

Aug 13th, 9:00 AM - 10:15 AM

Implementing Immersive Virtual Reality in an Aviation/Aerospace Teaching and Learning Paradigm

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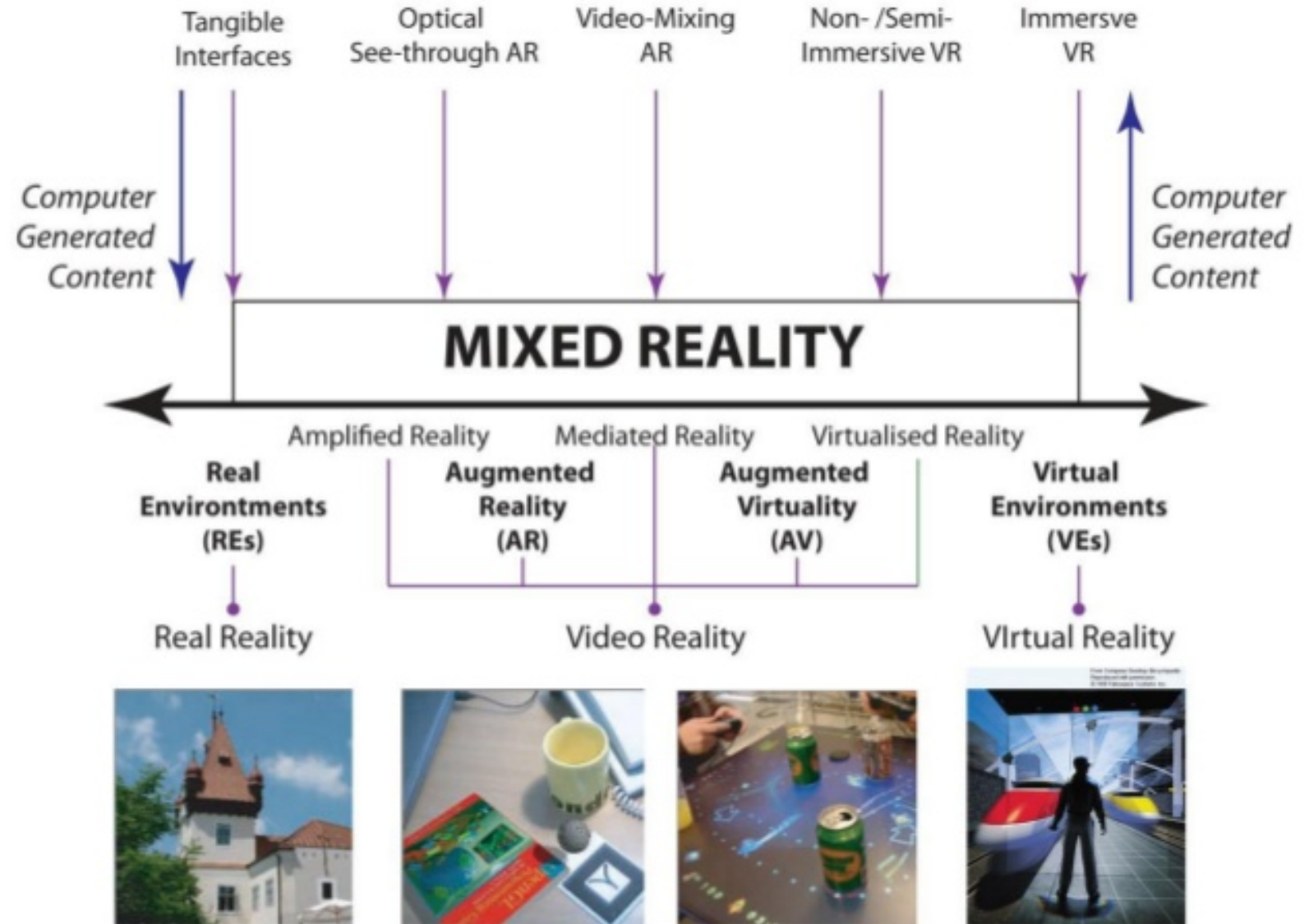


