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CHRIS COLLINS

BEN FINEMAN

JULY 2016

Real Applications of Virtual Reality In Higher Education

Real Applications of Virtual Reality In Higher Education

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Introduction

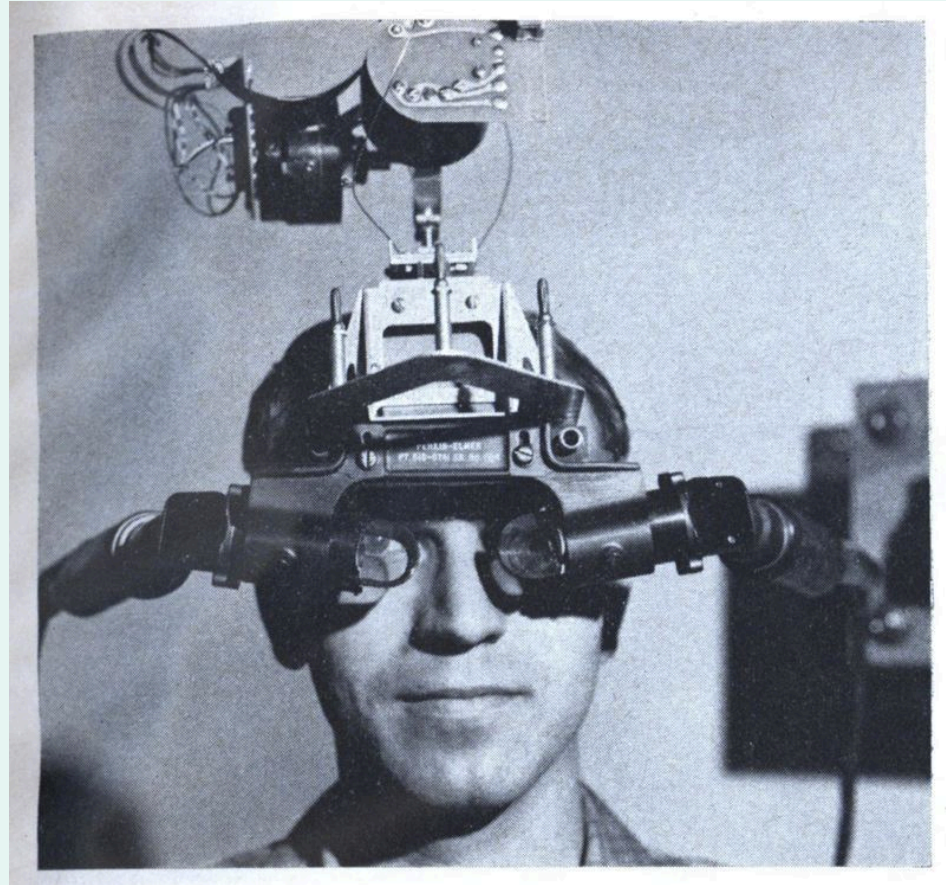
vir·tu·al re·al·i·ty

'vərCH(əw)əl rē'alədē

Noun

technology that replicates an environment that simulates physical presence in places in the real world or imagined worlds and lets the user interact in that world.

