

**61ST CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGION**

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**AGENDA ITEM 8: CAPACITY DEVELOPMENT
AND IMPLEMENTATION**

**STRENGTHENING NEXT-GENERATION AVIATION PROFESSIONALS
THROUGH DIGITAL LEARNING AND REGIONAL ANSP COOPERATION**

(Presented by Indonesia)

INFORMATION PAPER

SUMMARY

This paper identifies a regional NGAP implementation issue: emerging air navigation technologies require aviation professionals who can continuously maintain and upgrade their competencies, while States/Administrations and air navigation service providers (ANSPs) in Asia and Pacific have different levels of access to training resources. Drawing on Indonesia's experience through Perum LPPNPI (AirNav Indonesia), the paper analyses how a Learning Management System (LMS) linked with performance management improved learning visibility, accessibility, traceability and accountability across a geographically dispersed ANSP. AirNav Indonesia recorded 63,962 learning certificate submissions in 2024 and 65,861 in 2025, while employees meeting or exceeding the applicable annual L&D criteria increased from 54.7 per cent to 71.0 per cent. The paper invites the Conference to support focused regional ANSP cooperation in two areas: digital learning resource collaboration, including bite-sized interactive modules supported by Subject Matter Experts (SMEs), and practical talent mobility, particularly staff exchange and short-term attachments.

STRENGTHENING NEXT-GENERATION AVIATION PROFESSIONALS THROUGH DIGITAL LEARNING AND REGIONAL ANSP COOPERATION

1. INTRODUCTION

- 1.1 The 61st DGCA Conference theme, "Smart Skies: Emerging Technologies for Safe, Secure, Sustainable and Efficient Aviation", places technology at the centre of regional discussion. Emerging technologies, automation, artificial intelligence, data-driven air traffic management, cybersecurity, performance-based navigation and sustainability initiatives will not deliver their full benefit without a sufficient, competent and adaptable aviation workforce.
- 1.2 The ICAO Next Generation of Aviation Professionals (NGAP) Strategy recognizes that aviation workforce development requires structured planning, education and training, innovation, partnerships, resource mobilization, and global mobility. For the Asia and Pacific Region, the issue is not limited to attracting future talent; it also concerns the ability of existing ANSP personnel to continuously maintain and upgrade competencies under different levels of training access and resources.
- 1.3 Indonesia presents this paper to propose practical regional cooperation among States/Administrations and ANSPs in two focused areas: digital learning resource collaboration and talent mobility, particularly staff exchange. The proposal is informed by Indonesia's experience, through its ANSP, Perum LPPNPI (AirNav Indonesia), in using an LMS as part of an integrated performance and workforce development system.

2. DISCUSSION

Problem identification

- 2.1 ANSPs in the region share a common challenge: operational personnel must remain competent, current and compliant with national licensing, competency and certification requirements, while the operating environment is increasingly affected by new technologies, data-driven operations, automation, cyber risks and changing expectations from users. For geographically dispersed or resource-constrained environments, reliance on classroom-based training alone can create unequal access, higher cost and slower knowledge refreshment.
- 2.2 Indonesia's context illustrates this challenge. AirNav Indonesia provides air navigation services across approximately 300 aerodromes and employs more than 4,700 personnel, including approximately 1,663 air traffic controllers, 1,070 Communication, Navigation and Surveillance (CNS) technicians (ATSEP), and 165 Aeronautical Information Services officers. Maintaining learning access and competency development across such a network requires mechanisms that are scalable, measurable and not fully dependent on physical training delivery.

Analysis of the Indonesian ANSP's LMS experience

- 2.3 Since 2024, AirNav Indonesia has implemented an integrated performance management approach covering core values, individual achievement, Learning and Development (L&D), and contribution/project assignment. NavLeap, AirNav Indonesia's LMS, supports this approach by providing a digital channel for learning participation, learning records, certificate submission, knowledge access and learning performance monitoring. The significance of the LMS is not the platform alone, but its integration with the individual KPI system, personnel development planning, certification records and managerial accountability.
- 2.4 The outcome data show increased visibility and participation in learning. AirNav Indonesia recorded 63,962 learning certificate submissions in 2024 and 65,861 submissions in 2025. Against the applicable annual L&D criteria, the proportion of employees meeting or exceeding the L&D target increased from 54.7 per cent in 2024 to 71.0 per cent in 2025. Therefore, the L&D component increased by 16.3 percentage points and became the strongest positive driver in the 2025 employee performance framework.

Indicator	Indonesia / AirNav Indonesia data or outcome
Learning certificate submissions	63,962 submissions in 2024 and 65,861 submissions in 2025.
L&D target achievement	Employees meeting or exceeding the applicable annual L&D criteria increased from 54.7 per cent in 2024 to 71.0 per cent in 2025.
Performance driver	The L&D component increased by 16.3 percentage points and became the strongest positive driver in the 2025 employee performance framework.

Source: AirNav Indonesia internal workforce and performance management data, 2024-2026.

- 2.5 These data should be interpreted carefully. They demonstrate stronger learning participation, traceability, accountability and access; they do not, by themselves, prove direct causality with operational safety outcomes. However, for an ANSP environment, these are important enabling outcomes because recurrent learning, competency refreshment, learning records and certification traceability are essential foundations for maintaining operational readiness and supporting continuous improvement.