Agenda

- Training in Immersive Environments
- Virtual Space in Education & Training
- Creating & Implementing a Virtual Space
- The ERAU Lab: Capabilities & Technologies
- Future Opportunities

Training in Immersive Environments

The Virtuality Continuum



Aksenova, 2013, adapted from Milgram & Kishino, 1994

Virtual Space in Education & Training

- **Education:** collaborative learning, enhanced systems training, gamification, enhanced visualization of materials
- **Medicine:** integrated systems to aid surgery, patient rehabilitation in a virtual environment
- **Military:** virtual training environment, head-up displays (HUD) and head-mounted displays (HMDs)



Creating & Implementing a Virtual Space

- **Mission and Purpose of the ERAU COA ARVRMR Lab:**

- To explore, develop, and test immersive simulation technologies for use in aviation research, teaching and learning

- **Benefits of having a Virtual Space**

- Undertaking of high-risk tasks
- Demonstrating effects of actions
- Completing repetitive tasks
- Increasing cognitive processes
- Customizing performance-based training



The ERAU Lab: Capabilities



Cessna 172 Virtual Walkaround



F/A-18 Hornet VR Receiver Aerial Refueling
Part-Task Trainer



Mission: ISS VR experience

The ERAU Lab: Technologies

- **Equipment:**
 - HTC Vive Pro HMD system
 - Custom Graphics PC Workstation, 4.2 GHz Intel i7-7700K CPU, GeForce 1080 Graphics Card
 - Oculus VR headset
 - AVT Simulation and U.S. Navy Naval Air Systems Command F/A-18 Hornet VR Receiver Aerial Refueling Part-Task



Future Opportunities

- Simulation training efficiencies
- FAA Airman Standards
- Gamification
- Military and commercial pilot training
- Physiological testing and training

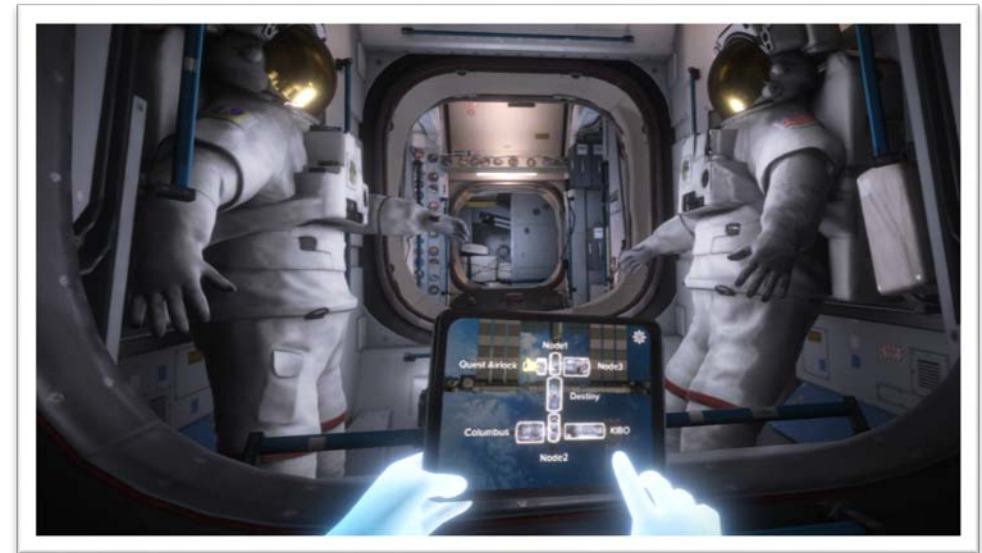


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Questions?



Thank you from the ERAU ARVRMR Team

- Mike Bakula
- Ken Byrnes
- Kim Chambers
- Zachary Colman
- Antonio Cortés
- Andy Dattel
- Rei de la Paz
- John French
- Daniel Friedenzohn
- Stephanie Fussell
- Kris Hammer
- Tom Haritos
- Bricen Hoyle
- Florian Jentsch
- Mark Leary
- Kevin Richard
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- Brent Terwilliger
- Tyler Wise