1968: Philco Headsight





1991: CAVE Automatic Virtual Environment



**2013:
Oculus Rift**

2016 Launch





**2014:
Google
Cardboard**

**5M+ Units
Shipped**



Photo Credit: Slash Gear



**2015:
GearVR**

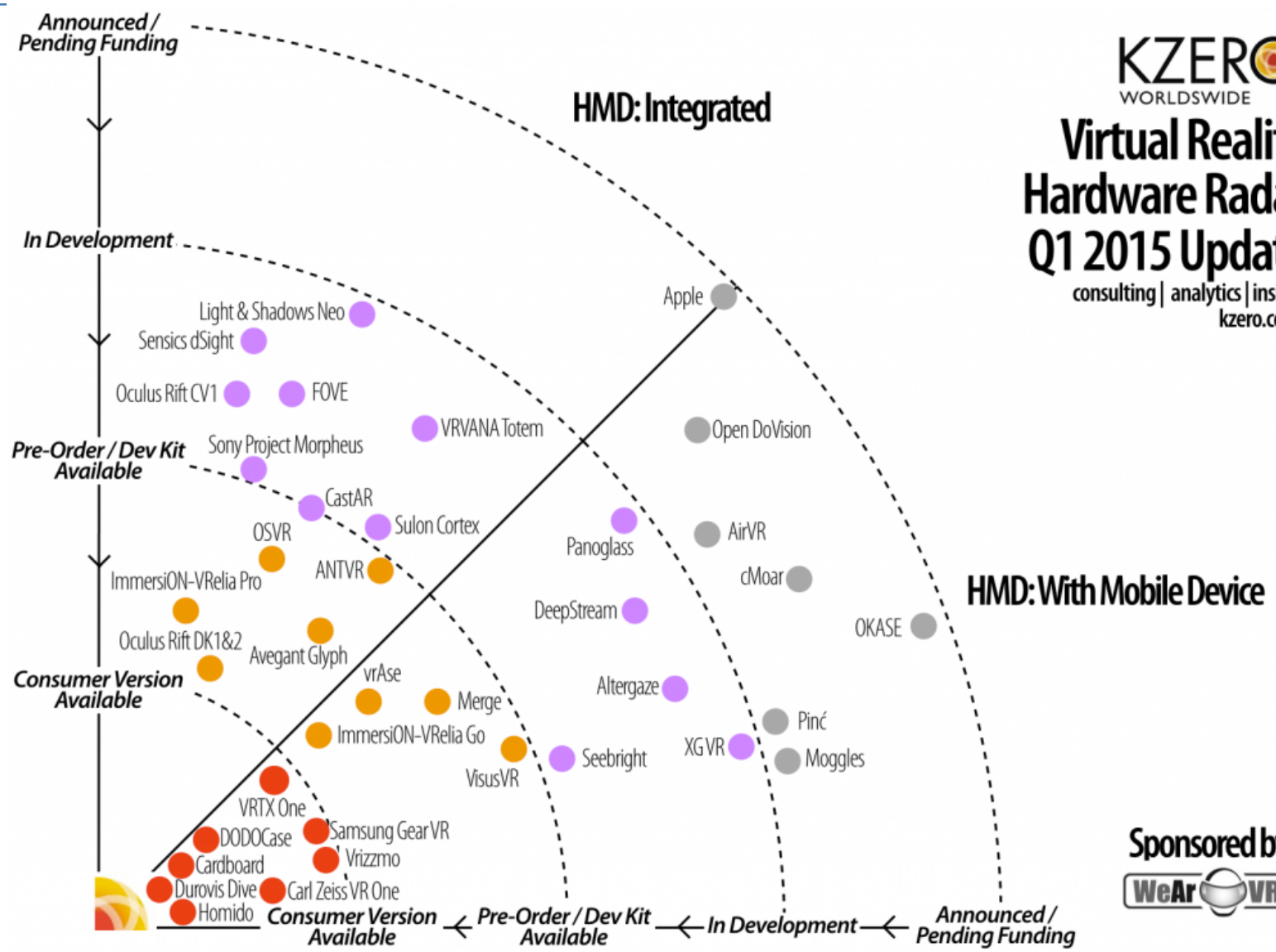


**2015:
HTC Vive**



Virtual Reality Hardware Radar Q1 2015 Update

consulting | analytics | insight
kzero.co.uk



VR HMD PRICE RANGE



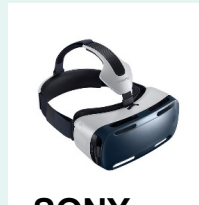
Google Cardboard
QR Code



**GOOGLE
CARDBOARD**

\$10 - \$20

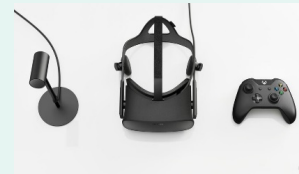
DIY or KIT



**SONY
GEAR VR**

\$99

Must use a
Samsung
Phone/Tablet



**OCULUS VR
RIFT (CV1)**

\$650*

Consumer
Release



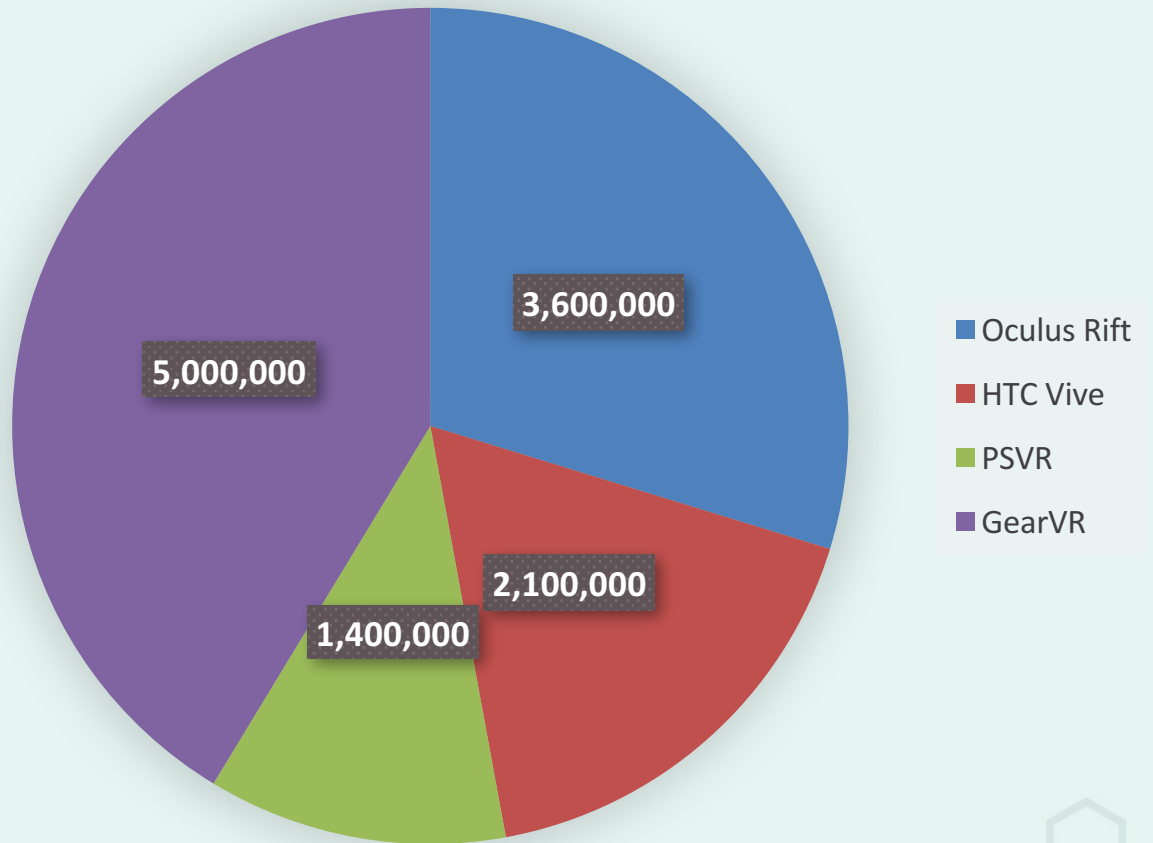
**HTC
VIVE**

\$800*

Consumer
Release

* Also requires a **PC** with GTX 970+
video card ~ \$1500 - \$2500
(sorry, Mac peeps) ;)

