



ICAO | UNITING AVIATION

Aeronautical Information Management

Task Force 03 Meeting

AIM 2.0 Training Requirements

ICAO-NACC Regional Office
Presented by RO-AIM

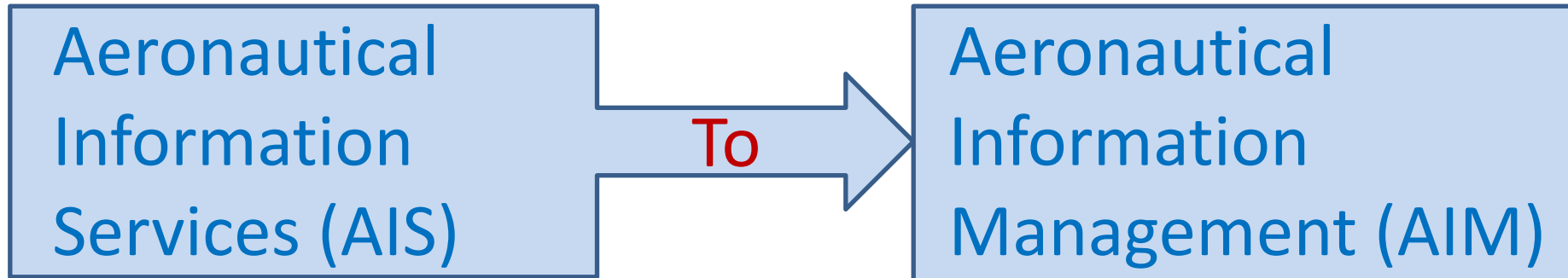
Mexico City, 25 to 28 Feb. 2020



- ✈ **Background**
- ✈ **The Next Generation of Aviation Professionals (NGAP)**
- ✈ **Requirements**
- ✈ **The Competency Based Approach (CBA)**
- ✈ **Next Step**



The **ICAO** Air Navigation Commission (ANC), established on 2008, a study group (SG) to develop a global strategy - roadmap for the Transition:





The expected outputs:

Roadmap for the transition from AIS to AIM, as well as amendments to:

- Annex 15 Aeronautical Information Services
- Annex 4 Aeronautical Charts
- Doc 10066 **New** PANS AIM
- Doc 8126 Aeronautical Information Services Manual - 4 Vol.
- Doc 8697 Aeronautical Chart Manual

and the development of two **new** manuals related to the AIM:

- Quality Management System – Doc 9839

- AIM Training – Doc 9991



The Next Generation of Aviation Professionals (NGAP)

The ICAO NGAP Programme has been incorporated into the ICAO Global Plans, both for safety and air navigation, as well as the ICAO Business Plan and Work Programme

ICAO NGAP is:

- ✈ important and critical to provide greater support
- ✈ elevate from initiative to an ICAO Programme for:

- ✈ Pilots
- ✈ Controllers
- ✈ Aircraft maintenance
- ✈ Other specialists
- ✈ and AIM ?



Most likely scenario

Pilot populations and associated training needs: 2010–2030

	Pilots needed: 2030	Annual (Attrition: 4% per annum)		
		Training needs	Training capacity	Shortage/surplus
Africa	55 932	3 814	1 010	- 2 804
Asia/Pacific	229 676	13 983	4 935	- 9 048
Europe	262 329	15 552	7 955	- 7 597
Latin America	101 301	6 250	1 945	- 4 305
Middle East	39 246	2 458	850	- 1 598
North America	292 314	10 449	27 655	17 206
World	980 799	52 506	44 350	- 8 146



Air traffic controller populations and associated training needs: 2010–2030

	Movements: 2030	ATCOs: 2030	Annual (Attrition: 5% per annum)		
			Training needs	Training capacity	Shortage/surplus
Africa	1 059 000	2 863	169	210	41
Asia/Pacific	16 379 000	44 282	2 931	1 865	-1 066
Europe	12 064 000	32 516	1 755	1 440	-315
Latin America	4 005 000	10 828	750	935	185
Middle East	1 507 000	4 074	253	90	-163
North America	16 694 000	45 133	2 860	2 200	-660
World	61 708 000	139 796	8 718	6 740	-1 978

