SAT/22 – WP/23
June/2017

INTERNATIONAL CIVIL AVIATION ORGANIZATION
WESTERN AND CENTRAL AFRICAN OFFICE

Twenty second Meeting on the improvement of Air Traffic Services over the South Atlantic (SAT/22)

(Paris, France, 07-09 June 2017)

Agenda Item3: Communications, navigation and surveillance (CNS) (by the CNS Working Group)

3.3 Improvement of CNS system in the SAT Region (AMHS, AIDC, ADS-B)

(Presented by the Cabo Verde)

SUMMARY
The Aviation System Block Upgrade (ASBU) B0-25 recommends "Increased interoperability, efficiency and capacity through ground-ground integration". To this end ATS inter-facility data communication (AIDC) is assumed by many States. The AIDC and the OLDI are tools to coordinate flight data between Air Traffic Service Units (ATSU) and both satisfies the basic coordination of flight notification, coordination and transfer of control.
REFERENCE(S): Manual of Air Traffic Services Data Link Applications (**Doc 9694)** Procedures for Air Navigation Services — Air Traffic Management, (PANS-ATM, **Doc 4444**) Manual of Air Traffic Services Data Link ICAO (**Doc 9694**) GOLD Global Operational Data Link Document EUROCONTROL Standard for On-Line Data Interchange (**OLDI**) North *American (NAM) Common Coordination Interface Control Document (**ICD**)* ICAO Document **9750** Global Air Navigation Plan **2013-2028** Doc. **9883**
Related ICAO Strategic Objective(s): Increase capacity, enhance efficiency and safety of aviation operations

1. INTRODUCTION:

In order to ensure continuous safety and air navigation modernization, ICAO developed the strategic systems approach known as Aviation System Block Upgrade (ASBU). ASBU defines programmatic and flexible global systems, allows States to develop their air navigation capacities based on their specific operational requirements.

The ASBU approach has four Blocks. namely Block 0, Block 1, Block 2 and Block 3. Each block is further divided into Modules. Block 0 is composed of Modules containing technologies and capabilities that are implemented currently.
Module FICE in Block 0 was introduced to improve coordination between air traffic service units (ATSUs) by using ATS inter-facility data communication (AIDC). The transfer of communication in a data link environment improves the efficiency of this process. The data link environment enhances capacity, efficiency, interoperability, safety and reduces cost.
The AIDC and the OLDI are tools to coordinate flight data between Air Traffic Service Units (ATSU) and both satisfies the requirements of basic coordination of flight notification, coordination and transfer of control.

2. DISCUSSION:

The automated exchange of flight data facilitates quick and accurate exchange of information and delivers safety and efficiency benefits for ANSPs and aircraft operators. The major benefits are:

- Reduced workload for ATCOs
- Reduction of read-back and hear-back errors due manual coordination
- Reduction of gross navigational errors and large height deviations which may have occurred due to ATCO-to-ATCO coordination errors
- Facilitation of operational initiatives such as user preferred routes (UPR) and dynamic airborne reroute procedure (DARP).

Automated data exchange is no longer only a desirable feature but is now becoming a necessity where the separation minima between flights are reduced and flight paths are becoming more flexible and user-centric. The seamless transition of flights across FIR boundaries with reduced lateral and longitudinal separation and flight paths like flex tracks, UPRs, DARPs require quick and accurate exchange of data across FIR boundaries.

The existing tools granting automation are: AIDC and OLDI. The standard OLDI is used in Europe and in many countries of Middle East. Elsewhere AIDC.

OLDI and AIDC also help improve efficiency through quicker coordination. The data exchange is nearly instantaneous as the messages are exchanged through eronautical fixed telecommunications network (AFTN) based on message priority. Whereas, in manual coordination, the process requires much more time due to factors such as engaged telephone lines, ATCOs being busy with other tasks, typing or writing of data etc.

Both standards cover notification, coordination and transfer at boundaries, defining messages exchanged between an upstream and a downstream Flight Data Processor: Inter-centre communications or ICC in Annex 10 vol. II. In general, they share only 6 common messages: ABI, PAC, CDN, ACP, MAC, LAM.

Industry has been providing with ATC systems for a long time embarking often the 2 standards, with different HMI design, ranging from a dedicated window to the full integration in the label.

It is also necessary to consider that automatic data sharing means also interoperability because ACC´s may have different standards as seen in the Figure 1. In order to communicate with both centers using different standards, AAC 3 must have a server with multiple standards.

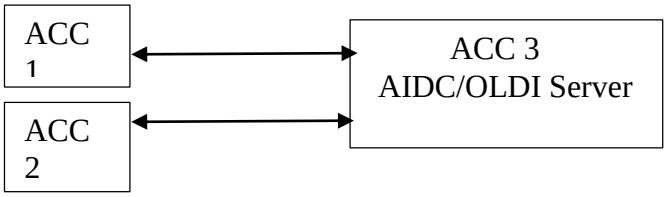

Fig. 1 – Interoperability between centers

Regarding the implementation process, in order to ensure system compatibility, ATSU´s should consider establishing bilateral agreements (LOA/MOU) for defining supported messages, testing and modifying automated systems. These agreements should specify the requirements and limitations of the two systems.

Table 1 summarizes the benefits of the automatic data sharing between ATS units.

Improved capacity	Reduced ATCO workload and increased data integrity supports reduced separation. This translates directly to cross sector or boundary capacity flow increases
Improved efficiency	The reduced separation can also be used to more frequently offer aircraft flight levels closer to the flight optimum; in certain cases, this also translates into reduced en-route holding
Improved global interoperability	The use of standardized interfaces reduces the cost of development, allows ATCOs to apply the same procedures at the boundaries of all participating centers and border crossing becomes more transparent to flights
Enhanced safety	Greater accuracy of flight plan information enhances the ATCO's ability to tactically plan for and properly control the flight
Improved cost benefit	Increase of throughput at ATSU boundary and reduced ATCO workload will outweigh the cost of FDPS software changes. The business case is dependent on the environment

Table 1. AIDC Summary of Benefits Table: ICAO Document 9750 Global Air Navigation Plan 2013-2028

In order to ensure interoperability with all correspondents, Sal ACC is envisaging the replacement of the existing system with one having both standards: AIDC and OLDI.

A global framework for trajectory management is being developed by R&D following ICAO Global ATM Operational Concept, which should progressively supersede current AIDC and OLDI implementations and bring a seamless trajectory shared by airlines, network, ATSUs, and airports from 2020 onwards. So, it is necessary consider the modernization of existing system in the path to Flight and Flow Information for a Collaborative Environment (FFICE)

3. ACTION BY THE MEETING:

3.1. The meeting is invited to:

- Note the information provided in this working paper
- Encourage States to implement AIDC/OLDI in order to ensure compatibility with neighboring centers
- Encourage States to conduct bilateral workshop/meeting to expedite **BO-FICE**