Considerations for AIDC and NAM/ICD Implementation according with ICAO SARPs

Agenda

- Operational Concept
- Benefits Identification
- Basis for planning
- ICAO Documentation

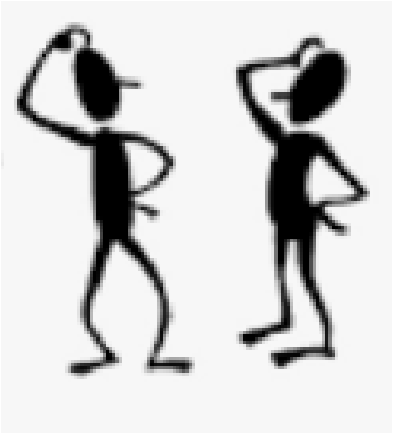
Agenda Item 4: Technical and operational requirements required for the ADS-B implementation

Operational Concept

- Purpose; Definition of the objectives operations, the benefits to obtain.
- Operational environment; Set of circumstances that define the need or not to perform an implementation.
- ATM functions; Have the resources of all kinds necessary to provide the service.
- Infrastructure; I have the necessary infrastructure to implement it.

Benefits Identification

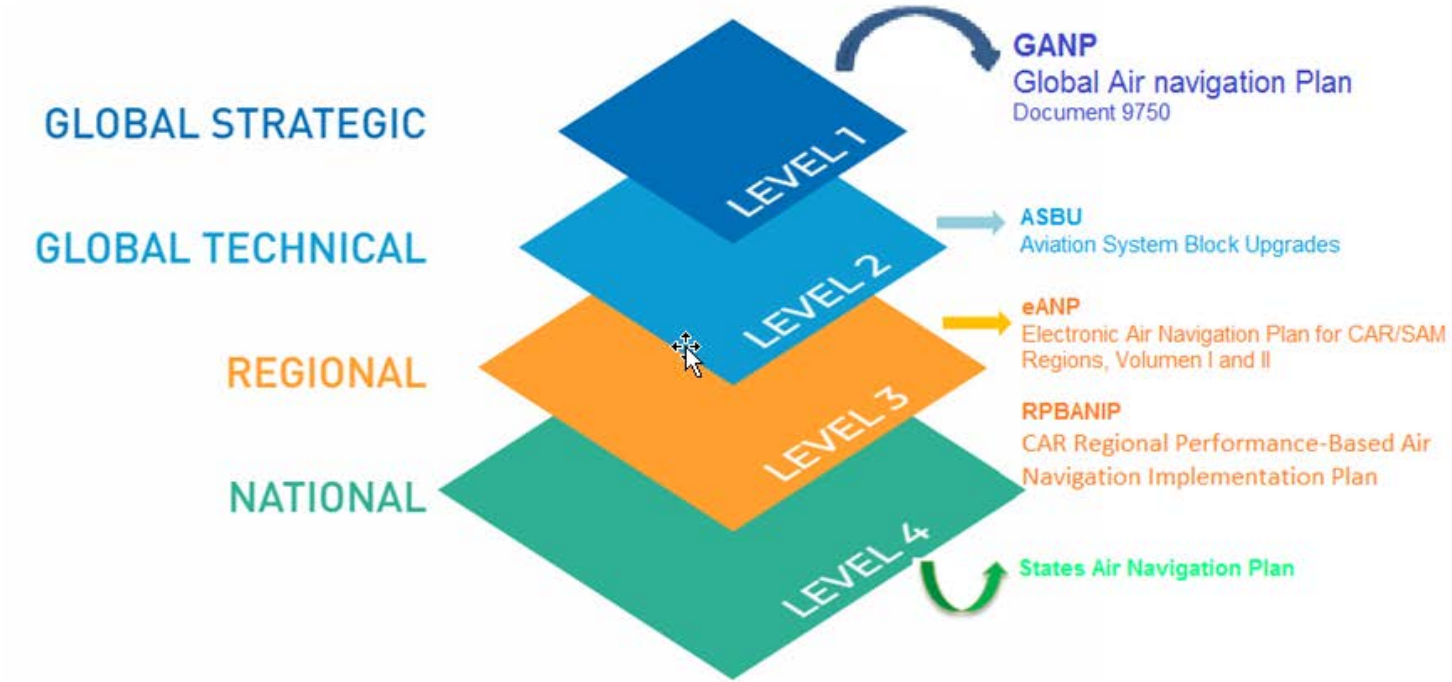
- Efficiency;
- Safety
- Capacity;
- Environmental;
- Cost reductions;
- Access; and
- Other metrics (e.g. predictability, flexibility, usefulness);



