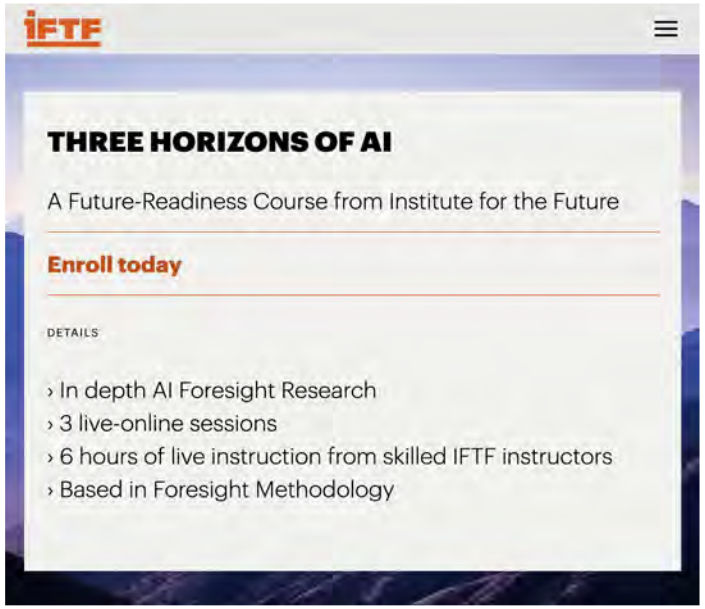

IFTF

AFIT Discounts for Foresight Essentials Trainings

IFTF Foresight Essentials



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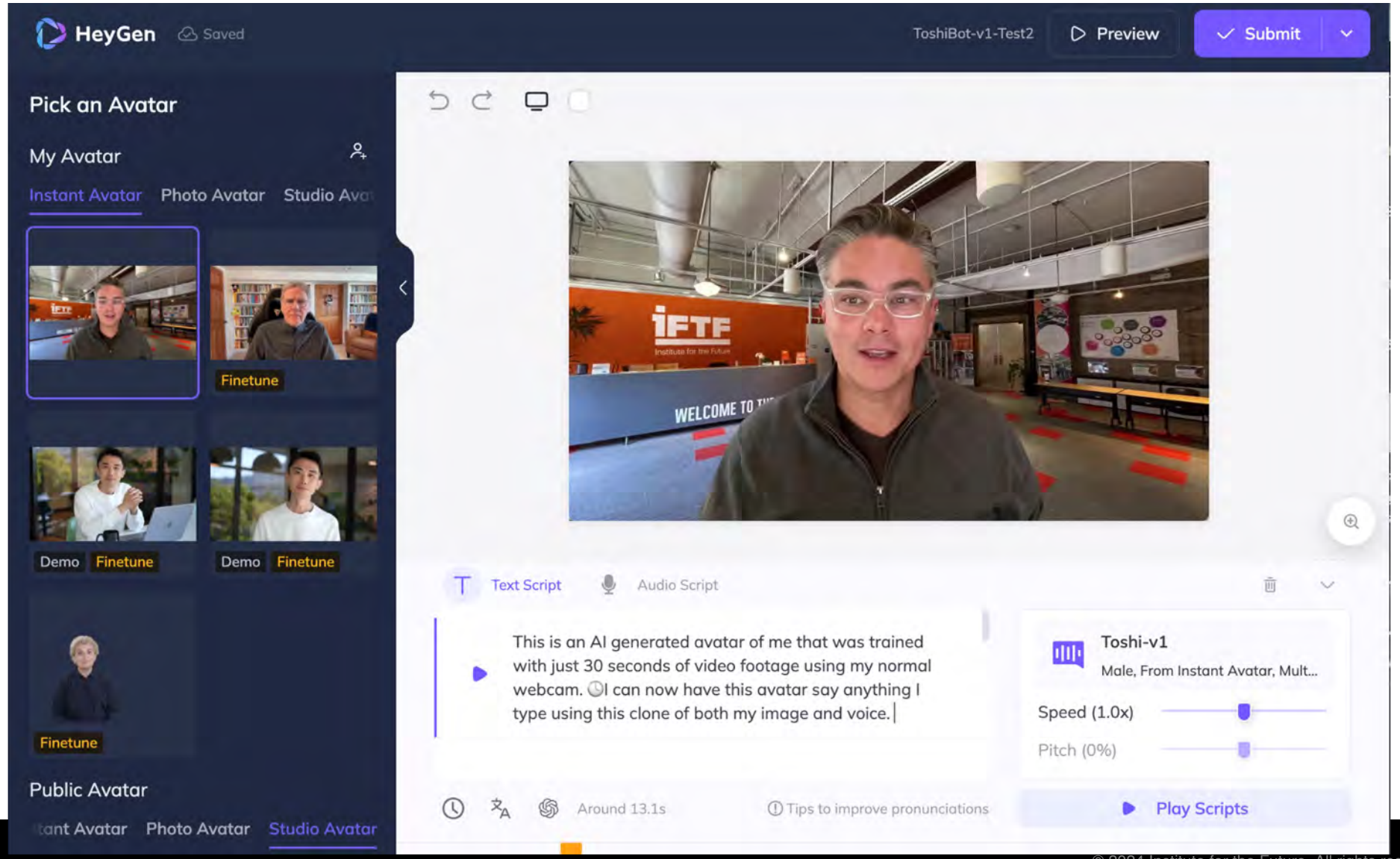
$500 off!

