



ICAO

UNITING AVIATION

ICAO Support in AIM Implementation

Roberta Luccioli
TO/AIM

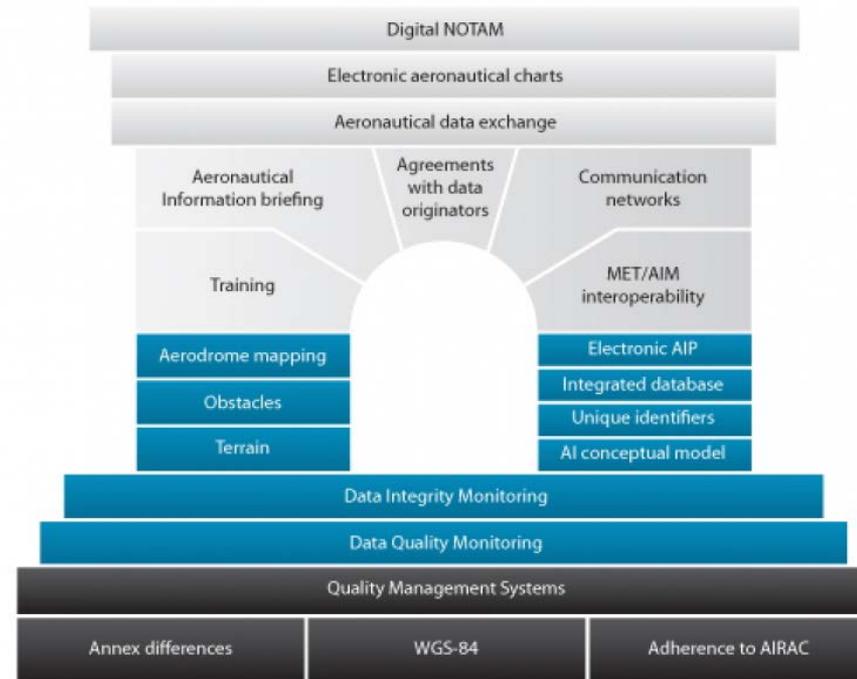
Outline

- How does AIM implementation look like?
- The common implementation challenges
- ICAO support in AIM implementation
- AIM Implementation Strategy



How does AIM implementation look like?

- ICAO Regions updated charts: IFAIMA Global AIM Kampala 2017
- AIS to AIM Transition Roadmap (21 steps)
- Regional indicators, metrics and targets
- Focus on **Phase 1 and 2**. Phase 3 slowly
- Regional priorities: **Quality, eAIP, Digital Datasets (AIXM)**
- No region has fully implemented Phase 1, 2
- Several efforts by Regions and States to advance AIM implementation
- Regions are facing similar challenges



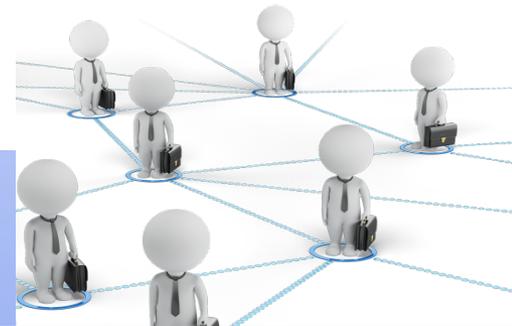
Common implementation challenges

- Institutional challenges:
 - Lack of effective regulatory frameworks to support AIM transition
 - Lack of clear requirements for stakeholders involved, quality of services is impacted
 - Lack of understanding that multiple and uncoordinated rules can be costly
 - Lack of competent staff/training



Common implementation challenges

- Service provision challenges:
 - Quality issues in the aeronautical information products
 - Not easy relationship with data originators
 - Lack of competent resources, need for training
 - Digital datasets are still considered immature for implementation: reliable exchange of data between stakeholders is still a challenge



Common implementation challenges

- Technological challenges:
 - AIXM poses challenges in terms of data exchanges;
 - AIXM is very permissive. Major bilateral coordination is required;
 - Lack of global business rules to facilitate the exchange of information;
 - Need for mapping rules to convert AIXM to ARINC;
 - No incremental AIXM updates (UUIDs issues)



ICAO support in AIM implementation



... What have we done?



ICAO with the support of the AIS to
AIM Study Group

State Letter 2017/22
(21/04/17)

1. Review Annex 15:
 - **New AIM concepts**
2. New PANS-AIM :
 - **Enable the delivery of uniform services**
 - **Vehicle for the emerging technical requirements for AIM**



A global set of provisions...



How the global AIM framework helps...

