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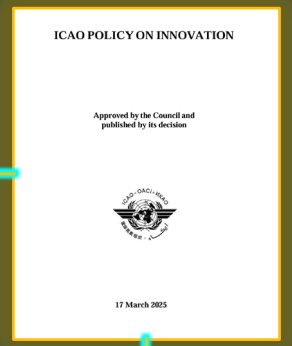
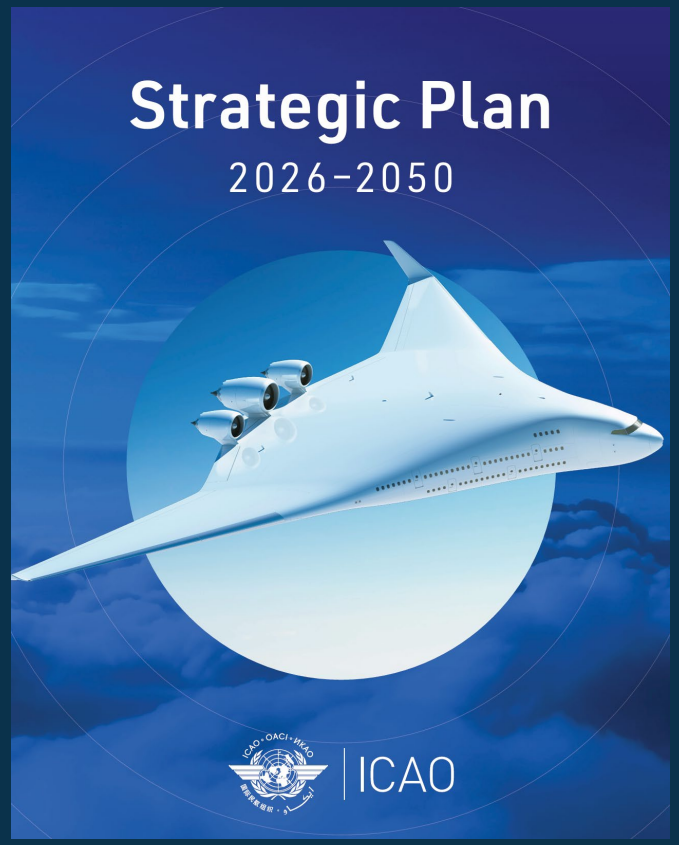
国际民航组织 • ايكاو
INTERNATIONAL
CIVIL AVIATION
ORGANIZATION

The ICAO Innovation Programme

P/02 Agenda Item 3



Triennial Operating Plan / Work Programme


Strategic Plan
2026–2050
ICAO

ICAO Vision

A safe, secure and sustainable international civil aviation system that connects the world for the benefit of all nations and people.

THREE ESSENTIAL ASPIRATIONS CRYSTALLIZE THIS VISION

The goal of Zero fatalities in international aviation from accidents and acts of unlawful interference.

The long term global aspirational goal of Net-zero carbon emissions by 2050 for international civil aviation operations.

The goal of aviation to serve as an integral part of a thriving, connected, accessible, inclusive, and affordable transport system for people and goods, contributing to socio-economic development, while ensuring no country is left behind.

ICAO Mission

To lead international civil aviation as a key driver of social and economic development while enhancing aviation safety, security, economic development and environmental sustainability for a growing aviation system by advancing air law, developing policies, plans and standards, monitoring and auditing, and supporting States' capabilities for the benefit of all nations and people.

ICAO provides a leadership role and forum for all matters relating to international civil aviation, which Member States and the wider aviation community expect, particularly in times of major challenges when international leadership is needed. In the spirit of leaving no country behind, ICAO consistently responds to the needs of Member States by delivering services and support where required. This includes, to the extent of its mandate, resource mobilization and capacity building, often in partnership with other institutions and collaborators. ICAO provides multiple instruments and services to Member States in several shapes and forms, including the international law instruments and regulatory frameworks necessary to underpin effective member state implementation of standards, recommended practices and guidance material that takes into account the socio-economic benefit for all Member States.

Our mission is supported by our three main processes of work: policy development and standard setting, monitoring and auditing, and implementation support.

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Where we will be in 2050

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High Priority Enablers

To successfully achieve the Strategic Goals outlined in this plan, ICAO has identified a set of High Priority Enablers. These enablers are critical cross-cutting factors that underpin the successful implementation of the Strategic Goals and ensure that the benefits of aviation are realized across all strategic areas. The High Priority Enablers focus on key areas which are essential for addressing the complex challenges facing the aviation industry. By prioritizing these enablers and integrating them into the implementation of the Strategic Goals, ICAO aims to create a more resilient, sustainable, and inclusive international civil aviation system. The progress and impact of the High Priority Enablers will be regularly monitored and assessed to ensure their effective contribution to the overall success of the Strategic Plan.

ICAO Continuous Organizational Improvement – focused on enhancing organizational efficiency to ensure the greatest possible efficiency and effectiveness in the operations of ICAO to meet the strategic goals, including Human Resource Management, Digitalization, Financial Management, Multilingualism, Governance and Accountability, and Business Operations and process management.

Innovation – recognizing the real and potential benefits and challenges that innovation can bring to the air transport sector and providing Member States with the tools, knowledge and mindsets to realize these benefits in a manner that leaves no country behind. Innovation actively promotes new solutions that support the Organization's Strategic Goals and increase the efficiency and effectiveness of ICAO. The aim is to encourage innovation to be embedded throughout ICAO's work.

Gender Equality and Attracting New Talent to Aviation – ICAO will expand on its ambition to achieve ICAO's Strategic Goals, and contribute to the UN Sustainable Development Goals, by achieving gender equality. Viewing international aviation as a vital enabler within the UN SDGs and to address multisector challenges affecting aviation, ICAO aims to expand opportunities for all as we seek out the best possible talent including the next generation of aviation professionals. By promoting and fostering fairness and impartiality for a sustainable, resilient, diverse and inclusive future of the aviation sector ICAO seeks to remove gender, diversity, equity and inclusivity barriers so as to optimally support sustainable expansion of the aviation sector, as well as the human resources needs of the Organization.

Partnerships, Resource Mobilization and Financial Sustainability – ICAO acknowledges partnerships as being intrinsically intertwined to aviation and to resource mobilization for States and the Organization, facilitating ICAO to achieve its Strategic Goals in support of the UN Sustainable Development Goals. ICAO will unite Member States, UN system organizations, agencies, funds and programmes, international associations and other stakeholders to leverage the diverse capabilities, resources and knowledge of ICAO's partners, while ensuring alignment to the Organization's principles, objectives and values, and the financial sustainability and flexibility of the Organization.

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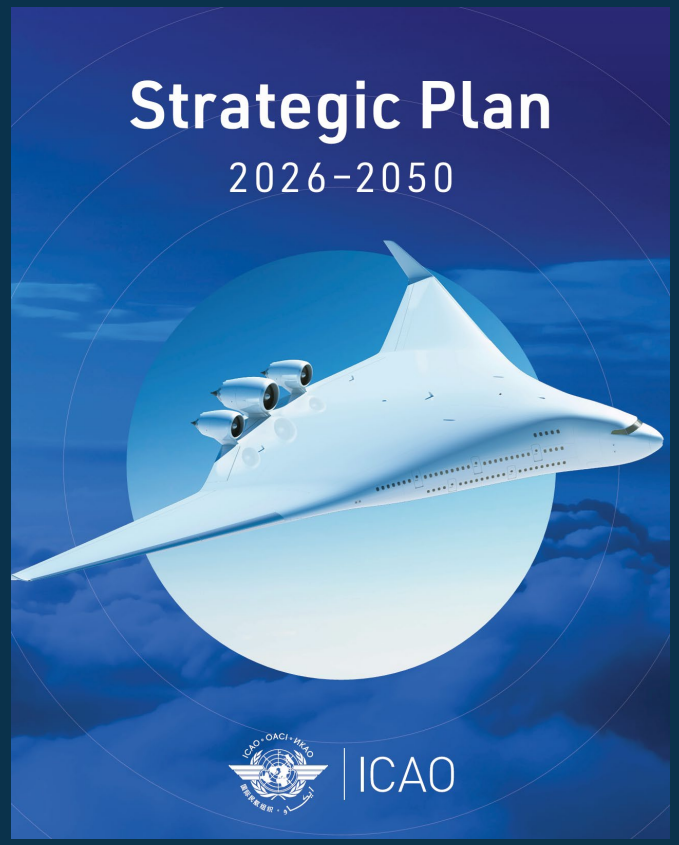
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ICAO POLICY ON INNOVATION

Approved by the Council and published by its decision

17 March 2025

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c) *Promote an environment where innovation in aviation can flourish in all ICAO regions* in line with the No Country Left Behind (NCLB) initiative.

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THE FORTY-SECOND ICAO ASSEMBLY
A42
SAFE SKIES. SUSTAINABLE FUTURE.
23 SEPTEMBER - 3 OCTOBER 2025 | MONTRÉAL, CANADA

International Civil Aviation Organization

WORKING PAPER

A42-WP/217
EX/94
29/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

PROMOTING REGULATORY SANDBOXES AS A TOOL FOR EVIDENCE-BASED INNOVATION IN CIVIL AVIATION

(Presented by Brazil and supported by 18 Latin American Civil Aviation Commission (LACAC) Member States[1])

EXECUTIVE SUMMARY

This paper advocates for the adoption of regulatory sandboxes as an effective mechanism to enhance regulatory agility, resilience, and evidence-based decision-making in civil aviation. It highlights the experience of the Brazilian National Civil Aviation Agency (ANAC) in implementing regulatory sandboxes to foster innovation safely, focusing on two pioneering projects: the implementation of photovoltaic-powered runway lighting systems and the development of vertiport infrastructure for eVTOL operations.

Building upon prior discussions in A41-WP/233, HLCC 2021-WP/210, and HLCC 2021-WP/11, the paper proposes the integration of sandbox methodologies into existing ICAO guidance materials and explores the future possibility of dedicated guidance development. Recognizing the diversity of legal frameworks among Member States, the paper also presents foundational principles that enable the safe adoption of regulatory sandboxes regardless of specific legislative structures.

Action: The Assembly is invited to:

a) acknowledge the prior discussions held under A41-WP/233, HLCC 2021-WP/210, and HLCC 2021-WP/11 on modernizing regulatory practices and enhancing regulatory capacity;
b) recognize the role of regulatory sandboxes as a valuable tool to foster evidence-based regulatory innovation, build resilience, and support agile regulatory responses to emerging technologies in civil aviation;
c) request the Council to initiate the integration of regulatory sandbox methodologies into existing ICAO guidance materials related to regulatory capacity-building and innovation, and to consider, subject to further demand, the future development of dedicated guidance material and a compendium of best practices on the design, implementation, and evaluation of regulatory sandboxes;
d) encourage Member States to adopt sandbox approaches as part of their regulatory toolkits, in alignment with ICAO's Strategic Objectives and the principles established under Article 44 of the Chicago Convention.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	N/A

[1] Argentina, Belize, Bolivia (Plurinational State of), Chile, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela (Bolivarian Republic of)

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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

FUTURE AVIATION FORUM (FAF) 2026

(Presented by Saudi Arabia)

EXECUTIVE SUMMARY

The Future Aviation Forum (FAF) 2024 was held in Riyadh from 20 to 22 May 2024, under the patronage of the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz. Organized by the General Authority of Civil Aviation (GACA) under the theme "Elevating Global Connectivity", the event served as a global platform for shaping the future of the aviation sector through collaboration, innovation, and investment.