DIGITAL TWINS of everyone



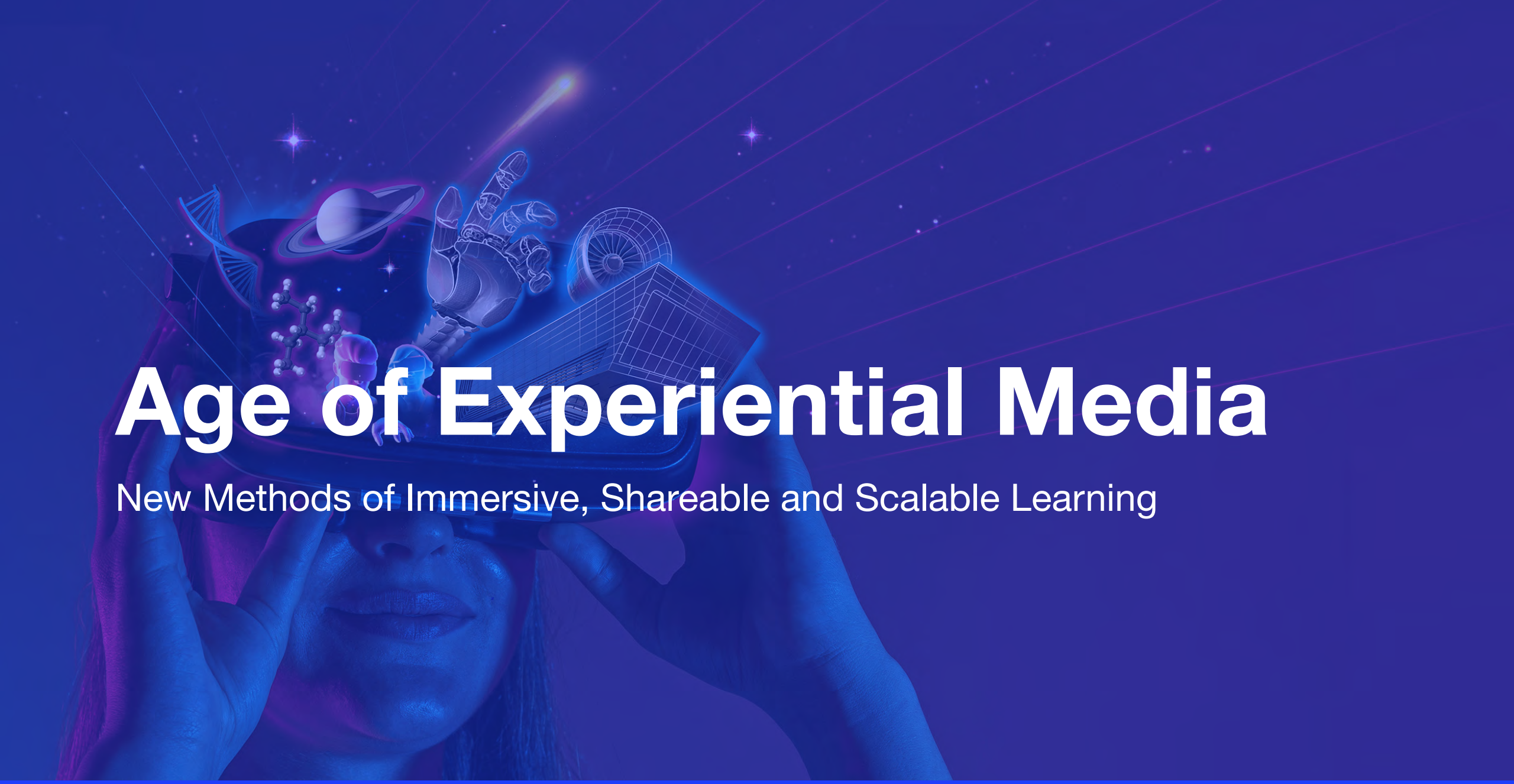
Extended Realities of Learning

Experiential Media and the Future of Education

POWERED BY

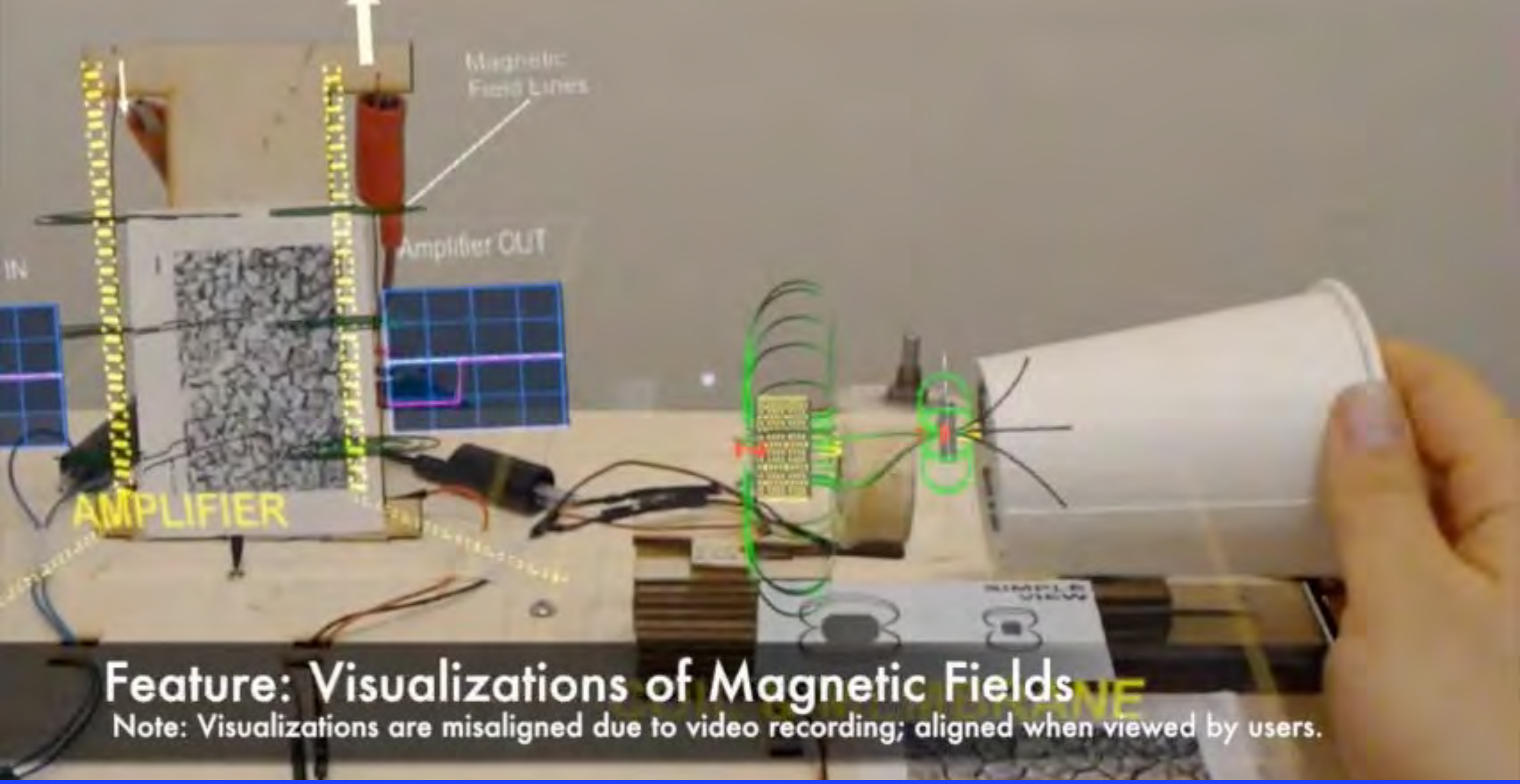
California Community Colleges

IFTF
Institute for the Future



Age of Experiential Media

