



International Civil Aviation Organization

ICAO

**Eleventh Meeting of the Air Traffic Management Sub-Group
(ATM/SG/11) of APANPIRG**

Singapore, 2 – 6 October 2023

Agenda Item 8: Any other business

**LEVERAGING ARTIFICIAL INTELLIGENCE TO ENHANCE CONTROLLER ENGLISH
LANGUAGE TRAINING IN NON-ENGLISH SPEAKING STATES**

(Presented by China)

SUMMARY

This ~~information~~ paper shares China's experience in utilizing artificial intelligence (AI) to facilitate advanced training systems that enhance air traffic controllers' English proficiency, radiotelephony communications, and emergency response capabilities in non-English speaking States. AI-enabled tools providing customized feedback have shown positive outcomes including strengthened aviation phraseology, voice interaction abilities, and abnormal situation management. Wider application of AI-powered innovations to improve controllers' English skills is recommended.

1. INTRODUCTION

1.1 Air traffic controllers' English proficiency is critical for aviation safety as global air traffic grows, particularly in States where English is not broadly spoken. Innovative technologies like artificial intelligence can enhance traditional training programs and improve controllers' language capabilities.

2. DISCUSSION

Enhancing English Proficiency with AI

2.1 China has been developing AI-powered training tools tailored to promote air traffic controllers' aviation English skills. Leveraging speech recognition and natural language processing, the tools provide customized feedback on controllers' pronunciation, vocabulary and grammar during exercises.

2.2 By analyzing individual speaking patterns and weaknesses, the AI system generates targeted training content and repetition to strengthen specific language areas. China has piloted the usage of the tools at a number of air traffic control training facilities.

2.3 The test results indicate that, compared to traditional classroom teaching, English proficiency of those controller's using artificial intelligence training have promoted relatively faster. The AI system can provide personalized training and real-time feedback unavailable previously.

Global Harmonization

2.4 The application of AI training can significantly enhance controllers' English abilities, especially for those States with weak English proficiency. ICAO should facilitate coordination between Member States utilizing AI for English training to share best practices and optimize systems.

2.5 Standardizing AI training tools globally offers many benefits. Shared data and models improve performance across countries with similar needs. Collaboration also allows harmonized integration of advanced AI training into air traffic management infrastructure.

2.6 Industry partners can provide essential AI and technical expertise regarding human factors in aviation. A coordinated approach under ICAO will ensure AI training innovations effectively address controllers' English proficiency challenges at a global scale.

Improving Radiotelephony Communications with AI

2.7 AI voice recognition capabilities allow tailoring of training to focus on aviation phraseology and improve radiotelephony interaction abilities.

2.8 AI feedback enhances controllers' phraseology, voice clarity, readback accuracy, and speed of radiotelephony exchanges. AI metrics quantify communication improvements across live and simulated radiotelephony scenarios.

Managing Emergencies with AI

2.9 AI analytics identify gaps in abnormal and emergency management to generate targeted exercises. AI assesses pronunciation of key terms, response times, and adherence to standard protocols under pressure.

3. CONCLUSION

3.1 As air traffic increases worldwide, improving controllers' English communication abilities is vital for safety. AI-powered innovations in training systems can significantly elevate controllers' English proficiency, radiotelephony abilities, and emergency response capabilities. AI presents a tremendous opportunity to transform air traffic management training programs and progress English proficiency.

3.2 ICAO plays a key role in enabling cooperation between Member States to accelerate AI development and integrate advanced training systems enhancing controllers' language skills. Partnering with industry, ICAO can guide aviation in realizing the full potential of AI training tools improves safety globally.

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a) note the information mentioned above;
- b) discuss any relevant matters as appropriate.

.....