



ICAO



# ICAO TRAINING STANDARDIZATION MEETING

REUNIÃO DE PADRONIZAÇÃO  
DE TREINAMENTO

14-16 • ABRIL • 2025  
HOTEL EPIC SANA | LUANDA, ANGOLA



GOVERNO DE  
**ANGOLA**

**mintrans.gov.ao**  
Ministério dos Transportes





ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

## Preparing for Tomorrow: Regional Capacity Development in Aviation Training through Standardization and Collaboration

*Building-in Resilience in Training: Preparing Aviation Professionals for a Changing Operational Environment*



# SAM MAHLANGU

Head of Training Delivery and Systems  
ATNS Aviation Training Academy – South Africa



A wide-angle photograph of a vast, deep blue ocean under a light blue sky with scattered white clouds. In the lower center of the frame, a pair of bright yellow diving fins with black straps are visible, protruding from the water's surface. The water has a textured, rippled appearance. The overall mood is serene and expansive.

# DEEP DIVE I



ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

## Hard truths

Global aviation system relies heavily on a **highly trained and skilled** workforce

- ❑ *43% reduction and 4.8 million job losses globally attributable to the seismic event – **critical skills lost to the industry***
- ❑ The industry requirements:
  - 665,990 new **technicians**,
  - 554,000 **pilots**,
  - 922,678 **cabin crew** members
  - 106,800 **air traffic controllers** to support the growing aircraft fleet by **2037**
- ❑ **Navigation turbulent skies** - With rapid technological breakthroughs, **evolving regulations**, and surging global demand.
- ❑ **Training is not just a necessity**—it's the lifeline that will determine whether aviation wings or stalls in the face of these realities.



ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

## The reality before us

### World (aviation) vs seismic event

- Training schedules – out the window
- Hiring froze, stalled workforce growth
- The recovery of air travel demand outpaced the availability of qualified personnel.

### ❑ ***The BIG debate***

- *The growing pressure on training institutions to accelerate personnel development*
- *How can we ensure efficiency in training while maintaining the highest standards of safety and competence?*

