



International Civil Aviation Organization

MIDANPIRG/22 & RASG-MID/12 Meetings

(Doha, Qatar, 4 – 8 May 2025)

Agenda Item 4.2: Outcomes of the RASG-MID Groups (SEIG/6 Meeting)

**STATE-LEVEL FLIGHT DATA MONITORING (FDM): A NEW ERA
OF PROACTIVE SAFETY IN IRAN**

(Presented by the Islamic Republic of Iran)

SUMMARY

This paper presents the State-Level Flight Data Monitoring (FDM) Program by the Civil Aviation Authority of Iran (CAA.IRI), a pioneering initiative for proactive safety management. Unlike traditional airline-based FDM, this centralized system collects real-time flight data from all operators, enabling regulators to identify risks early and enhance Performance-Based Oversight (PBO).

To expand this approach, CAA.IRI proposes an ICAO MID task force to research and develop best practices for state-level FDM across the region. With ICAO MID's support in expertise, training, and funding, this initiative aims to improve aviation safety, data-driven oversight, and regional cooperation, setting a new standard for predictive safety management in the Middle East.

Action by the meeting is at paragraph 7

REFERENCE

- ICAO ANNEX 19 - SAFETY MANAGEMENT
- ICAO DOC 9859 - SAFETY MANAGEMENT MANUAL (SMM)
- ICAO DOC 10004 - GLOBAL AVIATION SAFETY PLAN (GASP)
- ICAO DOC 10000 - MANUAL ON FLIGHT DATA ANALYSIS PROGRAMMES (FDAP)

1. INTRODUCTION

1.1 The Civil Aviation Authority of the Islamic Republic of Iran (CAA.IRI) is proud to present its State-Level Flight Data Monitoring (FDM) Program as a pioneering initiative to improve aviation safety. This program represents a significant step forward in proactive safety management by centralizing the collection and analysis of real-time flight data from all airline operators in Iran. By processing this data through a state-of-the-art integrated system, the program empowers the regulator to monitor flight safety performance across the nation in real-time, shifting from a reactive to a proactive safety management approach.

1.2 This initiative aligns with ICAO's Global Aviation Safety Plan (GASP) and the Middle

East Regional Aviation Safety Strategy, aiming to enhance safety oversight through data-driven insights and performance-based oversight (PBO).

In recognition of the growing importance of such initiatives in the region, CAA.IRI proposes the establishment of a task force under the ICAO MID Region to carry out further research and develop best practices in the area of State-Level Flight Data Monitoring (FDM), with the support of the ICAO MID Regional Office.

2. DISCUSSION

2.1 FDM programs have traditionally been implemented at the individual airline level, with limited regulatory oversight. While effective in addressing internal operational safety concerns, these programs often fail to provide regulators with the broader, more comprehensive view needed to identify systemic safety risks across operators.

2.2 In response to this challenge, CAA.IRI has implemented a State-Level FDM System that collects real-time flight data from all airlines operating in Iran, processes it through a centralized system, and provides the regulator with real-time safety intelligence. This allows CAA.IRI to monitor safety trends across the entire aviation sector, identify emerging risks early, and intervene proactively to address potential threats before they lead to accidents.

2.3 This shift to predictive safety management ensures that the program is not only compliant with ICAO Annex 19 and the Safety Management Systems (SMS) framework but also provides a scalable model that could be adapted by other states in the ICAO MID region.

3. OBJECTIVES OF THE STATE-LEVEL FDM PROGRAM

The primary goals of the State-Level FDM Program are to:

3.1 Enhance Proactive Safety Management: By identifying risks in real-time, this system allows for early intervention, reducing the likelihood of incidents or accidents.

3.2 Enable Performance-Based Oversight (PBO): Data-driven insights into operator performance enable tailored, risk-based regulatory actions.

3.3 Establish Industry-Wide Safety Benchmarks: The FDM program allows for cross-operator performance comparisons, creating opportunities for safety improvements across the sector.