The next edition, FAF 2026, planned to take place in April 2026, will build on this momentum by fostering deeper international partnerships, advancing ICAO-aligned priorities, and showing transformative aviation solutions.

Action: The Assembly is invited to:

a) acknowledge the Future Aviation Forum as a key international platform supporting ICAO's global objectives on safety, sustainability, innovation, and facilitation;
b) encourage ICAO and member States to actively participate in and contribute to FAF 2026, both through high-level representation and technical collaboration aligned with strategic priorities; and
c) support the integration of FAF outcomes into ICAO's global agenda to accelerate industry-wide progress.

Strategic Goals:	This working paper relates to all strategic goals.
Financial implications:	Not Applicable
References:	

[1] English and Arabic versions provided by Saudi Arabia.

International Civil Aviation Organization

WORKING PAPER

A42-WP/234
EX/100
29/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

RESPONSIBLE AND STRATEGIC INTEGRATION OF ARTIFICIAL INTELLIGENCE IN INTERNATIONAL CIVIL AVIATION

(Presented by Singapore, co-authored by Thailand and co-sponsored by Canada, China and Republic of Korea)

EXECUTIVE SUMMARY

Artificial intelligence (AI) is seeing rapid advancements and increasing adoption across many industries, including aviation, with applications ranging from predictive maintenance to safety oversight, air traffic management and operational decision support. These technologies offer transformative potential but also raise new challenges relating to oversight and accountability, ethics and equality of access, and consistent safety outcomes and automation dependency, particularly when AI operates on probabilistic or opaque logic.

This paper proposes that ICAO take a leading role in studying, standardising and adapting the safety applications of artificial intelligence in aviation.

Action: The Assembly is invited to request the ICAO Council to:

a) establish a structured collaboration platform with UN bodies, standards organizations, industry, and academia to identify aviation-specific risks, use cases, and ethical concerns;
b) conduct a global scoping study on current AI applications, oversight practices, and readiness gaps;
c) task relevant ICAO panels to assess the implications of AI integration on their areas of expertise; and
d) initiate the development of foundational ICAO guidance material (e.g., a circular or manual) on AI integration in safety-critical domains.

Strategic Goals:	This working paper relates to Strategic Goals: *Every Flight is Safe and Secure* *No Country Left Behind* *Aviation Delivers Seamless, Accessible, and Reliable Mobility for All* *The International Civil Aviation Convention and other Treaties, Laws and Regulations address all Challenges*
Financial implications:	Nil
References:	Nil

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29/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

INTEGRATING ARTIFICIAL INTELLIGENCE INTO ICAO'S WORK PROGRAMS

(Presented by Saudi Arabia)

EXECUTIVE SUMMARY

The continuous and rapid evolution of the global civil aviation system presents both significant challenges and opportunities. To enhance aviation safety, capacity, efficiency, and environmental protection, as outlined in ICAO's Strategic Objectives, the Organization should leverage transformative technologies. artificial intelligence (AI) and machine learning (ML) represent a paradigm shift in capability, offering powerful tools to support ICAO's entire work programs.

This paper proposes a structured approach for leveraging AI across all ICAO's activities. It outlines how AI can enhance the Organization's ability to develop, validate, and implement Standards and Recommended Practices (SARPs) and guidance material in a more agile, data-driven, and efficient manner. Rather than focusing solely on new entrants and innovations, this paper advocates for a holistic integration of AI to support all activities from safety risk modelling and compliance monitoring to the optimization of internal regulatory processes.

To formalize this strategic direction, this paper proposes an amendment to Assembly Resolution A40-27: *Innovation in aviation*. The amendment instructs the Council to adopt fundamental principles for the trustworthy and effective use of AI and directs the Secretariat to apply these principles to enhance the delivery of ICAO's work programs, thereby ensuring ICAO remains at the forefront of technological advancement in aviation

Action: The Assembly is invited to:

a) note the information and the proposed approach presented in this paper;
b) recognize the potential role of Artificial Intelligence in advancing all of ICAO's Strategic Objectives and work programs; and
c) discuss and adopt the proposal for amendment of the Assembly Resolution A40-27: *Innovation in aviation*, provided in the attachment to this working paper.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	Initial activities to be undertaken within the regular budget. The development and implementation of AI applications may require the allocation of additional resources.
References:	Doc 10209, Report on the Fourteenth Air Navigation Conference (AN-Conf/14) Doc 10184, *Assembly Resolutions in Force* Doc 9750, *Global Air Navigation Plan*

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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

HARNESSING ARTIFICIAL INTELLIGENCE FOR STANDARDIZED AND ENHANCED AVIATION OVERSIGHT

(Presented by the United Arab Emirates)

EXECUTIVE SUMMARY

This working paper addresses the strategic imperative for the standardized integration of Artificial Intelligence (AI) within Civil Aviation Authorities (CAAs) and regional cooperation mechanisms. It highlights AI's transformative potential in regulatory oversight, particularly given global manpower shortages and increasing operational complexity. It underscores the necessity for ICAO's leadership in harmonizing and standardizing AI practices globally. It proposes a dedicated global seminar hosted by the United Arab Emirates in 2026 explicitly focused on AI integration within civil aviation authorities (CAAs), and regional cooperation mechanisms, emphasizing regulatory oversight, governance frameworks, and accountability mechanisms, distinct from existing ICAO AI events focused on operational, industry, and innovation applications.

Action: The Assembly is invited to:

a) recognize the significant potential and emerging necessity of integrating AI within CAAs' and regional cooperation mechanisms oversight functions;
b) support the United Arab Emirates'0 initiative to host an ICAO-supported global seminar in 2026 specifically dedicated to regulatory, oversight, and governance aspects of AI integration within CAAs and regional cooperation mechanisms, distinguishing its scope from ICAO's existing operationally focused AI forums, and request active ICAO Secretariat support in organizing the seminar;
c) invite the ICAO Secretariat, under the direction of the Secretary General and in coordination with the Council, to provide technical and logistical support for the planning and delivery of the proposed global seminar on artificial intelligence, which will be fully hosted and financially supported by the United Arab Emirates; and
d) support ICAO in the study, review and possible development of guidance for States and regional cooperation mechanisms for the use of AI to support their regulatory oversight needs.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	Expected activities fall within the available ICAO budgetary resources, supported potentially by voluntary contributions from Member States.
References:	Doc 10140, *Assembly Resolutions in Force (as of 4 October 2019)* Doc 10004, *2023-2025 Global Aviation Safety Plan* Doc 9750, *Global Air Navigation Plan*

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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE AVIATION SECTOR

(Presented by Colombia and supported by Latin American Civil Aviation Commission (LACAC) Member States[2]).

EXECUTIVE SUMMARY

Artificial intelligence (AI) is revolutionizing the aviation industry, optimizing processes and improving efficiency in key areas such as air traffic management (ATM), predictive maintenance and safety. Its ability to process large volumes of data, including weather information, flight plans and transfers, and to detect patterns, permits route optimization, congestion prediction and risk anticipation, improving safety and efficiency in the use of airspace.

AI also affects the development of new forms of air mobility, such as advanced air mobility (AAM) and urban air mobility (UAM), presenting new challenges for the integration of these operations and human-machine interaction in airspace.

It is crucial to understand the potential of AI if we are to meet the challenges posed by increasing automation, and to provide training to prevent over-reliance on systems; the possible effects on operators' perception of situations, the ethical dilemmas arising from assisted decision making and the challenges for training - all of which are factors in guaranteeing the ability to react in critical environments if necessary - should be a matter for analysis by the sector.

It is proposed that AI should be incorporated into ATM systems and a new concept, AI/CNS/ATM, should be developed with a view to the digital transformation of air navigation, incorporating the advances already made and encouraging further development for use in air navigation support services.

Action: The Assembly is invited to:

a) invite ICAO to promote discussions between regulatory authorities and system manufacturers in order to establish clear frameworks that address ethical and legal dilemmas, ensuring that artificial intelligence (AI) is implemented in a safe and transparent manner in aviation; and
b) direct ICAO to evaluate the incorporation of AI into Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM), applying the lessons learned from the incorporation of satellites into aviation.

[1] Spanish version provided by Colombia.
[2] Belize, Bolivia (Plurinational State of), Chile, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela (Bolivarian Republic of).

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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

CURRENT PRACTICES AND ARTIFICIAL INTELLIGENCE ENHANCEMENTS

(Presented by Belize on behalf of the Member States[2] of the Central American Corporation for Air Navigation Services (COCESNA))

EXECUTIVE SUMMARY

Artificial intelligence (AI) offers a wide range of opportunities and benefits for civil aviation, transforming the way operations are managed and improving various aspects of the sector. AI can enhance and optimize safety, increase efficiency in air navigation and data management, improve service quality, and provide advanced data analytics and accurate statistical predictions. With the advancement of technologies such as machine learning, computer vision and automation, industry is encountering both opportunities and challenges having significant impacts on their effective integration.

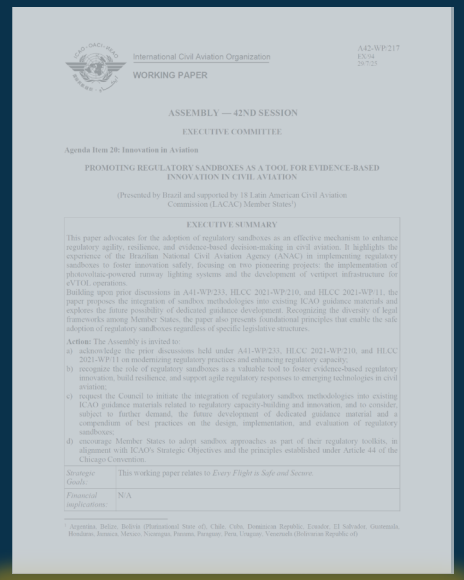
This working paper presents an analysis of the opportunities and benefits that AI offers to civil aviation, highlighting its positive impact on operations management. It also analyzes current practices pertaining to the use of AI in aviation and proposes key considerations for its improvement and future implementation. It presents fundamental considerations aligned with international regulations and strategies designed to enhance safety, efficiency and quality in the sector, making the most of AI's potential to transform international civil aviation.

Action: The Assembly is invited to:

a) take note of the information provided;
b) request that ICAO contribute to enabling States to assess and enhance their strategies for artificial intelligence (AI) implementation in civil aviation, adopting implementation approaches based on international best practices, AI management standards, staff competencies and cybersecurity;
c) request that ICAO establish a regulatory framework for AI regulation, providing clear guidelines and standards that ensure the ethical and effective implementation of AI; and
d) request that ICAO promote and support the reinforcement of staff competencies in the proper implementation and use of AI in process management to make the most of emerging technologies.

Strategic Goals:	This working paper related to all Strategic Goals.
Financial implications:	

[1] Spanish version provided by COCESNA.
[2] Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua.



