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

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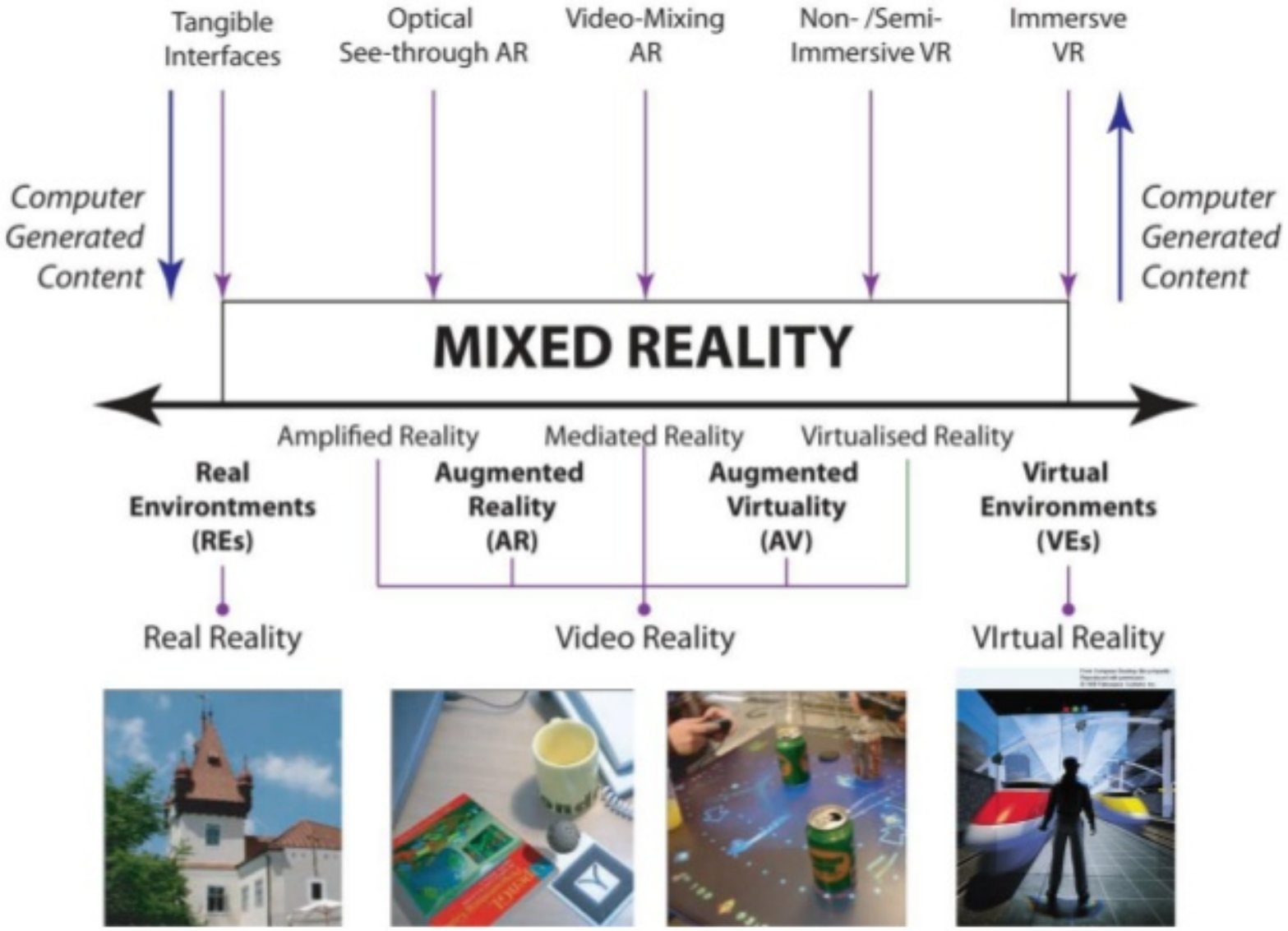
Agenda

- 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

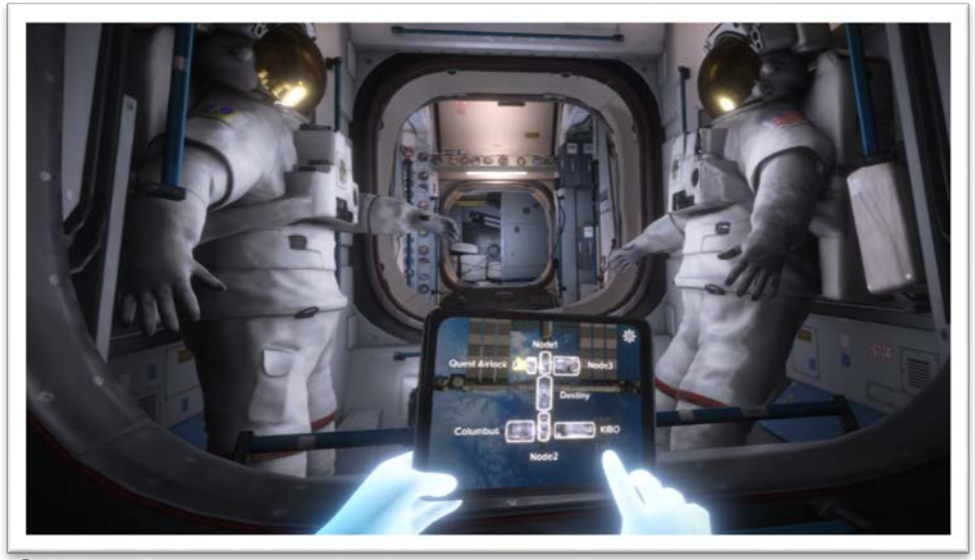


Photo © Magnopus

Questions?

Thank you from the ERAU ARVRMR Team

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