.2 One cannot argue the lesser amount of implications and work flow changes caused by major SARPs implementation in the late '90s e.g. transition to "new" Aeronautical Information Publication (AIP) structure, adoption of the World Geodetic System - 1984 (WGS-84) horizontal reference, etc., compared to the impact complexity in States "transposing" the recent SARPs.

3.3 In contrast to other bordering aviation domains, it has to be recognized that the traditional AIS is undergoing one of the most challenging paradigm shift changes in a relatively short period of the last 10-15 years.

4. AIM CHALLENGES

4.1 Beyond doubt, presently, AIS world is in an extensive process of transformation by transitioning from traditional product centric provision of aeronautical information being replaced by a data-centric and system oriented solution.

4.2 The major consequences for AIS community of the transitional process AIS – (A) IM – IM are the paradigm shift for (1) mind-set change from “handle” to “understanding/manage the data”, (2) emerging of the technology in AIS day-to-day operations (tools, database) and (3) knowledge of and acquaintance with “external” activity domains e.g. instrument flight procedures design (IFPD), industry ARINC 424 coding, terrain and obstacles data or aerodrome mapping database.

5. DIGITAL DATASETS PROVOCATION

5.1 Recently, the aeronautical information products have been enlarged with the provision of five digital data sets: AIP, terrain, obstacle, aerodrome mapping and instrument flight procedure (IFP) dataset. Essentially, they represent the next step-forward from electronic to “digital” AIP.

5.2 Besides the “heavy” technological system aspect, the implementation of datasets is also dependent on industry support, but, the commercial vendors are not following closely and in full the AIM “technological” developments, but rather in a “selective mode” due to their business-driven evaluation.

5.3 Without an explicit NCLB programme support, there is a potential risk for States AIM not being capable to deliver a consistent provision of aeronautical datasets, hence resulting in a proliferation of different ways of digital information provisions and, consequently, jeopardizing the interoperability (system-wide information management (SWIM)-wise) of data exchanges.

6. PROPOSALS FOR NCLB FOCUS ON AIM

6.1 Equally important to ICAO involvement, an imperative component of NCLB initiative should be the inter-supportive and cooperative work between States of the same or different ICAO regions.

6.2 UAE has been involved in the early stage of the regional NCLB programme and it is willing to further offer some assistance and contributing with resources and expertise for working together with ICAO and fellow Member States.

6.3 Based on a successfully UAE AIM experience, technical progress and knowledge, the following may be considered specific proposals for countries cooperation in order to reduce any “asperities” within the States AIM inter-operations.

6.4 One suitable and beneficial in-scope activity is the set-up of Cooperation Agreements or Protocols between States AIM (not necessarily geographically close) in order to conduct aeronautical data exchange trials.

6.4.1 The proper approach should be in a project management manner, with activities as follows:

- a) objective(s) statement;
- b) strengths, weaknesses, opportunities, and threats (SWOT) analysis and strategic planning;
- c) identification of the quick wins and, as longer term, objectives and requirements for system adaptations;
- d) identification of project leaders, required expertise, human & financial resources, timeline; and
- e) a roadmap with clear milestones and deliverables, etc.

6.4.2 The main benefits resulting from this initiative are:

- a) to reach a “practical” common exchange model i.e. syntactic and semantic compatibility; and
- b) implementation of a common set of business rules.

6.4.3 In case of neighbouring States, the data exchange activity will also bring the advantage for overcoming one of AIP dataset challenges i.e. the agreement on the “authoritative source” for all cross-border type of features.

6.5 Another possible supportive NCLB initiative should be the sharing of SWIM experience as a natural step forward from the data exchange to a “technically-structured” interoperability process.

6.5.1 As example, this activity may encompass following benefits:

- a) sharing of SWIM knowledge/experience between State AIM organizations for bringing them to an equally advanced stage regarding the transition to AIM roadmap implementation;
- b) perform real user – consumer exercise via SWIM framework; and
- c) considering data sets exchange as SWIM services, it should allow all parties developing specific applications e.g. Charting, IFPD (Terrain, Obstacles & AIP datasets), etc.

6.6 One more practical proposal is for State AIM to team up with industry suppliers which are dedicating their efforts to develop software applications allowing management of safety critical data.

6.6.1 State AIM should test commercial vendor products capabilities (Software Test Agreement) in order to proof if the features of interest are:

- a) adequately fulfilling ICAO SARPS; and
- b) format and structure compatible with the existing AIM system for possible integration.

6.6.2 This pragmatic approach may facilitate a “quick win” solution for in-place AIM systems that are challenged by the upcoming requirements, for example, creation of NOTAM graphically and conversion for exchange or full support of Digital Datasets implementation.

6.7 Finally, it should be recommended that NCLB programme may prioritize the AIS personnel training due to the new competencies requirements in successful transition to the AIM environment.

6.7.1 Mindful of the paradigm shift, AIS personnel skills and aptitudes are to focus now on “understanding” rather than “handle” the data by dealing with cross domain disciplines such as PANS-OPS procedure design, basic path terminators ARINC 424 rules and ICAO Annex 4— *Aeronautical* Charts charting expertise.

7. CONCLUSION

7.1 Generally, through the NCLB initiative, ICAO is working to raise worldwide awareness on the significance of the effective implementation of ICAO SARPS, policies and plans.

7.2 Among long-established aviation domains, it has to be recognized that the traditional AIS is undergoing one of the most challenging paradigm shift changes within a condensed period of time.

7.3 The AIS community is in due course of transitional process with implications of (1) mind-set change from “handle” to “manage” the data, (2) emerging of the technology/digitalization in daily operations and (3) knowledge of activity areas beyond the conventional AIS functions.

7.4 Based on successfully UAE AIM experience and technical progress, there are specific proposals for States activities to be considered within NCLB focus on AIM.

7.5 Within the NCLB framework, UAE is at the stage to further offer assistance and supportive contribution with resources, expertise and training for working together with ICAO and fellow Member States.

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