Implementation considerations for regional digital learning cooperation

- 2.6 Based on this experience, Indonesia considers that digital learning cooperation among ANSPs could support NGAP implementation in a practical and low-cost manner. A voluntary regional cooperation mechanism could include bite-sized interactive learning modules, webinars, learning repositories, learning assessments and practitioner communities. Possible awareness-level topics may include safety management, human factors, Performance-Based Navigation (PBN), cybersecurity awareness, safety culture, human capital development, change management, and emerging digital air navigation concepts and tools, such as ATM automation, information management and data-driven operations.
- 2.7 Such cooperation would require contributions from Subject Matter Experts (SMEs) across the region. Indonesia is willing to support further discussion on the possible use of its ANSP digital learning platform and learning modules, including no-cost, low-cost or cost-sharing access where feasible. The arrangement should remain voluntary and open to willing States/Administrations and ANSPs. It should also apply safeguards on quality assurance, cybersecurity, data protection, intellectual property, language accessibility and non-sensitive information sharing. It should support preparatory learning before formal training, recurrent knowledge, professional development and exposure to emerging topics, without replacing national licensing requirements, operational competency checks or formal regulatory approval processes.

Talent mobility as a complementary pathway

- 2.8 Digital learning should be complemented by structured talent mobility. Many ANSPs face comparable institutional issues, including workforce renewal, capability gaps against advanced ATM systems, regulatory and legal complexity, cost recovery, user-charge, billing and collection challenges, AI and cybersecurity risks, safety culture, fatigue and wellbeing, and the need to strengthen corporate support functions. These challenges are not limited to operational units and are often better addressed through peer learning and exposure to how other ANSPs solve similar problems.
- 2.9 In this paper, operational personnel may include air traffic controllers and CNS technicians (ATSEP). Talent mobility should also include aeronautical information management, procedure design, safety and quality, cybersecurity, data analytics, finance, billing and collection, procurement, human capital, legal, compliance, corporate strategy and change management professionals. The most practical corridor may begin with staff exchange and short-term attachments, complemented by virtual mentoring or communities of practice where feasible. Safety-critical and licensed functions must remain subject to national laws, security rules, licensing requirements, competency standards and host ANSP procedures.

Evaluation of improvements, conclusions and recommendations

- 2.10 Indonesia's experience indicates that digital learning can deliver greater value when embedded into a broader people system rather than treated as a stand-alone training platform. For the region, the main opportunity is to transform individual ANSP learning assets into a voluntary cooperation model that supports common NGAP objectives, especially for States with limited training resources and Pacific Small Island Developing States (PSIDS) where appropriate.
- 2.11 The Conference is therefore invited to consider a focused regional approach that combines digital learning resource collaboration with practical talent mobility, especially staff exchange. Appendix A provides an indicative framework that may be refined by interested States/Administrations and ANSPs.

3. ACTION BY THE CONFERENCE

- 3.1 The Conference is invited to:
- a) note that emerging technologies and the Smart Skies agenda require ANSP personnel to continuously maintain and upgrade competencies through accessible, measurable and accountable learning systems.

- END -

Appendix A to the Information Paper

INDICATIVE DIGITAL LEARNING RESOURCE COLLABORATION AND TALENT MOBILITY FRAMEWORK

- A.1 This Appendix provides indicative supporting material for the proposed action items. It does not create new regulatory obligations. The framework may be refined by interested States/Administrations and ANSPs based on readiness, national requirements, available resources, subject-matter expertise and safeguards for non-sensitive information.
- A.2 The initial cooperation pilot programme should support preparatory learning before formal training, recurrent knowledge, professional development and exposure to emerging aviation topics. It should not replace national licensing requirements, operational competency checks, or formal regulatory approval processes.
- A.3 The reference to emerging digital air navigation concepts and tools is intended as an awareness-level topic, not a formal licensing course. It may include ATM automation, information management, data-driven operations, cybersecurity interfaces and other relevant developments identified by participating States/Administrations and ANSPs.

Table A-1. Indicative digital learning cooperation stream

Cooperation stream	Possible activities	Potential participants	Expected output
Digital learning modules	Selected non-sensitive bite-sized modules on safety management, human factors, PBN, cybersecurity awareness, safety culture, change management and awareness of emerging digital air navigation concepts and tools.	Interested States/Administrations and ANSPs, including PSIDS where appropriate.	Shared learning access and common baseline awareness.
Subject Matter Expert contribution	Voluntary SME contribution to module review, webinar delivery, content validation and knowledge exchange.	SMEs nominated by participating States/Administrations and ANSPs.	Improved content quality and regional relevance.
Knowledge sharing	Webinars, repositories, discussion forums, learning assessments and practitioner communities.	Focal points and practitioners from participating ANSPs.	Reusable knowledge assets and peer learning channels.
Learning governance	Quality assurance, cyber/data protection, intellectual property, language accessibility, and alignment with ICAO guidance.	DGCA Indonesia, interested States/Administrations, ANSP focal points and relevant partners.	A controlled, voluntary and scalable cooperation model.

Table A-2. Indicative talent mobility framework

Talent mobility mode	What it means in practice	Indicative scope	Expected value and safeguards
Virtual mentoring / community of practice	Regular online discussion or mentoring among practitioners and SMEs on agreed non-sensitive topics.	Operational, technical, safety, quality, human capital, legal, data and change functions.	Low-cost continuity of peer learning. Participation should be voluntary and limited to agreed, non-sensitive information.
Staff exchange / short-term attachment	A temporary visit or placement, usually for observation, job-shadowing, structured exposure or participation in non-sensitive work under host ANSP procedures.	CNS technicians (ATSEP), ATCO-related exposure, AIM, safety, human capital, legal, finance/billing, and corporate functions.	Practical exposure to comparable ANSP challenges. Activities must follow national law, security rules, licensing/competency requirements and host ANSP procedures.
Joint problem-solving project	A defined cross-ANSP activity to produce a practical output, such as a shared learning module, lessons-learned note, or implementation checklist.	Digital learning, learning analytics, safety culture, human capital transformation and institutional support.	Shared solutions and stronger regional cooperation. Scope, data protection, intellectual property and deliverables should be agreed in advance.

- END OF APPENDIX A -