Second Meeting of Rapporteurs of the North American, Central American and Caribbean Working Group (NACC/WG/RAP/02)

ICAO NACC Regional Office, Mexico City, Mexico, 28 to 31 March 2023

Agenda Item 5: **Update of the Action Plans of the Task Groups of the NACC/WG, of the NACC/WG Action Plan and of the regional activities in the Development of the Projects of the CAR/SAM Regional Planning and Implementation Group (GREPECAS)**

Challenges and priorities for APAC/ICD and NAM/ICD implementation

(Presented by AIDC Task Force Rapporteur)

EXECUTIVE SUMMARY	
This working paper gives an overview of AIDC implementation in the NAM/CAR region, presents challenges both past and current regarding AIDC implementation efforts, and considers the priorities identified for the future.	
Action:	Suggested actions are presented in section .
Strategic Objectives:	• Strategic Objective 1 – Safety • Strategic Objective 2 – Air Navigation Capacity and Efficiency
References:	• None.

1 . **Introduction**

1.1   AIDC stands for ATS Inter-facility Data Communications. It allows coordination of flights between FIRs in an automated manner, through the exchange of messages between ATC Center systems.

1.2   In the NAM/CAR region, there are mainly two protocols, or as commonly referred to, Interface Control Documents, in use:

a)   The NAM ICD, developed by the NAM region.

b)   Those based on the Asia/Pacific interface control document (APAC). This includes the APAC ICD per se, and also the PAN ICD, which results from the fusion of the APAC and NAT region ICDs. These ICDs are commonly referred to with the term AIDC, when contrasting with the NAM ICD.

1.3   This working paper discusses the challenges that AIDC implementation has confronted, and is still overcoming, as well as the priorities identified for achieving the goal of purposeful and effective implementation.

2. Overview

2.1 The NAM/CAR region has progressed significantly in the implementation of AIDC, as displayed in Table 1. This table shows the total and percentage of AIDC interfaces (bilateral connections between two FIRs) that are in the different stages of development, from planning to operational.

Status	Number	% total
Implementing	1	1.47
Operational	44	64.71
Planned	16	23.53
Testing	7	10.29

Table 1: Implementation status of NAM/CAR AIDC interfaces

2.2 Most States in the region have successfully implemented at least one interface, and thus have good experience of the implementation of their remaining interfaces with the other adjacent FIRs. This is displayed in Table 2.

State	Operational/Not operational
Bahamas	Not operational
Belize	Not operational
COCESNA	Operational
Canada	Operational
Costa Rica	Not operational
Cuba	Operational
Curacao	Not operational
Dominican Republic	Operational
El Salvador	Operational
Guatemala	Operational
Haiti	Not operational
Jamaica	Not operational
Mexico	Operational
Nicaragua	Operational
Trinidad and Tobago	Not operational
United States	Operational

Table 2: States with at least one operational AIDC interface

2.3 As stated, different ICDs are in use in the region. The number of interfaces using each ICD is showed in Table 3. This is based on total number of interfaces; it is important to take into account that some States have many interfaces. Also, the LOAs that appear in Table 3 refer to interfaces that are internal to the State of Mexico.

ICD name	Interfaces using
LOA	5
NAM-ICD Version E	27
NAT ICD	5
PAC ICD	6
PAN ICD V.1	1

Table 3: ICD use among operational interfaces

2.4 The different interfaces implemented by each State is detailed in Table 4.

State	ICD
COCESNA	NAM-ICD Version E
COCESNA	PAC ICD
Canada	NAM-ICD Version E
Canada	NAT ICD
Cuba	NAM-ICD Version E
Dominican Republic	NAM-ICD Version E
El Salvador	PAC ICD
Guatemala	PAC ICD
Mexico	LOA
Mexico	NAM-ICD Version E
Mexico	PAN ICD V.1
Nicaragua	PAC ICD
United States	NAM-ICD Version E
United States	NAT ICD
United States	PAN ICD V.1

Table 4: ICD use by State

3 .   **Challenges**

3.1   AIDC, as a technology, depends on a number of preexisting conditions:

a)   Surveillance coverage in both FIRs, especially at the shared border.
b)   Capable ATC systems working in both FIRs
c)   A communication network between the ATC systems
d)   Correct flight plan information
e)   The agreement on a common ICD to be used

3.2   Each of these factors have presented challenges during the different implementation efforts at one time or another.

3.3   The existence of the MEVA network has provided a means for communication, but that communication path from system to system must be set up, tested, and secured. With the issue of Cybersecurity growing in importance, securing the connection is now more important than ever. Though there has not been an outstanding issue brought to light regarding a cyberattack on and AIDC interface connection, the impact of such an attack is easy to perceive. The move to the future, full TCP/IP CANSNET network only stresses the importance of this factor.

3.4   ATC systems must be capable of sending and receiving the messages agreed upon by both FIRs, as specified in the selected ICD. This has been easier said than done, as subtle differences in ICD interpretation has brought up significant interoperability issues. Now that many interfaces have been implemented in the region, this issue has been stabilizing, nonetheless we still see issues coming up in implementations of systems that in principle should be able to communicate with each other. Industry has cooperated amply to overcome this issue, but in the future, when interoperability will be much more demanded for functionalities to be successfully deployed, an more encompassing process of standards management must be put in place to assure compatibility issues are reduced to a minimum.

3.5   The fact that different ICDs are in use in the region brings its own challenges. Although the experience of a successful implementation carries over to the next interface implementation, if they are different ICDs the prior knowledge no longer applies in its entirety. Software adjustments, procedures, training, and other aspects will most likely apply as in a first time implementation.

3.6   Having the correct flight plan data has been a perennial issue, as years go by without it ceasing to be mentioned as a threat to operational safety. Without good flight plan data, the subsequent information sent downstream as CPLs could be equally flawed, propagating the errors from departure to arrival, with all the safety implications it carries. Significant efforts from ANSPs and airspace users has been put into mitigating the problem, but we are still far from "driving the nail in the coffin" of bad flight plans.

4 .   Priorities

4.1   Given the current state of AIDC implementation in the region, several priorities can be identified:

a)   Finish the implementations that are in progress, as soon as possible, so those States can begin to benefit operationally from the investment. The knowledge accumulated by the States that have already implemented has been key to the success of subsequent efforts, and will continue to be shared.

b)   Identify where AIDC fits in the regional strategy. The outcome of this meeting, namely, to agree upon regional objectives for eANP Volume III, is of utmost importance to establish priorities for the direction of aviation functionality implementation, AIDC being one of them. What we decide to concentrate on , be it efficiency, predictability, capacity, or any other of the performance objectives, should tell us what we need from each technology.

4.2   As a corollary to the above, States may have their own priorities to consider, in the sense of needing more fundamental services to be in place prior to considering AIDC; deficiencies in, for example, surveillance coverage or voice communications acquire an importance above AIDC, for obvious reasons. There is no race for implementing any kind of technology; nonetheless, when our regional objectives and their accompanying benefits become clear, a possible shift in priorities at the State level should be justifiable.

5 .   Suggested actions

5.1   The meeting is invited to:

a)   Consider the challenges regarding AIDC implementation, and contribute to the Task Force with any suggestions or ideas useful to surmounting them;
b)   Consider where AIDC impacts the development of the regional objectives within their scope of action, to engage in discussions directed to address these issues;
c)   Recommend any other actions deemed necessary.

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