New Methods of Immersive, Shareable and Scalable Learning

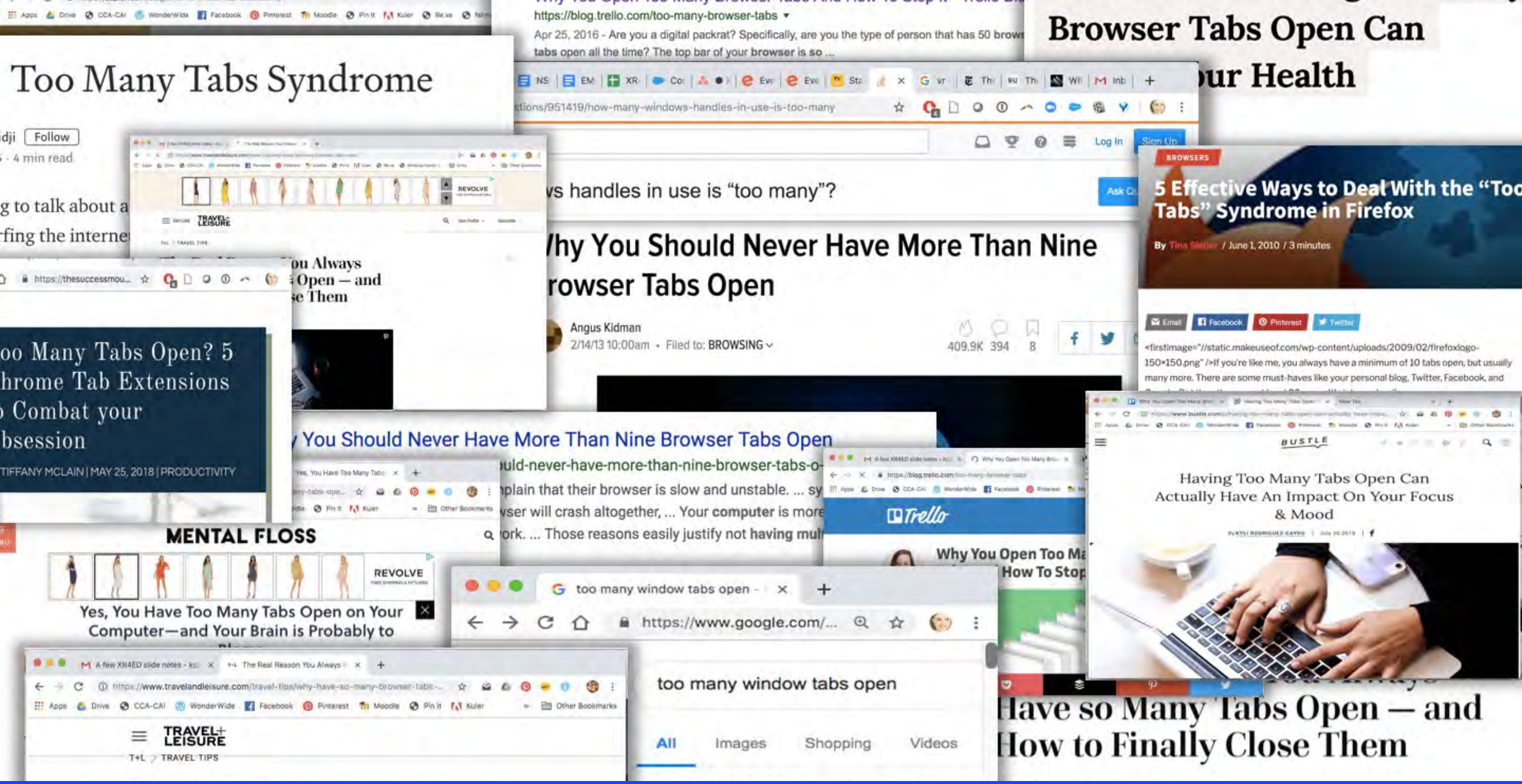


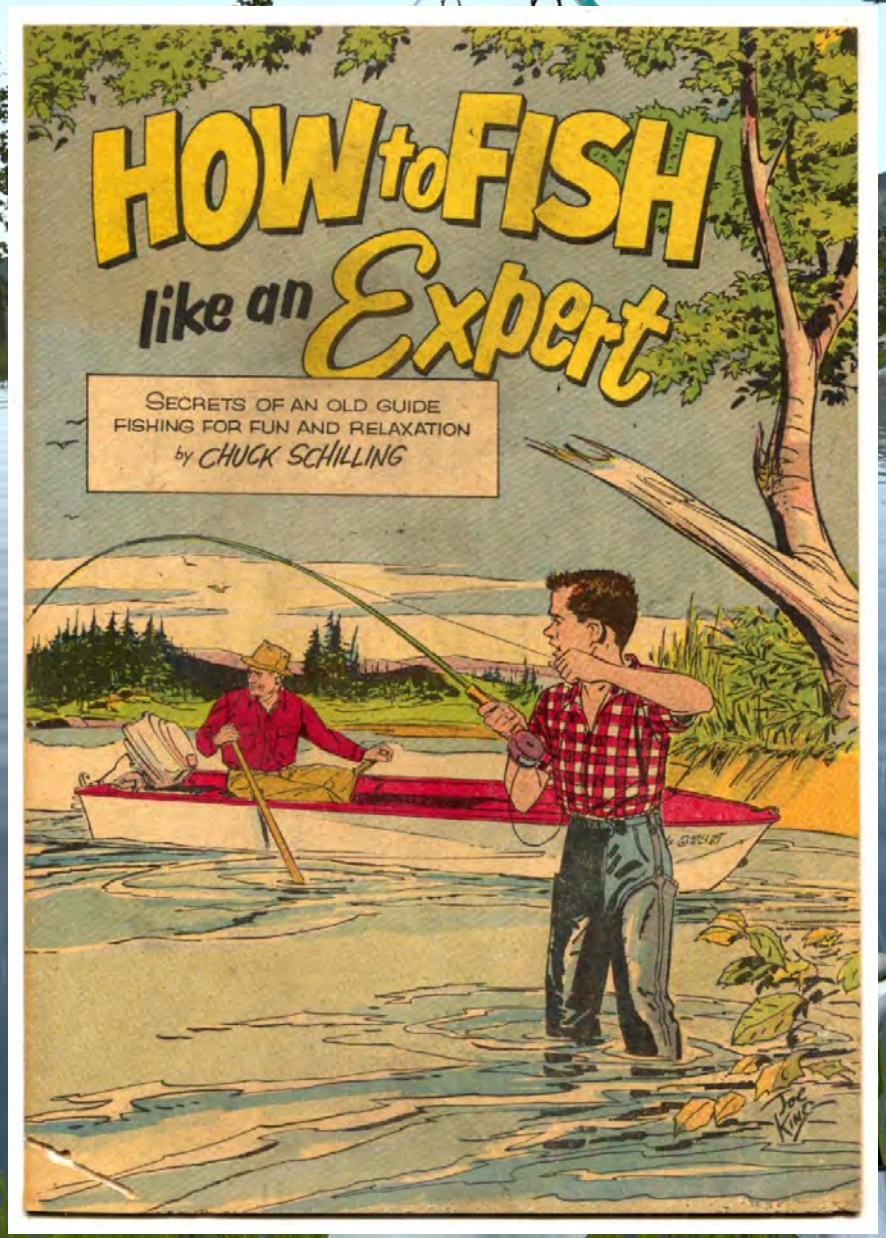
Feature: Visualizations of Magnetic Fields

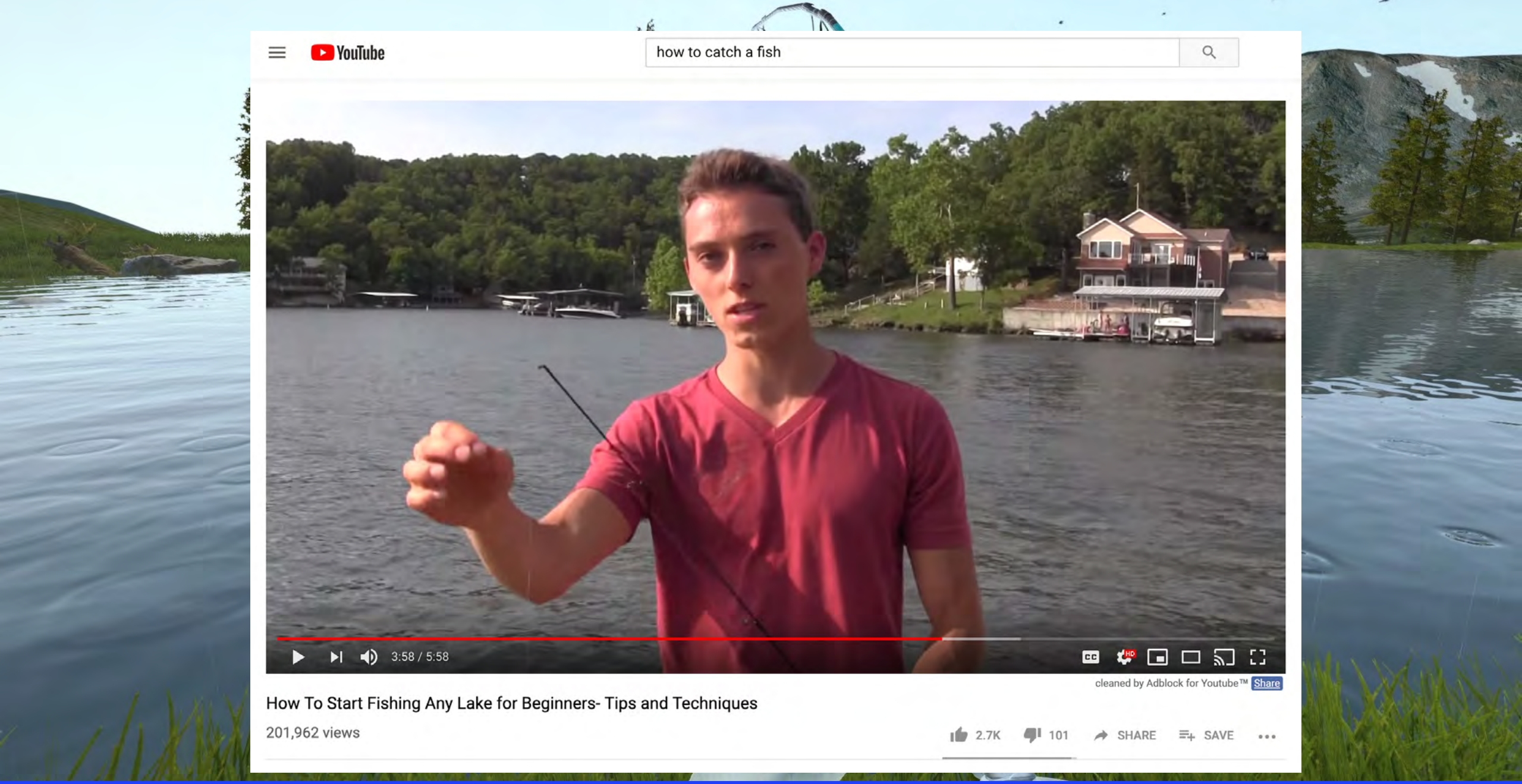
Note: Visualizations are misaligned due to video recording; aligned when viewed by users.

