

International Civil Aviation Organization
Middle East Regional Office

SAFETY ENHANCEMENT IMPLEMENTATION GROUP (SEIG)
EIGHTH MEETING (SEIG/8)

(Muscat, Oman, 11 – 13 October 2026)

Agenda Item 2: Coordination between SSP and SMS Implementation & Safety Enhancement Initiatives (SEIs)

**IMPLEMENTATION OF AN AUTOMATED SYSTEMIC
BARRIER FOR AIR TRAFFIC CONTROLLER COMPETENCY,
VALIDITY, AND OPERATIONAL CURRENCY MANAGEMENT**

(Presented by Iraq)

EXECUTIVE SUMMARY	This working paper presents Iraq's operational deployment of an automated systemic barrier platform bridging administrative regulatory oversight and daily tactical Air Traffic Control (ATC) operations. The system automates the real-time tracking, evaluation, and verification of Air Traffic Controller (ATCO) competency elements, including medical fitness certifications, Unit Endorsements, ICAO English Language Proficiency (ELP), sector currency thresholds, and periodic competency checks. By implementing proactive 30-day expiration alerts and integrating automated gating mechanisms within operational rostering and shift assignments, the platform eliminates administrative vulnerabilities and human error in licensing currency management. This systemic safety barrier guarantees zero regulatory gaps prior to operational shift activation, directly reinforcing Air Navigation Service Provider (ANSP) Safety Management Systems (SMS) and State Safety Programme (SSP) continuous monitoring oversight in accordance with ICAO Annex 1, Annex 19, and the MID-RASP.
Action by Meeting	Paragraph 4.1

References	• ICAO Annex 1 — <i>Personnel Licensing</i> • ICAO Annex 19 — <i>Safety Management</i> • ICAO Doc 9859 — <i>Safety Management Manual (SMM)</i> • ICAO Doc 9966 — <i>Manual for the Oversight of Fatigue Management Approaches</i> • ICAO Global Aviation Safety Plan (GASP, Doc 10004) • ICAO Middle East Regional Aviation Safety Plan (MID-RASP)
Strategic Objectives	Safety (GASP Goals 1 and 2: Continuous reduction of operational safety risks and strengthening of State safety oversight capabilities).

1. INTRODUCTION

1.1 Under the provisions of ICAO Annex 1 (*Personnel Licensing*) and Annex 19 (*Safety Management*), Air Navigation Service Providers (ANSPs) and Civil Aviation Authorities (CAAs) must ensure that air traffic control services are provided exclusively by licensed, medically certified, linguistically qualified, and operationally current air traffic controllers.

1.2 In conventional air traffic service operational environments, tracking controller validity parameters (such as Class 3 medical renewals, ICAO Language Proficiency levels, rating validities, and recent sector experience) has historically relied on fragmented databases, decentralized records, or manual verification methods. Such manual administrative workflows introduce latent systemic hazards, including the potential for oversight delays, unsynchronized records between administrative offices and operational facilities, and the rare but critical vulnerability of an individual assuming an operational watch with lapsed certification.

1.3 In direct alignment with the ICAO Global Aviation Safety Plan (GASP) and the Middle East Regional Aviation Safety Plan (MID-RASP) Safety Enhancement Initiatives (SEIs), Iraq has conceptualized, developed, and deployed the **ATCO Competency & Validity Management System**. Developed internally by the Exams and Development Unit within the General Company for Airport Management and Air Navigation (GCAAN), this platform serves as an automated systemic barrier designed to eliminate licensing non-compliance and tactical currency gaps before personnel can be deployed to operational control positions.

2. DISCUSSION & SYSTEM ARCHITECTURE

2.1 Operational Concept and System Architecture

2.1.1 The ATCO Competency & Validity Management System acts as a real-time digital gateway that unifies regulatory records directly with operational watch rosters. The platform monitors multi-dimensional parameters governing an operational controller's legal and technical eligibility:

- **Aviation Medical Certification:** Active tracking of Class 3 medical certificates and designated operational limitations.
- **ICAO English Language Proficiency (ELP):** Multi-tier tracking of validity expiration timelines for Level 4 (1 year) and Level 5 (3 years), ensuring continuous compliance with Annex 1 standards.
- **Sector Ratings & Unit Endorsements:** Dynamic monitoring of unit-specific ratings across En-route (ACC), Approach (APP), and Aerodrome Control (TWR) sectors.
- **Operational Currency & Recency Thresholds:** Verification of minimum active controlling hours required within defined 90-day intervals to retain valid sector authorizations.
- **Periodic Assessments & Development Exams:** Integration with the ANSP Exams and Development Unit to record annual practical checks, emergency refresher simulations, and development evaluations.

