



**WORKING PAPER**

**ASSEMBLY — 41ST SESSION**

**TECHNICAL COMMISSION**

**Agenda Item 31: Aviation Safety and Air Navigation Standardization**

**CHALLENGES IN IMPLEMENTATION OF NEW INTEGRATED CNS/ATM PROJECT**

(Presented by Bangladesh)

**EXECUTIVE SUMMARY**

This paper presents the challenges in the implementation of new communications, navigation and surveillance/air traffic management (CNS/ATM) technologies while ensuring the interoperability of systems, and timely and harmonized deployment of those new technologies, which may be consistent among different States and regions, and which should be considered in the development of global air navigation operational improvement strategies to contribute to the achievement of the goals related to effective national air navigation plan (NANP) implementation in line with the Global Air Navigation Plan (GANP, Doc 9750).

Due to limited resources, this paper also emphasizes the challenges in incorporating complex ICAO Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS) into State's national regulations. To meet this issue, ICAO and States may look into measures to actively enhance the development and adoption process of ICAO Standards. Identifying a new and streamlined framework for CNS/ATM standardization and better decision-making processes is one way to accelerate the development and rollout of state-of-the-art aeronautical CNS services for an overall systems improvement

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

- a) note the challenges faced by States to date, related to their integrated CNS/ATM projects;
- b) encourage States, international organizations and industry stakeholders to enhance coordination and cooperation in support of the continued development and implementation of their ongoing CNS/ATM projects; and
- c) encourage ICAO to continue to develop and finalize a new streamlined framework for CNS and frequency spectrum standardization

<i>Strategic Objectives:</i>	This working paper relates to the Safety and Air Navigation Capacity and Efficiency Strategic Objectives.
<i>Financial implications:</i>	Based on national budget and/or from extra-budgetary contributions
<i>References:</i>	Annex 19 – <i>Safety Management</i> Annex 10 — <i>Aeronautical Telecommunications</i> Doc 10140, <i>Assembly Resolutions in Force (as of 4 October 2019)</i> Doc 10115, <i>Thirteenth Air Navigation Conference, Montréal, 9-19 October 2018. Report</i> The ICAO Integrated CNS and spectrum strategy (ICNSS) initiative

## 1. INTRODUCTION

1.1 The global air navigation system is becoming more complex day by day to meet the ever-growing expectations of the aviation community to equitably accommodate all airspace users' operations in a safe, secure and cost-effective manner while reducing the aviation environmental impact. To increase capacity, efficiency, predictability, and flexibility while ensuring the interoperability of systems and harmonization of procedures, ICAO Member States should work together for overall operational improvements.

1.2 Rapid technological growth and innovation have made it more challenging for ICAO to establish and administer international Standards and Recommended Practices (SARPs), Procedures for Air Navigation Services (PANS), and other materials on time. Due to a lack of resources, states usually struggle to incorporate complex SARPs and PANS into their national regulations. ICAO and States must identify ways to actively improve the development and implementation of ICAO standards in order to address this issue. However, it is becoming more and more difficult to achieve a global consensus and effective application of those new technologies in a timely and coordinated manner.

1.3 To avoid unequal and incompatible deployment of new communications, navigation and surveillance/air traffic management (CNS/ATM) technology, ICAO may continue to improve the process for developing/adopting ICAO regulations, and establishing consensus for a prompt and successful rollout. This paper focuses on identifying a new and simplified framework for CNS/ATM standardization and better decision-making procedures in order to accelerate the development and implementation of cutting-edge aviation CNS services and improve overall system performance. Aviation will continue to receive the high uptime and resilience needed to maintain an acceptable level of aviation safety as long as these integrated CNS/ATM systems are in existence.

## 2. DISCUSSION

2.1 CNS systems and the services that States provide are key enablers for the high level of safety required by aviation. Compared to other users of the frequency spectrum in industries, aeronautical CNS systems currently in use are robust and typically have overall uptime and reliability that are generally orders of magnitude better. However, the majority of contemporary CNS system designs are outdated, having been introduced over 50 years ago. Gradual updates and improvements to these systems over the years have efficiently accommodated the increasingly complex and busy use of airspace. With a contract signed on 21 October 2021, Bangladesh, for instance, has recently embarked on an integrated CNS/ATM project. Most modern aviation needs can still be met by these systems. The development of such cutting-edge technologies is often a challenge for States, particularly when it comes to system integration.

2.2 The fast-paced technological innovation in the telecommunications sector is caused by the constantly growing needs of a user base consisting of billions of people. By reducing the size, weight and power required, while boosting the capabilities and overall performance of the CNS systems and spectral efficiency, utilizing current state-of-the-art radiocommunications technology could lead to some remarkable improvements in aviation efficiency and sustainability.

2.3 State regulators lack resources and well-experienced experts when attempting to address new requirements such as those necessary to accommodate new entrants using innovative technologies. Therefore, considering Assembly Resolution A40-27: *Innovation in aviation*, ICAO has prioritized the

implementation of existing Standards over the development of new Standards. Performance-based Standards have been preferred over prescriptive Standards and detailed technical specifications, where appropriate.

2.4 The ICAO CNS Standards framework needs to evolve in response to the rapid advancement of CNS technology. Without this, it is impossible to ensure that SARPs, industry standards, and comprehensive technical specifications will be developed in a harmonized manner and at the pace necessary to maintain global interoperability and ongoing high safety standards. Achieving this will be a considerable challenge.

2.5 To address the challenges described above and with recent Assembly Resolutions and recommendations from the Thirteenth Air Navigation Conference (AN-Conf/13), ICAO has undertaken the integrated CNS and spectrum project in May 2020. The ICAO ICNSS project was focused on a medium and long-term action plan (in the form of roadmaps) for CNS systems and spectrum efficiency while improving global harmonization of the CNS infrastructure and identifying a new and streamlined framework for CNS standardization. However, the appropriate strategy needs to be established in a timely manner, by ICAO, States, and the entire aviation community, including new entrants.

### 3. CONCLUSION

3.1 The aviation industry today is not what it was a few years ago. Modernization and technological innovation are progressing at an accelerating rate. However, it is becoming more difficult to reach a global consensus and deploy those new technologies in a timely, harmonized and coordinated manner. The process of developing and adopting ICAO regulatory provisions needs to be improved in order to avoid unequal and incompatible implementation of new CNS/ATM technologies.

3.2 States and industry stakeholders are encouraged to support the ongoing development and implementation of the Integrated CNS/ATM projects in a timely, harmonized and coordinated manner. A new streamlined framework for CNS and frequency spectrum standardization may also be developed by ICAO, with the ultimate objective of this effort being to propose a set of recommendations for endorsement by the Assembly.

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