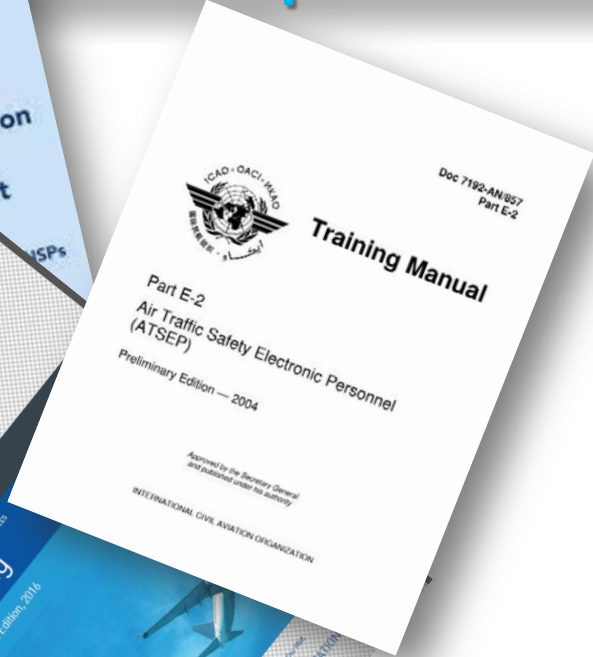


Maintenance personnel populations and associated training needs: 2010–2030

	Maintenance personnel needed: 2030	Annual (Attrition: 5% per annum)		
		Training needs	Training capacity	Shortage/surplus
Africa	58 635	3 769	600	-3 169
Asia/Pacific	289 510	19 010	4 265	-14 745
Europe	330 522	22 977	14 625	-8 352
Latin America	101 226	6 881	1 315	-5 566
Middle East	59 905	4 107	2 045	-2 062
North America	325 171	13 586	29 410	15 824
World	1 164 969	70 331	52 260	-18 071



ICAO Forecast AIM Specialists





ANNEX 15 – 3.6.4

“Within the context of the established **quality management system**, the competencies and the associated **knowledge, skills and abilities** required for each function shall be identified, and personnel assigned to perform those functions **shall be appropriately trained**. Processes shall be in place to **ensure that personnel possess the competencies required to perform specific assigned functions**. Appropriate records shall be maintained so that the **qualifications of personnel can be confirmed**. Initial and periodic assessments shall be established that require personnel to **demonstrate the required competencies**. Periodic assessments of personnel shall be used as a means to detect and correct shortfalls in knowledge, skills and abilities.”

Note.—*Guidance material concerning training methodology to ensure the competency of personnel is contained in the Aeronautical Information Management Training Development Manual (Doc 9991) and in a **New** version of the PANS TRAIN (Doc 9868)*



Competency-based Training and Assessment

- ✈ Training and assessment that are characterized by a performance orientation, emphasis on standards of performance and their measurement, and the development of training to the specified performance standards





ICAO UNITING AVIATION

ICAO Competency Frameworks

Developed	Under development
MPL (Doc 9868)	AIM personnel
Aircraft Maintenance Personnel (Doc 9868)	Flight Instructors
Flight Procedure Designers (Doc 9906)	Air Traffic Controllers
Flight Validation Pilots (Doc 9906)	Air Traffic Personnel Safety Electronics
Designated Medical Examiners (Doc 8984)	Airport Safety Personnel
	Cabin Crew
	Etc. ...



ICAO

UNITING AVIATION

Competency based approach

The existing draft:

- ICAO DOC 7192-AN/857 Part E-3

“Training Manual for Aeronautical Information Services Personnel Preliminary Edition 2005” was reviewed:

- ✖ Outdated, unfit for today and tomorrow
- ✖ Inconsistent
- ✖ Lack of guidance for AIS and AIM-Providers, who have ARO or other ATS
- ✖ or MET-services (or parts of it) integrated.
- ✖ Absence of future developments
- ✖ Absence of recommendations concerning the qualifications and competence for trainers



ICAO

UNITING AVIATION

Competency based approach

✈ With participation and support from:



✈ The CANSO AIM Working Group established a smaller focus group in spring 2009 with the objective to develop, coordinate and facilitate the drafting of the new ICAO AIM training material

✈ This was done under the workstream-leadership of **Augustin Lamprecht** (LPS/Slovak Republic) representing CANSO at the ICAO AIS-AIM SG



| ICAO

UNITING AVIATION

Competency based approach

COMPETENCY - as the attributes required to perform a job:

- ✈ **Knowledge** is generally considered to be information that is applied directly to the performance of a function.
- ✈ **Skill** is an observable competence to perform a task.
- ✈ **Ability** is the competence to perform an observable behavior or a behavior that results in an observable outcome.