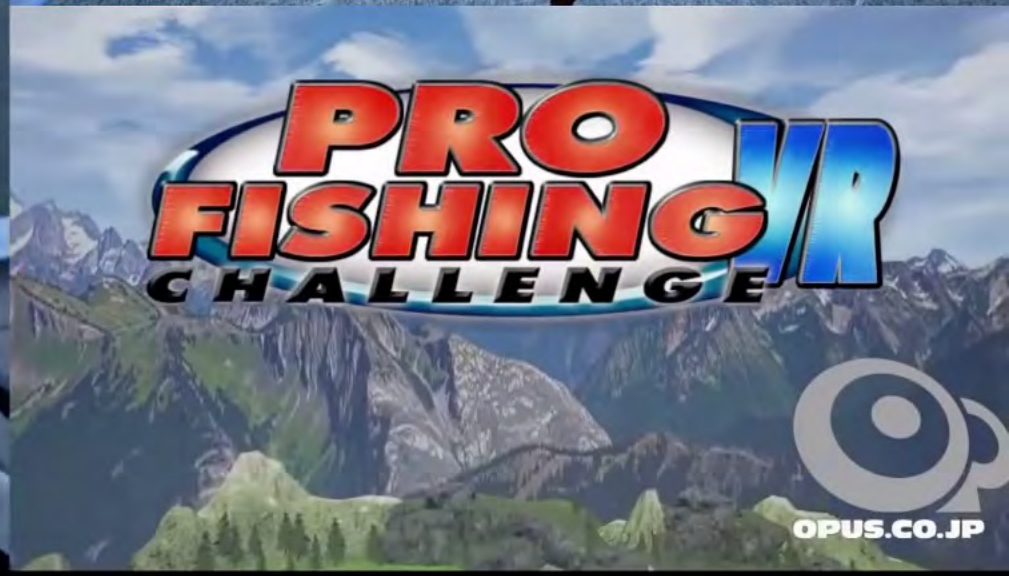
VIRTUAL REALITY (VR)
+
AUGMENTED REALITY (AR)

EXPERIENTIAL MEDIA









REVIVE VIVE SWE VIVER

Moving from **Passive Observer** to **Active Participants**

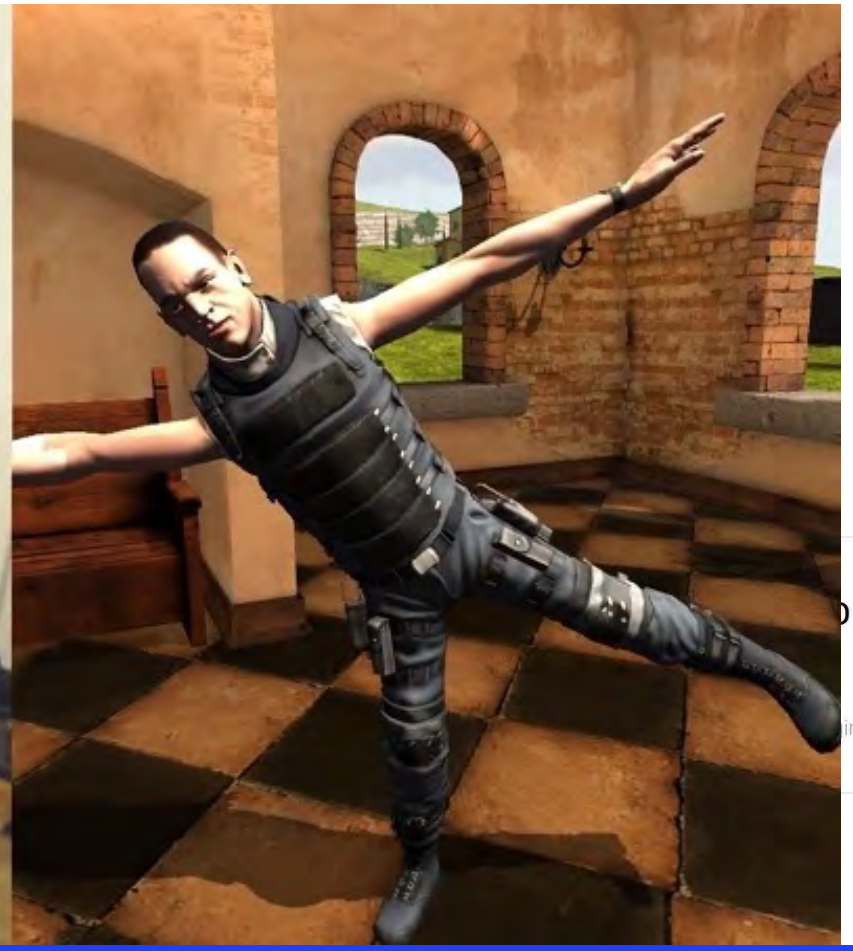
Embodied Presence in VR

WHAT

While basic 3-point tracking of a user's head and hands can make for a very expressive avatar, full body tracking systems allow full control of limbs and torso. Being able to run, jump, dance and move throughout the virtual world creates a deeper sense of immersion and engagement for the user and those around them. More sophisticated systems like the Tesla suit integrate motion capture and biometric sensors with haptic and temperature control feedback.

SO WHAT

XR will turn our whole body into an interface for moving, expressing and manipulation in virtual worlds. Future XR systems will include bio-metric sensors and multi-sensory feedback including smells, temperature and force feedback.



Walking the Plank in VR

WHAT

Richie's Plank Experience is simple but terrifying. Users are placed in a VR headset where they are taken to the top of a skyscraper. The doors open and there is a plank hanging out in mid air which they are forced to walk out on. A real plank is laid out in front of them to walk on increasing the believability of the experience which induces fear in nearly everyone that tries it.

SO WHAT

Even when your conscience mind knows it's being tricked, your body doesn't have a category for fake. Embodied interfaces can induce powerful emotional reactions unlike any other media. This psychological believability can be used for increasing both the perceptual and emotional realness of simulations which can help make the lessons and trainings more impactful.

