



International Civil Aviation Organization

Aerodrome Safety & Planning Implementation Group

Seventh Meeting (ASPIG/7)
(Riyadh, Saudi Arabia, 6 – 10 April 2025)

Agenda Item 3: Regional Performance Framework for Aerodrome Capacity and Efficiency

Seamless Operation Program

(Presented by the State of Saudi Arabia)

SUMMARY

This paper presents the Seamless Operation Program, a strategic initiative to enhance efficiency, predictability, and sustainability across Saudi Arabia's four major airports. By uniting key aviation stakeholders, it drives performance-based initiatives aligned with Vision 2030 and the National Aviation Strategy. Leveraging automation and real-time data, the Program streamlines airport operations and supports the Kingdom's aviation modernization goals.

Action by the meeting is at paragraph 3

REFERENCES

- Saudi Vision 2030 & National Aviation Strategy
- Saudi Air Navigation Plan (SNAP)
- Saudi Future Airspace Concept (SFAC)
- ICAO SARPs & Best Practices
- SESAR & EUROCONTROL PRC

1. INTRODUCTION

1.1 The Seamless Operation Program is driving the transformation of Saudi Arabia's aviation sector in alignment with Vision 2030. Focused on efficiency, coordination, and sustainability, it enhances aircraft flow, infrastructure utilization, and stakeholder collaboration across Riyadh, Jeddah, Dammam, and Madinah airports.

1.2 The Seamless Operation Program encompasses 296 initiatives, 25 stakeholders, and 36 working groups.

1.3 The Program leverages data-driven performance monitoring to improve runway capacity, turnaround efficiency, and operational predictability. It also introduces game-changing initiatives—A-

CDM & predictive tools, airspace optimization, data digitalization, and operational committees, aligned with the Saudi Air Navigation Plan (SNAP) and Saudi Future Airspace Concept (SFAC).

1.4 Through innovation and strategic governance, the Program is setting new standards in airport operations, positioning Saudi Arabia as a leader in global aviation efficiency.

2. DISCUSSION

Operational Assessment

2.1 In response to growing operational challenges at King Khalid International Airport (KKIA) and King Abdulaziz International Airport (KAIA), the HE GACA President and HE Saudia DG initiated a comprehensive assessment in 2022 to identify inefficiencies at the airport and define a structured path forward.

2.2 The initiative aimed to establish harmonized, efficient, and customer-centric airport operations, aligning efforts with stakeholder expectations and enhancing passenger experience at Jeddah International Airport (OJDN) and Riyadh International Airport (OERK). In summer 2024, the Program scope was expanded to include Dammam International Airport (OEDF) and Madinah International Airport (OEMA)

2.3 The assessment analyzed the aircraft flow within the airport from final approach to taxiing, turnaround and departure, revealing six key areas requiring operational transformation:

- i. Holistic situational awareness
- ii. Real-time management of the operation
- iii. Operational procedures
- iv. Airfield infrastructure
- v. IT system & integration
- vi. Ground operators' services

2.4 To implement these improvements, a multi-entity team was formed, bringing together key stakeholders—including airport operators, airlines, air navigation services, and ground handling providers—to ensure seamless collaboration across all project phases.

The need for Operational Transformation

2.5 The Seamless Operation Program was designed to drive efficiency and optimization across Saudi Arabia's aviation ecosystem. It is built on following three core pillars:

- Purpose: Unifying aviation stakeholders to unlock their full operational potential through seamless collaboration.
- Vision: Establishing the Seamless Operation Program as a global benchmark in airfield operations, promoting a collaborative culture for enhanced efficiency.
- Mission: Leading the operational transformation of airports, airlines, ground handlers, and air navigation service providers, ensuring efficiency, effectiveness, and predictability through the implementation of targeted initiatives aimed at capacity maximization.

2.6 Supported by targeted initiatives and continuous performance monitoring, the Program is aligned with GACA's 2030 passenger targets, emphasizing:

- i. Optimized runway systems
- ii. Increased operational flexibility
- iii. Efficient resource utilization
- iv. Reduced operational complexity
- v. Eliminating the need for large-scale masterplan expansions

Reaching Future State

2.7 The Seamless Operation Program defines a clear pathway toward an optimized aviation ecosystem, ensuring Saudi Arabia's major airports achieve global standards in efficiency, predictability, and sustainability. This transformation is driven by strategic objectives, operational pillars, and measurable performance targets.

Future State Architecture

2.8 The Program focuses on six key improvements to enhance airport operations:

- i. Increased airside capacity to meet growing demand.
- ii. Streamlined processes for greater operational efficiency.
- iii. Optimized infrastructure utilization for maximum efficiency.
- iv. Data-driven decision-making to improve predictability.
- v. Real-time data integration for better coordination.
- vi. Reduced environmental impact through optimized aircraft movements.

Performance Targets

2.9 The Future State transformation is structured over a five-year implementation period, with annual performance targets aligned with strategic goals. To ensure accountability and continuous progress, the Program defines eight critical KPIs that measure operational efficiency and effectiveness:

- i. Runway system capacity
- ii. Additional Taxi-in time
- iii. Additional Taxi-out time
- iv. Arrival on-time performance
- v. Departure on-time performance
- vi. Turnaround time adherence
- vii. First door open on-time
- viii. Last door closed on-time

Program Progress

2.10 The Seamless Operation Program is driving airport operational excellence across four major airports, monitoring 296 initiatives with 25 stakeholders. Progress is tracked through two reporting dashboards, supported by 36 working groups and 17 monthly reports, ensuring data-driven decision-making and structured governance.

2.11 Among the different initiatives implemented, some stand out as game changers, revolutionizing aviation efficiency and aligning with Saudi Air Navigation Plan and the Saudi Future Airspace Concept:

- A-CDM & Predictive Tools – AI-driven solutions and ADS-B for enhanced situational awareness and optimized aircraft flow.
- Airspace Enhancement – Maximizing runway capacity and improving airspace efficiency.
- Data Digitalization & Automation – Strengthening data-sharing and process automation for seamless coordination.
- Operational Committees – Establishing dedicated forums for planning, performance monitoring, and delay management.

Next Steps for the Seamless Operation Program

2.12 The Program will continue building on its success across the four airports while expanding efforts to address new challenges in Saudi Arabia's aviation sector. Key priorities include:

- Maintaining operational achievements while supporting major airport developments.
- Scaling up improvements at Dammam and Madinah Airports to align with Riyadh and Jeddah.
- Exploring additional workstreams, such as cargo operations and baggage flow, to further enhance the passenger experience.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information in this paper.
- b) Encourage States ongoing collaboration within the aviation ecosystem to refine strategies using operational insights.
- c) Ensure alignment with ICAO standards and adopt best practices for long-term sustainability.
- d) Promote among the States innovation and best practices to foster a competitive sustainable and efficient aviation sector.