2.2 Proactive Alert Thresholds and Systemic Gating

2.2.1 Rather than depending on post-facto administrative reviews, the platform establishes predictive escalation protocols. Automated notifications are dispatched precisely 30 days prior to the expiration of any certification, medical assessment, or rating validity. This advance notification is automatically routed to the individual controller, supervisory watch commanders, the unit training manager, and the regulatory oversight focal points.

2.2.2 Crucially, the platform operates as a deterministic operational barrier. In the event that a validity parameter lapses without verified renewal, the system automatically marks the profile as non-deployable. The integrated roster module flags the controller and prohibits their assignment to operational positions, preventing tactical dispatch errors in the control room.

Validity Dimension	Governing ICAO / National Standard	Automated Monitoring Threshold	Systemic Barrier Effect
Class 3 Medical Certificate	ICAO Annex 1, Chapter 6	Alert at T-30 days; daily alerts at T-7 days	Instant roster locking upon expiration date (00:01 UTC)
Language Proficiency (ELP)	ICAO Annex 1 / Doc 9835 (Levels 4, 5, 6)	Alert at T-60 and T-30 days prior to expiry	Restricts controller to non-operational or supervised status
Sector Recency /	National ANS Regulations & Manual	Continuous rolling 90-day logged operational	Mandates structured reassessment before

Validity Dimension	Governing ICAO / National Standard	Automated Monitoring Threshold	Systemic Barrier Effect
Currency	of ATS	hours	sector return
Competency Assessments	ICAO Doc 9859 / Unit Training Plans	Annual check interval tracking	De-authorizes solo operational position logging

2.3 Integration with Fatigue Management and Tactical Rostering

2.3.1 In addition to statutory validity tracking, the system integrates operational shift planning logic designed to address fatigue hazards in accordance with ICAO Doc 9966 (*Manual for the Oversight of Fatigue Management Approaches*).

2.3.2 The scheduling engine incorporates parameters governing maximum continuous duty periods, mandatory break-to-position ratios, circadian low-point exposure, and minimum rest periods between consecutive shifts. By evaluating both legal validity and physiological readiness simultaneously, the system ensures that every controller assigned to a console is fully certified, current, and rested.

2.4 Alignment with State Safety Programme (SSP) and USOAP CMA

2.4.1 The automation of ATCO validity tracking provides verifiable, audit-proof data streams that reinforce both the ANSP Safety Management System and State Safety Oversight capabilities. From an oversight perspective, the platform directly addresses critical elements audited under the ICAO Universal Safety Oversight Audit Programme Continuous Monitoring Approach (USOAP CMA), particularly within:

- **Personnel Licensing and Training (PEL):** Providing instantaneous, tamper-evident regulatory records demonstrating that zero personnel operate outside statutory validity windows.
- **Air Navigation Services (ANS):** Ensuring structural compliance with operational unit qualifications, on-the-job training oversight, and recurrent sector competence.
- **Safety Assurance (Annex 19):** Delivering real-time Safety Performance Indicators (SPIs) related to workforce qualification integrity and training pipeline efficiency.

3. CONCLUSION

3.1 The manual management of ATCO operational currencies presents an inherent administrative risk that can be completely eliminated through targeted digital automation. Iraq's implementation

of the ATCO Competency & Validity Management System establishes an automated systemic defense that harmonizes administrative regulatory requirements with the fast-paced realities of tactical air traffic management.

3.2 The demonstrated success of this automated platform represents a cost-effective, high-impact regional best practice that supports the strategic objectives of the MID-RASP and aligns with regional Safety Enhancement Initiatives (SEIs).

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a. **Note** the technical information and operational outcomes presented in this working paper regarding the implementation of an automated ATCO competency and validity management barrier;
- b. **Acknowledge** the critical role of automated systemic barriers in bridging administrative licensing processes with tactical air traffic operations to prevent non-compliant duty assignments;
- c. **Encourage** States and ANSPs within the ICAO Middle East Region to examine and adopt automated validity and competency tracking architectures as an effective Safety Enhancement Initiative (SEI) within their national safety frameworks; and
- d. **Recommend** that the SEIG evaluate including automated operational currency management as a recommended safety practice within future regional safety enhancements and SSP implementation guidance.

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