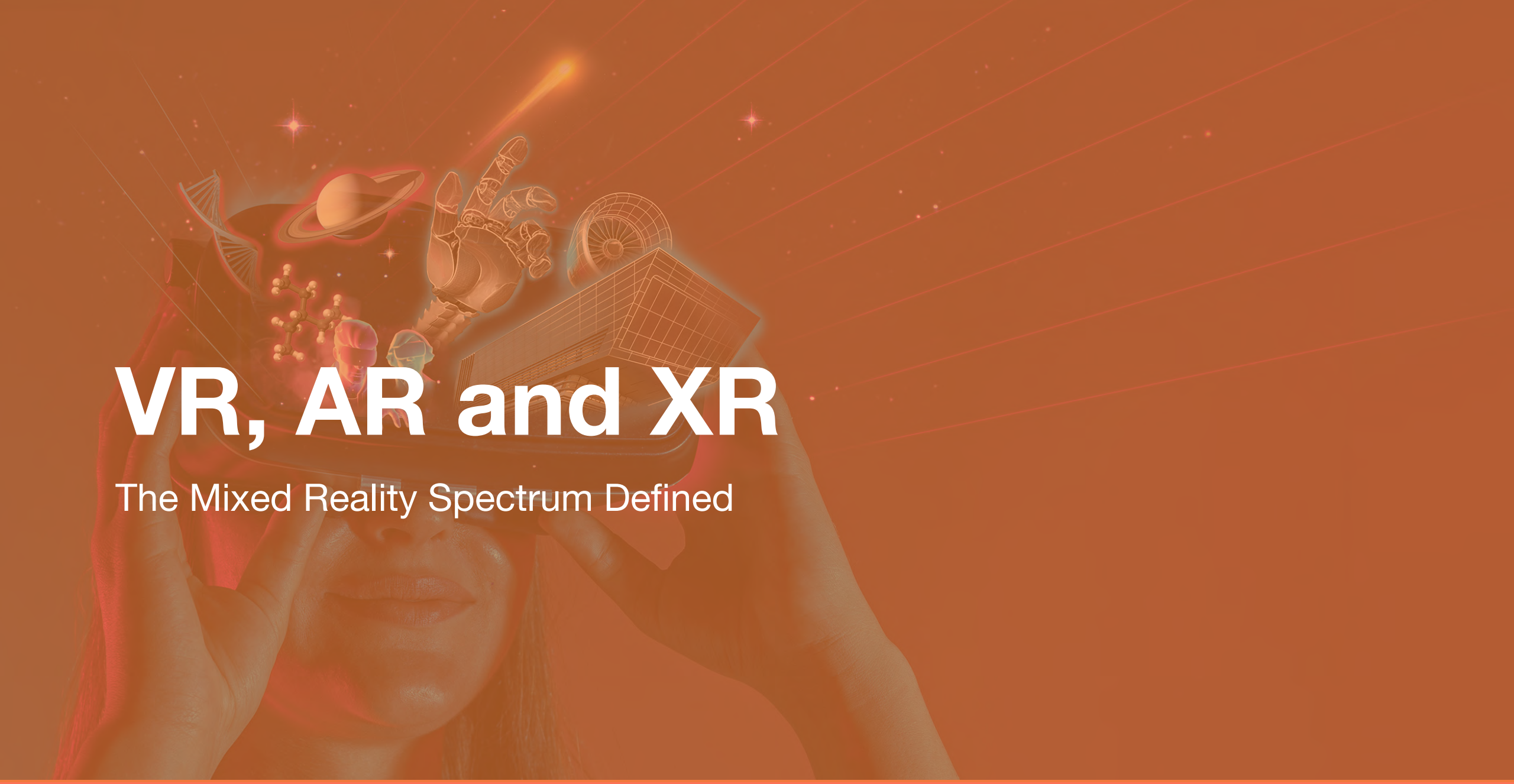
Kinesthetic Learning

WHAT

Prisms VR is pioneering a spatial learning platform that teaches math and science through immersive, first-person experiences. This unique approach allows students to discover abstract concepts tactically and kinesthetically in virtual reality. By connecting physical experiences to symbolic notation and vocabulary, Prisms aims to make learning more engaging, relatable, and memorable. This method caters to diverse learning styles, particularly benefiting visual and kinesthetic learners.

SO WHAT

This VR-powered embodied learning could radically democratize STEM education, unlocking potential in previously marginalized learners. We might witness a renaissance of diverse thinkers, from visual-spatial geniuses to kinesthetic prodigies, revolutionizing scientific innovation. This paradigm shift could upend traditional notions of intelligence, creating a more inclusive STEM landscape where neurodiversity becomes a catalyst for groundbreaking solutions to global challenges, rather than a barrier to entry.



VR, AR and XR

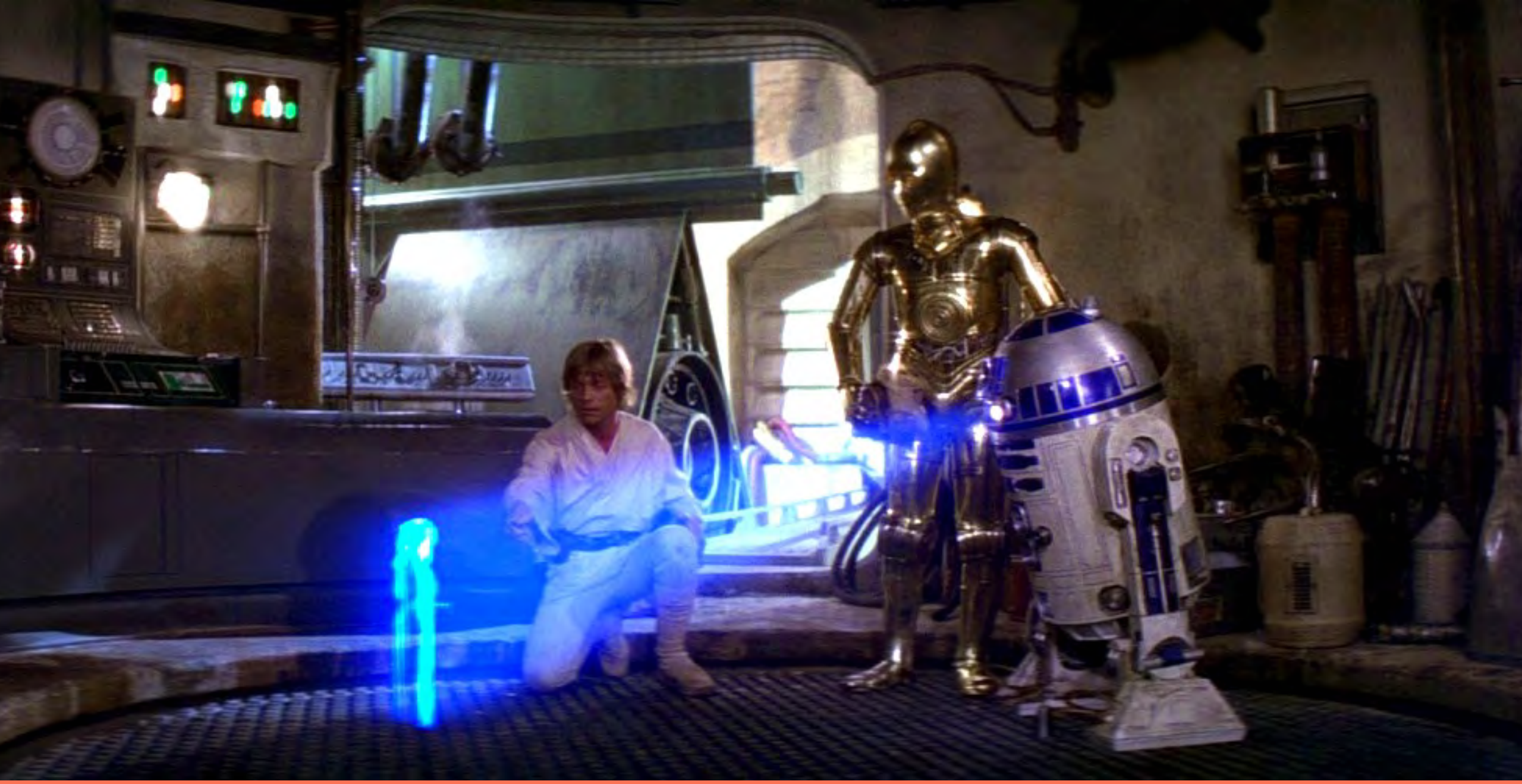
The Mixed Reality Spectrum Defined

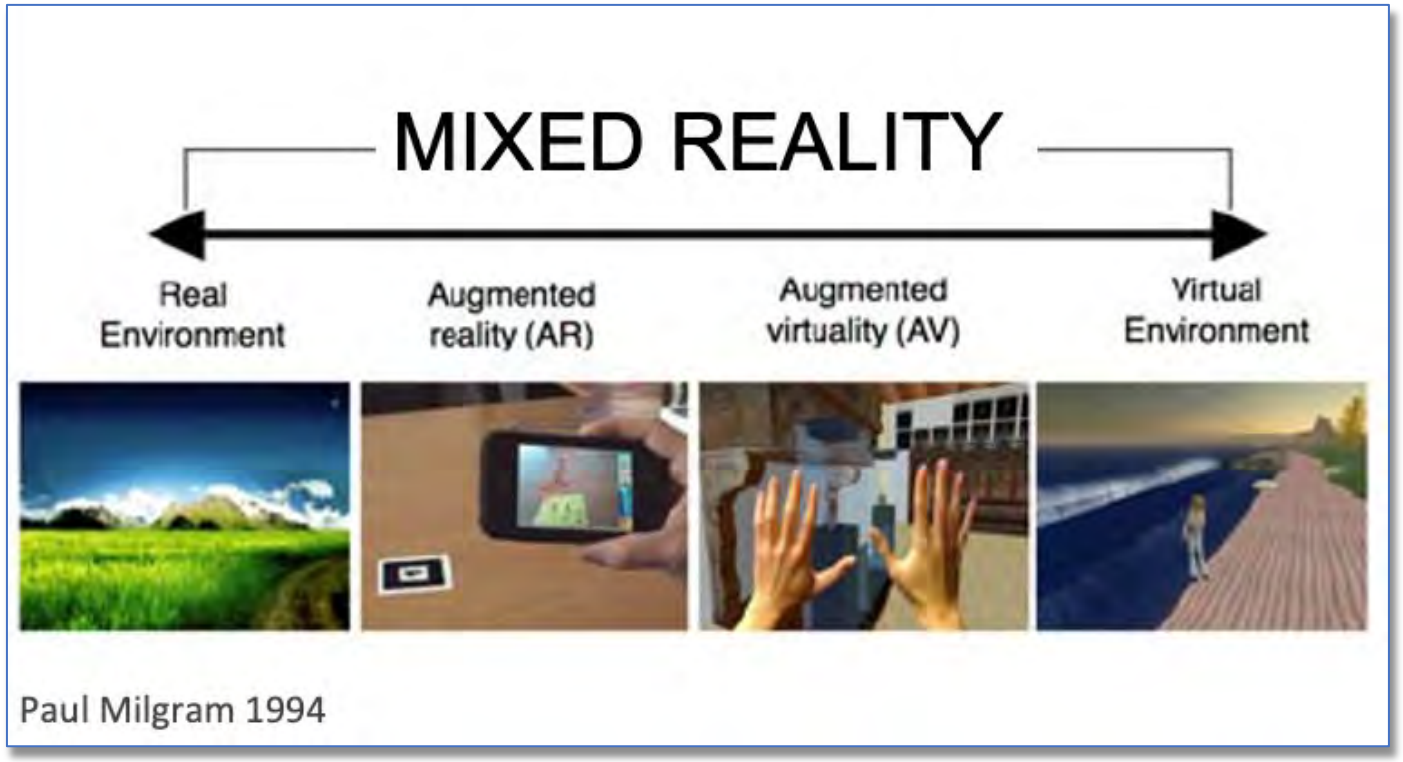
VR

(Virtual Reality)

