



ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 13: Aviation Security — Policy

ENHANCING AIR CARGO SUPPLY CHAIN SECURITY THROUGH DIGITAL  
TRANSFORMATION

(Presented by Saudi Arabia)

EXECUTIVE SUMMARY

In recent years, the air cargo sector has witnessed a significant increase in cargo volumes and a greater number of stakeholders within the supply chains, resulting in a more complex operational environment and elevated security risks. With the continuous evolution of threats, there is a growing need for innovative solutions centered on digital transformation to strengthen air cargo security. The Global Aviation Security Plan (GASeP) emphasizes the importance of adopting modern technological solutions as an effective tool in support of civil aviation security. Modern digital systems serve as a primary tool for verifying stakeholder data, recording shipments, tracking their movement, proactively analysing risks, and linking information with relevant databases. This enhances procedural efficiency, supports compliance with international standards, and enables the sector to meet increasing security challenges in air cargo.

**Action:** The Assembly is invited to:

- a) take note of the information presented in this paper;
- b) invite ICAO to consider the possibility of organizing an international symposium on digital transformation in aviation security, to be hosted by the Kingdom of Saudi Arabia; and
- c) encourage Member States to adopt digital transformation-based solutions to enhance air cargo security.

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|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Strategic Goals:</i>        | This working paper relates to Strategic Goal <i>Every Flight is Safe and Secure</i> .                                                                 |
| <i>Financial implications:</i> | None                                                                                                                                                  |
| <i>References:</i>             | Annex 17 – <i>Aviation Security</i><br>ICAO Doc 8973, <i>Aviation Security Manual</i><br>ICAO Doc 10108, <i>Global Aviation Security Plan (GASeP)</i> |

<sup>1</sup> English and Arabic versions provided by Saudi Arabia.

## 1. INTRODUCTION

1.1 The global air cargo sector is experiencing rapid growth, which increases the complexity of supply chains, and the number of stakeholders involved. This raises the potential for exploitation by entities or individuals posing security threats, requiring the development of advanced digital systems capable of detecting such threats and enhancing integration with national databases.

1.2 Reference is made to the Global Aviation Security Plan (GASeP), which highlights the importance of developing technological resources and promoting innovation as a key priority for enhancing aviation security. Priority 4 –Improve Technological Resources and Foster Innovation – is a core pillar in this field and reinforces the move toward adopting digital solutions in securing air cargo supply chains.

1.3 Reference is also made to Annex 9 – *Facilitation*, paragraph 4.10 (Recommendation), which states: “Contracting States should provide for the electronic submission of cargo information prior to the arrival or departure of cargo.”

1.4 Digital transformation is considered a fundamental pillar for enhancing air cargo security. Modern digital systems offer advanced tools for verifying stakeholder data, registering shipment details, tracking their movement throughout all stages of the supply chain, proactively analyzing risks, and linking data with relevant entities. This contributes to achieving positive security, operational, and economic impacts across the supply chain, as detailed in sections 2, 3, and 4.

## 2. OBJECTIVES OF DIGITAL TRANSFORMATION IN AIR CARGO SECURITY

2.1 Develop integrated digital solutions to support air cargo security procedures, including digital verification of stakeholder data, accurate registration of outbound and transferred shipment information, and tracking shipment movement through all stages of the supply chain.

2.2 Improve the ability to proactively analyse risks by linking operational and security data and feeding security assessment programs with shipment information.

2.3 Support transit and transfer cargo operations by tracking them, verifying their security screening status at external stations, and ensuring compliance with approved security procedures.

2.4 Enable collaboration among relevant stakeholders in the supply chain to accelerate security decision-making and ensure compliance with the National Programme requirements and international standards.

2.5 Provide integrated reports and statistics to support security planning and continuously improve operational and regulatory procedures.

## 3. MAIN ROLES AND FUNCTIONS OF DIGITAL TRANSFORMATION IN AIR CARGO SECURITY

3.1 Provide advanced digital tools for real-time verification of stakeholders’ data involved in the supply chain by linking with national databases and relevant entities.

- 3.2 Manage transit and transfer cargo operations by enabling tracking between external stations, verifying security screening status for each shipment, and linking them to the systems of handling agents and airlines.
- 3.3 License air cargo supply chain relevant entities in a flexible and regulated manner, allowing them to operate legally after fulfilling required security standards.
- 3.4 Electronically verify the sender's information for outbound shipments.
- 3.5 Register shipment details in a manner that ensures all critical information is documented, including sender, sender address, consignee, consignee address, shipment content, weight, number of packages, and air waybill number.
- 3.6 Electronically track all stages the shipment passes through within the air cargo supply chain, along with the responsible personnel at each stage.
- 3.7 Register the vehicles information that transport outbound air cargo from regulated agents to the airport, including driver names and vehicle security seals.
- 3.8 Analyze shipment behavior using its data and associated security procedures — such as the shipper, contents, number of hours it remained stored after screening, and others — to feed the cargo risk analysis program and conduct a risk assessment for each shipment.
- 3.9 Support security screening equipment operators by providing access to the shipment's threat level and details to apply appropriate security measures.
- 3.10 Issue an electronic security declaration (e-CSD) for the shipment upon completion of required security procedures, which can be shared with other stakeholders in the air cargo chain.

#### **4. CONTRIBUTION OF DIGITAL TRANSFORMATION TO OPERATIONAL AND ECONOMIC EFFICIENCY**

- 4.1 The operational experience of the platform demonstrated that its use contributes to improving the quality and reliability of data.
- 4.2 Significantly enhances the flexibility of air cargo movement.
- 4.3 The platform supports enhancing the capacity of air cargo facilities without the need for additional construction by improving the distribution of operational resources and reducing cargo accumulation at screening areas.