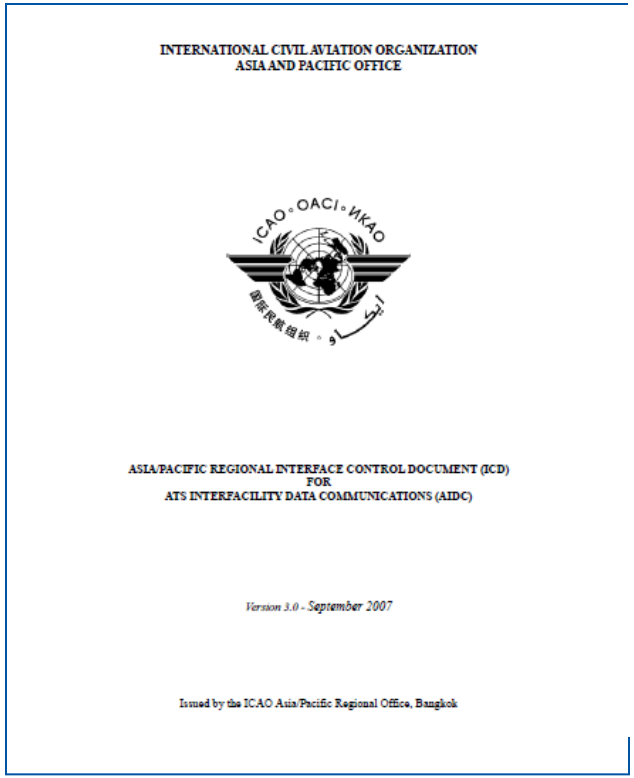
BENEFITS OF RISK MANAGEMENT

- Provides a systematic approach to examine the key components of risk and produce a risk assessment;
- Informs the effective allocation of limited resources;
- Provides basis for prioritizing mitigation strategy alternatives; Assesses your safety-security environment focusing on keeping vulnerabilities at an acceptable level; Establishes a common frame of reference for analyzing aviation security, communicating issues, and determining priorities;
- Provides the basis for compliance with Annexes.

Basis for planning



AIDC and NAM/ICD Documents

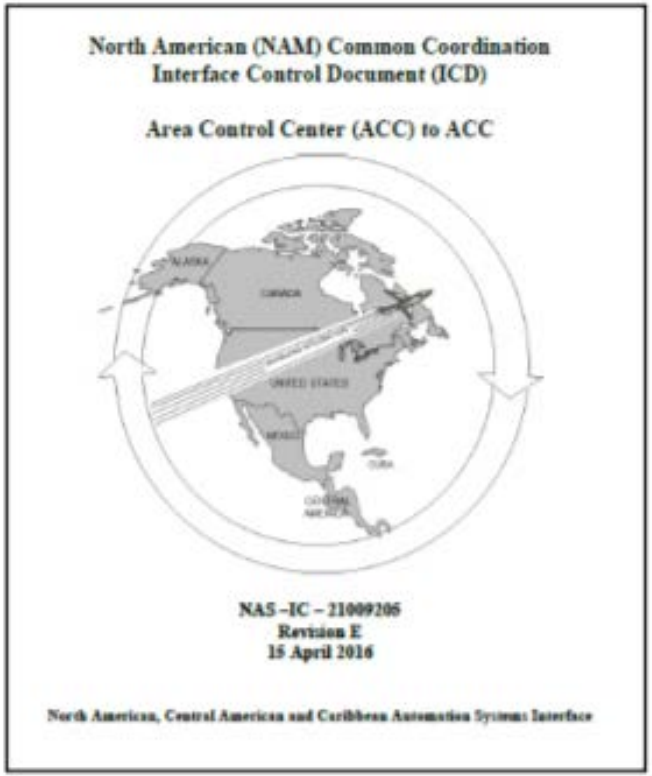


INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

ASIA/PACIFIC REGIONAL INTERFACE CONTROL DOCUMENT (ICD)
FOR
ATS INTERFACILITY DATA COMMUNICATIONS (AIDC)