Projected 2016 VR Sales: 12.2M Units



Source: Piper Jaffray

aug·men·ted re·al·i·ty

Noun

an enhanced version of reality created by the use of technology to overlay digital information on an image of something being viewed through a device (as a smartphone camera)



**2015:
Microsoft
Hololens**

Light
Augmentation

Full virtual
environment

AR

Immersion Spectrum

VR

ges·ture con·trol

Noun

enables humans to communicate with machines (HMI) and interact naturally without any mechanical devices



**2014:
Leap
Motion**

GESTURE DEVICE PRICE RANGE

Gesture Control



**LEAP
MOTION**

\$80

Available
now



**RING
ZERO**

\$149

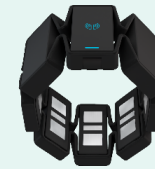
Available
now



**MICROSOFT
KINECT FOR PC**

\$149

Available
now



**MYO
ARMBAND**

\$199

Available
now

Field Trips



The Jackson School Victoria, Australia

Photo Credit: Education Week



**Arlington Science Focus School
Arlington, VA**

Photo Credit: The Synapse



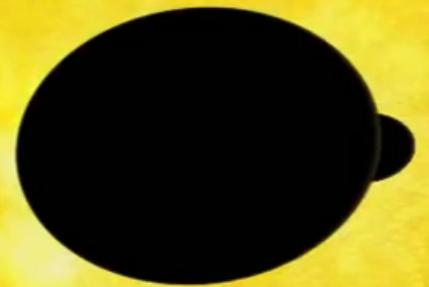
Photo Credit: Mat's Classroom

12,756 KM ACROSS

THE MOON



VENUS
12,104 KM



WELCOME!

PLEASE SIT BACK
AND RELAX.

0%



Photo Credit: Extreme Tech



Google

EXPEDITIONS



Google
JUMP



Training



Archaeology Site Training:



Photo Credit: CallT2

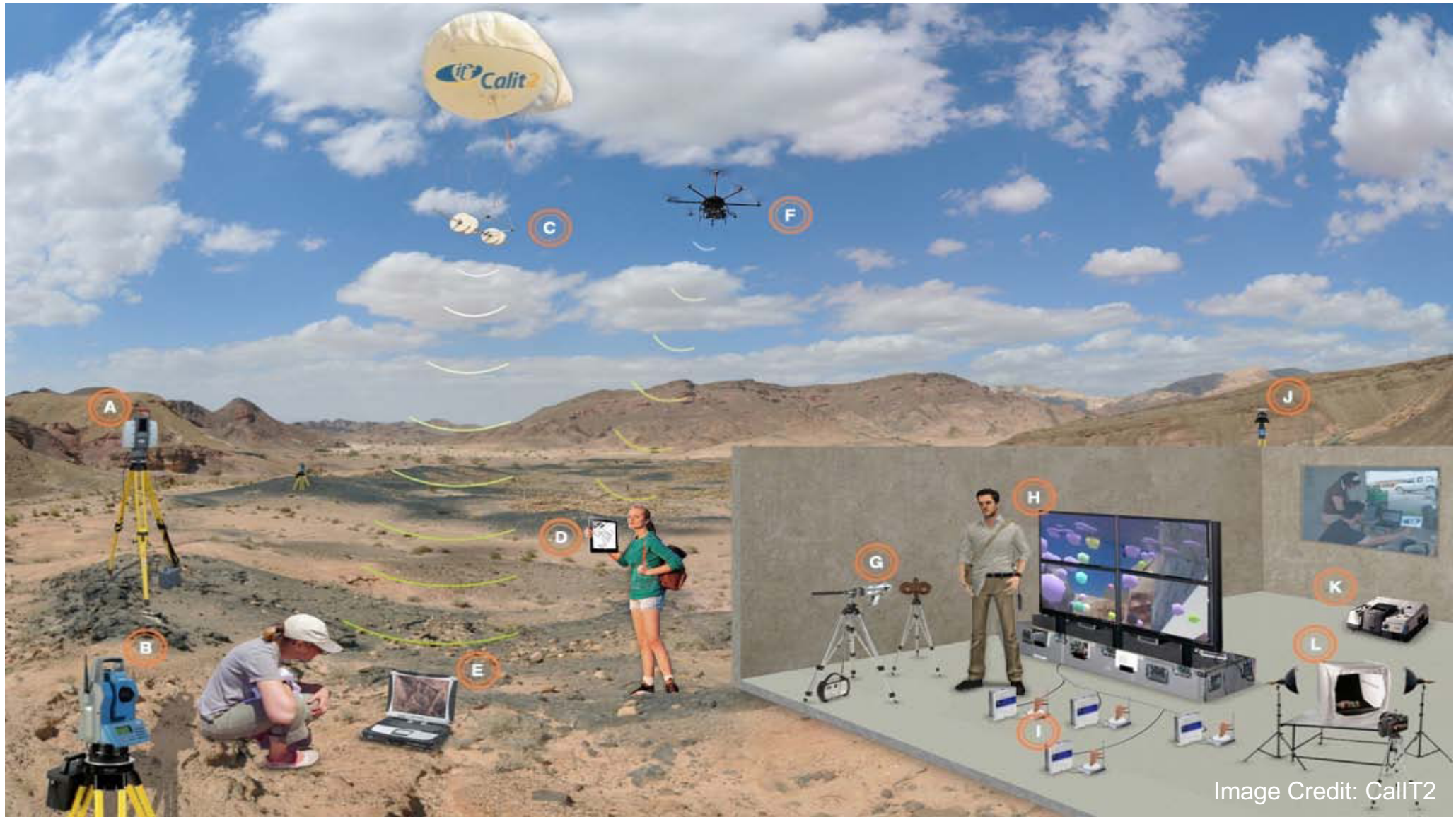


Image Credit: CalIT2



Naval Training Simulation



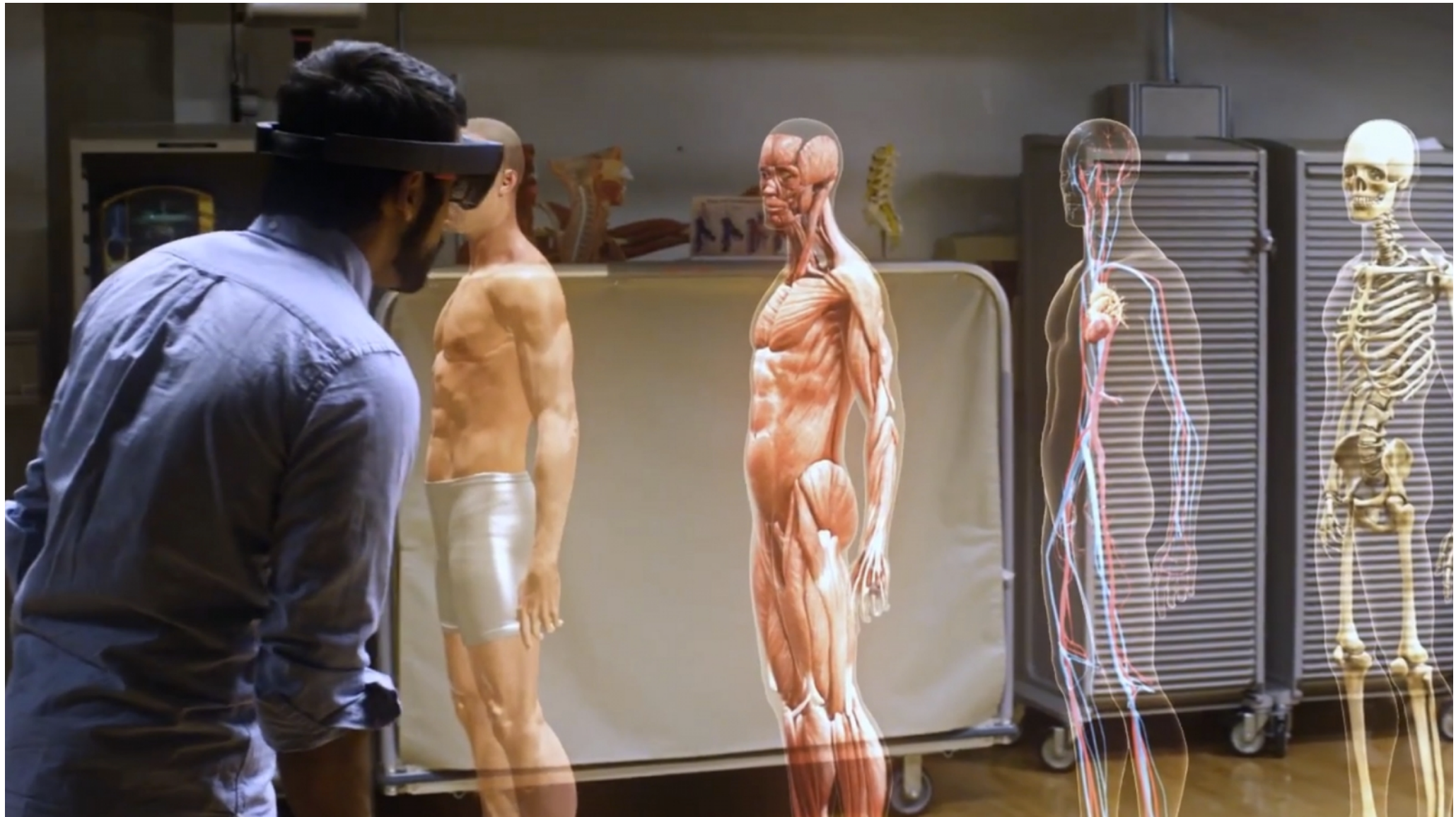
Photo Credit: Naval Postgraduate School



CASE WESTERN RESERVE
UNIVERSITY EST. 1826

Medical Education

INTERNET





Brain Surgery Training

"In creating a completely artificial world for the patient, we could map certain zones and connections of his brain related to functions that we could not, up to now, easily test on the operating table," Philippe Menei, Neurosurgeon