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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

PROMOTING REGULATORY SANDBOXES AS A TOOL FOR EVIDENCE-BASED INNOVATION IN CIVIL AVIATION

(Presented by Brazil and supported by 18 Latin American Civil Aviation Commission (LACAC) Member States[1])

EXECUTIVE SUMMARY

This paper advocates for the adoption of regulatory sandboxes as an effective mechanism to enhance regulatory agility, resilience, and evidence-based decision-making in civil aviation. It highlights the experience of the Brazilian National Civil Aviation Agency (ANAC) in implementing regulatory sandboxes to foster innovation safely, focusing on two pioneering projects: the implementation of photovoltaic-powered runway lighting systems and the development of vertiport infrastructure for eVTOL operations.

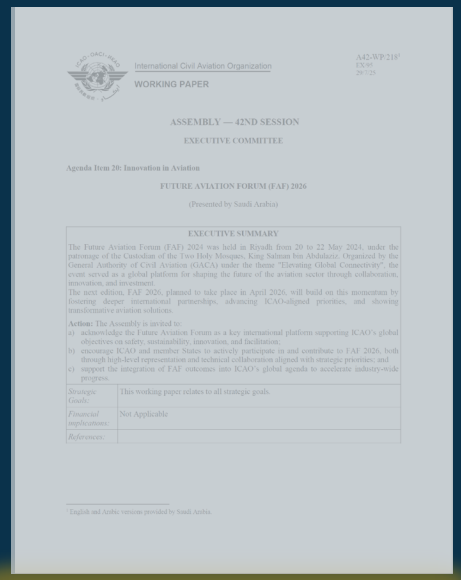
Building upon prior discussions in A41-WP/233, HLCC 2021-WP/210, and HLCC 2021-WP/11, the paper proposes the integration of sandbox methodologies into existing ICAO guidance materials and explores the future possibility of dedicated guidance development. Recognizing the diversity of legal frameworks among Member States, the paper also presents foundational principles that enable the safe adoption of regulatory sandboxes regardless of specific legislative structures.

Action: The Assembly is invited to:

a) acknowledge the prior discussions held under A41-WP/233, HLCC 2021-WP/210, and HLCC 2021-WP/11 on modernizing regulatory practices and enhancing regulatory capacity;
b) recognize the role of regulatory sandboxes as a valuable tool to foster evidence-based regulatory innovation, build resilience, and support agile regulatory responses to emerging technologies in civil aviation;
c) request the Council to initiate the integration of regulatory sandbox methodologies into existing ICAO guidance materials related to regulatory capacity-building and innovation, and to consider, subject to further demand, the future development of dedicated guidance material and a compendium of best practices on the design, implementation, and evaluation of regulatory sandboxes;
d) encourage Member States to adopt sandbox approaches as part of their regulatory toolkits, in alignment with ICAO's Strategic Objectives and the principles established under Article 44 of the Chicago Convention.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	N/A

[1] Argentina, Belize, Bolivia (Plurinational State of), Chile, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela (Bolivarian Republic of).



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EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

FUTURE AVIATION FORUM (FAF) 2026

(Presented by Saudi Arabia)

EXECUTIVE SUMMARY

The Future Aviation Forum (FAF) 2024 was held in Riyadh from 20 to 22 May 2024, under the patronage of the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz. Organized by the General Authority of Civil Aviation (GACA) under the theme "Elevating Global Connectivity", the event served as a global platform for shaping the future of the aviation sector through collaboration, innovation, and investment.

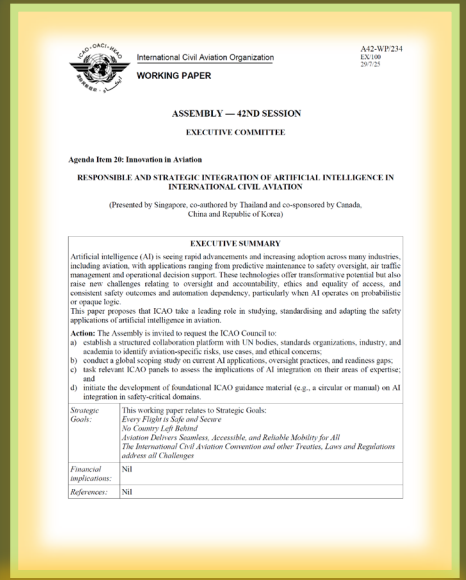
The next edition, FAF 2026, planned to take place in April 2026, will build on this momentum by fostering deeper international partnerships, advancing ICAO-aligned priorities, and showing transformative aviation solutions.

Action: The Assembly is invited to:

a) acknowledge the Future Aviation Forum as a key international platform supporting ICAO's global objectives on safety, sustainability, innovation, and facilitation;
b) encourage ICAO and member States to actively participate in and contribute to FAF 2026, both through high-level representation and technical collaboration aligned with strategic priorities; and
c) support the integration of FAF outcomes into ICAO's global agenda to accelerate industry-wide progress.

Strategic Goals:	This working paper relates to all strategic goals.
Financial implications:	Not Applicable
References:	

[1] English and Arabic versions provided by Saudi Arabia.



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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

RESPONSIBLE AND STRATEGIC INTEGRATION OF ARTIFICIAL INTELLIGENCE IN INTERNATIONAL CIVIL AVIATION

(Presented by Singapore, co-authored by Thailand and co-sponsored by Canada, China and Republic of Korea)

EXECUTIVE SUMMARY

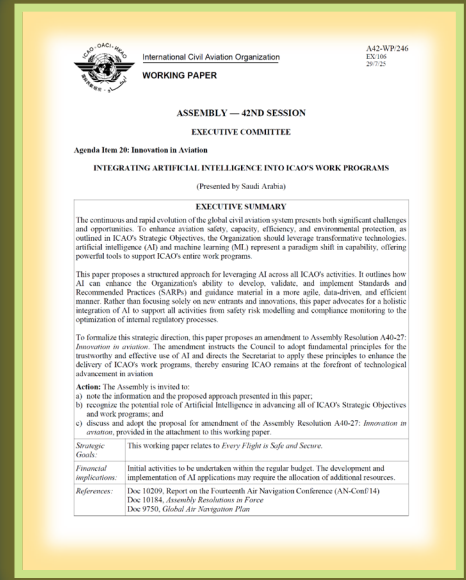
Artificial intelligence (AI) is seeing rapid advancements and increasing adoption across many industries, including aviation, with applications ranging from predictive maintenance to safety oversight, air traffic management and operational decision support. These technologies offer transformative potential but also raise new challenges relating to oversight and accountability, ethics and equality of access, and consistent safety outcomes and automation dependency, particularly when AI operates on probabilistic or opaque logic.

This paper proposes that ICAO take a leading role in studying, standardising and adapting the safety applications of artificial intelligence in aviation.

Action: The Assembly is invited to request the ICAO Council to:

a) establish a structured collaboration platform with UN bodies, standards organizations, industry, and academia to identify aviation-specific risks, use cases, and ethical concerns;
b) conduct a global scoping study on current AI applications, oversight practices, and readiness gaps;
c) task relevant ICAO panels to assess the implications of AI integration on their areas of expertise; and
d) initiate the development of foundational ICAO guidance material (e.g., a circular or manual) on AI integration in safety-critical domains.

Strategic Goals:	This working paper relates to Strategic Goals: *Every Flight is Safe and Secure* *No Country Left Behind* *Aviation Delivers Seamless, Accessible, and Reliable Mobility for All* *The International Civil Aviation Convention and other Treaties, Laws and Regulations address all Challenges*
Financial implications:	Nil
References:	Nil



International Civil Aviation Organization

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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

INTEGRATING ARTIFICIAL INTELLIGENCE INTO ICAO'S WORK PROGRAMS

(Presented by Saudi Arabia)

EXECUTIVE SUMMARY

The continuous and rapid evolution of the global civil aviation system presents both significant challenges and opportunities. To enhance aviation safety, capacity, efficiency, and environmental protection, as outlined in ICAO's Strategic Objectives, the Organization should leverage transformative technologies. artificial intelligence (AI) and machine learning (ML) represent a paradigm shift in capability, offering powerful tools to support ICAO's entire work programs.

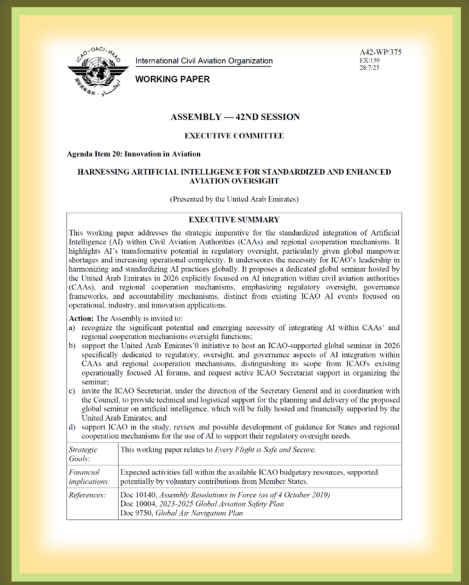
This paper proposes a structured approach for leveraging AI across all ICAO's activities. It outlines how AI can enhance the Organization's ability to develop, validate, and implement Standards and Recommended Practices (SARPs) and guidance material in a more agile, data-driven, and efficient manner. Rather than focusing solely on new entrants and innovations, this paper advocates for a holistic integration of AI to support all activities from safety risk modelling and compliance monitoring to the optimization of internal regulatory processes.

To formalize this strategic direction, this paper proposes an amendment to Assembly Resolution A40-27: *Innovation in aviation*. The amendment instructs the Council to adopt fundamental principles for the trustworthy and effective use of AI and directs the Secretariat to apply these principles to enhance the delivery of ICAO's work programs, thereby ensuring ICAO remains at the forefront of technological advancement in aviation

Action: The Assembly is invited to:

a) note the information and the proposed approach presented in this paper;
b) recognize the potential role of Artificial Intelligence in advancing all of ICAO's Strategic Objectives and work programs; and
c) discuss and adopt the proposal for amendment of the Assembly Resolution A40-27: *Innovation in aviation*, provided in the attachment to this working paper.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	Initial activities to be undertaken within the regular budget. The development and implementation of AI applications may require the allocation of additional resources.
References:	Doc 10209, Report on the Fourteenth Air Navigation Conference (AN-Conf/14) Doc 10184, *Assembly Resolutions in Force* Doc 9750, *Global Air Navigation Plan*



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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

HARNESSING ARTIFICIAL INTELLIGENCE FOR STANDARDIZED AND ENHANCED AVIATION OVERSIGHT

(Presented by the United Arab Emirates)

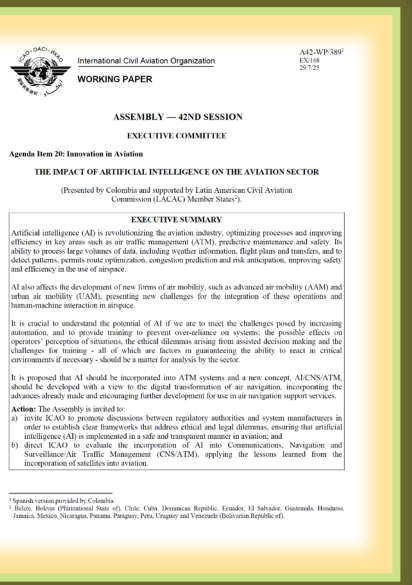
EXECUTIVE SUMMARY

This working paper addresses the strategic imperative for the standardized integration of Artificial Intelligence (AI) within Civil Aviation Authorities (CAAs) and regional cooperation mechanisms. It highlights AI's transformative potential in regulatory oversight, particularly given global manpower shortages and increasing operational complexity. It underscores the necessity for ICAO's leadership in harmonizing and standardizing AI practices globally. It proposes a dedicated global seminar hosted by the United Arab Emirates in 2026 explicitly focused on AI integration within civil aviation authorities (CAAs), and regional cooperation mechanisms, emphasizing regulatory oversight, governance frameworks, and accountability mechanisms, distinct from existing ICAO AI events focused on operational, industry, and innovation applications.

