International Civil Aviation Organization

AN-Conf/14-WP/96
28/6/24

WORKING PAPER

FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

Agenda Item 3: Air Navigation System Performance Improvement
3.2: Phasing out legacy systems

INNOVATION IN AVIATION COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS) SYSTEMS

(Presented by Japan)

EXECUTIVE SUMMARY

While recognizing the need for introducing innovation in aviation system, particularly in the area of communications, navigation and surveillance (CNS) systems, this working paper highlights that the transition to a new system in globally harmonised manner would be challenging for States. Noting the need for activities in the ICAO framework and in order to encourage all Contracting States efforts to further contribute to ICAO activities and to ensure successful implementation of the harmonized transition in a manner that leaves no country behind, the working paper emphasize the need of clarifying methodology of optimizing those CNS legacy systems such as using minimum operation network consideration.

Action: The Conference is invited to agree to the recommendation in paragraph 3.

1. INTRODUCTION

1.1 The pressure on the spectrum resource keeps increasing. Aviation industry needs to continue to evolve its systems used to support communications, navigation and surveillance (CNS) functionality, so it can support the safe and efficient use of the airspace, while demonstrating efficient radio frequency spectrum use. If aviation industry were to lose access to frequency bands critical for the provision of CNS, and/or have to share access to frequency bands with non-aviation users, there would be significant impact on air navigation services.

1.2 In line with recommendations from the thirteenth Air Navigation Conference (AN-Conf/13), ICAO has undertaken the integrated communications, navigation, surveillance and spectrum (ICNSS) project to launch a study built on multidisciplinary disciplinary view of the CNS elements and frequency spectrum to evolve the required CNS and frequency spectrum access strategy and system roadmap in the short, medium and long term in a performance based and service-oriented manner to ensure that CNS systems remain efficient users of the spectrum resource.

2. DISCUSSION

2.1 The 40th Session of the ICAO Assembly adopted Assembly Resolution A40-27: *Innovation in Aviation* shows a pathway for ICAO and its Member States to address new technologies and concepts of operations. The resolution recognizes that innovations have significant potential to improve aviation safety and efficiency globally.

2.2 It is predicted that the demand on aviation will be grown furthermore, with the introduction of new airspace users in the future (e.g., electric Vertical Take-Off and Landing (eVTOL) and remotely piloted aircraft systems (RPAS)). Therefore, the aviation stakeholders will have to embrace new and more capable technologies that can offer increasing levels of safety and efficiency. This also would be more efficient in terms of spectrum use.

2.3 While it has also been recognized that there are challenges in facilitating the introduction of innovation in civil aviation in a manner that leaves no country behind. Due to a varying level of capacity to meet and sustain their compliance with international standards, States are not always able to effectively implement international standards in a timely manner at the rate in which they are adopted by ICAO. This indicates that the decommissioning of existing systems should be carefully considered in global planning.

2.4 In order to ensure globally harmonized implementation plan for technology innovation, it is necessary to carefully coordinate between States within region. ICAO has established the planning and implementation regional groups (PIRGs). PIRGs serve as regional cooperative forums that determine regional priorities, develop and maintain the regional air navigation plans, and associated work programmes, based on the Global Air Navigation Plan (GANP, Doc 9750) and relevant ICAO provisions.

2.5 Member States are encouraged to improve their civil aviation systems by actively participating in ICAO's work and by effectively implementing ICAO Standards and Recommended Practices (SARPs) and policies so that they can foster sustainable local and regional prosperity and fully benefit from innovation in aviation systems.

2.6 However, when introducing those new systems in operation, States will face additional challenges of balancing operation of existing systems, legacy systems and new systems as well as ensuring compatibilities of those systems to improve aviation safety and efficiency.

2.7 To address these challenges, one of the topics should be considered globally is an agreed methodology of "optimization of the legacy CNS systems" such as utilizing minimum operation network consideration. ICAO should simultaneously consider the phasing out of legacy systems and the optimizing operation of legacy systems in globally harmonized manner. On top of this consideration, ICAO should develop the implementation plan for the innovation in aviation systems and CNS technology roadmap including phasing out of legacy systems to ensure that the harmonized transition is successful achieved in a manner that leaves no country behind.

3. CONCLUSION

3.1 The Conference is invited to agree to the following recommendation:

Recommendation 3.2/x — Addressing the innovation in the area of Communications, Navigation and Surveillance (CNS) systems.

That States:

a) strengthen their contribution to the ICAO activities and improve the communications, navigation and surveillance (CNS) functionality to ensure the successful implementation of innovation in the aviation systems in a manner that leaves no country behind; and

that ICAO:

b) develop and integrate the implementation plan for the innovation in aviation systems and technology roadmap including phasing out of legacy systems, especially in CNS areas, in globally harmonized manner to improve aviation safety and efficiency.

— END —