- Important reference for National AIM Regulatory Framework
- Better identifies responsibilities and functions of stakeholders involved, including data originators
- Clear set of requirements of data to be collected and maintained by the AIS
- Focuses stakeholders attention on the right things: quality first
- Start addressing well-known issues (e.g. what information qualifies a NOTAM)
- Modern concepts: split data collection from data provision



New practical tools



- PANS-AIM: instructions and practical procedures for AIM offices

Example:



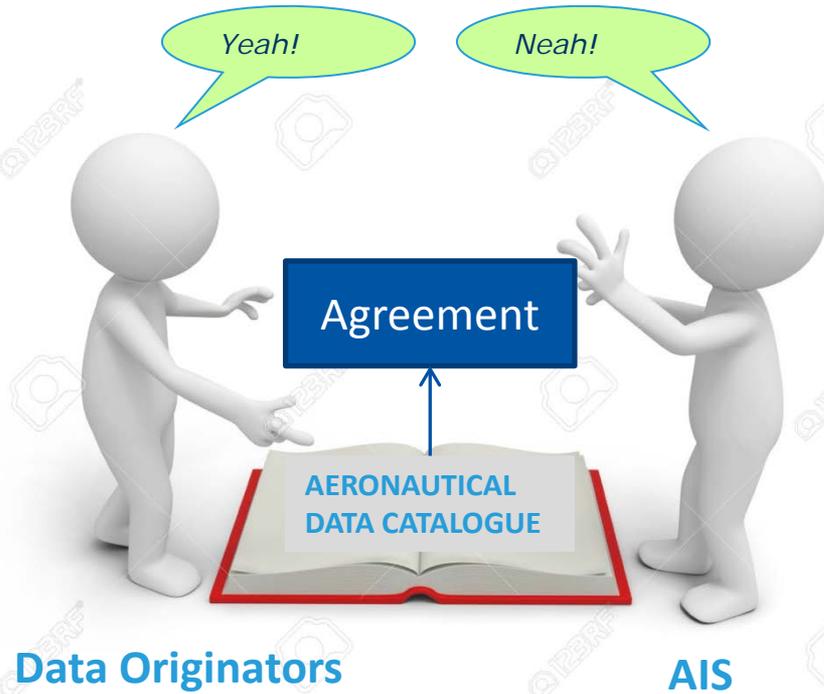
e.g. PROCESSING

1. Verification:
 - Comparison processes
 - Feedback processes
 - Processing through independent systems
 - Data and information compared with originator's request
2. Validation:
 - Data and information compared to an expected range, value or business rules
 - Data and information compared between two different outputs



New practical tools

- Aeronautical Data Catalogue: description of AIM data scope



Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Riv.	Ch
Aerodrome - Helipad				A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.						
	Certification date		Date	The date when the airport certification has been issued by the supervising authority.						
	Certification expiration date		Date	The date when the airport certification will become invalid.						
	Field elevation									
		Elevation	Elevation	The vertical distance above Mean Sea Level (MSL) of the highest point of the landing area.		0.5 m	essential	surveyed	1m or 1ft	1 m
		Geoid altitude	Height	Geoid altitude at the aerodrome helipad elevation position.	where appropriate	0.5 m	essential	surveyed	1m or 1ft	1 m
	Reference temperature		Value	The monthly mean of the daily maximum temperatures for the hottest month of the year at an aerodrome. This temperature should be averaged over a period of years. (ICAO recommendation).						
	Mean low temperature		Value	The mean lowest temperature of the coldest month of the year, for the last five years of data at the aerodrome elevation.		5 degrees				
	Magnetic variation									
		Angle	Angle	The angular difference between True North and Magnetic North.		1 degree	essential	surveyed	1 degree	1 d
		Date	Date	The date on which the magnetic variation had the corresponding value.						
		Annual change	Value	The annual rate of change of the magnetic variation.						
	Reference point			The designated geographical location of an aerodrome.						

- One single source of data quality requirements
- Common language about data
- Basis for agreements with originators

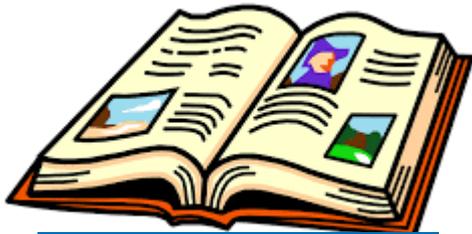
Host of guidance is on the way...



Volume 1: AIM organizational development



- AIS main functions and responsibilities
- **AIM competency framework**
- Critical elements in the AIM environments
- Organizational aspects of an AIS/AIM organization



AIS Manual

Volume 2: Aeronautical Data Process



- Explain how to use the ADC
- Constellations of data origination
- How to make the collection effective
- Examples of Val&Ver Techniques
- Examples of QA&QC methodologies
- Automation (how it is applied)

Volume 3: Digital Products



- Why going digital?
- AIXM (gen description)
- What to do with interoperability
- Best practices/digital datasets

Volume 4: Legacy Products



- Reflecting the latest Ax 15 and PANS-AIM changes

There is a lot more to do...