Version 3.0 - September 2007

Issued by the ICAO Asia/Pacific Regional Office, Bangkok



North American (NAM) Common Coordination
Interface Control Document (ICD)

Area Control Center (ACC) to ACC

NAS –IC – 21009206
Revision E
15 April 2016

North American, Central American and Caribbean Automation Systems Interface

ICAO Documentation

- **Given the international nature of aviation, special efforts should be taken to ensure harmonization though compliance with ICAO Standards and Recommended Practices (SARPs). The AIDC implementation must have to consider the compatibility with other ATS systems and operational procedures.**

ICAO Definition

- *The AIDC application exchanges information between ATS units (ATSUs) for support of critical air traffic control (ATC) functions, such as notification of flights approaching a flight information region (FIR) boundary, coordination of boundary conditions and transfer of control and communications authority.*

ANNEX 10

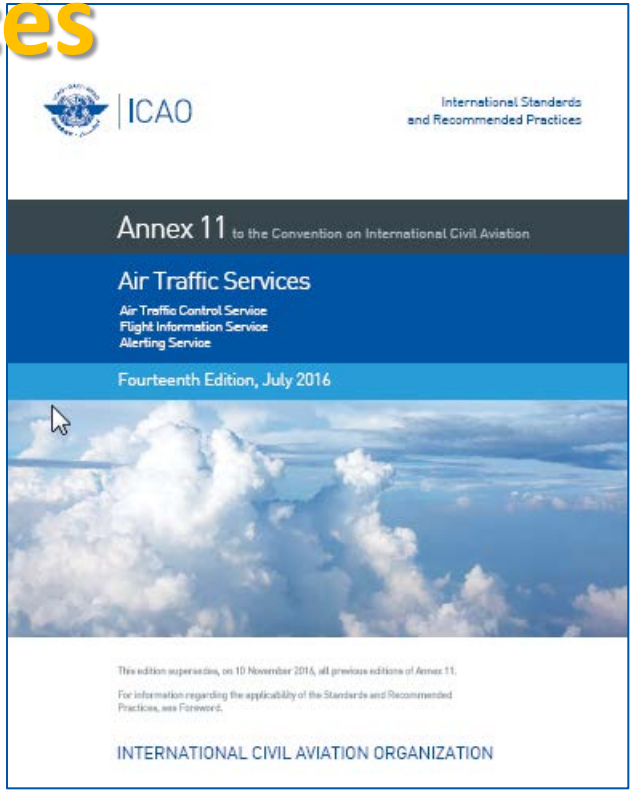
ICAO UNITING AVIATION

NO COUNTRY LEFT BEHIND

Annex 10

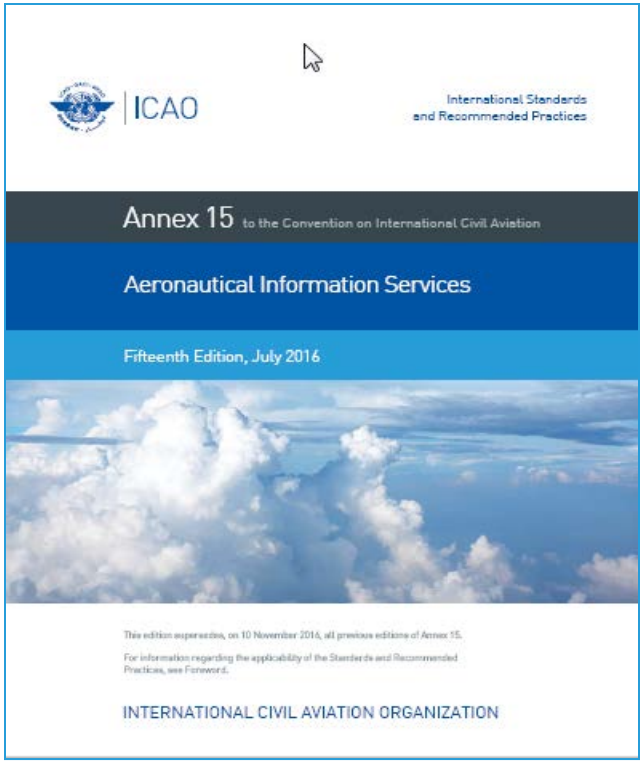
Annex 11: Air Traffic Services

- The Standards and Recommended Practices in this document, together with the Standards in Annex 2, govern the application of the Procedures for Air Navigation Services — Air Traffic Management (Doc 4444, PANS-ATM) and the Regional Supplementary Procedures — Rules of the Air and Air Traffic Services, contained in Doc 7030, in which latter document will be found subsidiary procedures of regional application.