Action: The Assembly is invited to:

a) recognize the significant potential and emerging necessity of integrating AI within CAAs' and regional cooperation mechanisms oversight functions;
b) support the United Arab Emirates'0 initiative to host an ICAO-supported global seminar in 2026 specifically dedicated to regulatory, oversight, and governance aspects of AI integration within CAAs and regional cooperation mechanisms, distinguishing its scope from ICAO's existing operationally focused AI forums, and request active ICAO Secretariat support in organizing the seminar;
c) invite the ICAO Secretariat, under the direction of the Secretary General and in coordination with the Council, to provide technical and logistical support for the planning and delivery of the proposed global seminar on artificial intelligence, which will be fully hosted and financially supported by the United Arab Emirates; and
d) support ICAO in the study, review and possible development of guidance for States and regional cooperation mechanisms for the use of AI to support their regulatory oversight needs.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	Expected activities fall within the available ICAO budgetary resources, supported potentially by voluntary contributions from Member States.
References:	Doc 10140, *Assembly Resolutions in Force (as of 4 October 2019)* Doc 10004, *2023-2025 Global Aviation Safety Plan* Doc 9750, *Global Air Navigation Plan*



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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE AVIATION SECTOR

(Presented by Colombia and supported by Latin American Civil Aviation Commission (LACAC) Member States[1]).

EXECUTIVE SUMMARY

Artificial intelligence (AI) is revolutionizing the aviation industry, optimizing processes and improving efficiency in key areas such as air traffic management (ATM), predictive maintenance and safety. Its ability to process large volumes of data, including weather information, flight plans and transfers, and to detect patterns, permits route optimization, congestion prediction and risk anticipation, improving safety and efficiency in the use of airspace.

AI also affects the development of new forms of air mobility, such as advanced air mobility (AAM) and urban air mobility (UAM), presenting new challenges for the integration of these operations and human-machine interaction in airspace.

It is crucial to understand the potential of AI if we are to meet the challenges posed by increasing automation, and to provide training to prevent over-reliance on systems; the possible effects on operators' perception of situations, the ethical dilemmas arising from assisted decision making and the challenges for training - all of which are factors in guaranteeing the ability to react in critical environments if necessary - should be a matter for analysis by the sector.

It is proposed that AI should be incorporated into ATM systems and a new concept, AI/CNS/ATM, should be developed with a view to the digital transformation of air navigation, incorporating the advances already made and encouraging further development for use in air navigation support services.

Action: The Assembly is invited to:

a) invite ICAO to promote discussions between regulatory authorities and system manufacturers in order to establish clear frameworks that address ethical and legal dilemmas, ensuring that artificial intelligence (AI) is implemented in a safe and transparent manner in aviation; and
b) direct ICAO to evaluate the incorporation of AI into Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM), applying the lessons learned from the incorporation of satellites into aviation.

[1] Spanish version provided by Colombia.
[2] Belize, Bolivia (Plurinational State of), Chile, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela (Bolivarian Republic of).

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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

CURRENT PRACTICES AND ARTIFICIAL INTELLIGENCE ENHANCEMENTS

(Presented by Belize on behalf of the Member States[2] of the Central American Corporation for Air Navigation Services (COCESNA))

EXECUTIVE SUMMARY

Artificial intelligence (AI) offers a wide range of opportunities and benefits for civil aviation, transforming the way operations are managed and improving various aspects of the sector. AI can enhance and optimize safety, increase efficiency in air navigation and data management, improve service quality, and provide advanced data analytics and accurate statistical predictions. With the advancement of technologies such as machine learning, computer vision and automation, industry is encountering both opportunities and challenges having significant impacts on their effective integration.

This working paper presents an analysis of the opportunities and benefits that AI offers to civil aviation, highlighting its positive impact on operations management. It also analyzes current practices pertaining to the use of AI in aviation and proposes key considerations for its improvement and future implementation. It presents fundamental considerations aligned with international regulations and strategies designed to enhance safety, efficiency and quality in the sector, making the most of AI's potential to transform international civil aviation.

Action: The Assembly is invited to:

a) take note of the information provided;
b) request that ICAO contribute to enabling States to assess and enhance their strategies for artificial intelligence (AI) implementation in civil aviation, adopting implementation approaches based on international best practices, AI management standards, staff competencies and cybersecurity;
c) request that ICAO establish a regulatory framework for AI regulation, providing clear guidelines and standards that ensure the ethical and effective implementation of AI; and
d) request that ICAO promote and support the reinforcement of staff competencies in the proper implementation and use of AI in process management to make the most of emerging technologies.

Strategic Goals:	This working paper related to all Strategic Goals.
Financial implications:	

[1] Spanish version provided by COCESNA.
[2] Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua.

AI

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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

PROMOTING REGULATORY SANDBOXES AS A TOOL FOR EVIDENCE-BASED INNOVATION IN CIVIL AVIATION

(Presented by Brazil and supported by 18 Latin American Civil Aviation Commission (LACAC) Member States[1])

EXECUTIVE SUMMARY

This paper advocates for the adoption of regulatory sandboxes as an effective mechanism to enhance regulatory agility, resilience, and evidence-based decision-making in civil aviation. It highlights the experience of the Brazilian National Civil Aviation Agency (ANAC) in implementing regulatory sandboxes to foster innovation safely, focusing on two pioneering projects: the implementation of photovoltaic-powered runway lighting systems and the development of vertiport infrastructure for eVTOL operations.

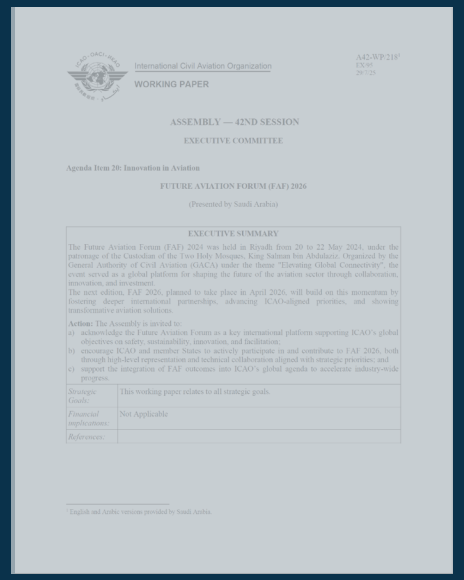
Building upon prior discussions in A41-WP/233, HLCC 2021-WP/210, and HLCC 2021-WP/11, the paper proposes the integration of sandbox methodologies into existing ICAO guidance materials and explores the future possibility of dedicated guidance development. Recognizing the diversity of legal frameworks among Member States, the paper also presents foundational principles that enable the safe adoption of regulatory sandboxes regardless of specific legislative structures.

Action: The Assembly is invited to:

a) acknowledge the prior discussions held under A41-WP/233, HLCC 2021-WP/210, and HLCC 2021-WP/11 on modernizing regulatory practices and enhancing regulatory capacity;
b) recognize the role of regulatory sandboxes as a valuable tool to foster evidence-based regulatory innovation, build resilience, and support agile regulatory responses to emerging technologies in civil aviation;
c) request the Council to initiate the integration of regulatory sandbox methodologies into existing ICAO guidance materials related to regulatory capacity-building and innovation, and to consider, subject to further demand, the future development of dedicated guidance material and a compendium of best practices on the design, implementation, and evaluation of regulatory sandboxes;
d) encourage Member States to adopt sandbox approaches as part of their regulatory toolkits, in alignment with ICAO's Strategic Objectives and the principles established under Article 44 of the Chicago Convention.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	N/A

[1] Argentina, Belize, Bolivia (Plurinational State of), Chile, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela (Bolivarian Republic of)



International Civil Aviation Organization

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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

FUTURE AVIATION FORUM (FAF) 2026

(Presented by Saudi Arabia)

EXECUTIVE SUMMARY

The Future Aviation Forum (FAF) 2024 was held in Riyadh from 20 to 22 May 2024, under the patronage of the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz. Organized by the General Authority of Civil Aviation (GACA) under the theme "Elevating Global Connectivity", the event served as a global platform for shaping the future of the aviation sector through collaboration, innovation, and investment.

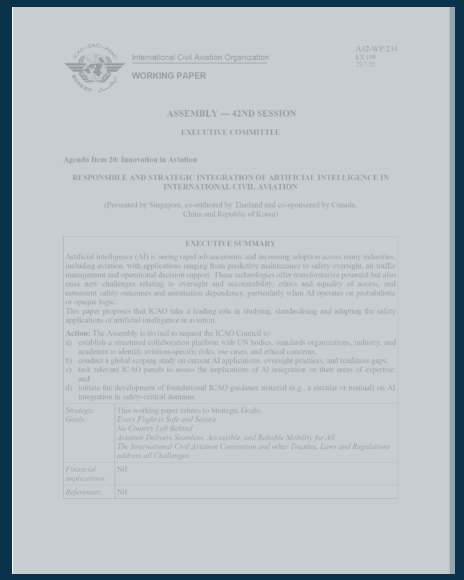
The next edition, FAF 2026, planned to take place in April 2026, will build on this momentum by fostering deeper international partnerships, advancing ICAO-aligned priorities, and showing transformative aviation solutions.

Action: The Assembly is invited to:

a) acknowledge the Future Aviation Forum as a key international platform supporting ICAO's global objectives on safety, sustainability, innovation, and facilitation;
b) encourage ICAO and member States to actively participate in and contribute to FAF 2026, both through high-level representation and technical collaboration aligned with strategic priorities; and
c) support the integration of FAF outcomes into ICAO's global agenda to accelerate industry-wide progress.

Strategic Goals:	This working paper relates to all strategic goals.
Financial implications:	Not Applicable
References:	

[1] English and Arabic versions provided by Saudi Arabia.