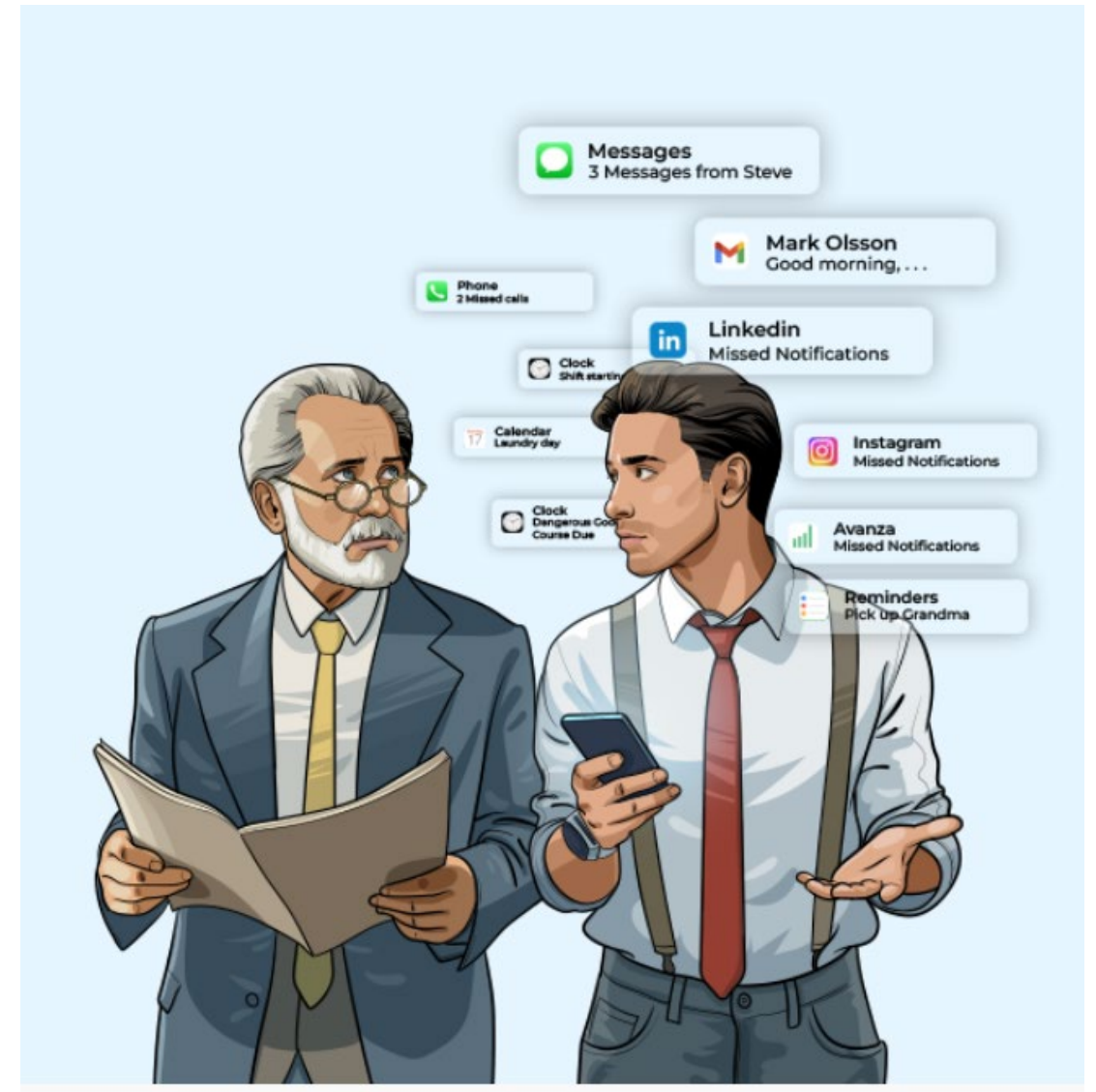
## Why must training *EVOLVE*?

**Rethinking** how we train aviation personnel can significantly improve both the supply and quality of aviation professionals.

**Digital age**, distractions are abundant, and attention spans are shorter than ever,

Training must evolve to meet the needs of a **screen-addicted workforce**.

**Traditional aviation training** can be time-consuming, expensive and **unattractive** to the screen-addicted workforce.







ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

## Our response plan – Building Resilience through training

Aviation roles are evolving rapidly, and training is key to staying relevant. ***But how...***

- **Technology evolution:** Transitioning to emerging technologies requires a means of mastering unfamiliar technologies and data.
- **ATCs and pilots:** With automation on the horizon, these professionals require advanced training to manage complex systems while honing critical decision-making skills.
- **Engineering professionals:** AI-driven tools for predictive maintenance, system performance and measurable system operations demand a technology-competent workforce ready to adapt.

## Remote Training and Accessibility: Breaking Barriers

- Remote training took off during the pandemic, but challenges remain.
- How do you ensure engagement, quality, and accessibility for trainees scattered across the globe?
- How do you implement a CBTA framework in such a diverse environment?

Blended learning models and an engaging CBTA framework combine the flexibility of online platforms with the rigor of in-person standards.

- Add data analytics to monitor progress, a recipe for remote training that delivers.



ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

## Our response plan – Building Resilience through training

Aviation roles are evolving rapidly, and training is key to staying relevant. ***But how...***



**Better training strategies**, such as CBTA and structured digital learning tools, can optimise time while maintaining high standards



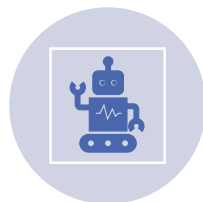
Focus on **maximising retention and skill application** through smarter and adaptive training



Ensure that **training methods** align with the way modern learners absorb information



Engaging, **interactive**, and **well-structured approaches** could bridge the gap.