3.4 Support Predictive Analytics: With the use of artificial intelligence (AI) and big data analytics, the program predicts and mitigates risks before they become critical.

3.5 Strengthen Regulatory Efficiency: By shifting from routine compliance checks to targeted oversight based on data, resources are optimized for greater safety impact.

4. PROPOSED TASK FORCE FOR FURTHER RESEARCH

4.1 Given the success of Iran's State-Level FDM Program, CAA.IRI invites the ICAO MID Region to consider the establishment of a task force dedicated to further exploring and advancing the implementation of state-level FDM programs across the Middle East. This task force would be responsible for conducting research, identifying best practices, and developing a framework for the broader regional adoption of such programs.

Key Activities of the Proposed Task Force:

4.2 Research & Development: Conduct in-depth studies on the integration of state-level FDM systems, identifying common challenges and opportunities for improvement.

4.3 Knowledge Sharing: Facilitate workshops, webinars, and collaborative forums to share

experiences and lessons learned from regional FDM initiatives.

4.4 Framework Development: Develop a regional framework and guidelines for the implementation of state-level FDM systems, ensuring compliance with ICAO standards and addressing the unique needs of the Middle East region.

4.5 Collaboration with ICAO MID Regional Office: Seek the support of the ICAO MID Regional Office in facilitating technical assistance, funding, and capacity-building programs for the implementation of state-level FDM systems.

4.6 Monitoring & Evaluation: Establish metrics for evaluating the effectiveness of FDM programs and continuously improving them based on feedback from operators and regulators.

5. SUPPORT FROM ICAO MID REGIONAL OFFICE:

The ICAO MID Regional Office will play a crucial role in supporting the task force's efforts by providing:

5.1 Technical Expertise: Expertise in the design and implementation of state-level FDM systems, including regulatory, legal, and operational aspects.

5.2 Capacity Building: Organizing workshops, training sessions, and seminars for stakeholders in the aviation industry to build the necessary skills for successful program implementation.

5.3 Financial Support: Assisting with funding and resources to ensure that the task force can effectively conduct its research and implement initiatives across the region.

6. EXPECTED OUTCOMES

By establishing a task force and focusing on State-Level FDM implementation, the ICAO MID Region can expect the following outcomes:

6.1 Improved Safety across the Region: By proactively monitoring and addressing safety risks, the region can achieve a significant reduction in aviation incidents and accidents.

6.2 Data-Driven Safety Oversight: Regulators will be empowered to take more informed, data-driven actions that lead to safer operational environments.

6.3 Harmonized Regional Approach: A collaborative regional framework will ensure that all states in the ICAO MID region can implement FDM programs tailored to their local needs, with alignment to ICAO's global safety goals.

6.4 Stronger Regional Cooperation: Establishing the task force will foster closer collaboration between states, regulators, and operators, creating a unified approach to safety management.

7. ACTION BY THE MEETING

7.1 The meeting is invited to:

- a) Establish a Task Force under the ICAO MID Region to conduct research and develop a regional framework for state-level FDM implementation, with the support of the ICAO MID Regional Office.
- b) Encourage Regional Collaboration among all member states, ensuring that lessons learned from Iran's experience are shared and adapted to other national

contexts.

- c) Support Capacity Building initiatives to help states develop the necessary infrastructure, technical expertise, and regulatory frameworks for state-level FDM programs.

The establishment of a Task Force for State-Level FDM Research represents a unique opportunity for the ICAO MID Region to enhance its aviation safety management capabilities.

By leveraging real-time flight data, predictive analytics, and performance-based oversight, this initiative has the potential to revolutionize safety oversight in the region.

Iran's State-Level FDM Program serves as a model and with the support of the ICAO MID Regional Office, this task force can pave the way for other states to adopt similar systems. Together, we can create a safer, more efficient aviation environment across the Middle East.

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