Knowledge, Skills and Abilities (KSA)

The principle for this approach uses performance as the measurement to identify the opportunity for competency-based training and how it can address gaps in performance



ICAO

UNITING AVIATION

Competency based approach

The development of competency-based training and assessment is based on a systematic approach whereby:

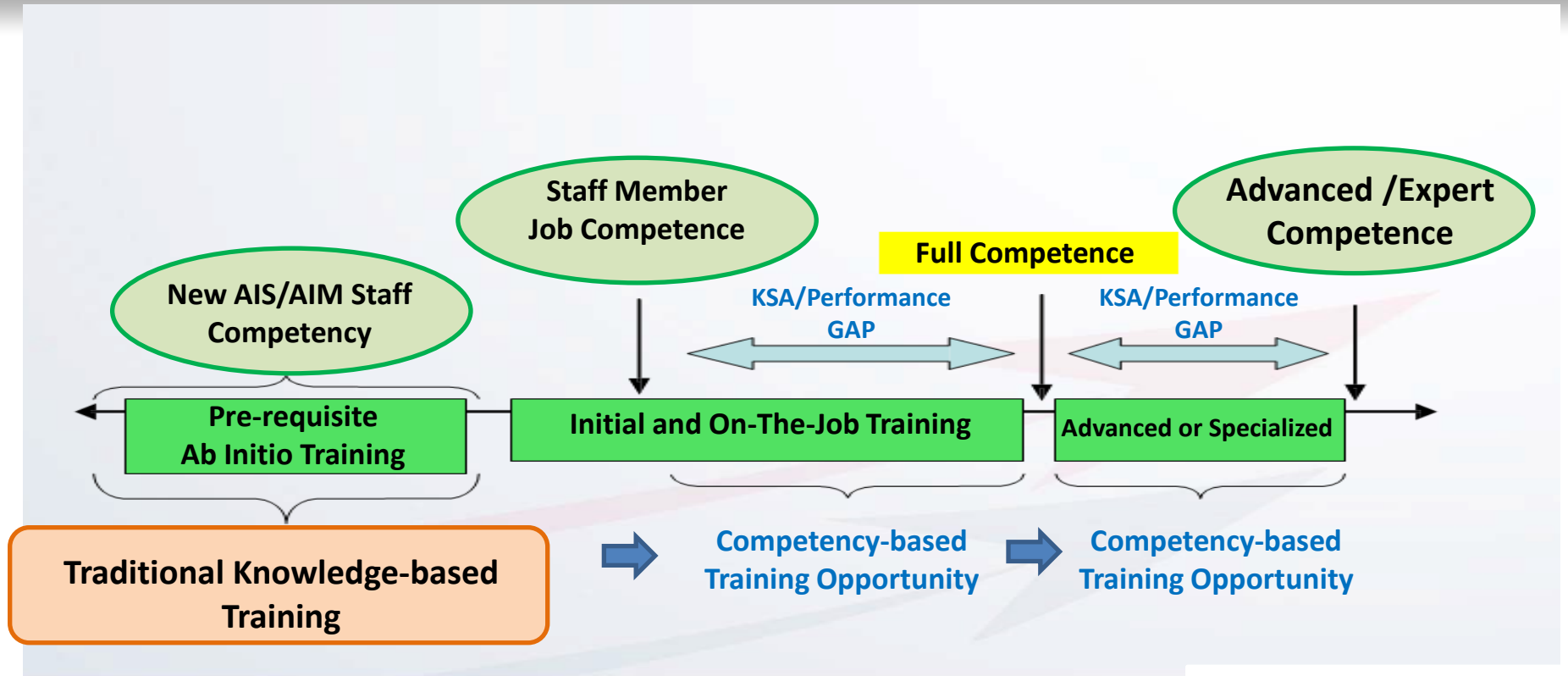
- ✈ Knowledge, skills, and abilities and their standards are defined
- ✈ Performance is measured against the standards
- ✈ Training is based on the **gaps** between the required competency and current performance