AR

(Augmented Reality)

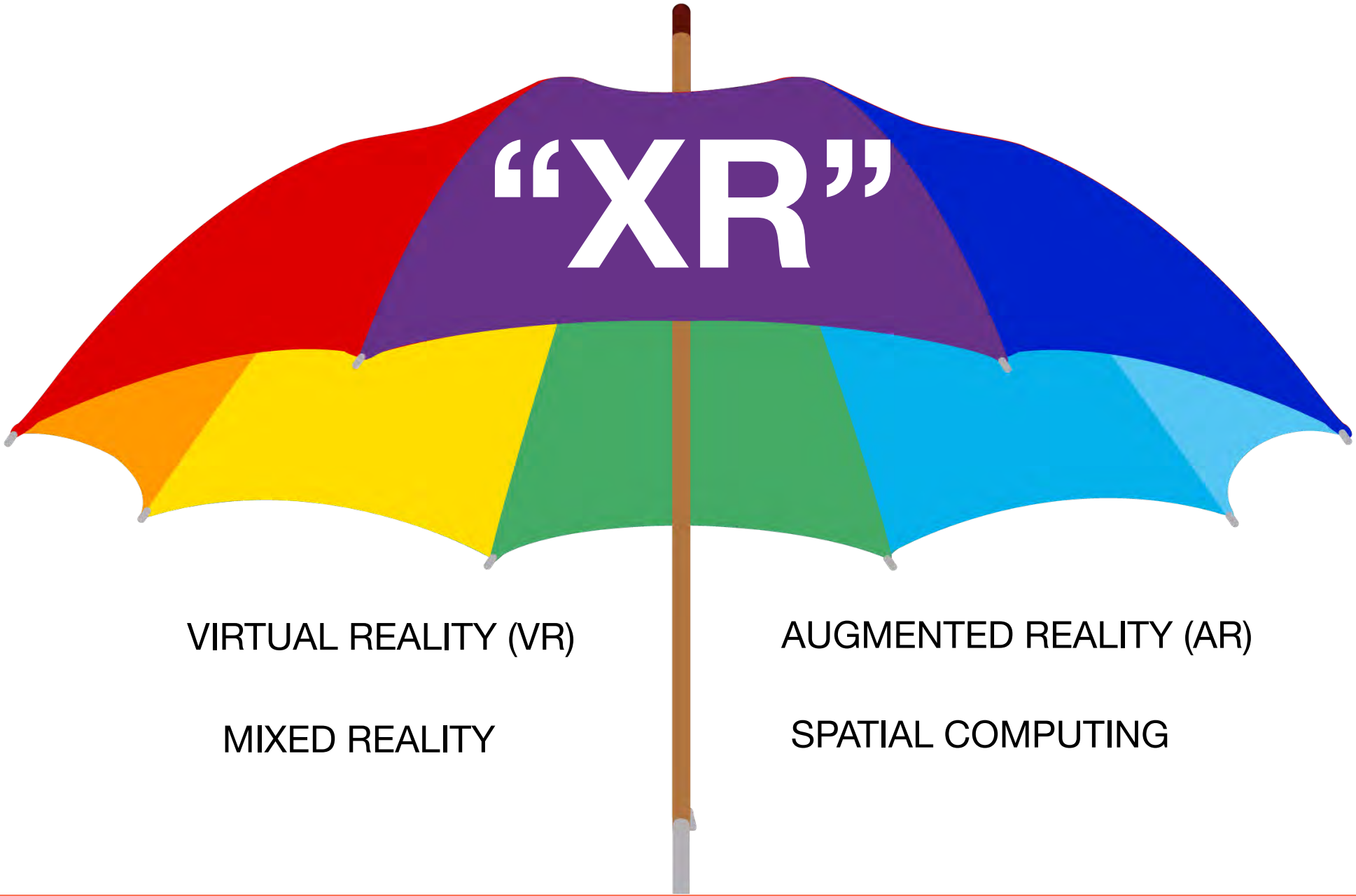




MR

(Mixed Reality)

Apple's "Spatial Computing"



VIRTUAL REALITY (VR)

MIXED REALITY

AUGMENTED REALITY (AR)

SPATIAL COMPUTING

XR Affordances and Applications

Capabilities and Capacities for Extending and Transforming Learning

VR AFFORDANCES:

Going Anywhere

Virtual Labs

WHAT

ASU online program partnered with Google to develop 30 virtual simulations on the Labster VR platform to teach Cell Biology, Ecology and Animal Physiology. They loaned out 35 VR headsets to the students who completed the 6 week course where they learned theory, visited virtual sites to collect data, returned to their virtual lab to analyze findings, and took quizzes to track their learning progress. 98% of the students surveyed said they would like to do more labs in VR.