International Civil Aviation Organization

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A42-WP/234
EX/100
29/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

RESPONSIBLE AND STRATEGIC INTEGRATION OF ARTIFICIAL INTELLIGENCE IN INTERNATIONAL CIVIL AVIATION

(Presented by Singapore, co-authored by Thailand and co-sponsored by Canada, China and Republic of Korea)

EXECUTIVE SUMMARY

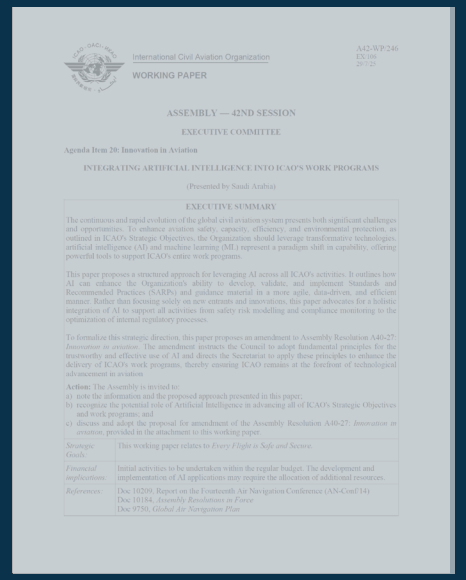
Artificial intelligence (AI) is seeing rapid advancements and increasing adoption across many industries, including aviation, with applications ranging from predictive maintenance to safety oversight, air traffic management and operational decision support. These technologies offer transformative potential but also raise new challenges relating to oversight and accountability, ethics and equality of access, and consistent safety outcomes and automation dependency, particularly when AI operates on probabilistic or opaque logic.

This paper proposes that ICAO take a leading role in studying, standardising and adapting the safety applications of artificial intelligence in aviation.

Action: The Assembly is invited to request the ICAO Council to:

a) establish a structured collaboration platform with UN bodies, standards organizations, industry, and academia to identify aviation-specific risks, use cases, and ethical concerns;
b) conduct a global scoping study on current AI applications, oversight practices, and readiness gaps;
c) task relevant ICAO panels to assess the implications of AI integration on their areas of expertise; and
d) initiate the development of foundational ICAO guidance material (e.g., a circular or manual) on AI integration in safety-critical domains.

Strategic Goals:	This working paper relates to Strategic Goals: *Every Flight is Safe and Secure* *No Country Left Behind* *Aviation Delivers Seamless, Accessible, and Reliable Mobility for All* *The International Civil Aviation Convention and other Treaties, Laws and Regulations address all Challenges*
Financial implications:	Nil
References:	Nil



International Civil Aviation Organization

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29/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

INTEGRATING ARTIFICIAL INTELLIGENCE INTO ICAO'S WORK PROGRAMS

(Presented by Saudi Arabia)

EXECUTIVE SUMMARY

The continuous and rapid evolution of the global civil aviation system presents both significant challenges and opportunities. To enhance aviation safety, capacity, efficiency, and environmental protection, as outlined in ICAO's Strategic Objectives, the Organization should leverage transformative technologies. Artificial intelligence (AI) and machine learning (ML) represent a paradigm shift in capability, offering powerful tools to support ICAO's entire work programme.

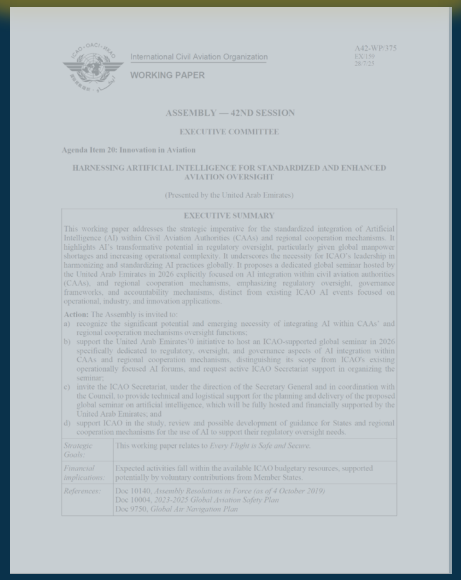
This paper proposes a structured approach for leveraging AI across all ICAO's activities. It outlines how AI can enhance the Organization's ability to develop, validate, and implement Standards and Recommended Practices (SARPs) and guidance material in a more agile, data-driven, and efficient manner. Rather than focusing solely on new entrants and innovations, this paper advocates for a holistic integration of AI to support all activities from safety risk modelling and compliance monitoring to the optimization of internal regulatory processes.

To formalize this strategic direction, this paper proposes an amendment to Assembly Resolution A40-27: *Innovation in aviation*. The amendment instructs the Council to adopt fundamental principles for the trustworthy and effective use of AI and directs the Secretariat to apply these principles to enhance the delivery of ICAO's work programme, thereby ensuring ICAO remains at the forefront of technological advancement in aviation.

Action: The Assembly is invited to:

a) note the information and the proposed approach presented in this paper;
b) recognize the potential role of Artificial Intelligence in advancing all of ICAO's Strategic Objectives and work programme; and
c) discuss and adopt the proposal for amendment of the Assembly Resolution A40-27: *Innovation in aviation*, provided in the attachment to this working paper.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	Initial activities to be undertaken within the regular budget. The development and implementation of AI applications may require the allocation of additional resources.
References:	Doc 10209, Report on the Fourteenth Air Navigation Conference (AN-Conf/14) Doc 10184, *Assembly Resolutions in Force* Doc 9750, *Global Air Navigation Plan*



International Civil Aviation Organization

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28/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

HARNESSING ARTIFICIAL INTELLIGENCE FOR STANDARDIZED AND ENHANCED AVIATION OVERSIGHT

(Presented by the United Arab Emirates)

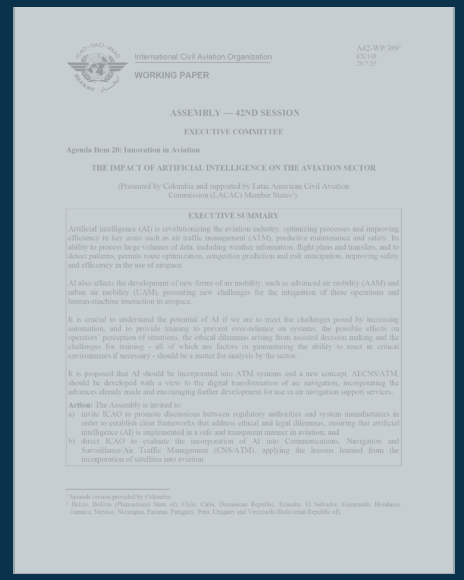
EXECUTIVE SUMMARY

This working paper addresses the strategic imperative for the standardized integration of Artificial Intelligence (AI) within Civil Aviation Authorities (CAAs) and regional cooperation mechanisms. It highlights AI's transformative potential in regulatory oversight, particularly given global manpower shortages and increasing operational complexity. It underscores the necessity for ICAO's leadership in harmonizing and standardizing AI practices globally. It proposes a dedicated global seminar hosted by the United Arab Emirates in 2026 explicitly focused on AI integration within civil aviation authorities (CAAs), and regional cooperation mechanisms, emphasizing regulatory oversight, governance frameworks, and accountability mechanisms, distinct from existing ICAO AI events focused on operational, industry, and innovation applications.

Action: The Assembly is invited to:

a) recognize the significant potential and emerging necessity of integrating AI within CAAs' and regional cooperation mechanisms oversight functions;
b) support the United Arab Emirates'[1] initiative to host an ICAO-supported global seminar in 2026 specifically dedicated to regulatory, oversight, and governance aspects of AI integration within CAAs and regional cooperation mechanisms, distinguishing its scope from ICAO's existing operationally focused AI forums, and request active ICAO Secretariat support in organizing the seminar;
c) invite the ICAO Secretariat, under the direction of the Secretary General and in coordination with the Council, to provide technical and logistical support for the planning and delivery of the proposed global seminar on artificial intelligence, which will be fully hosted and financially supported by the United Arab Emirates; and
d) support ICAO in the study, review and possible development of guidance for States and regional cooperation mechanisms for the use of AI to support their regulatory oversight needs.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	Expected activities fall within the available ICAO budgetary resources, supported potentially by voluntary contributions from Member States.
References:	Doc 10140, *Assembly Resolutions in Force (as of 4 October 2019)* Doc 10004, *2023-2025 Global Aviation Safety Plan* Doc 9750, *Global Air Navigation Plan*



International Civil Aviation Organization

WORKING PAPER

A42-WP/389[1]
EX/168
29/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE AVIATION SECTOR

(Presented by Colombia and supported by Latin American Civil Aviation Commission (LACAC) Member States[2])

EXECUTIVE SUMMARY

Artificial intelligence (AI) is revolutionizing the aviation industry, optimizing processes and improving efficiency in key areas such as air traffic management (ATM), predictive maintenance and safety. Its ability to process large volumes of data, including weather information, flight plans and transfers, and to detect patterns, permits route optimization, congestion prediction and risk anticipation, improving safety and efficiency in the use of airspace.

AI also affects the development of new forms of air mobility, such as advanced air mobility (AAM) and urban air mobility (UAM), presenting new challenges for the integration of these operations and human-machine interaction in airspace.

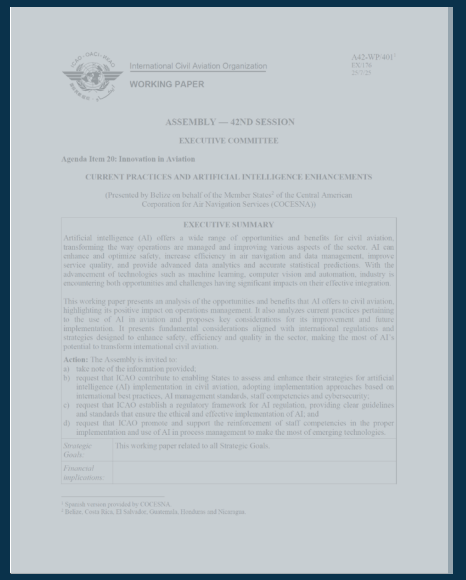
It is crucial to understand the potential of AI if we are to meet the challenges posed by increasing automation, and to provide training to prevent over-reliance on systems; the possible effects on operators' perception of situations, the ethical dilemmas arising from assisted decision making and the challenges for training – all of which are factors in guaranteeing the ability to react in critical environments if necessary – should be a matter for analysis by the sector.

It is proposed that AI should be incorporated into ATM systems and a new concept, AI/CNS/ATM, should be developed with a view to the digital transformation of air navigation, incorporating the advances already made and encouraging further development for use in air navigation support services.

Action: The Assembly is invited to:

a) invite ICAO to promote discussions between regulatory authorities and system manufacturers in order to establish clear frameworks that address ethical and legal dilemmas, ensuring that artificial intelligence (AI) is implemented in a safe and transparent manner in aviation; and
b) direct ICAO to evaluate the incorporation of AI into Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM), applying the lessons learned from the incorporation of satellites into aviation.

[1] Spanish version provided by Colombia.
[2] Belize, Bolivia (Plurinational State of), Chile, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela (Bolivarian Republic of).



International Civil Aviation Organization

WORKING PAPER

A42-WP/401[1]
EX/176
25/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

CURRENT PRACTICES AND ARTIFICIAL INTELLIGENCE ENHANCEMENTS

(Presented by Belize on behalf of the Member States[2] of the Central American Corporation for Air Navigation Services (COCESNA))

EXECUTIVE SUMMARY

Artificial intelligence (AI) offers a wide range of opportunities and benefits for civil aviation, transforming the way operations are managed and improving various aspects of the sector. AI can enhance and optimize safety, increase efficiency in air navigation and data management, improve service quality, and provide advanced data analytics and accurate statistical predictions. With the advancement of technologies such as machine learning, computer vision and automation, industry is encountering both opportunities and challenges having significant impacts on their effective integration.