Integrating **adaptive learning platforms, gamification**, and advanced digital training programs





ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

## Our response plan – Building Resilience through training

Aviation roles are evolving rapidly, and training is key to staying relevant. ***But how...***

- Leverage **regional collaboration and knowledge sharing** through the establishment of **regional training centres of excellence**
  - require collaboration between** training institutes, industry stakeholders and AFI states.
- Promotion of **harmonised standards** to enable mobility and **mutual recognition** of training standards.
- **Secondments** and **exchange programs** should be incorporated and implemented per MoU.
- Adapt training based on evolving **ICAO guidance** and **global best practices**



ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

# Preparing the future today

- ☐ Futureproofing aviation = ***Adopting the latest technologies?***
- ☐ It is about ***sustainability***
- ☐ With global net-zero targets in sight, the industry needs professionals who are not ***just skilled*** but also deeply ***committed to environmental goals***.
- ☐ *The future lies in understanding how personnel **learn today** and crafting training that produces not just ATCs/pilots but better-prepared, highly skilled, and ready to take on emerging aviation's complexities.*



ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

# Preparing the future today

## ❑ *Technological shift?*

- It's about understanding how **people** learn **today**.

## ❑ *Focused **training intervention** – BANI environment necessitates training interventions to handle **brittle, anxious, non-linear** and **incomprehensible** environments*

- *Crisis management and anxiety training become mandatory*
- *Humanities, as opposed to STEAM, become core for cultural competency, communication and interdisciplinary collaboration*

**COLLABORATION AND COOPETITION** for a sustainable aviation industry



ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO







ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

# Preparing the future today

- ❑ **Futureproofing aviation** = adapting training for **climate change** and **weather variability**
- ❑ **BCP** - preparing workforce for seismic events
- ❑ **Scenario-based** training interventions for emergency response and continuous service provision.
- ❑ **Space weather** significantly impacts aviation operations by disrupting **communication, navigation** and increasing radiation exposure, especially during polar flights.
  - **Communication disruptions** – HF radio blackouts and satellite communication
  - **Navigation system impacts** – GPS/GNSS degradation



ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

# Where does the future lie?

- ☐ The future of aviation isn't just about cutting-edge technology or greener skies—it's about the **people** who make it **all possible**.

## Technological Overload: Striking the Right Balance

- ☐ With **emerging technologies**, aviation training has become more technologically rich - virtual reality simulations, augmented reality tools, and advanced flight systems.

**CATCH:** *Too much tech, too fast, can **overwhelm** both trainers and trainees.*

- ☐ Integrate technology in ways that enhance learning without **overcomplicating** it



ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

# Being different is never a crime



It's okay to be different.

Me

AFI region is capable and can be different



ICAO



ICAO TRAINING  
STANDARDIZATION  
MEETING

REUNIÃO  
DE PADRONIZAÇÃO  
DE TREINAMENTO

# What now?

## Workgroup 1

How do we adapt and integrate **emerging technologies** into our training interventions for the AFI region?

## Workgroup 2

**Leading in the 21<sup>st</sup> century** - enhancing soft skills and decision-making under **BANI** in the AFI region

## Workgroup 3

How do we adapt training delivery to the changing **operational challenges**?

## Workgroup 4

What are the **core competencies** and strategies that can help to close **competency gaps** in the AFI region?

## Workgroup 5

What training interventions would you recommend in response to the evolving weather patterns in the AFI region, and how can they be effectively implemented?





ICAO



# ICAO TRAINING STANDARDIZATION MEETING

REUNIÃO DE PADRONIZAÇÃO  
DE TREINAMENTO

14-16 • ABRIL • 2025  
HOTEL EPIC SANA | LUANDA, ANGOLA



GOVERNO DE  
**ANGOLA**

**mintrans.gov.ao**  
Ministério dos Transportes