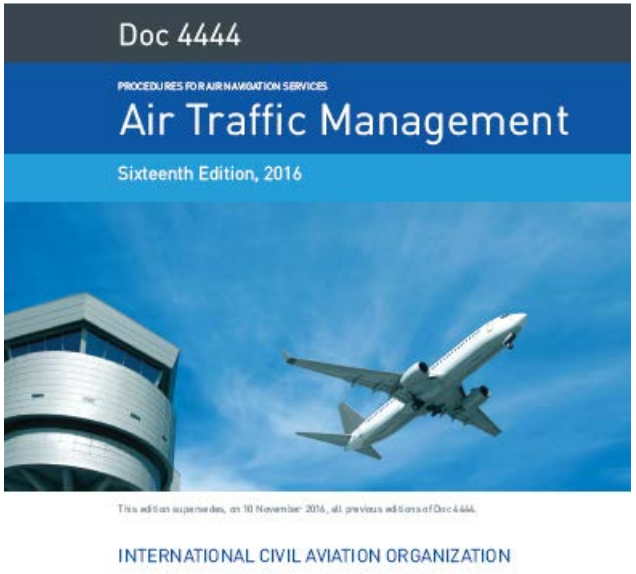
Annex 15: Aeronautical Information Services

- The object of the aeronautical information service is to ensure the flow of information necessary for the safety, regularity and efficiency of international air navigation.



PAN-ATM (Doc 4444/ATM501)

ICAO



- The *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM) are complementary to the Standards and Recommended Practices contained in Annex 2 — *Rules of the Air* and in Annex 11 — *Air Traffic Services*. They are supplemented when necessary by regional procedures contained in the *Regional Supplementary Procedures* (Doc 7030).

AIDC and NAM/ICD Implementation

- The State must define the communication protocol to be used (AIDC or NAM/ICD).
- Technical Requirements
- Operational Requirements
- Other

Differences between the automated NAM/ICD and ASIA/PAC protocols

Phases	NAM	Additional Information
First phase	NAM ICD automation is Class 1 which exchanges active flight plans using a CPL message	
Second phase	The second phase of the automation is Class 2 which adds the following capabilities: a) Exchange of Filed Flight Plan (FPL) and Estimate (EST) messages. b) Modification of a CPL or of a FPL that was activated by an EST message (MOD). c) Modification of FPL messages (CHG).	**Flight Data Coordination** A Class 2 interface adds the following capabilities to a Class 1 interface: a) Modification of a CPL or FPL that was activated by an EST message (MOD). b) Exchange of Filed Flight Plan (FPL) and Estimate (EST) messages. c) Cancellation of a previously sent FPL or CPL (CNL). d) Modification of FPLs (CHG). e) General Information (MIS) capability.
		Interface Management Class 2 Interface Management adds the following capabilities: a) Logical Rejection Messages (LRM). b) Interface management (IRQ, IRS, TRQ, TRS, ASM). When implemented between two ATSUs, the messages which make up the interface management message set are selected by bilateral agreement based on operational need.
Logical Acknowledgement Message (LAM) The Logical Acknowledgement Message (LAM) signifies that a message was received correctly. During Class 1, each system must determine if a message was rejected or lost, or if the interface failed by timing-out receipt of an LAM for each message sent. During the Class 2 phase, the Logical Rejection Message (LRM) provides the reason a message was rejected.		
Third Phase	The third phase of the automation is Class 3 which adds the following capabilities: a) Radar Handoff b) Radar Pointout	

Phases	AIDC	Additional Information
First/Second and Third Phase	**Implemented at the same time**	

Pre – implementation Requeirments

- Need for a better definition of the requirements of the Air Traffic Control Systems.
- Need to improve the training of personnel responsible for the integration, configuration
- and operation of automated channels.
- Weaknesses in the integration and connection between ATC control centres of different suppliers.
- Delivery of AIDC and NAM/ICD messages through AFTN and AMHS Systems.