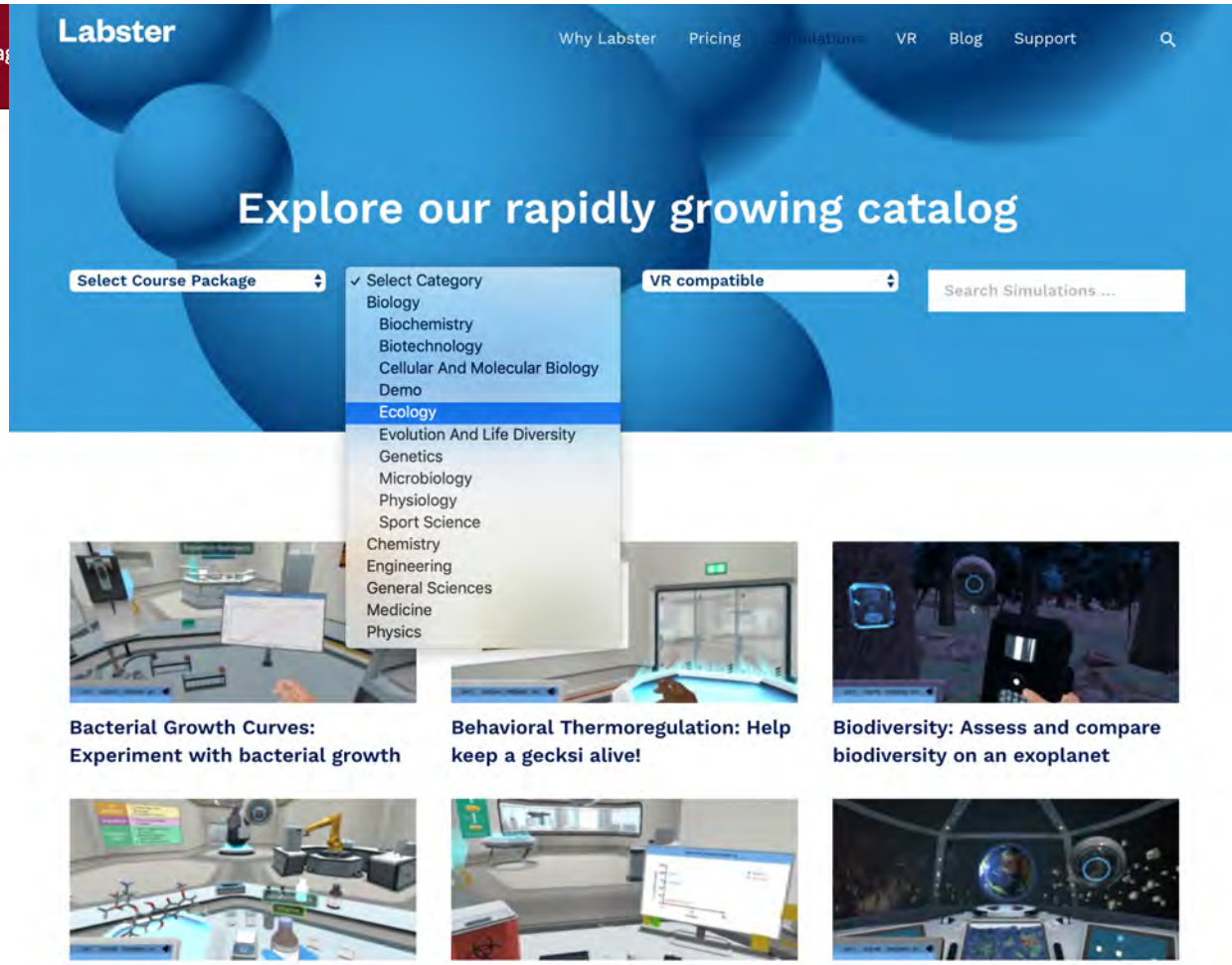
SO WHAT

Virtual labs aren't a complete replacement for real world wet labs, but can prepare students to make their time in the real lab more effective and safer, and provide wider access to experience of working with expensive and delicate lab equipment. Virtual labs will increasingly be integrated into existing LMS systems.

The State Press | Politics | Science and Tech | Community | Opinion | Arts | Sports | Mag

Video: ASU looks into the future with new virtual reality labs

Professors and students are trying to adapt to the new virtual reality technology



Virtual Classrooms

WHAT

Virtual classroom platforms like Engage VR allow teachers to host lectures with up to 40 students in VR where they can hold discussions, demonstrations, and integrate both 3D and 2D content such as websites, PowerPoint and YouTube videos into their lessons. Most virtual classroom platforms support participation in VR headsets as well as desktops for students not in VR.

SO WHAT

Virtual classroom platforms will continue to evolve to allow for creation, curation and sharing of XR educational content. As these platforms evolve they will likely take on more capabilities to resemble more full-featured Learning Management Systems integrating content management, collaborative learning spaces, and assessment tools. Existing LMS will also likely expand to support XR content and participation.

EMERGING
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VR AFFORDANCES:

Embodied Workforce Training

VR was invented for training

VR Enterprise Training

VR simulation trains employees to cook chicken in 10 min, as opposed to the previous 25 min

Walmart

17,000 VR headsets for training

United Rentals

Reducing training time by 40%

AIRBUS

Exploring 250 use cases for XR applications and training

ups

TM

4,000 drivers trained in VR

Surgical Simulators

WHAT

Osso VR trains students in surgical procedures using Oculus Rift headsets. The simulators provide instructions and guidance and can also record students to allow instructors to evaluate their performance and provide detailed feedback.

SO WHAT

Surgical training is a great example of utilizing VR simulations for trainings that would otherwise require expensive equipment, raw materials (in this case human cadavers) and could be dangerous for the participants. With VR simulators doctors can practice anywhere they have a VR system and repeat procedures as many times as they need to.

