



ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 18: Capacity Development and Implementation Support – Policy and Activities

COOPERATION AND KNOWLEDGE MANAGEMENT AS A PILLAR FOR THE PRODUCTIVE TRANSFORMATION OF THE AVIATION SECTOR

(Presented by Colombia and supported by the member States of LACAC²)

EXECUTIVE SUMMARY

The aviation sector, as a key driver of economic and technological development, faces the constant challenge of adapting to a globalized environment requiring high standards of safety, efficiency and innovation. In this context, knowledge management emerges as a fundamental strategic pillar for boosting the productive transformation of the industry, allowing aviation organizations to build capacity, optimize processes and remain competitive in a dynamic market.

Collaboration between governments, industry, academia and international bodies enables access to advanced technologies, financing and global knowledge networks, driving innovation and improving the sector's competitiveness. Initiatives such as the creation of aviation think tanks, the development of qualifications frameworks and the creation of aerospace clusters exemplify how cooperation and knowledge management translate into a safer, more efficient and innovative sector.

Action: The Assembly is invited to:

- request the Council, under the ICAO Strategic Plan 2026-2050, to develop a cross-cutting knowledge management catalyst with essential interfaces to the different strategic goals; and
- invite States to consider the development of technology transfer initiatives through joint R&D&I projects and the development of platforms to share aviation knowledge using AI.

<i>Strategic Goals:</i>	This working paper relates to Strategic Goal <i>Aviation Delivers Seamless, Accessible and Reliable Mobility for All</i>
<i>Financial implications:</i>	The ICAO activities referred to in this paper shall be subject to availability of resources in the 2026-2028 Budget or voluntary contributions, as appropriate.

¹ Spanish version provided by Colombia

² Argentina, Belize, Bolivia (Plurinational State of), Brazil, Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela (Bolivarian Republic of)

<i>References:</i>	ICAO Strategic Plan 2026-2050 Latin American Civil Aviation Commission, 2019 Strategic Plan 2020-2030 Baltazar, L., et.al. (2022), <i>Gestión del conocimiento y la competitividad en la industria aeroespacial</i> , Universidad Tecnológica de Querétaro. <i>Innovation in the Productive Industrial Transformation dialnet-Innovacion En La Transformacion Productiva Industrial</i> , Cardona, M., (2012)
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1. INTRODUCTION

1.1 The aviation sector is a key strategic component of the global economy, characterized by its high technology, stringent quality standards and constant need for innovation. It faces significant challenges, such as environmental sustainability, the integration of emerging technologies and the optimization of operational efficiency, which require continuous adaptation to a constantly evolving global environment. In this context, international cooperation and knowledge management are positioned as key elements for the productive transformation of the sector.

1.2 ICAO's Strategic Plan 2026-2050 establishes a comprehensive vision for the future of aviation, prioritizing safety, sustainability, inclusion and innovation. Its objective is to achieve zero fatalities from accidents and unlawful acts and net-zero carbon emissions by 2050, ensure through cooperation and support that no country is left behind, and facilitate seamless, accessible, and reliable mobility. In addition, it seeks to foster economic development, maintain a comprehensive legal framework and strengthen high priority enablers, such as ICAO's continuous organizational improvement, gender equality and attracting new talent, innovation and resource mobilization to ensure the sector's financial sustainability.

1.3 Knowledge management is not explicitly mentioned in the main documents of the ICAO Strategic Plan 2026-2050. However, the concept is implicit in several aspects of the plan, such as international cooperation, capacity building, and innovation. ICAO emphasizes the importance of sharing experiences and best practices among Member States in order to strengthen global aviation.

1.4 The accumulated experiences in different countries contribute significantly to the construction of a collective know-how that is essential for addressing the common challenges of the sector. Successful examples such as aerospace clusters in Mexico demonstrate how synergy between universities, research centres and governments can transform the aviation sector, boosting competitiveness and innovation. These collaborative models offer valuable lessons on how to integrate knowledge and experience to build local capacity and strengthen the industry globally.

2. DISCUSSION

2.1 The productive transformation of the region's aviation sector requires strategic and dynamic knowledge management involving information acquisition and effective implementation through generation, transfer, standardization, and application. Recent studies³ have confirmed that efficient knowledge management is crucial for strengthening the sector's technological capabilities and reducing reliance on traditional industries.

