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**RISK-BASED SAFETY OVERSIGHT: A SCALABLE, DATA-DRIVEN APPROACH USING
SAFETY RISK PROFILE**

(Presented by Saudi Arabia)

EXECUTIVE SUMMARY

This paper describes a scalable approach for developing Safety Risk Profiles (SRPs) at the organizational level and integrating them into a State's safety oversight system. It outlines how insights gained within individual aviation organizations can feed into a broader national risk picture, enabling Civil Aviation Authorities to prioritize oversight based on actual risk. The aim is to illustrate a framework that moves from organizational insight to State oversight by systematically using data-driven safety risk profiles. The paper also includes a proposal for amendment to Assembly Resolution A41-6 provided as an attachment.

<i>Strategic Goals:</i>	This working paper relates to <i>Every Flight is Safe and Secure</i> .
<i>Financial implications:</i>	Activities to be undertaken within existing budgetary allocations.
<i>References:</i>	Doc 10184, <i>Assembly Resolutions in Force</i> Do 10004, <i>2026-2028 Global Aviation Safety Plan</i> State letter AN 15/1.4-24/23 Cospas-Sarsat Joint Committee-39/Report

1. INTRODUCTION

1.1 The aviation industry continues to improve safety by adopting proactive, risk-based approaches. In recent years, the focus has shifted from a reactive approach to proactively identifying and mitigating risks before they lead to incidents or accidents. The ICAO Global Aviation Safety Plan (GASP) encourages States to implement risk-based oversight so that safety efforts and resources are directed where they are needed most, proportionate to the level of risk in the state aviation system.

1.2 The concept of a Safety Risk Profile (SRP) addresses this challenge by providing a systematic performance-based snapshot of an organization's main safety risks and performance. An SRP is essentially a service provider safety performance management tool that highlights an organization's operational scope and complexity, identifies the key hazards and risks in its operations, and reflects its safety performance record (including incident history and compliance level). Each SRP gives a snapshot of where an individual operator or service provider faces the most significant safety risks.

1.3 Developing SRPs at the organizational level and then scaling this approach to the State level can significantly enhance the state oversight system. By aggregating and analysing the SRPs of all its service providers, a State gains a comprehensive view of safety risk across the entire aviation system. In essence, this approach enables a shift from organizational insight to State oversight: safety insights gathered within each organization are systematically fed into the state's decision-making for oversight.

2. DISCUSSION

2.1 Many States are moving towards performance-based and risk-based safety oversight, yet in practice, oversight practices can still be one-size-fits-all or reactive. Without a detailed safety risk profile of individual organizations, States might allocate oversight resources evenly or based only on broad indicators like the size and complexity of operations. This can lead to situations where high-risk areas do not receive necessary attention and consideration, or low-risk service providers are burdened with unnecessary safety oversight activities. Furthermore, crucial safety information may remain isolated within the aircraft operators or service providers. Some of the challenges in traditional oversight that a risk-profile approach seeks to address include:

- a) *Reactive focus*: Oversight often reacts to accidents or incidents after the fact.
- b) *On-size-fits-all*: Without enough risk information, Civil Aviation Authorities may treat all operators and service providers similarly, missing the opportunity to focus on those with higher risk factors.
- c) *Resource allocation*: Without a structured approach to risk profiling, States may inadvertently misallocate safety oversight resources, focusing too heavily on operations that pose minimal risk.

2.2 An organizational Safety Risk Profile (SRP) forms the cornerstone of this scalable oversight framework. It is tailored for each aviation service provider—such as an airline, airport, air navigation service provider, or maintenance organization—and consolidates key information relevant to the organization's safety risk exposure. To develop an SRP, the organization's operational context must first be understood, including the scale, size, complexity, and operating environment of its activities. Both quantitative and qualitative data are then integrated, encompassing historical safety performance—such as incidents, accident reports, and audit findings—as well as current risk evaluations drawn from the

organization's Safety Management System (SSM). The SRP synthesizes this data into a concise representation of the organization's safety risk picture.

2.3 Once individual organizations have developed their SRPs, the State Civil Aviation Authority—such as the GACA in Saudi Arabia—can begin reviewing them collectively. This scalable integration enables the regulator to assess safety risks at both the organizational (micro) and sectoral (macro) levels. The process is guided by a structured methodology comprising the following steps:

- a) *Data collection and sharing*: Establish consistent channels for the regular submission of safety data and information from each aircraft operator, service provider, and organization.
- b) *Profile development*: Analyse the operational data of each aircraft operator, service provider, and organization to identify inherent risks and assess safety performance trends with a focus on significant risk areas and notable safety concerns.
- c) *Oversight planning*: Align the State's oversight activities with the risk levels identified in the SRPs. Entities with higher-risk profiles may warrant more frequent oversight, inspections, targeted audits, or direct regulatory support.
- d) *Continuous improvement*: Treat each SRP as a living document. Regularly update both the profiles and corresponding oversight strategies to reflect the new and updated data, evolving risks, and changes in performance.

2.4 Integrating SRPs into State safety oversight offers a range of clear, practical benefits. Foremost among them is the ability to implement targeted oversight and resource allocation. States can concentrate their efforts on areas of highest risk, ensuring safety oversight is both effective and resource-efficient.

2.5 The development and review of SRPs also foster greater transparency and trust between State and aircraft operators, and service providers. By jointly reviewing risk data and agreeing on mitigation measures, both parties gain a shared understanding of safety priorities, ultimately contributing to a stronger and more collaborative safety culture.

2.6 The SRP approach serves as a valuable input to the SSP, which each ICAO Member State is required to implement. Within the SSP framework, States are expected to conduct safety risk management at the national level—an objective that is strongly supported by the development of structured SRPs for individual aviation operator and service providers. Organizational SRPs offer critical input into sector-wide and national safety risk profiling, ensuring that a State's oversight priorities are grounded in comprehensive, updated data drawn from across the industry. This data-driven strategy aligns closely with ICAO's emphasis on predictive risk management and supports ongoing oversight through effective mechanisms.

3. CONCLUSION

3.1 The effective implementation of an SSP and risk-based oversight is cornerstone of modern aviation safety management. The proposed framework, centered on the development of organizational SRP and their aggregation into a State safety risks, provides a practical, scalable, and powerful mechanism to achieve these objectives.

3.2 By systematically leveraging the safety data generated within each aircraft operator and service provider, States can significantly enhance their ability to manage safety proactively, allocate resources efficiently, and foster a more collaborative safety culture. This approach strengthens the SSP, directly supports the goals of the GASP, and contributes to the continuous improvement of aviation safety at the national, regional, and global levels.

3.3 To formally embed this best practice into the global safety framework, it is proposed that ICAO amend its key safety management documents and Assembly Resolution A41-6, Appendix A, to explicitly recognize and encourage the adoption of SRPs as an essential tool for effective State safety management.

3.4 The Assembly is invited to adopt the proposed amendment to Assembly Resolution A41-6 attached to this paper, recognizing that the systematic use of SRPs at the organizational level provides a scalable and data-driven foundation for a State to conduct effective risk-based oversight and manage national-level safety risks.

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