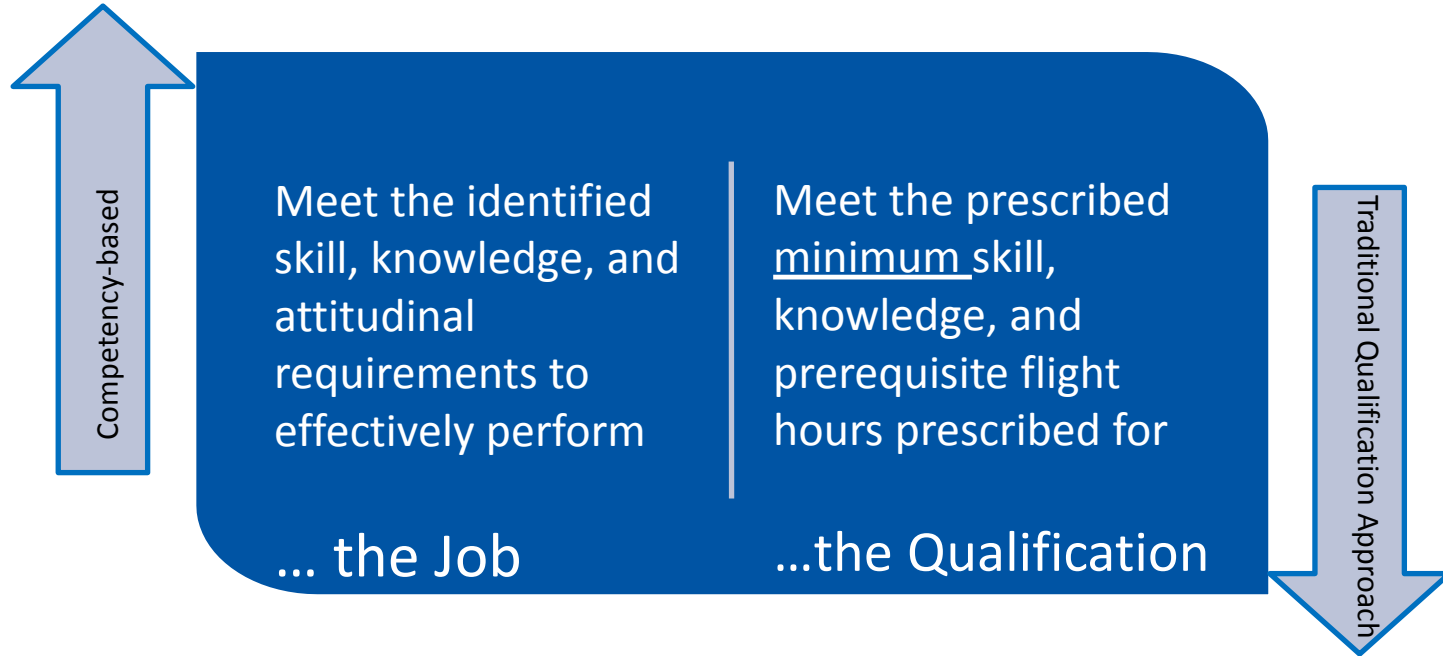
Assessment tools for these competencies are developed to determine whether these competencies have been achieved after the training has been conducted





Competency based approach







Pre-requisites to the AIS Competencies

- ✈ Thorough job/task analysis
- ✈ A system-based approach to training programme design & development
- ✈ Performance assessment criteria
- ✈ Tools

NEW! Pre-requisites to the AIS Competencies	AIS Competency Framework (main functional areas)
<ul style="list-style-type: none">• Types and characteristics of aeronautical Information• Geodesy and Cartography• Air Traffic Management and Aeronautical Information Management Concepts• ARO and Aeronautical Information <u>functions</u>• Technological Requirements	<ul style="list-style-type: none">• Data and Information Management• Base Information• Information Messaging• Additional Products and Services• Pre- and Post- Flight Information• ARO• Business Continuity



A combination of **skills, knowledge** and **attitude** required to perform a task to the prescribed standard.