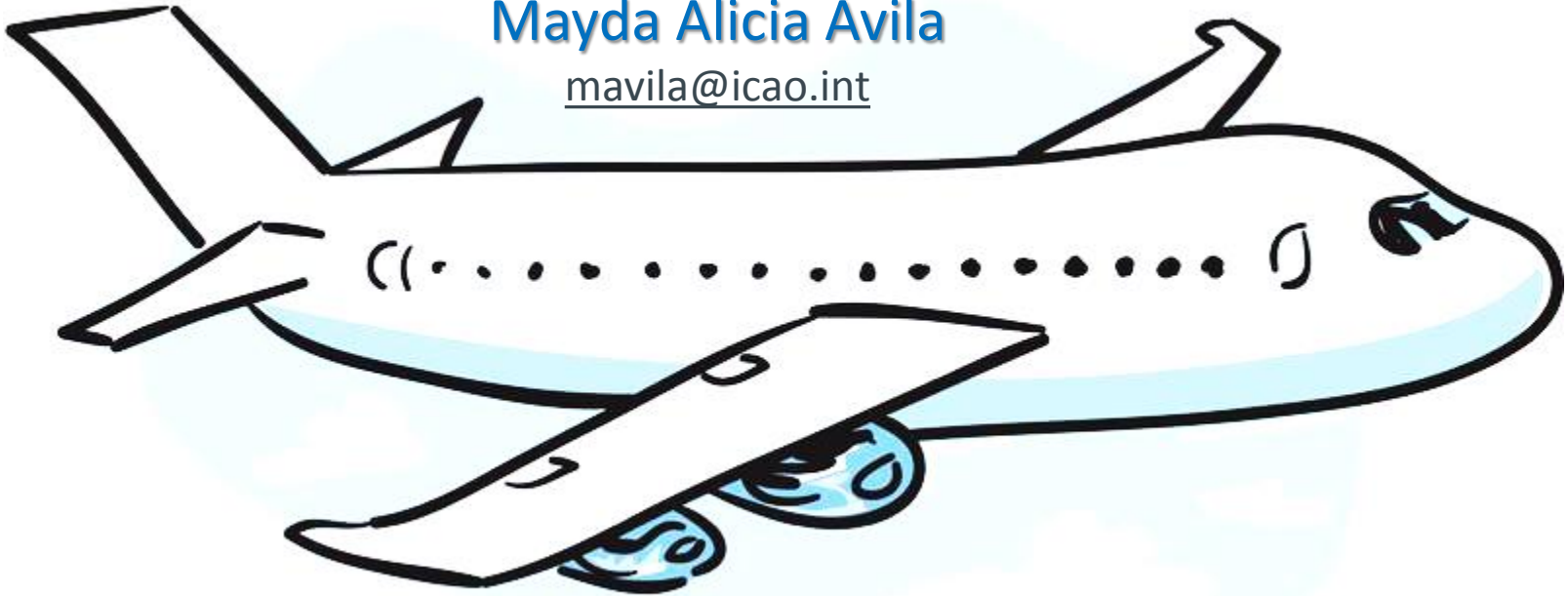
Post – implementation Activities

- Maintenance of the ATC Systems database.
- The need to extend the training programme to the personnel responsible for maintaining
- the communications infrastructure and maintenance of the systems.
- Need to strengthen, evaluate and implement a procedure for continuous improvement in
- **operational control procedures.**
- **Finally, the negative impact that the errors in the information of the flight plans produces**
- **in the automation and the operational risk added to it.**

Problems that affected AIDC Implementation

- Lack of clear system requirements.
- System protocol documentation, since providers had different interpretations thereof.
- Unclear semantics and lack of real technical/operational requirements by the States.
- Incorrect database configuration.
- Lack of properly trained personnel to fulfil system analyst functions.
- Lack of standardisation.

Mayda Alicia Ávila
mavila@icao.int



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International Civil Aviation Organization North American, Central American and Caribbean Regional Office

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Questions?