



**23<sup>rd</sup> COSCAP-SEA STEERING COMMITTEE MEETING (SCM/23)**

**(22-23 April 2026, Bali, Indonesia)**

**Discussion Paper 04 (DP/04)**

**Agenda Item 3: Updates from Member States**

(Presented by Indonesia)

**SUMMARY**

This Working Paper proposes the development of an AI-assisted Risk-Based Oversight (RBO) Pilot Project for civil aviation authorities (CAAs) of Southeast Asia region. The initiative aims to enhance regulatory oversight effectiveness by enabling data-driven prioritization of surveillance activities based on operators' safety risk profiles.

The proposed project aligns with recent amendments to ICAO Annex 19 – Safety Management, the guidance of ICAO Doc 9734 (Safety Oversight Manual), Doc 8335, and emerging ICAO safety intelligence concepts. It also responds to identified challenges in the Asia-Pacific region related to inspector resource constraints, fragmented safety data, and USOAP findings concerning Critical Elements (CEs), particularly CE-3 and CE-8.

**Action:** The COSCAP Southeast Asia Steering Committee Meeting is invited to:

1. Note the proposed AI-assisted Risk-Based Oversight Pilot Project;
2. Invite interested SEA States to participate in and support the pilot implementation; and
3. Agree for COSCAP-SEA to coordinate and provide technical support for the initiative.

**1 Background**

- 1.1 The aviation sector in Southeast Asia continues to experience significant and sustained growth. This growth is accompanied by an increasingly diverse range of operators, complex route structures, and millions of annual aircraft movements. As a result, CAAs face growing pressure to maintain effective regulatory oversight with limited inspector resources and increasing volumes of safety data.
- 1.2 Traditional surveillance programmes, which are largely based on uniform inspection cycles, often do not adequately reflect the varying levels of operational risk among service providers. This can lead to inefficient allocation of oversight resources and potential safety gaps where higher-risk operators may not receive proportionate regulatory attention.
- 1.3 Recognizing these challenges, ICAO has progressively emphasized the transition toward risk-based and performance-based oversight methodologies. Amendments to ICAO Annex 19 – Safety Management, effective November 2026, and the introduction of the Safety Intelligence Manual (Doc 10159) highlight the need for States to integrate safety data analysis, predictive indicators, and emerging technologies into regulatory decision-making. Further updated guidance in the Safety Management Manual (Doc 9859) is also forthcoming.



- 1.4 Within this framework, ICAO Doc 9734 (Safety Oversight Manual) remains the primary reference for the establishment and management of State safety oversight systems based on the eight Critical Elements (CEs). Annex 19 further reinforces safety oversight as a core State responsibility under the State Safety Programme (SSP). In parallel, ICAO’s Universal Safety Oversight Audit Programme (USOAP) monitors States’ effective implementation of these elements and identifies systemic gaps and areas requiring corrective action.
- 1.5 ICAO guidance explicitly supports the use of risk-based surveillance approaches. Doc 9734 encourages States to adapt surveillance programmes where risk-based methods are applied, while Doc 8335 (Part IV, Section 2.2.2) notes that States may establish Safety Risk-Based Surveillance (SRBS) programmes that prioritize oversight activities based on operators’ safety risk profiles. Additional practical guidance and tools are available through the ICAO Safety Management Implementation (SMI) website.
- 1.6 Recent regional initiatives demonstrate growing interest in innovative oversight approaches. An AI-assisted Risk-Based Oversight (RBO) concept, presented by the Directorate General of Civil Aviation (DGCA) of Indonesia, was shared during the ICAO APAC Workshop on Innovation and Emerging Technologies in Aviation (20–21 November 2025). The presentation received positive feedback from participating States, indicating interest in exploring potential participation in this initiative under a COSCAP-SEA framework.

## 2 Discussion

- 2.1 Despite ongoing efforts, many CAAs in the Southeast Asia region continue to face systemic oversight challenges, including:
  - **Oversight capacity constraints:** A high ratio of operator to inspector limit the frequency and depth of surveillance activities.
  - **Fragmented safety data:** Safety-related information is often distributed across multiple databases and reporting systems, reducing the ability to conduct timely and comprehensive safety analysis.
  - **Uniform surveillance cycles:** Fixed inspection intervals do not adequately reflect differing operational risk profiles, resulting in suboptimal deployment of limited oversight resources.
- 2.2 These challenges contribute to weaknesses identified under USOAP findings, particularly CE-3 (Organization) and CE-8 (Resolution of Safety Issues), where the lack of effective risk-based surveillance systems and supporting technologies has been noted in several States.
- 2.3 In response, this Working Paper proposes the initiation of an AI-assisted Risk-Based Oversight (RBO) Pilot Project under COSCAP-SEA. The pilot project would leverage advanced data analytics and artificial intelligence techniques to integrate multiple safety data sources, identify emerging risk trends, and support States in prioritizing oversight and surveillance activities.
- 2.4 The initiative is intended to complement, not replace, existing regulatory processes, while progressively enhancing oversight effectiveness, transparency, and consistency across participating States.
- 2.5 The proposed AI-Assisted RBO Pilot Project would be implemented in a phased manner, subject to Steering Committee guidance and participating States’ agreement. The indicative roadmap includes:
  - **Stakeholder Preparation:** Engagement and coordination among COSCAP-SEA, participating States and relevant technical partners.



- **Taskforce Establishment:** Formation of a dedicated AI-Assisted RBO Pilot Project taskforce comprising regulatory, safety, and technical experts (TBD).
  - **Programme Development:** Development of the pilot project framework, governance structure, detailed roadmap, and implementation timeline (TBD).
  - **Implementation Support:** Technical assistance, system configuration, training, and operational deployment within participating States (TBD).
  - **Evaluation and Continuous Improvement:** Assessment of pilot outcomes, identification of lessons learned, and refinement of the programme for potential regional expansion (TBD).
- 2.6 The AI-Assisted RBO Pilot Project is expected to support States in strengthening compliance with ICAO SARPs, improving USOAP performance, and enhancing the overall effectiveness of safety oversight in the region.

### 3 Action of the Meeting

- 3.1 Note the information contained in this Working Paper;
- 3.2 Invite Southeast Asia States to express interest in participating the AI-assisted RBO Pilot Project; and
- 3.3 Agree for COSCAP-SEA to coordinate and provide technical support for the development and implementation of the AI-Assisted RBO Pilot Project.

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