ICAO Doc 9868 – PANS-Training

New elements in the manual

- ✈ List of pre-requisites to the AIS - AIM Competencies
- ✈ Better definition of temporality of aeronautical information:
 - ✓ “static information” and “dynamic information” replaced by “base information” and “information messaging”
- ✈ Expanded details concerning AIS - AIM Competency





New elements have been Introduced in order to...

- ✈ Better incorporate the concept of temporality of information
- ✈ All aeronautical data and information change over time, but to varying degrees in terms of frequency or magnitude
- ✈ Identify the pre-requisites for performing specific competencies
- ✈ Assist organizations in assessing AIS personnel and facilitate its effective integration within an AIS organization
- ✈ Help identify the initial requirements to ensure an effective performance within an AIS organization
- ✈ Better specify the functions associated to the AIS/AIM Competency Units





- ✈ Data and Information Management
- ✈ Static Data
- ✈ Dynamic Data
- ✈ Additional Products
- ✈ Pre- and Post-flight Information,
- ✈ Air Traffic Services Reporting Office (ARO) functions
- ✈ Business Continuity

Competency Unit

Competency Element

Terminal Objective (Performance Criteria)

Enabling Objectives



Example for the competency unit: BASE INFORMATION (STATIC DATA)

2	BASE INFORMATION	
2.1	GENERATE AIP or AIP AMENDMENT	
2.1.1	<ul style="list-style-type: none">• Prepare content (text, tables, charts, and other elements)	ICAO Annex 15, Annex 4, Doc 8126, Doc 8400, Doc 8697, Local procedures
2.1.2	<ul style="list-style-type: none">• Coordinate with other relevant parties	Local procedures
2.1.3	<ul style="list-style-type: none">• Translate text into appropriate language	
2.1.4	<ul style="list-style-type: none">• Verify content	
2.1.5	<ul style="list-style-type: none">• Obtain approval of content	
2.1.6	<ul style="list-style-type: none">• Compile product	
2.1.7	<ul style="list-style-type: none">• Obtain approval of compiled product	
2.1.8	Make AIP or AIP Amendment available (electronic form)	Annex 15 Section 3.3, ICAO 9855 (use of internet) and Local procedures



Example for the Competency Unit: INFORMATION MESSAGING (DYNAMIC DATA)

3	INFORMATION MESSAGING	
3.1	GENERATE NOTAM	
3.1.1	<ul style="list-style-type: none">• Prepare content (series, number, Q line, E field, etc.)	ICAO Annex 15 Chap. 5, ICAO Doc 8126
3.1.2	<ul style="list-style-type: none">• Coordinate with other relevant parties	Local procedures
3.1.3	<ul style="list-style-type: none">• Translate text into appropriate language	Local procedures
3.1.4	<ul style="list-style-type: none">• Verify content	Local procedures
3.1.5	Make NOTAM available	ICAO Annex 15 Chap. 5.3, Annex 10 Vol 2 Chap 4 ; Doc 8126; Doc 7910; Doc 8400; Local procedures



6	ARO	
6.1	PROCESS FPL	
6.1.1	<ul style="list-style-type: none">Receive the FPL proposal	ICAO Doc 4444; Local procedures
6.1.2	<ul style="list-style-type: none">Process the FPL (Verify FPL for compliance with format and data conventions, and for completeness and accuracy)	Local procedures
6.1.3	<ul style="list-style-type: none">Receive, create and process associated /supplementary messages	
6.1.4	<ul style="list-style-type: none">Execute corrective action	
6.1.5	Transmit FPL	ICAO Annex 10 Vol 2 Chap 4., Doc 4444; Local procedures



- ✈ Organizational Development
- ✈ Human resource planning
- ✈ Competency-based training implementation AIS-AIM (including ARO) training requirements must be broadly covered and accepted
- ✈ Review as reference the manual that was published by **CANSO** in 2016, available for free on the CANSO website on AIM Training:
([https://www.canso.org › sites › default › files › AIM Training Manual](https://www.canso.org/sites/default/files/aim_training_manual.pdf))



ICAO

UNITING AVIATION



ICAO

North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



THANK YOU

email: rmartinez@icao.int