Photo Credit: Chu Angers University Hospital

Recruiting

YOU VISIT





Football Recruiting



Photo Credit: Sports Illustrated

HEADCASE



Design



Historical Recreation



missionv.ie





Architecture Design



Photo Credit: Archinect News

Distance Learning



Realtime Lecture In VR



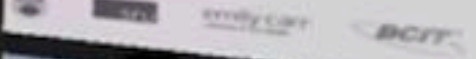
Justin

Controlling the Controllers

Talk 11
Part C "Controlling"
Video Game Law 2014
UBC Law @ Altac **John**

Jon Festinger O.C.
Centre for Digital Media
Festinger Law & Strategy
<http://videogame.law.ubc.ca>
@jfestinger
jm_festinger@thardis.ca

CENTRE FOR DIGITAL MEDIA





Online Degree Program Offered Over VR

Executive
Education

Stanford LEAD Certificate
Learn
Engage
Accelerate
Disrupt

Raquel Gonzalez-Dalmau
(marta)

Daniel Klein

Martha Weeks

Kevin Williams

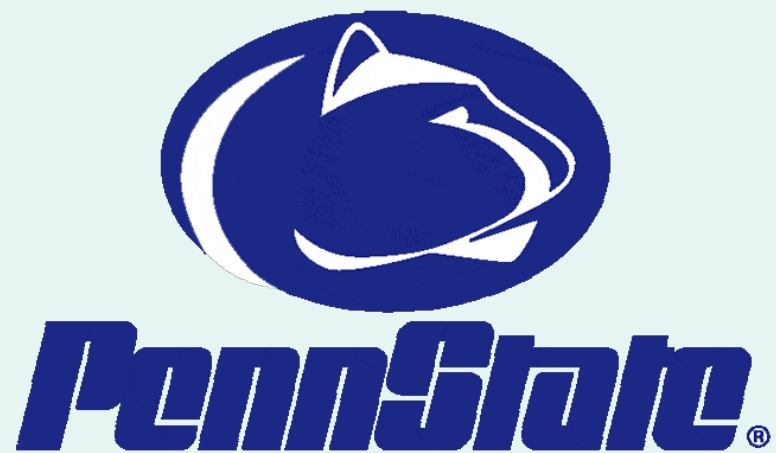




Distance Learning for Disaster Recovery

avayalive
engage





Improving Online Learning

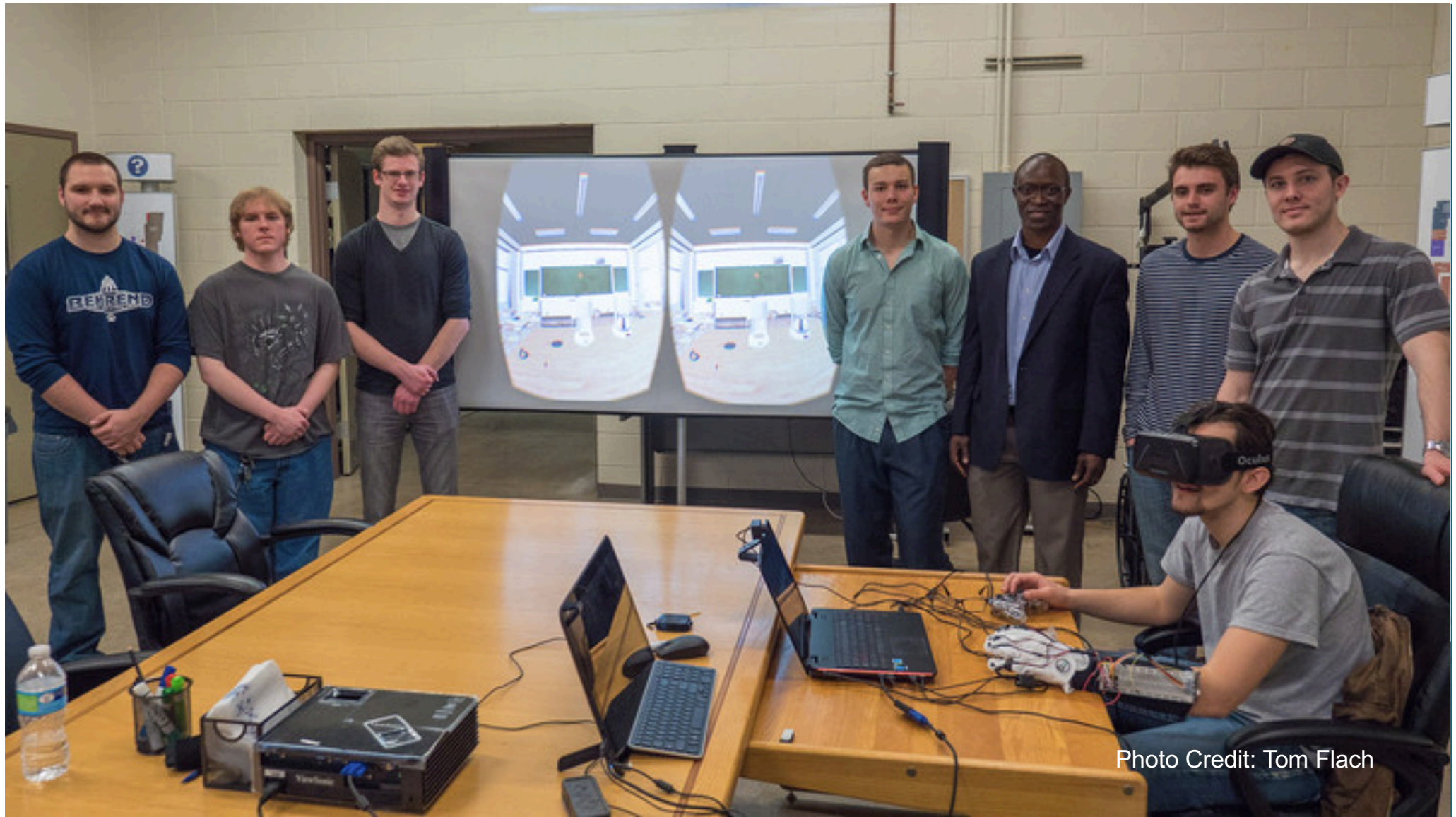
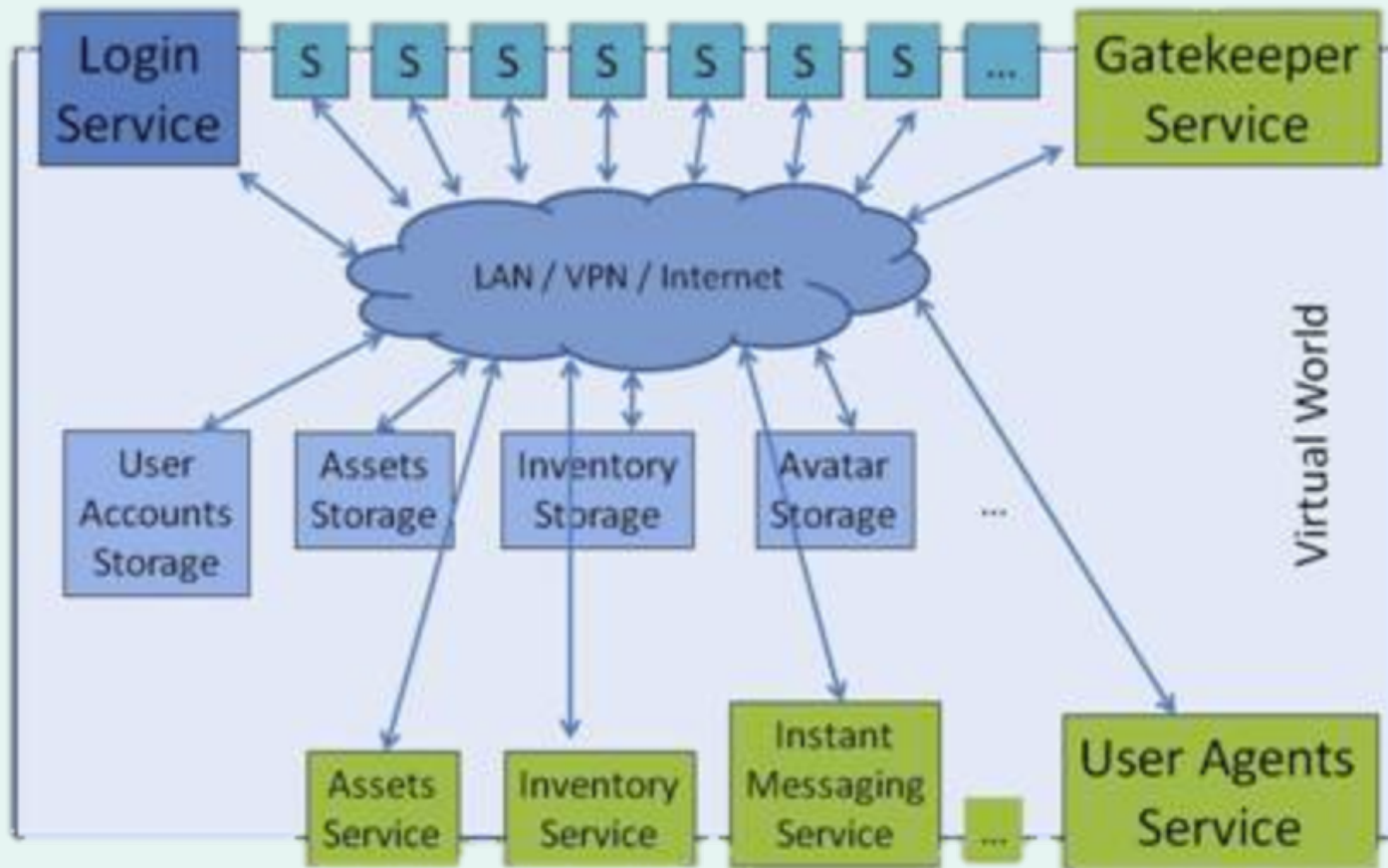


Photo Credit: Tom Flach

Collaboration



Hypergrid





Production by:
Oculus Foundation
Sponsored By:
SIMUD
GRID

OpenSimulator Community Conference
November 8 - 9, 2014

OpenSimulator Community Conference
A joint production by:
AVECON
Sponsored By:
SIMUD
GRID

