International Civil Aviation Organization

MIDANPIRG/20 and RASG-MID/10 Meetings

(Muscat, Oman, 14-17 May 2023)

Agenda Item 2.2:   **Update from States and International Organizations**

INDUSTRY ROADMAP FOR FUTURE SKIES

(Presented by CANSO)

SUMMARY

The Complete Air Traffic Services (CATS) Global Council is a unique industry forum which brings together leaders from across the manned and unmanned aviation industries together with service and technology providers. The CATS Global Council works under the strong belief that as a sector we need to act collectively and with a sense of urgency in order to mobilise and build the future complete air transport system together to meet evolving and future industry needs.

The first action of the CATS Global Council was to create a collaborative vision of the future skies of 2045, which is described in information paper "CATS Global Council Vision" from CANSO. The CATS Global Council then undertook the critical task of developing a roadmap, laying out the key activities on the pathway to turning the vision into reality. The CATS vision roadmap includes technological and regulatory developments as well as political, economic, social and environmental aspects.

While much of the activity needed to build the future air transport system will be undertaken by industry, this information paper highlights some activities for which ICAO has a critical role to play and makes suggestions for additions of actions to the ICAO work programme.

REFERENCES

Doc 10118, Global Aviation Security Plan

Doc 10004, Global Aviation Safety Plan

Doc 9750, Global Air Navigation Plan

futureskyvision.com

CATS-Global-Council_Vision.pdf (canso.fra1.digitaloceanspaces.com)

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1.   **INTRODUCTION**

1.1   The roadmap for future skies, developed by the CATS Global Council, provides a logical and ambitious pathway toward the CATS vision to create global airspace that is safe, fair, intelligent and interoperable, leveraging revolutionised design, technology and services to power sustainable global mobility and prosperity.

1.2   The roadmap is a living document for which industry holds itself accountable for progress, with direct engagement with ICAO and States. It will be used to galvanize the industry and to enlist and engage stakeholders in the CATS vision for our future skies and the necessary activities to get there. The roadmap not only focuses on technical developments but also addresses the political, economic, legal, social, operational and environmental aspects, which are all critical to progress.

1.3   The roadmap, built on seven core building blocks, is composed of three layers: long-term goals, intermediate milestones and finally actions. For each of the seven building blocks that underpin the vision, two long-term goals have been identified:

1.4   The roadmap establishes the following three overarching goals and eleven enabling goals which have been derived from CATS Global Council vision.

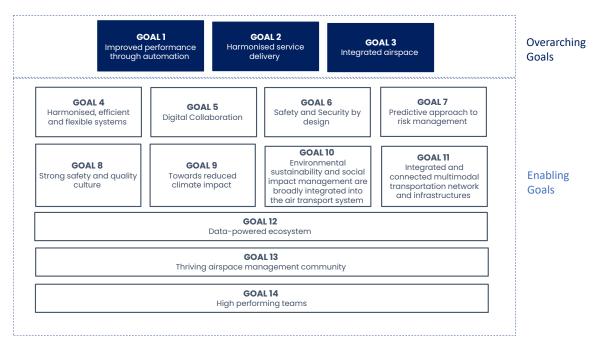|			
GOAL 1 Improved performance through automation	**GOAL 2** Harmonised service delivery	**GOAL 3** Integrated airspace	Overarching Goals
GOAL 4 Harmonised, efficient and flexible systems	**GOAL 5** Digital Collaboration	**GOAL 6** Safety and Security by design	**GOAL 7** Predictive approach to risk management
GOAL 8 Strong safety and quality culture	**GOAL 9** Towards reduced climate impact	**GOAL 10** Environmental sustainability and social impact management are broadly integrated into the air transport system	**GOAL 11** Integrated and connected multimodal transportation network and infrastructures
GOAL 12 Data-powered ecosystem			Enabling Goals
GOAL 13 Thriving airspace management community			
GOAL 14 High performing teams			

Figure 1: CATS 2045 Vision Long Term Goals

1.5   For each long-term goal, the roadmap identifies the key milestones and actions that need to occur to achieve it. Over 70 milestones and 100 actions have been identified.

2.   DISCUSSION

Ownership of Key Activities

2.1   The CATS Global Council feels that aviation is at a turning point. With many new airspace users looking to take to the skies, industry should take the lead in determining what the future holds. The CATS Global Council accepts that it is the custodian of its own vision and therefore it is the responsibility of the industry to deliver the vision and to own most of the actions and activities identified in the roadmap. However, ICAO is solely and uniquely positioned to contribute to important elements and to drive the global harmonisation that is a key pillar of the CATS vision.

