International Civil Aviation Organization

MIDANPIRG Air Traffic Management Sub-Group

Eleventh Meeting (ATM SG/11)
(Abu Dhabi, UAE, 19 – 23 October 2025)

Agenda Item 7: Any other Business

SMART HEADSET PROJECT – MENTAL HEALTH

(Presented by the United Arab Emirates)

SUMMARY

This Working Paper highlights the **Smart Headset Project**, developed jointly by the UAE GCAA and Abu Dhabi Police. The project aims to monitor and enhance cognitive states — including mental focus, fatigue, and stress management — for critical operational personnel such as air traffic controllers and flight operations staff. The meeting is requested to note the information and share any lessons learned or existing practices to support the project.

Action by the meeting is at paragraph 3.

1. INTRODUCTION

1.1 This WP describes the Smart Headset development, integration, and testing of a wearable neuro-monitoring device for the Sheikh Zayed Air Navigation Centre. The device will be implemented in training sessions, supporting the advancement of mental health and operational performance.

2. DISCUSSION

2.1 In line with the UAE's artificial intelligence strategy in the field of government performance and state competitiveness through the use of new technologies that support anticipation and innovation, the General Civil Aviation Authority adopted the study of the use of a smart headset and sensors aimed at enhancing cognitive performance among air traffic controllers (ATCs) and flight operations personnel (FOPs) at the Sheikh Zayed Air Navigation Centre. The device will leverage advanced electroencephalogram (EEG) technology to capture brain activity, translating these signals into actionable insights to improve mental focus, Fatigue, and stress management during high-stakes operations. in cooperation with Abu Dhabi Police the strategic partners of the GCAA.

2.2 Abu Dhabi Police are providing their full support in the process of registering the patent of product with the UAE Ministry of Economy. The registration is being processed as a joint intellectual property between both parties, reflecting the collaborative nature of the project and the shared contribution to its development, innovation, and future commercialization potential.

2.3 Coordination has been carried out with the GCAA's Aeromedical Department to ensure alignment and support for both the current proof of concept phase and the upcoming validation stages, with continuous communication maintained to address technical and operational requirements.

2.4 The first phase of the project will be implemented and tested within the simulator environment to evaluate performance, safety, and user interaction. Based on the outcomes and feedback from this phase, the system will then proceed to the next stage for implementation in the ATC operations room under live working conditions.

2.5 Plans have been established to engage pilots in the evaluation process by involving them in simulator sessions using the headset. This phase aims to gather their feedback on comfort, usability, and performance, ensuring that the design and functionality meet operational needs on the ground and in the air before moving to real-time application.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information of this paper;

b) share relevant lessons and or best practices to support the project; and

c) coordinate with the UAE GCAA if you wish to support or join the project.

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