“AIM Implementation Strategy”

The “AIM Implementation Strategy” will be:

- Documented strategy to guide AIM implementation
- A plan to achieve future AIM improvements

The “AIM Implementation Strategy” will describe:

1. **What is missing.** Major issues with implementation
 2. **What needs to be done.** Plan of activities to address the existing issues
 3. **Prioritization.** To make it realistic
 4. **Resources .** To make it feasible
- ICAO has just initiated brainstorming on “*what is missing*”, based on conferences outcome and stakeholders feedback

To understand what qualifies its content:

- Need to answer key questions





SARPs and Procedures update

ICAO Global AIM Framework is only the starting point!

SARPs, PANS need to be refined with respect to the following aspects:

- Role of Annex 4 in the future full datasets environment
- Annex 15, PANS-AIM:
 - Need for further strengthening the digitization provisions (specifically eTOD)
 - Expanded metadata requirements
 - Expanded QMS requirements
 - Quality management practices and data handling to achieve integrity reqs
- Data catalogue:
 - incorporation of all feedback on initial version
 - any new change to the infrastructure (e.g. free route airspace)?
 - link it to the AIRM/interoperability with other domains

Need for new and modern guidance

Guidance material

- Develop further ICAO guidance (QMS, eTOD, WGS84)
- Develop modern guidance:
 - Web-based: hyperlinked to ICAO material, external documents, etc.
 - “How to...” guidance: Step by step procedures/Simple to use
 - Based on business studies related to aviation stakeholders
 - Based on best practices
 - *PBN ops approval*: first example!

Training/Workshops/GoTeams

- Training programmes (new competency-based methodology)
- GoTeams (as “PBN GoTeam” to raise awareness about AIM)

AIM Expert Group



Terms of Reference?



AIM Expert Group

1. Continuously review and update AIM SARPs for further improvement and refinement
2. Continuously review and update the Aeronautical Data Catalogue for further improvement and refinement
3. Create the basis for a reliable and interoperable exchange of the aeronautical information
4. NOTAM improvement
5. Work on guidance
6. ... and other!

Encourage cooperation/partnership

- Cooperation/Partnership with international organizations:
 - Development of joint-guidance material (e.g. ICAO/CANSO Training manual)
 - Go-Teams to explain the criticality of AIM for the safety of operations
- Cooperation/Partnership with the industry:
 - Industry is a key-player
 - Industry participation to the AIM working group is essential
 - Need to explore together benefits and drawback of existing solutions



Encourage cooperation/partnership

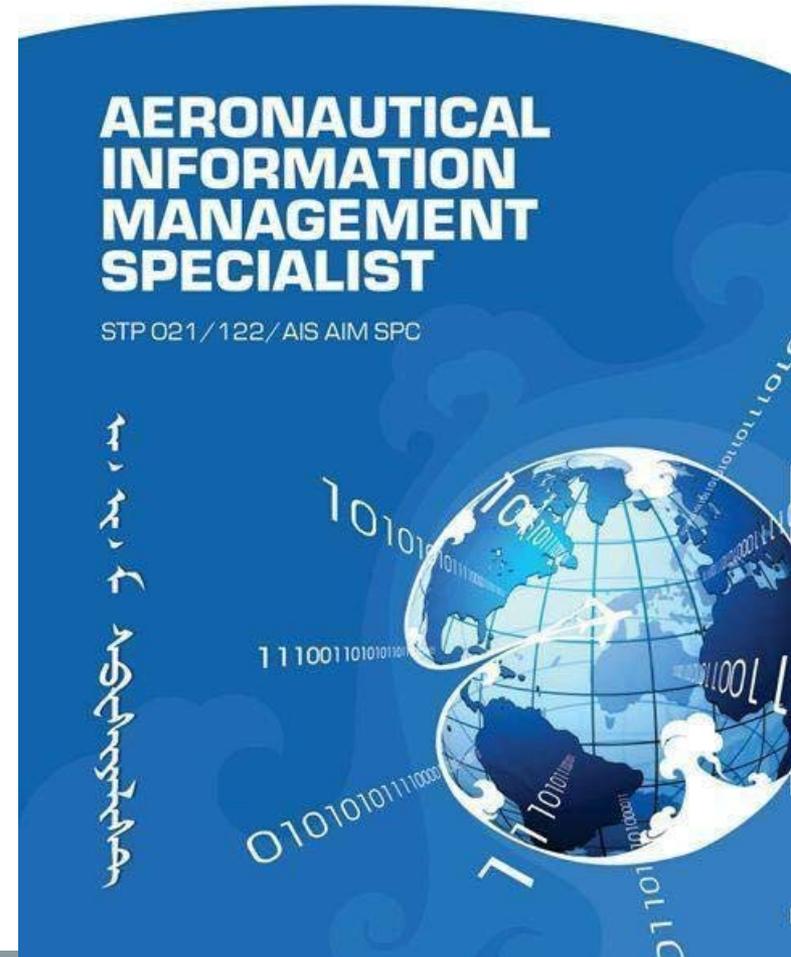


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TRAINAIR
PLUS

- Cooperation/Partnership with States:
 - Mongolia/ICAO TRAINAIR Plus: the AIM Specialist training Programme
 - Based on the previous competency-based training and assessment methodology
 - Possibility to develop new programmes
 - Any other suggestions for cooperation/partnership?