This working paper presents an analysis of the opportunities and benefits that AI offers to civil aviation, highlighting its positive impact on operations management. It also analyzes current practices pertaining to the use of AI in aviation and proposes key considerations for its improvement and future implementation. It presents fundamental considerations aligned with international regulations and strategies designed to enhance safety, efficiency and quality in the sector, making the most of AI's potential to transform international civil aviation.

Action: The Assembly is invited to:

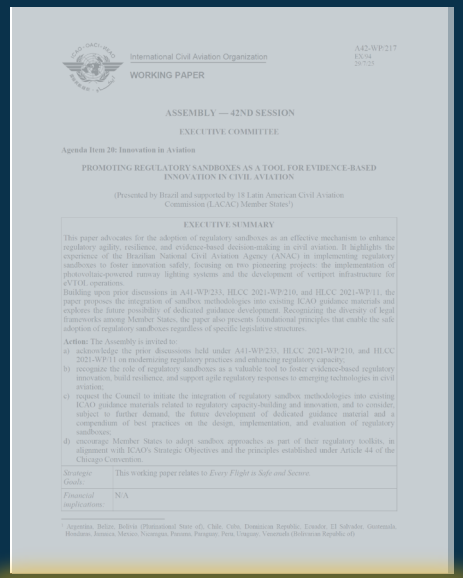
a) take note of the information provided;
b) request that ICAO contribute to enabling States to assess and enhance their strategies for artificial intelligence (AI) implementation in civil aviation, adopting implementation approaches based on international best practices, AI management standards, staff competencies and cybersecurity;
c) request that ICAO establish a regulatory framework for AI regulation, providing clear guidelines and standards that ensure the ethical and effective implementation of AI; and
d) request that ICAO promote and support the reinforcement of staff competencies in the proper implementation and use of AI in process management to make the most of emerging technologies.

Strategic Goals:	This working paper related to all Strategic Goals.
Financial implications:	

[1] Spanish version provided by COCESNA.
[2] Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua.

Sandbox

ICAO



International Civil Aviation Organization

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A42-WP/217
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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

PROMOTING REGULATORY SANDBOXES AS A TOOL FOR EVIDENCE-BASED INNOVATION IN CIVIL AVIATION

(Presented by Brazil and supported by 18 Latin American Civil Aviation Commission (LACAC) Member States[1])

EXECUTIVE SUMMARY

This paper advocates for the adoption of regulatory sandboxes as an effective mechanism to enhance regulatory agility, resilience, and evidence-based decision-making in civil aviation. It highlights the experience of the Brazilian National Civil Aviation Agency (ANAC) in implementing regulatory sandboxes to foster innovation safely, focusing on two pioneering projects: the implementation of photovoltaic-powered runway lighting systems and the development of vertiport infrastructure for eVTOL operations.

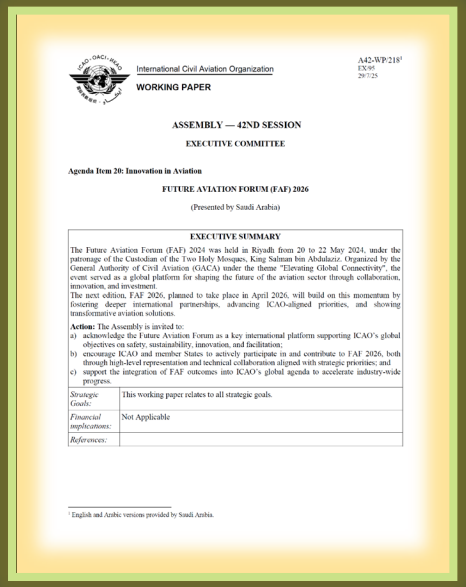
Building upon prior discussions in A41-WP/233, HLCC 2021-WP/210, and HLCC 2021-WP/11, the paper proposes the integration of sandbox methodologies into existing ICAO guidance materials and explores the future possibility of dedicated guidance development. Recognizing the diversity of legal frameworks among Member States, the paper also presents foundational principles that enable the safe adoption of regulatory sandboxes regardless of specific legislative structures.

Action: The Assembly is invited to:

a) acknowledge the prior discussions held under A41-WP/233, HLCC 2021-WP/210, and HLCC 2021-WP/11 on modernizing regulatory practices and enhancing regulatory capacity;
b) recognize the role of regulatory sandboxes as a valuable tool to foster evidence-based regulatory innovation, build resilience, and support agile regulatory responses to emerging technologies in civil aviation;
c) request the Council to initiate the integration of regulatory sandbox methodologies into existing ICAO guidance materials related to regulatory capacity-building and innovation, and to consider, subject to further demand, the future development of dedicated guidance material and a compendium of best practices on the design, implementation, and evaluation of regulatory sandboxes;
d) encourage Member States to adopt sandbox approaches as part of their regulatory toolkits, in alignment with ICAO's Strategic Objectives and the principles established under Article 44 of the Chicago Convention.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	N/A

[1] Argentina, Belize, Bolivia (Plurinational State of), Chile, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela (Bolivarian Republic of)



International Civil Aviation Organization

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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

FUTURE AVIATION FORUM (FAF) 2026

(Presented by Saudi Arabia)

EXECUTIVE SUMMARY

The Future Aviation Forum (FAF) 2024 was held in Riyadh from 20 to 22 May 2024, under the patronage of the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz. Organized by the General Authority of Civil Aviation (GACA) under the theme "Elevating Global Connectivity", the event served as a global platform for shaping the future of the aviation sector through collaboration, innovation, and investment.

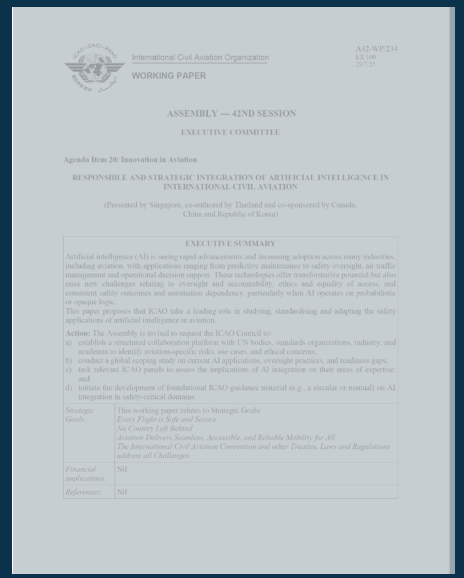
The next edition, FAF 2026, planned to take place in April 2026, will build on this momentum by fostering deeper international partnerships, advancing ICAO-aligned priorities, and showing transformative aviation solutions.

Action: The Assembly is invited to:

a) acknowledge the Future Aviation Forum as a key international platform supporting ICAO's global objectives on safety, sustainability, innovation, and facilitation;
b) encourage ICAO and member States to actively participate in and contribute to FAF 2026, both through high-level representation and technical collaboration aligned with strategic priorities; and
c) support the integration of FAF outcomes into ICAO's global agenda to accelerate industry-wide progress.

Strategic Goals:	This working paper relates to all strategic goals.
Financial implications:	Not Applicable
References:	

[1] English and Arabic versions provided by Saudi Arabia.



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A42-WP/234
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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

RESPONSIBLE AND STRATEGIC INTEGRATION OF ARTIFICIAL INTELLIGENCE IN INTERNATIONAL CIVIL AVIATION

(Presented by Singapore, co-authored by Thailand and co-sponsored by Canada, China and Republic of Korea)

EXECUTIVE SUMMARY

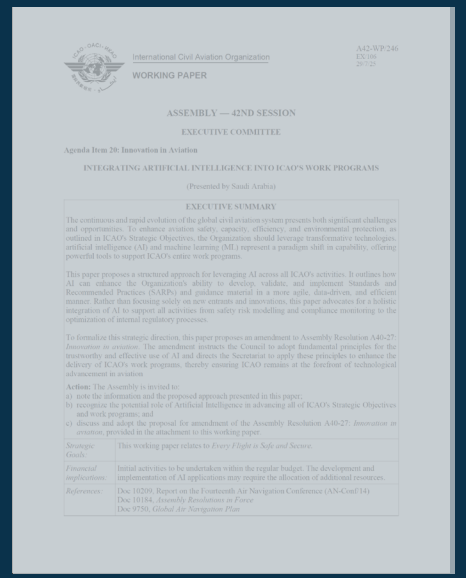
Artificial intelligence (AI) is seeing rapid advancements and increasing adoption across many industries, including aviation, with applications ranging from predictive maintenance to safety oversight, air traffic management and operational decision support. These technologies offer transformative potential but also raise new challenges relating to oversight and accountability, ethics and equality of access, and consistent safety outcomes and automation dependency, particularly when AI operates on probabilistic or opaque logic.

This paper proposes that ICAO take a leading role in studying, standardising and adapting the safety applications of artificial intelligence in aviation.

Action: The Assembly is invited to request the ICAO Council to:

a) establish a structured collaboration platform with UN bodies, standards organizations, industry, and academia to identify aviation-specific risks, use cases, and ethical concerns;
b) conduct a global scoping study on current AI applications, oversight practices, and readiness gaps;
c) task relevant ICAO panels to assess the implications of AI integration on their areas of expertise; and
d) initiate the development of foundational ICAO guidance material (e.g., a circular or manual) on AI integration in safety-critical domains.

Strategic Goals:	This working paper relates to Strategic Goals: *Every Flight is Safe and Secure* *No Country Left Behind* *Aviation Delivers Seamless, Accessible, and Reliable Mobility for All* *The International Civil Aviation Convention and other Treaties, Laws and Regulations address all Challenges*
Financial implications:	Nil
References:	Nil



International Civil Aviation Organization

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A42-WP/246
EX/101
29/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

INTEGRATING ARTIFICIAL INTELLIGENCE INTO ICAO'S WORK PROGRAMS

(Presented by Saudi Arabia)

EXECUTIVE SUMMARY

The continuous and rapid evolution of the global civil aviation system presents both significant challenges and opportunities. To enhance aviation safety, capacity, efficiency, and environmental protection, as outlined in ICAO's Strategic Objectives, the Organization should leverage transformative technologies. Artificial intelligence (AI) and machine learning (ML) represent a paradigm shift in capability, offering powerful tools to support ICAO's entire work programme.

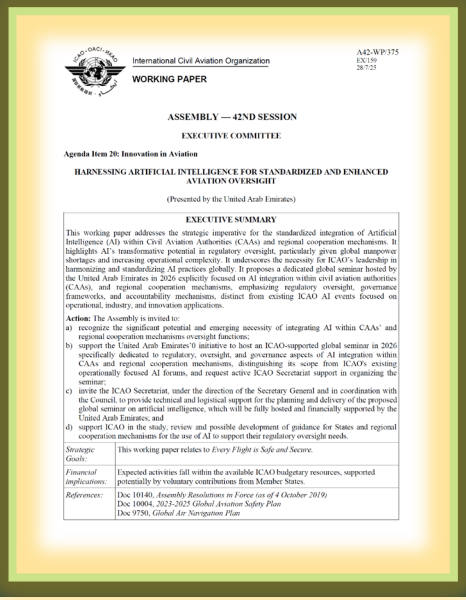
This paper proposes a structured approach for leveraging AI across all ICAO's activities. It outlines how AI can enhance the Organization's ability to develop, validate, and implement Standards and Recommended Practices (SARPs) and guidance material in a more agile, data-driven, and efficient manner. Rather than focusing solely on new entrants and innovations, this paper advocates for a holistic integration of AI to support all activities from safety risk modelling and compliance monitoring to the optimization of internal regulatory processes.

