



**WORKING PAPER**

**ASSEMBLY — 41ST SESSION**

**EXECUTIVE COMMITTEE**

**Agenda Item 26: ICAO Civil Aviation Training and Capacity Building**

**AUGMENTED REALITY AS THE STRATEGY FOR THE DEVELOPMENT OF  
STANDARDIZED TRAINING IN NGAP CAPACITY BUILDING**

(Presented by Venezuela (Bolivarian Republic of) and supported by Panama and  
the Dominican Republic<sup>2</sup>)

**EXECUTIVE SUMMARY**

The aviation industry today has undergone some changes following the incorporation of new technological tools in order to improve its processes, including training which, affected by the pandemic and changes in the world economy, has switched to the virtualization of courses, which has made it possible to continue to train the population. Augmented reality affords an opportunity to improve the quality of available teaching resources by ensuring real improved scenarios for teaching coursework redefined with as much data and information as possible on objects and images, thus improving the learning experience.

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

- a) take note of the information provided in this working paper;
- b) devise standardized strategies to improve practical training processes;
- c) encourage the production of documents to enable States to draw up standards and practices on the use of applicable augmented reality devices in training and capacity building;
- d) urge States and the industry to support ICAO in the drafting of standards and recommended practices on the use of augmented reality devices in training and capacity building.

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| <i>Strategic Objectives:</i>   | This working paper relates to all Strategic Objectives   |
| <i>Financial implications:</i> | N/A  |
| <i>References:</i>             | - Annex 1 — <i>Personnel Licensing</i><br>- Doc 9868, <i>Procedures for Air Navigation Services — Training</i><br>- Doc 9941, <i>Training Development Guide</i><br>- Doc 9625, <i>Manual of Criteria for the Qualification of Flight Simulation Training Devices</i> |

<sup>1</sup> Spanish version provided by Venezuela (Bolivarian Republic of).

<sup>2</sup> Member States of the Latin American Civil Aviation Commission (LACAC).

## **1. INTRODUCTION**

1.1 Given that training strategies are tools designed for the scope of competences required for aeronautical personnel, it is very important to embrace new technological trends such as augmented reality so that they can be delineated and improved.

1.2 Considering that competency-based training and assessment have characteristics geared to performance, emphasis on performance standards and measurement, as well as the development of training programmes in accordance with specific performance standards, augmented reality would contribute to the acquisition knowledge, skills and attitudes by personnel using this technology in accordance with established and tested parameters.

1.3 There are currently tools and devices that can stimulate knowledge through augmented reality on a work station by building the required knowledge, skills and aptitudes in a practical manner.

1.4 ICAO has, through its work units, developed SARPs, PANs and documentary references that have contributed to the development of world aviation and, to a great extent, to safety.

## **2. DISCUSSION**

2.1 In the last few years, including during the pandemic, ICAO has encouraged the development of Global Aviation Training (GAT) and has strengthened the development of practices for the development of competency-based training and assessment under the TRAINAIR PLUS programme. As a result, aviation training has followed the path of virtualization and courses available in the TRAINAIR PLUS Electronic Management System (TPeMS) can now be appreciated both in face-to-face and in virtual or online learning.

2.2 Augmented reality is the term used to describe a set of technologies through which the user sees part of the real world by means of a technological device that adds graphical information. The device or set of devices adds virtual information to existing physical information; in other words, a virtual part appears in reality. Moreover, it is defined as the technological resource that offers interactive experience to the user on the basis of combining the virtual with the physical by means of digital devices.

2.3 Augmented reality is currently a training medium used in various scenarios and areas (engineering, medicine and also aviation), yielding highly positive results; but has still not been duly and adequately regulated for formal quality aviation training. The industry has made interesting proposals on the use of this technology, and the sharing of its experience with ICAO would contribute to the drafting of documents designed to roll it out effectively.

2.4 The prospectus of the Aviation Training and Education Directory (ATED) contains an online course on Digital Transformation in Aviation, which pursues the analysis of technological innovations involving the use of technologies and tools such as artificial intelligence, blockchain and digital identity, affecting the organization at all levels and making a great improvement to safety by making efficient use of these technologies.

2.5 The benefits accruing from the use of virtual reality for capacity building are:

- a) it does not block the physical world, as it allows the user to interact with the real world;
- b) it uses the camera of a mobile device and improves reality by adding further information to the surroundings;
- c) it allows virtual objects superimposed on real objects to be seen;
- d) training data can be acquired by extraction from applied activities so that weaknesses or areas that the student must improve quickly can be detected without being transferred to the work station.

### **3. CONCLUSION**

3.1 Capacity building by means of augmented reality strategies will have various material benefits for learning achievement and the development of teaching resources involving interactive dynamics.

3.2 It is recommended that supporting documentation be compiled for States on the conduct and initiation of training involving augmented reality devices, thus boosting innovation and creativity in training centres of the TRAINAIR PLUS network and providing a defined reference framework.

3.3 Aviation training involving the use of augmented reality devices will have benefits for learning and the development of teaching materials, drawing on the dynamics of play as an aid in knowledge enhancement as an element of competency.

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