How to make the AIM Implementation Strategy effective?



- ICAO cannot do the magic!
- ICAO cannot do this project in isolation
- **Need for all stakeholders to properly engage and cooperate ...**

AIM implementation kick-off brainstorm session

- At ICAO Headquarters (Montreal)
- Possible dates: 1-3 November 2017
- Discuss the [AIM Draft Implementation Strategy](#)
- Define key-activities and contributions
- Key-stakeholders will be invited (industry, international organizations, ANSPs, etc.)





Safety and Air Navigation Implementation Symposium:

1. 13-15 Dec 2017
2. Premier event for ICAO: meet with major stakeholders
3. From concept to operations
4. Opportunity to get feedback on the draft AIM Implementation Strategy

GANIS (11-13 Dec 2017)						SANIS (13-15 Dec 2017)				
MON		TUE		WED		THU		FRI		
AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
GANIS/ SANIS Opening	<u>Innovative and Emerging Ops</u> <ul style="list-style-type: none"> • Concept of operations above FL600/FL660 near term • UTM (UAS traffic management) interoperability with ATM • RPAS C2 link • Detect and avoid • Future of space Ops and impact on ANS • Future of transportation 			<u>Global RASG & PIRG Forum</u> <ul style="list-style-type: none"> • Pres Opening • PIRG • RASG • Way ahead 		Implementation strategies	<u>Modernization of the Air Navigation System</u> <ul style="list-style-type: none"> • Familiarization with the GANP • ASBU framework as support to cost-effective modernization of the ATM system, while ensuring interoperability of systems • Performance management process • GANP deployment tools 			SANIS Wrap-up
	<u>Future of CNS and Avionics</u> <ul style="list-style-type: none"> • Data link comms • GNSS evolution <ul style="list-style-type: none"> • Dual-frequency, multi-constellation • GBAS/SBAS • PBN evolution • Phasing out legacy systems • SURV evolution <ul style="list-style-type: none"> • Space-based ADS-B • ACAS evolution • Standardization roadmap 		<u>Cyber threats</u> <ul style="list-style-type: none"> • Current and future threats • A global SWIM enabler • Solutions • Risk mitigation • Cross-domains impacts 		P B N		<u>Safety</u> <ul style="list-style-type: none"> • GASP 2020-2022 • Operational safety risks and emerging issues • RSOOs global strategy • Safety Management implementation 			
	<u>Information management</u> <ul style="list-style-type: none"> • SWIM developments • SWIM implementation and global interoperability • SWIM demonstrations and applications 		<u>Airport operational performance</u> <ul style="list-style-type: none"> • Aerodrome capacity and efficiency <ul style="list-style-type: none"> • Airport master planning and design • Total airport management • Aerodrome obstacle management 				Airports	<u>Perf-based aerodrome operating minima</u> <p><small>SARPs Phased implementation Facilitating access to airports Operational credits Implementation examples</small></p>		
	<u>Civil-military cooperation</u> <ul style="list-style-type: none"> • Airspace, a common resource effectively managed collectively? • Mission trajectories • Cyber threats • State aircraft operations • RPAS integration • SWIM • Interoperability 			<u>MET</u> <ul style="list-style-type: none"> • Evolution of MET services requirements • Future aviation MET service delivery 				<u>Civil-military cooperation</u> <ul style="list-style-type: none"> • How to kick-start civil-military cooperation? • Success stories and return of experience • Flexible use of airspace and airspace management tools • Advanced cooperation and integration 		

Summary

- Steps have been taken to support the transition of AIM
- AIM Global framework (set of provisions to facilitate the transition to data-centric environments)
- Set of practical tools and guidance to support the daily work of AIM officers
- What is still missing?
- “AIM Implementation Strategy”:
 - A plan for future AIM improvements
 - Initial phase: ICAO is identifying what is needed
 - Need for stakeholders to provide additional information on what needs to be done to support implementation
 - Draft project to be presented at the SANIS/1 symposium in Dec 17
- **ICAO is committed to support implementation...**
- **... but your inputs is essential to make it successful!**





Thank You