To formalize this strategic direction, this paper proposes an amendment to Assembly Resolution A40-27: *Innovation in aviation*. The amendment instructs the Council to adopt fundamental principles for the trustworthy and effective use of AI and directs the Secretariat to apply these principles to enhance the delivery of ICAO's work programme, thereby ensuring ICAO remains at the forefront of technological advancement in aviation.

Action: The Assembly is invited to:

a) note the information and the proposed approach presented in this paper;
b) recognize the potential role of Artificial Intelligence in advancing all of ICAO's Strategic Objectives and work programme; and
c) discuss and adopt the proposal for amendment of the Assembly Resolution A40-27: *Innovation in aviation*, provided in the attachment to this working paper.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	Initial activities to be undertaken within the regular budget. The development and implementation of AI applications may require the allocation of additional resources.
References:	Doc 10209, Report on the Fourteenth Air Navigation Conference (AN-Conf/14) Doc 10184, *Assembly Resolutions in Force* Doc 9750, *Global Air Navigation Plan*



International Civil Aviation Organization

WORKING PAPER

A42-WP/375
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28/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

HARNESSING ARTIFICIAL INTELLIGENCE FOR STANDARDIZED AND ENHANCED AVIATION OVERSIGHT

(Presented by the United Arab Emirates)

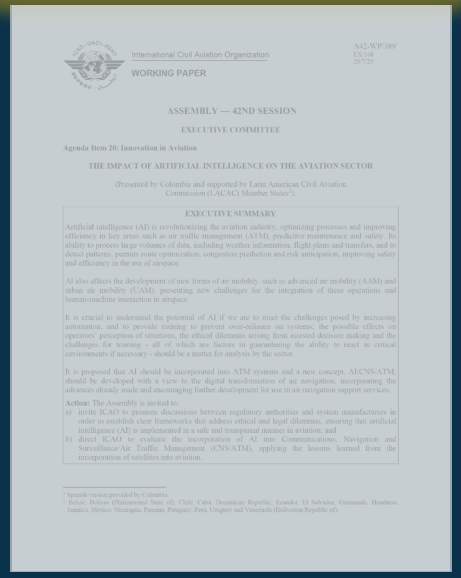
EXECUTIVE SUMMARY

This working paper addresses the strategic imperative for the standardized integration of Artificial Intelligence (AI) within Civil Aviation Authorities (CAAs) and regional cooperation mechanisms. It highlights AI's transformative potential in regulatory oversight, particularly given global manpower shortages and increasing operational complexity. It underscores the necessity for ICAO's leadership in harmonizing and standardizing AI practices globally. It proposes a dedicated global seminar hosted by the United Arab Emirates in 2026 explicitly focused on AI integration within civil aviation authorities (CAAs), and regional cooperation mechanisms, emphasizing regulatory oversight, governance frameworks, and accountability mechanisms, distinct from existing ICAO AI events focused on operational, industry, and innovation applications.

Action: The Assembly is invited to:

a) recognize the significant potential and emerging necessity of integrating AI within CAAs' and regional cooperation mechanisms oversight functions;
b) support the United Arab Emirates'0 initiative to host an ICAO-supported global seminar in 2026 specifically dedicated to regulatory, oversight, and governance aspects of AI integration within CAAs and regional cooperation mechanisms, distinguishing its scope from ICAO's existing operationally focused AI forums, and request active ICAO Secretariat support in organizing the seminar;
c) invite the ICAO Secretariat, under the direction of the Secretary General and in coordination with the Council, to provide technical and logistical support for the planning and delivery of the proposed global seminar on artificial intelligence, which will be fully hosted and financially supported by the United Arab Emirates; and
d) support ICAO in the study, review and possible development of guidance for States and regional cooperation mechanisms for the use of AI to support their regulatory oversight needs.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure.*
Financial implications:	Expected activities fall within the available ICAO budgetary resources, supported potentially by voluntary contributions from Member States.
References:	Doc 10140, *Assembly Resolutions in Force (as of 4 October 2019)* Doc 10004, *2023-2025 Global Aviation Safety Plan* Doc 9750, *Global Air Navigation Plan*



International Civil Aviation Organization

WORKING PAPER

A42-WP/389[1]
EX/168
29/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE AVIATION SECTOR

(Presented by Colombia and supported by Latin American Civil Aviation Commission (LACAC) Member States[2])

EXECUTIVE SUMMARY

Artificial intelligence (AI) is revolutionizing the aviation industry, optimizing processes and improving efficiency in key areas such as air traffic management (ATM), predictive maintenance and safety. Its ability to process large volumes of data, including weather information, flight plans and transfers, and to detect patterns, permits route optimization, congestion prediction and risk anticipation, improving safety and efficiency in the use of airspace.

AI also affects the development of new forms of air mobility, such as advanced air mobility (AAM) and urban air mobility (UAM), presenting new challenges for the integration of these operations and human-machine interaction in airspace.

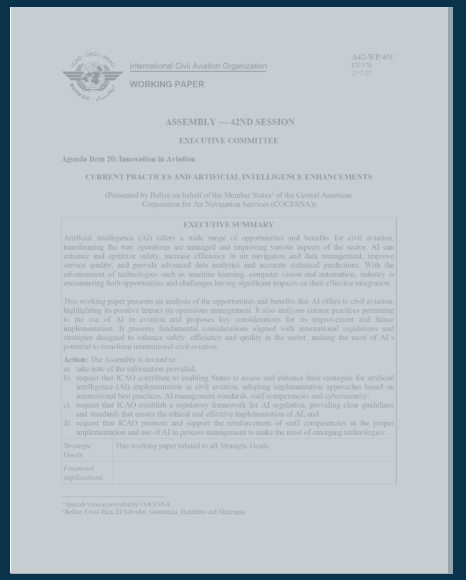
It is crucial to understand the potential of AI if we are to meet the challenges posed by increasing automation, and to provide training to prevent over-reliance on systems; the possible effects on operators' perception of situations, the ethical dilemmas arising from assisted decision making and the challenges for training - all of which are factors in guaranteeing the ability to react in critical environments if necessary - should be a matter for analysis by the sector.

It is proposed that AI should be incorporated into ATM systems and a new concept, AI/CNS/ATM, should be developed with a view to the digital transformation of air navigation, incorporating the advances already made and encouraging further development for use in air navigation support services.

Action: The Assembly is invited to:

a) invite ICAO to promote discussions between regulatory authorities and system manufacturers in order to establish clear frameworks that address ethical and legal dilemmas, ensuring that artificial intelligence (AI) is implemented in a safe and transparent manner in aviation; and
b) direct ICAO to evaluate the incorporation of AI into Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM), applying the lessons learned from the incorporation of satellites into aviation.

[1] Spanish version provided by Colombia.
[2] Belize, Bolivia (Plurinational State of), Chile, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela (Bolivarian Republic of).



International Civil Aviation Organization

WORKING PAPER

A42-WP/401[1]
EX/176
29/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 20: Innovation in Aviation

CURRENT PRACTICES AND ARTIFICIAL INTELLIGENCE ENHANCEMENTS

(Presented by Belize on behalf of the Member States[2] of the Central American Corporation for Air Navigation Services (COCESNA))

EXECUTIVE SUMMARY

Artificial intelligence (AI) offers a wide range of opportunities and benefits for civil aviation, transforming the way operations are managed and improving various aspects of the sector. AI can enhance and optimize safety, increase efficiency in air navigation and data management, improve service quality, and provide advanced data analytics and accurate statistical predictions. With the advancement of technologies such as machine learning, computer vision and automation, industry is encountering both opportunities and challenges having significant impacts on their effective integration.

This working paper presents an analysis of the opportunities and benefits that AI offers to civil aviation, highlighting its positive impact on operations management. It also analyzes current practices pertaining to the use of AI in aviation and proposes key considerations for its improvement and future implementation. It presents fundamental considerations aligned with international regulations and strategies designed to enhance safety, efficiency and quality in the sector, making the most of AI's potential to transform international civil aviation.

Action: The Assembly is invited to:

a) take note of the information provided;
b) request that ICAO contribute to enabling States to assess and enhance their strategies for artificial intelligence (AI) implementation in civil aviation, adopting implementation approaches based on international best practices, AI management standards, staff competencies and cybersecurity;
c) request that ICAO establish a regulatory framework for AI regulation, providing clear guidelines and standards that ensure the ethical and effective implementation of AI; and
d) request that ICAO promote and support the reinforcement of staff competencies in the proper implementation and use of AI in process management to make the most of emerging technologies.

Strategic Goals:	This working paper related to all Strategic Goals.
Financial implications:	

[1] Spanish version provided by COCESNA.
[2] Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua.

Events

ICAO

A42-WP/692
P/55
1/10/25

ASSEMBLY — 42ND SESSION

REPORT OF THE EXECUTIVE COMMITTEE
ON
AGENDA ITEM 20

(Presented by the Chairperson of the Executive Committee)

The attached report on Agenda Item 20 has been approved by the Executive Committee. Resolution 20/1 is recommended for adoption by the Plenary.

Note.— After removal of this covering sheet, this paper should be inserted in the appropriate place in the report folder.

(7 pages)

Agenda Item 20: Innovation in Aviation

Artificial Intelligence

20.1 At its sixth meeting, the Committee reviewed A42-WP/29, presented by the Council of ICAO, which highlighted the measures taken during the last triennium to implement Assembly Resolution A40-27 – *Innovation in aviation*, which, significantly, includes the approval by the Council of the ICAO Policy on Innovation. This foundational document was developed to address the findings and recommendations stemming from an independent assessment conducted by the United Nations System Staff College (UNSSC). It ensures continuity in key innovation -related activities including the ICAO Industry Consultative Forum (ICF), the continuous, enhanced and inclusive dialogue with stakeholders and provides actions to include out-of-sector innovators that can significantly and positively impact the aviation sector. In the core activity of global policies and standards, ICAO has deployed a Standardization Roadmap to help keep regulations ahead of innovation. From a strategic perspective, innovation has been positioned as a High Priority Enabler in the 2026-2050 Strategic Plan, allowing it to be more efficiently used to help delivering on all strategic goals.

20.2 Based on these developments, A42-WP/29 presented an update to Assembly Resolution A40-27 and recommended clauses to strengthen the implementation of the ICAO Policy on Innovation, particularly by urging States and stakeholders to take action that complement those of ICAO. These updates would help ensure a sector-wide alignment on innovation. The Committee agreed with the need for ICAO to engage with States on regulatory and implementation aspects for the use of artificial intelligence (AI).