OpenSimulator Community Conference
November 8 - 9, 2014
SIMUD
GRID

Brought to you by our sponsors...
AVINATION
SIMUD
GRID

Oculus Foundation
AVECON

OpenSimulator Community Conference



Oculus
Development



Augmented Reality Rift

AR-Rift





Lifesize 3D Video Avatars

Research



UCSIM | CENTER FOR SIMULATIONS & VIRTUAL ENVIRONMENTS RESEARCH



VISUALIZATION

Scientific data
visualization

UCIT | University of Cincinnati
Information Technologies


UNIVERSITY OF
Cincinnati

Center for Simulations & Virtual Environments Research

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ACADEMIC & RESEARCH PROJECTS

- **Procter & Gamble Research Project** – In partnership with Procter & Gamble, UCSIM is exploring exciting advances in scientific data visualization. After a successful initial launch, we expect continued collaboration with P&G as new capabilities emerge.
- **Cincinnati Children's Hospital Medical Center (CCHMC) TEAM VR Research Collaboration Agreement** – UCSIM is creating virtual reality software for the CCHMC TEAM VR's brand new state-of-the-art virtual reality laboratory. Our research collaboration agreement also facilitates UCSIM's ability to partner with TEAM VR on grants and other funding opportunities, as well as leveraging the new lab to create custom animations and motion capture for other UCSIM projects.
- **Virtual Counselor Prototype Commercialization** – UCSIM partnered with Dr. George B. Richardson, Asst. Professor, Substance Abuse Counseling Program in the College of Education, Criminal Justice, and Human Services to pitch a Virtual Counselor prototype to VC angel investors through the CincyTech accelerator, yielding the potential formation of a new company to market the application for health promotion and substance abuse counseling to underserved populations.



*CCHMC TEAM VR
soccer simulation for
injury prevention and
rehabilitation.*



SPORTS MEDICINE

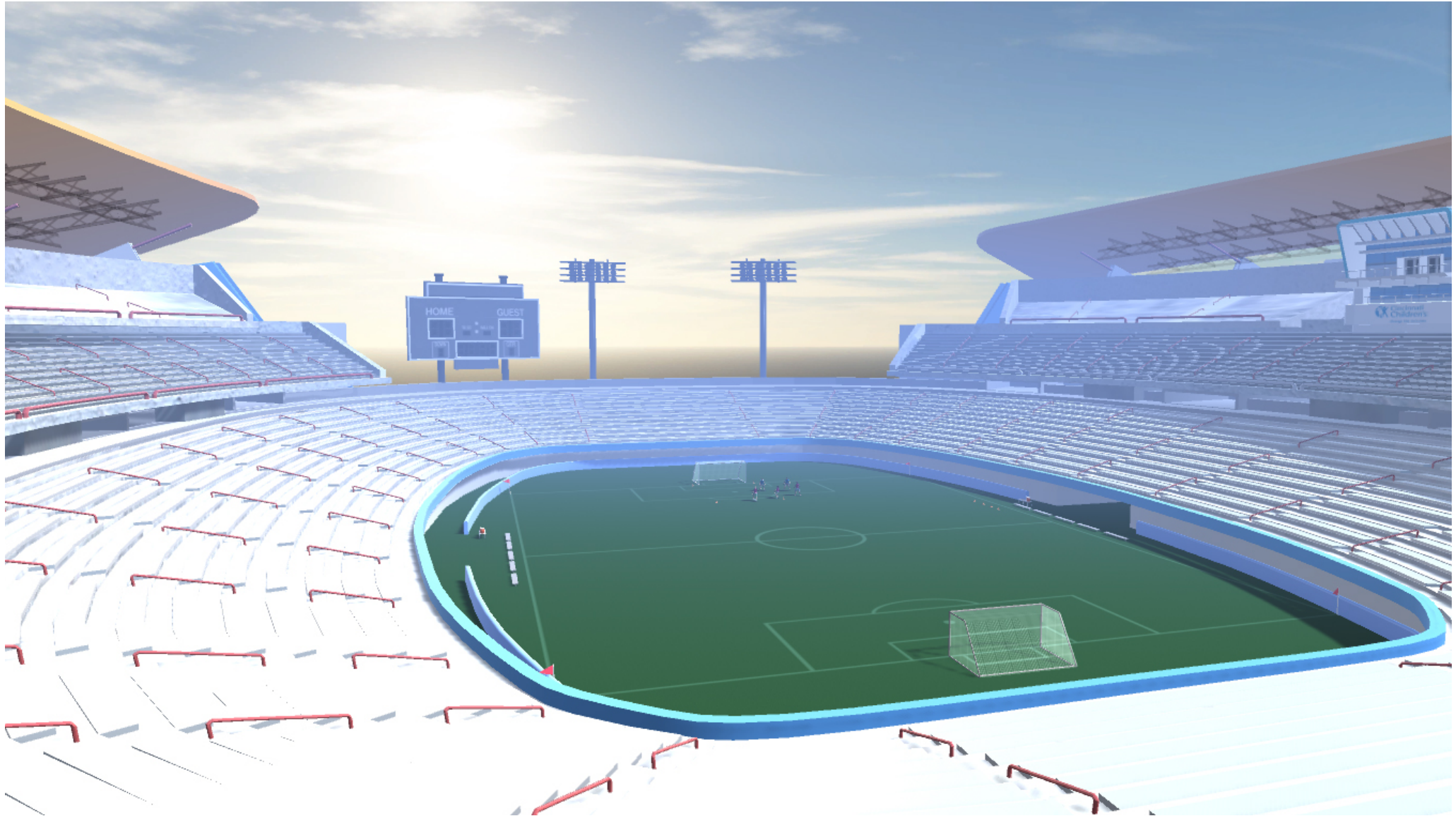
Student athlete injury and re-injury prevention

