

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

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

Tom Haritos

Embry-Riddle Aeronautical University, tharitos@k-state.edu

Stephanie G. Fussell

Embry-Riddle Aeronautical University, sfussell2@kent.edu

Follow this and additional works at: <https://commons.erau.edu/ntas>



Part of the [Aviation Commons](#), and the [Higher Education Commons](#)

Haritos, Tom and Fussell, Stephanie G., "Implementing Immersive Virtual Reality in an Aviation/Aerospace Teaching and Learning Paradigm" (2018). *National Training Aircraft Symposium (NTAS)*. 3.
<https://commons.erau.edu/ntas/2018/presentations/3>

This Presentation is brought to you for free and open access by the Conferences at Scholarly Commons. It has been accepted for inclusion in National Training Aircraft Symposium (NTAS) by an authorized administrator of Scholarly Commons. For more information, please contact commons@erau.edu.

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

Tom Haritos, Ph.D., Embry-Riddle Aeronautical University

Stephanie G. Fussell, M.S.A., Embry-Riddle Aeronautical University

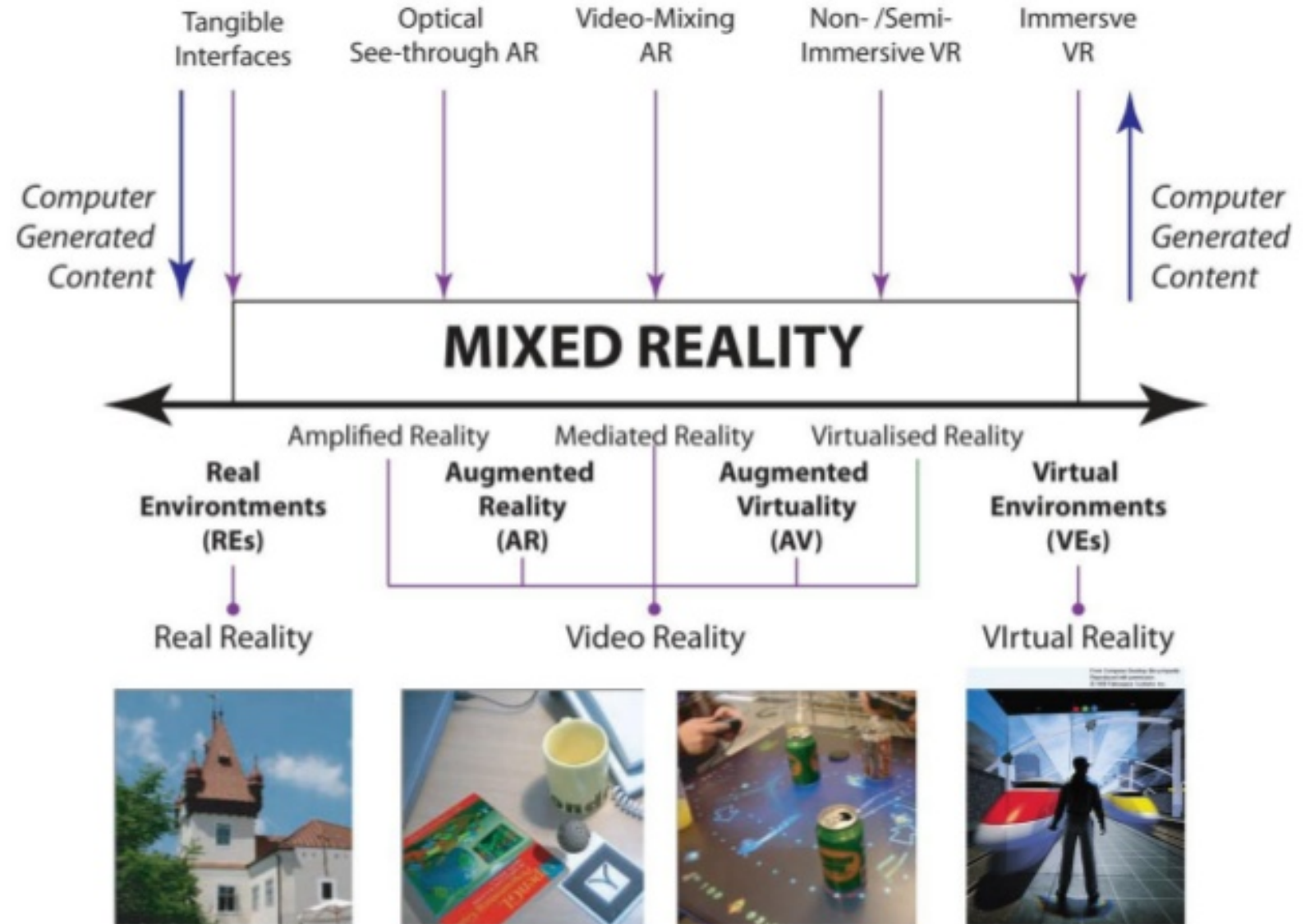


Agenda

- 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**

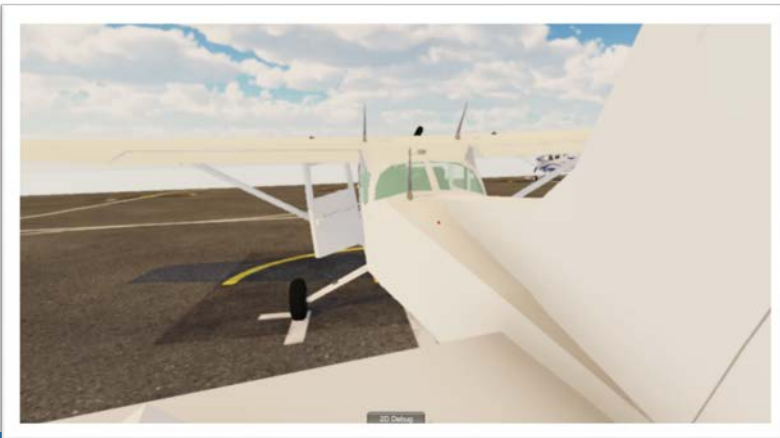
- Undertaking of high-risk tasks
- Demonstrating effects of actions
- Completing repetitive tasks
- Increasing cognitive processes
- Customizing performance-based training



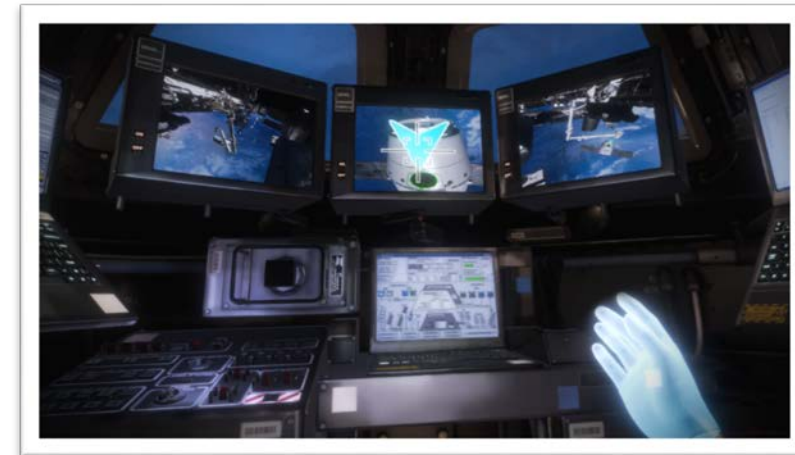
The ERAU Lab: Capabilities



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



Photo © Magnopus

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
- Clyde Rinkinen
- David Roach
- Raul Rumbaut
- Richard Snow
- Brent Terwilliger
- Tyler Wise