2.2   For that reason, while industry is prepared to contribute with technical expertise, the CATS Global Council believes that ICAO is best positioned to lead actions related to the following activities identified as part of the roadmap:

- The development of a framework for the decentralised management of sovereign airspace, addressing liability, security, regulatory, political and financial aspects.

- The development of a global service model in high altitude airspace that enables full integration and a review of existing airspace classes to ensure they remain fit for purpose for a future reality in which airspace will necessarily become a more unified, flexible and dynamic environment.

- The advancement of global electronic conspicuity standards guidance aimed at air to air and air to ground conspicuity.

- The integration into the GASP of practices encouraging proactive risk management for new models of strategic and tactical service delivery.

- The evolution of the existing competency models to the changing roles and new positions our future industry will need, enabling the delivery of performance-based training programmes, and unlocking opportunities to use objective data and improve monitoring and evaluation.

- The integration into or alignment with the Global Air Navigation Plan of the relevant core goals and key milestones identified within the roadmap.

2.3   In addition to the items identified in 2.2, ICAO plays an important role supporting the delivery of the Future Skies Vision through the ongoing work aimed at: encouraging harmonization and performance based regulatory approaches, enabling the establishment of a globally harmonized international aviation trust framework that will enable higher levels of digitization in a secure manner

2.4   The broad industry coalition that is represented by the CATS Global Council is well positioned to advance other key actions in the vision roadmap and will focus on the following workings areas (WA) in the period 2023-2025:

- WA1: Undertake the development of a new A New CONOPS for Global Airspace Management

- WA2: Create a global Traffic Management integration roadmap, including a pathway to Advanced Air Mobility (AAM) to plot a course toward full convergence of ATM and Unmanned Aircraft Systems Traffic Management (UTM).

- WA3: Optimised and simplified airspace.
  - Conduct a review of airspace classifications and providing inputs to ICAO to update the airspace classification system and review air traffic rules for all airspace participants within a more cooperative, inclusive and proactive framework.
  - Contribute to ICAO to create a new framework that enables the decentralised management of airspace across borders, addressing liability, security, regulatory, political and financial aspects.

- WA4: Innovation and digitalisation

  o Foster the adoption of a culture of innovation and digitalisation within the industry and improve the coordination for development and deployment of innovative solutions (at global and regional level)

  o Develop a standardisation strategy to advantage of a more digital aviation industry and better use the standards that we have – and identify what standards we need

- WA5: Global safety and security. For example:

  o Develop principles for a predictive approach to risk management that are agreed upon and are consistent with the performance metrics

  o Develop recommendations for the safe and expanded implementation of technology and higher levels of automation that considers human factors and globally harmonised safety culture principles.

- WA6: Achieving reduced climate impact.

  o Ensure ATM improvements in the decarbonisation roadmaps are embedded in all ANSPs strategic plans and investment has been identified and secured.

  o Promote optimisation of ATM infrastructure. Convert remaining ATM infrastructure and operations to carbon neutrality

- WA7: Thriving aviation community

  o Create partnerships to champion STEM education with diverse candidates.

  o Find ways to enhance recruitment efforts for systems engineers, data architects, analysts, and Artificial Intelligence/Machine Learning experts.

  o Identify skills that will be required in the future and define future career paths.

- WA 8: New ANS financing mechanisms

  o Develop new business models to address the greater diversity in aircraft operations and supporting services. These mechanisms should adequately and fairly cover the costs associated with the provision of services to an expanded customer base and provide sufficient performance incentives.

2.5   The Global Air Navigation Plan provides an important vehicle for harmonized advancement of key enabling capabilities. However, in its current state it may not go far enough in key areas, or provide for the level of airspace integration or automation now envisaged as necessary for the future sky vision. Industry will undertake the development of a technology roadmap to support the new Global CONOPS. The outcome of that activity will be coordinated with the ICAO GANP Study Group to support relevant updates and evolutions to the Global Air Navigation Plan and other relevant ICAO groups like the recently established ICAO Advance Air Mobility Study Group.

3.   ACTION BY THE MEETING

3.1   The meeting is invited to note the information presented in this Information Paper.

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