Traumatic Brain Injury (TBI) and concussion severity detection and rehabilitation

ADHD Research









EMERGENCY MEDICINE

Projecting augmented reality injuries for medical simulations and training



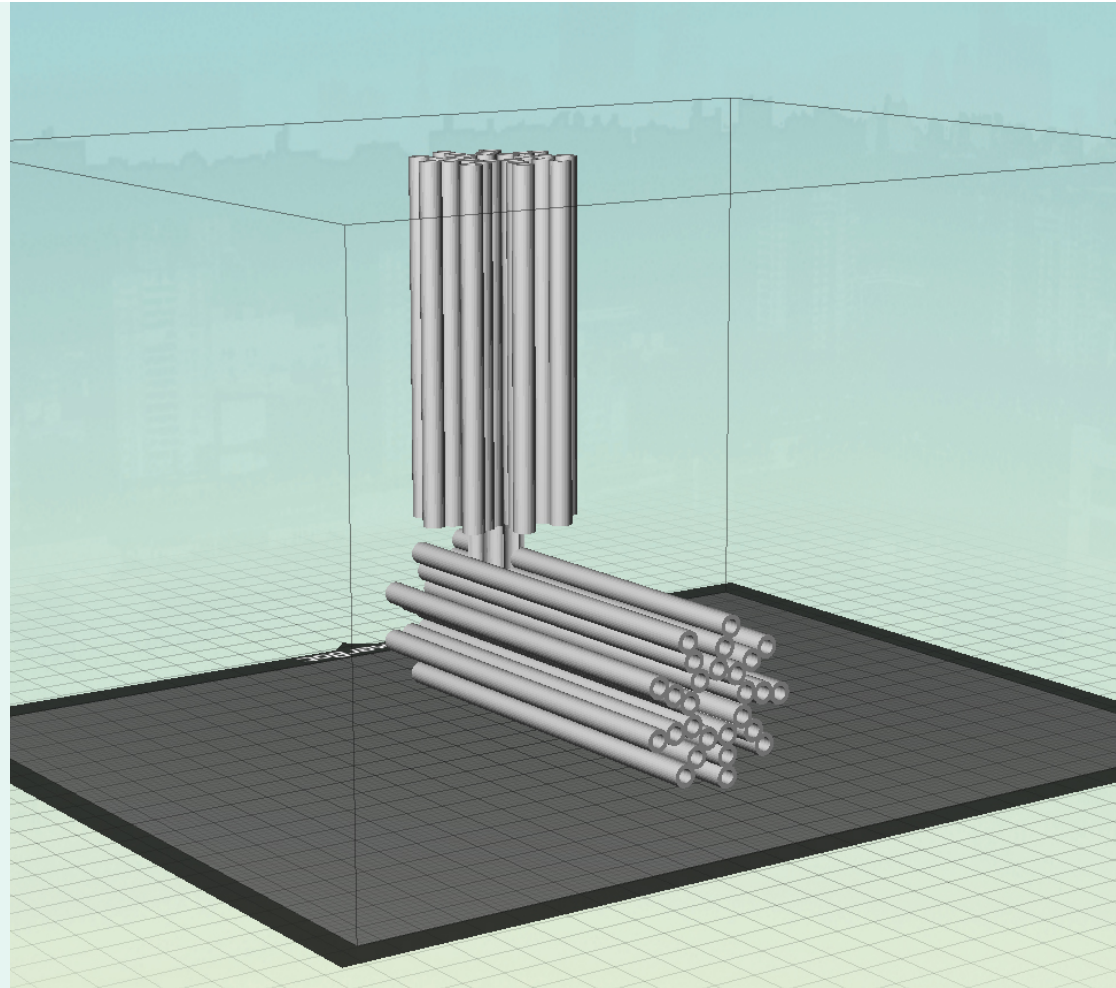
BEHAVIORAL RESEARCH

Classic game theory
experiments measuring
effects of VR on economic
decision-making



CANCER RESEARCH

Exploring the centriole's
electromagnetic field in
cancer using AR and VR
simulations





College of Education,
Criminal Justice, &
Human Services

ADDICTION & SUBSTANCE ABUSE

Mobile virtual counselor
app for addiction
counseling therapy



Virtual Counselor

Please select a counselor to start a session.
(IN PROGRESS)

Begin

*Developed by the University of Cincinnati Center for
Simulations and Virtual Environments Research (UCSIM)
ucsim@uc.edu*

VIRTUAL REALITY **R&D** REQUIRES

GAME DEVELOPERS

Experienced “game” developers with AI and UI expertise.

ARTISTS & DESIGNERS

Creative artists skilled in design, prototyping, graphics rendering, and 3D modeling/printing.

COMPUTER SCIENTISTS

With deep knowledge of machine learning, graphics computation, and natural language processing.

HARDWARE ENGINEERS

To develop custom AR/VR hardware and haptic devices.

HUMAN COMPUTER INTERFACE (HCI) EXPERTISE

With understanding of cognition, perception, and motion/emotion analysis.

RESEARCH STUDY DESIGN & EXECUTION

For experiments conducted in virtual environments.

UCSIM | VISION

Unleashing the human potential for scientific discovery, innovation, and creative play with **immersive technologies** and making **the Metaverse** of tomorrow.

Metaverse Working Group

metaverse@internet2.edu

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