20.3 The Committee reviewed A42-WP/401, presented by Belize on behalf of the Central American Corporation for Air Navigation Services (COCESNA) Member States[1], which provided an analysis of the opportunities and benefits that AI offers civil aviation, highlighting its positive impact on operations management.

20.4 The Committee reviewed A42-WP/389, presented by Colombia, supported by Latin American Civil Aviation Commission (LACAC) Member States[2], which highlighted that it is crucial to understand the potential of AI and take into account various factors in its proper use.

20.5 The Committee reviewed A42-WP/246, presented by Saudi Arabia, which outlined how AI can enhance the Organization's ability to develop, validate and implement Standards and Recommended Practices (SARPs) and guidance material in a more agile, data-driven, efficient manner.

20.6 The Committee reviewed A42-WP/234, presented by Singapore, co-authored by Thailand and co-sponsored by Canada, China and the Republic of Korea, which proposed that ICAO take a leading role with respect to applications of AI in aviation.

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[2] Belize, Bolivia (Plurinational State of), Chile, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela (Bolivarian Republic of).

20.7 The Committee reviewed A42-WP/375, presented by the United Arab Emirates. which addressed the strategic imperative for the integration of AI within civil aviation authorities.

20.8 All papers recommended various actions that ICAO may consider taking for it to play a proactive and leading role in the use of AI in Aviation.

20.9 The Committee noted the initiatives outlined in the papers and the common themes including: the need for ICAO to develop comprehensive regulatory frameworks and standardized approaches to AI implementation; the need for capacity building and training; and enhanced collaboration between ICAO, Member States, industry and academia. The Committee noted that some States recommended that the Organization first consider developing a strategic vision and high-level framework for the use of AI in aviation and cautioned that developing a regulatory framework and taking many of the other actions proposed in the working papers would be premature. The Committee recognized AI is a key enabler but urged caution in being overly prescriptive at this early stage.

20.10 The Committee noted the relevant ongoing and planned activities by ICAO, under the relevant sections of the action plan of the ICAO Policy on Innovation. These include the following:

1) currently several expert groups of ICAO are discussing AI in various forms and that this is expected to grow over the course of the next triennium; and

2) the Secretariat continues to coordinate these activities with a view to ensure that cross-cutting matters are harmonized; and

3) the Secretariat is initiating a collaborative effort on performing a strategic foresight exercise on AI in aviation. This effort will involve States, the United Nations, industry, academia and others. Once the project has been formulated, a State letter will be issued, inviting States and international organizations to be involved;

20.11 The Committee welcomed the initiatives of Member States to further global and regional discussions on AI. The Committee recognized the value of such events to the furtherance of ICAO's work on the subject and noted the mechanisms in place for the relevant inputs to be made to ICAO.

20.12 While noting the significant focus on AI during the discussions, the Committee agreed not to enumerate any specific innovations to ensure that it remained stable over a longer period of time, avoiding the need to amend text in response to changes in the landscape of innovations used by aviation.

20.13 The Committee noted the rapid advancements and increasing adoption of AI across many industries, including aviation, and agreed with the need for a collaborative and inclusive approach for all relevant stakeholders.

20.14 The Committee specifically noted the need to adopt an implementation approach for AI that promotes discussions between regulatory authorities and system manufacturers.

20.15 The Committee recognized the potential benefits of a structured approach for leveraging AI across all of ICAO's activities, and noted the need to integrate the subject of AI, where relevant, into

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the work programme of the Organization. In this regard the Committee also agreed that there was a need for ICAO to study the use of AI by regulators.

20.16 The Committee recognized the various issues raised across all papers, and noted that the best course of action should be determined by the Council of ICAO, in consideration of the policy on innovation as well as the need and availability of extra budgetary resources.

20.17 Information papers presented by Türkiye (A42-WP/511 and A42-WP/512) and the International Coordinating Council of Aerospace Industries Associations (ICCAIA) (A42-WP/489), were noted by the Committee.

Other matters related to innovation in aviation

20.18 The Committee reviewed A42-WP/217, Revision No. 1, presented by Brazil and supported by Latin American Civil Aviation (LACAC) Member States[3], which advocated for the adoption of regulatory sandboxes as an effective mechanism to enhance regulatory agility, resilience and evidence-based decision-making in civil aviation. The Committee agreed that ICAO incorporate references to sandboxes, where appropriate, within its guidance material, and welcomed the call for Member States to adopt sandbox approaches as part of their regulatory toolkits, while always ensuring that safety and air traffic services considerations remain central to any experimentation framework.

20.19 The Committee reviewed A42-WP/218, presented by Saudi Arabia, which highlighted the Future Aviation Forum (FAF) that took place in 2024. The paper also highlighted that the next edition, planned for April 2026, will build on the momentum by fostering deeper international partnerships, advancing ICAO-aligned priorities and showing transformative aviation solutions. The Committee noted the information on the FAF and welcomed the initiative outlined in the paper.

20.20 Information papers presented by Indonesia (A42-WP/633), the Republic of Korea (A42-WP/602), Hermes Air Transport Organisation (A42-WP/420), and the International Forum of Aviation Research (IFAR) (A42-WP/678), were noted by the Committee.

20.21 In light of the discussion, the Committee agreed to submit, for adoption by the Plenary, the following resolution, to supersede Assembly Resolution A40-27:

Resolution 20/1: Innovation in Aviation

Whereas Article 44 of the Convention on International Civil Aviation states that among the aims and objectives of ICAO are development of the principles and techniques of international air navigation and fostering of the planning and development of international air transport so as to meet the needs of the people of the world for safe, regular and economical air transport;

Whereas Article 37 of the Convention stipulates that ICAO shall adopt and amend from time to time, as may be necessary, international standards and recommended practices and procedures dealing with […] and such other matters concerned with the safety, regularity, and efficiency of air navigation as may from time to time appear appropriate;

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~~*Whereas* several ICAO Conferences have recognized the real and potential benefits and challenges that innovation can bring to the safety, efficiency, security, facilitation and to the economic and environmental sustainability of air transport and that Member States should be provided the opportunity to realize these benefits in a manner that leaves no country behind;~~

Whereas the ICAO Strategic Plan 2026-2050 recognizes the real and potential benefits and challenges that innovation can bring to the air transport sector and aims to provide Member States with the tools, knowledge and mindsets to realize these benefits in a manner that leaves no country behind and as a consequence identifies innovation as a high priority enabler critical to the successful implementation of the strategic goals.

Recognizing that ICAO provisions apply to civil aviation ~~all civil airspace users~~, and the absence of normative activity at the global level may hamper the realization of innovative technological solutions and prevent the materialization of their benefits in aviation; and to that end ICAO can benefit from continued interaction with industry to identify the latest technological developments their timely integration;

Recognizing that the nature and pace of innovations require regulators at the national, regional and global level avail themselves of new methodologies, as well as the relevant framework provided by ICAO, that facilitate the timely evaluation and assessment of ~~technological~~ innovation developments in a technology agnostic manner;

Acknowledging the ICAO Policy on Innovation;

The Assembly:

1. *Directs* the Council to implement the Policy on Innovation;

~~1~~2. *Urges* all Member States that have experience in facilitating the introduction of innovation in civil aviation, and that have evolved their regulatory methods to better evaluate and assess the application of such innovations, to share their experience with other States through ICAO;

~~2. *Directs* the Council to assess the need, as well as the resources required, to evolve the processes of the Organization, including its working methods with the industry in order to keep pace with innovations that affect the sustainable development of civil aviation;~~

3. ~~*Directs* the Council on the basis of the conclusions arising from the assessment to be undertaken pursuant to operative clause 2, to develop, high-level policies to address the findings of the aforementioned assessment and subsequently provide a framework that will help ensure the timely development of global policies and standards that support the continuing improvement of safety, efficiency, security, facilitation, economic and environmental performance;~~ *Calls* on Member States to support the efforts of ICAO to help ensure that all States have a fair opportunity to develop and deploy innovations in aviation; including through leveraging the assistance, capacity building and training frameworks of relevance that are offered by ICAO in line with the ICAO policy on innovation;

4. ~~*Directs* the Council to instruct the Secretary General to further liaise with States, governmental and non-governmental organizations, the private sector, academia and the relevant United Nations system~~

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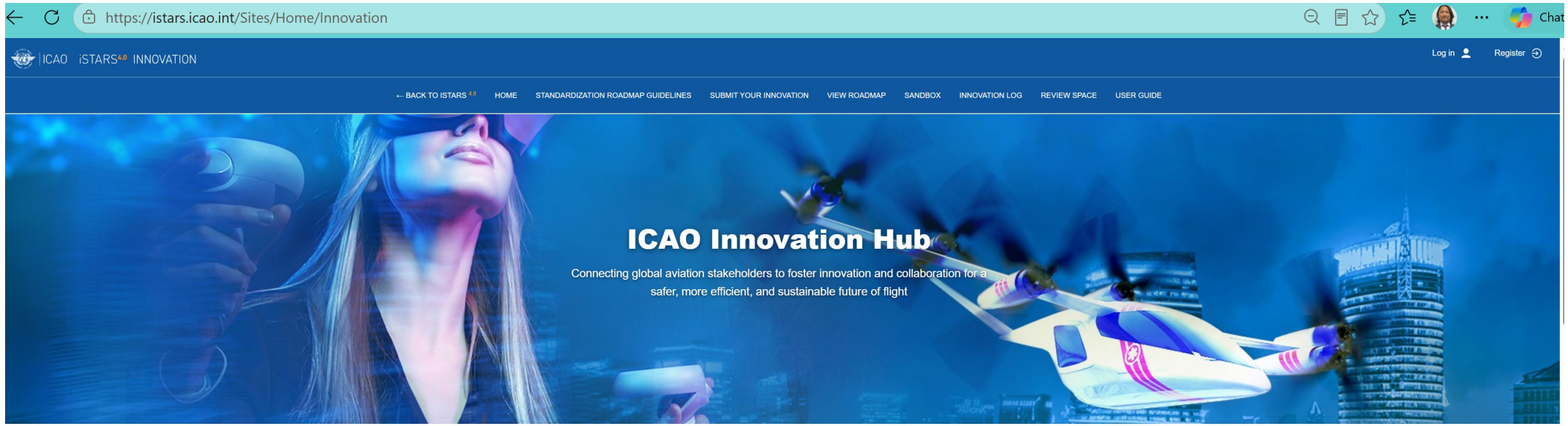
https://istars.icao.int/Sites/Home/Innovation



ICAO Innovation Policy

EN FR RU ES ZH AR

This policy is founded on Assembly Resolution A40-27: Innovation in aviation, which builds on the Chicago Convention to address the evolving nature of aviation innovations. It draws from the United Nations System Staff College's independent assessment and subsequent Council action to create a framework that supports all Member States in benefiting from aviation innovation.

Strategic Dialogue
Industry collaboration and knowledge sharing

Inclusive Innovation
Accessibility support for all member states

Instruments and Tools
Regulatory frameworks and standardization

Strategic Dialogue with Industry

- ✓ Share industry vision and knowledge
- ✓ Provide strategic advice and recommendations on innovations
- ✓ Track relevant innovations
- ✓ Discuss impact on aviation system
- ✓ Address regional/NCLB needs

ICAO

Thank You

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