2.2 Knowledge management in the Latin American Civil Aviation Commission (CLAC) plays a key role in the development and strengthening of the aeronautical sector in the region, the Strategic Plan

³ Baltazar, L., et.al. (2022), *Gestión del conocimiento y la competitividad en la industria aeroespacial*, Universidad Tecnológica de Querétaro. Mexico, doi: 10.33571/teuken. v13n21a4

2020-2030, which is reflected in cooperation between Member States, the exchange of best practices, technical training and professionalization, and the implementation of technologies adapted to the region.

2.3 Knowledge management is a fundamental pillar for achieving the goals of the ICAO Strategic Plan 2026-2050, enabling aviation to move forward in a coordinated, sustainable and efficient manner. Its impact is reflected in several key areas:

2.3.1 International cooperation and capacity building: Safety, sustainability and operational efficiency can be improved through training, audits, and technical assistance driven by the exchange of information and best practices among Member States, institutions, and aviation stakeholders to strengthen the collective knowledge within the sector.

2.3.2 Technological innovation and adaptation: Knowledge management accelerates the adoption of emerging technologies, with scientific and technical collaboration networks to facilitate equitable access to these innovations.

2.3.3 Global legal framework and standards: Updating international regulations requires a thorough understanding of global trends and risks, and the development of standards and recommended practices to address emerging challenges such as cybersecurity, climate change, and the growth of air traffic.

2.3.4 Synergy with academia and private sector: Integration of the collective know-how is strengthened through collaboration between universities, research centres, governments and private companies. Successful models, such as the aerospace clusters in Mexico, demonstrate how the connection between technical and operational knowledge fosters safety, efficiency, and global competitiveness.

2.4 Civil aviation is highly dependent on human capital developed through training programmes and their supporting expert networks. Its intellectual capital enables it to constantly innovate in all fields, with a current focus on digital transformation and artificial intelligence (AI) applications. It seeks operational optimization by facilitating the exchange of knowledge through civil aviation commissions and ICAO itself, and promotes global knowledge exchange, going from independent associations down to the States themselves.

2.5 The National Qualifications Framework is the product of collaboration between academia, industry and government to standardize technical and operational skills, promoting labour mobility and aligning training with the demands of the aviation sector. It facilitates knowledge transfer, promotes human talent development, and strengthens training in key areas such as airport operations, security and regulation. In addition, it acts as a tool for cooperation and communication, guiding stakeholders in the sector towards the training of highly competent personnel.

2.6 Trends in knowledge management have evolved significantly, driven by technological advances and the need for operational optimization in various sectors. Automation and digitalization have made it possible to transform information into intelligent actions through the incorporation of - AI, machine learning, and automated data processing, improving decision-making and increasing productivity. At the same time, global collaboration and technology transfer have strengthened collaborative networks between companies, governments, and international organizations, facilitating access to innovative solutions and promoting shared standards that foster competitiveness.

2.7 Joint R&D&I (Research, Development and Innovation) projects are key to addressing common challenges such as cybersecurity and the use of AI in aviation. These projects enable the generation of collaborative and creative solutions to global problems, while promoting technological development in

countries with less access to advanced resources. Global innovation networks, the creation of shared databases, and international training programmes are essential tools for strengthening cooperation in the sector.

2.8 Technology transfer, through joint R&D projects, also helps bridge technological gaps, democratizing access to new technologies and improving global competitiveness in the aviation sector. The implementation of these technologies also promotes a culture of continuous improvement, generating new cooperative scenarios that benefit both developed and developing countries.

2.9 AI-powered knowledge bases improve information management by optimizing data search, retrieval and analysis within an organization. Unlike traditional repositories, they use AI to interpret queries in natural language, identify search patterns, and generate automatic responses. These platforms can be integrated with chatbots and virtual assistants, facilitating the automation of customer service and internal support. In essence, they make information access faster, more intuitive, and more precise, increasing efficiency and productivity.

2.10 All these efforts contribute to strengthening industrial clusters as key drivers of knowledge management and industrial development. These clusters promote technology transfer, improve supply chain efficiency, and optimize resource utilization, contributing significantly to competitiveness and innovation in the sector.

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