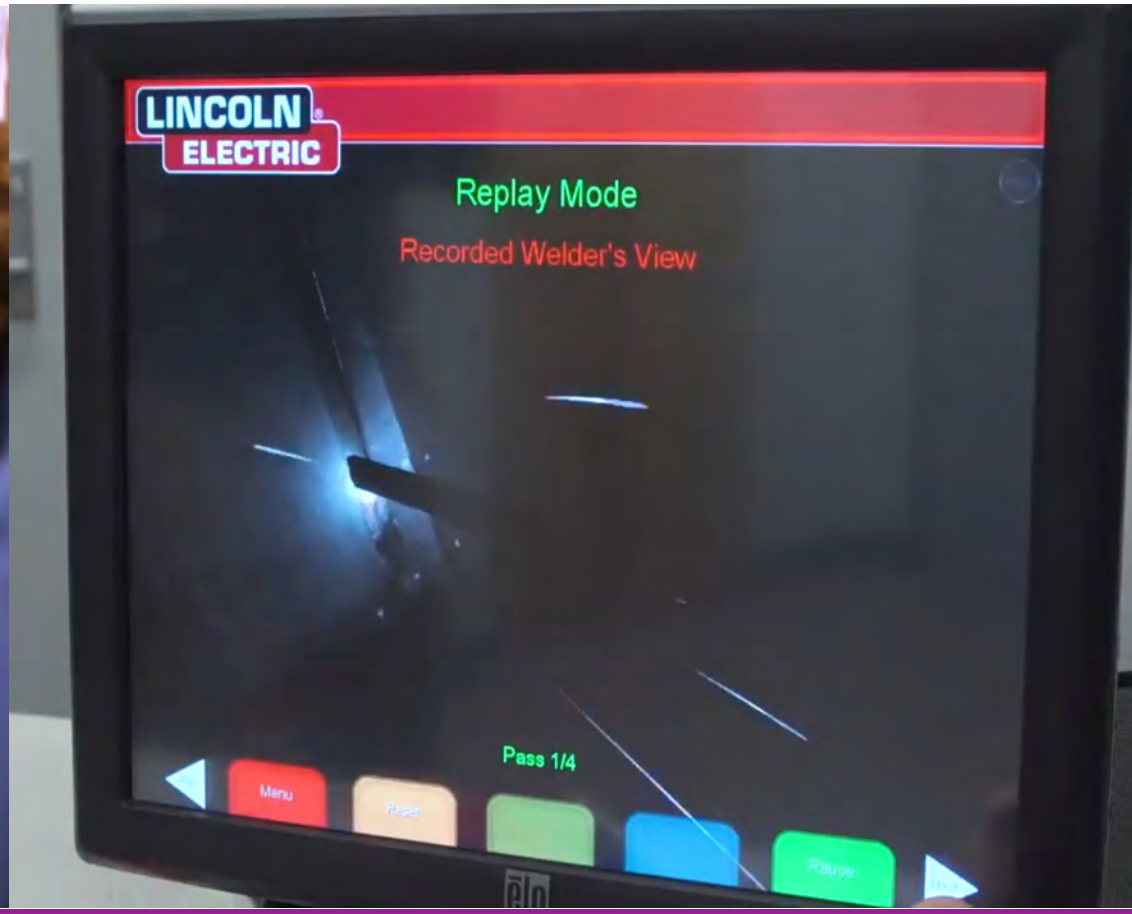
Welding Simulators

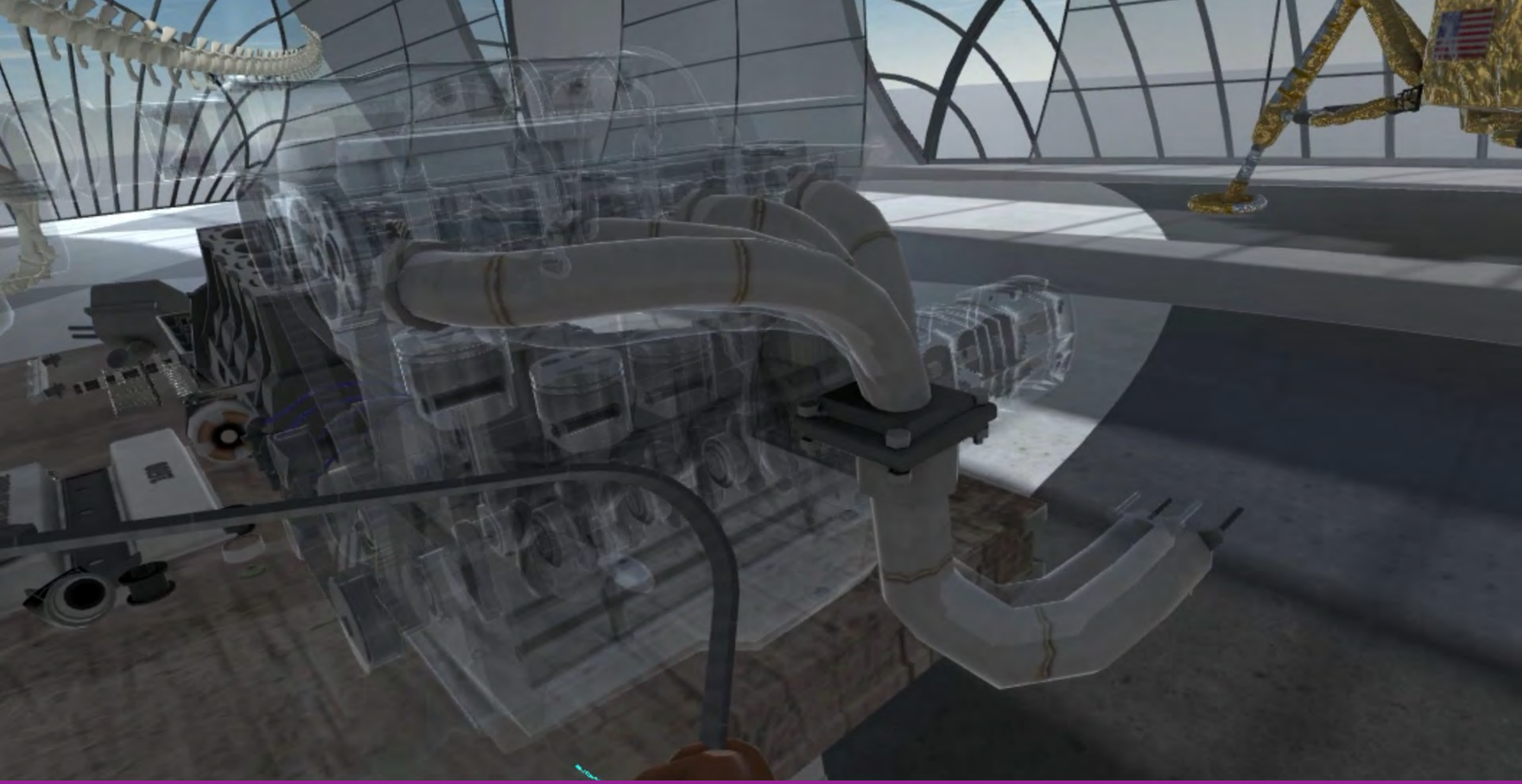
WHAT

Lincoln Electric's VR welding simulators help bridge the classroom and the welding booth. Students can build dexterity and muscle memory by allowing them to unlimited practice in a completely safe environment without using costly materials. Recording features allow instructors to see the weld from the students perspective to give them detailed feedback as well as showing them a first person view of a perfect weld.

SO WHAT

"Blended Learning" has been shown to be the most effective form of welding education. Employers can use the simulator for recruitment and to evaluate new hires. The interactive VR training kits are portable so, could be checked out from a school library for home practice.





VR AFFORDANCES:

Emotional Preparedness

Simulating Black Friday

WHAT

Walmart distributed 7,000 Oculus Go VR headsets to it's 200 training centers to help prepare employees for a range of in store experiences like Black Friday. Using StriVR's "immersive performance training platform." The system plays back 360º videos of various challenging situations like spills, customer confrontations and Black Friday crowds to help them learn what to do in these urgent and emotionally charged situations.

SO WHAT

Situational intelligence and keeping your cool in difficult environments is something hard to teach. For important, but infrequent events, like Black Friday, or a heart attack, VR simulations can provide trainees the opportunity to learn and practice in situations that are difficult to observe, experience or reproduce in real life.

Preparing Probation Clients for the DMV

WHAT

In 2020, The Emerging Media Lab (EML) at Institute for the Future (IFTF) partnered with Alameda County Probation Department (ACPD) to research and develop virtual reality enabled interventions to help ACPD support the success of their reentry clients on their release from incarceration.

SO WHAT

This partnership combined ACPD's innovative approaches to service-based support of their clients, with IFTF's expertise in futures research and the EML's focus on human centered design. Funded by a federal grant, the partnership sought to develop new approaches and applications to leveraging the unique immersive, interactive, and embodied affordances of virtual reality to build better futures for individuals in their transitions from prison.

AR Technology Today

Mobile

Wearables

Mobile 3D AR lessons

WHAT

Jigsaw is a mobile AR app that contains 3D explainer lessons for a wide range of subjects. Users can download and explore 3D models and animations on a smartphone or tablet. Lessons range from fixing a kitchen sink to exploring the inner layers of planet earth.

SO WHAT

Mobile AR leverages existing smartphones and tablets to delivery spatialized and interactive AR content. Embodied interactions increase engagement and retention. Eventually wearable AR headsets and glasses will make these interactions hands-free and more immersive, but in the meantime, mobile AR allows a wide variety of AR content to be developed and explored.


BODY WORLDS
DECODED
The Tech
Museum of Innovation
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Meta Quest 3: VR adds AR

WHAT

Meta Quest 3 introduces full-color passthrough cameras, allowing users to see their real environment while wearing the VR headset. This feature transforms the device into a mixed reality headset, blending virtual elements with the physical world. The improved cameras and higher resolution create a more immersive and socially connected experience compared to previous VR-only devices.

SO WHAT

As VR headsets evolve into mixed reality devices, the line between virtual and augmented reality blurs. This convergence could revolutionize how we interact with digital content in our daily lives. Future XR devices may seamlessly transition between immersive VR and AR overlays, opening new possibilities for education, such as learning piano with AR guidance overlaid on physical keys, making complex skills more accessible and engaging.

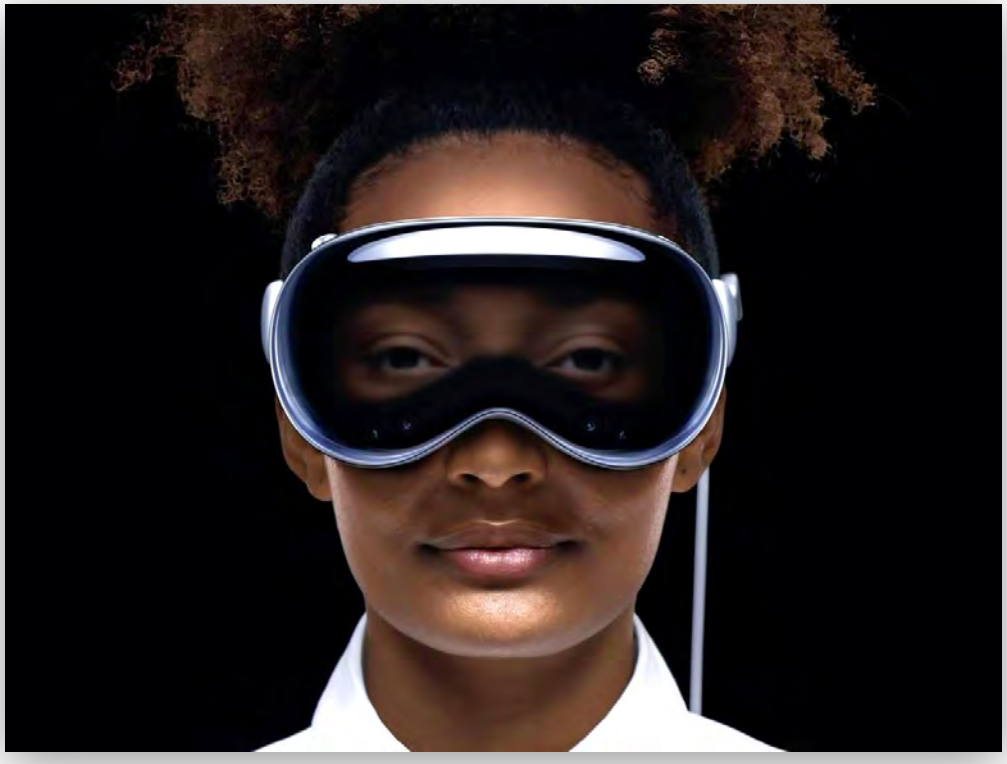
Apple Vision Pro Spatial Computer

WHAT

The Apple Vision Pro stands out as a cutting-edge hardware advancement, offering immersive experiences that extend beyond traditional learning tools. Educators can leverage this technology for engaging lessons in historical studies, science simulations, and creative arts. Despite its potential, challenges such as high costs and the need for robust IT support could hinder widespread adoption in educational institutions, limiting accessibility for diverse student populations.

SO WHAT

As technology becomes more integral to education, the Vision Pro could revolutionize classroom engagement and learning outcomes. If prices drop and IT frameworks develop, this hardware might democratize access to immersive experiences. Strategic partnerships between educators and technology developers could pave the way for innovative learning solutions. Overcoming initial hurdles will be essential in shaping an inclusive educational landscape, ensuring all students benefit from these advanced tools.



AR AFFORDANCES:

Transitioning from VR Simulation to the Real World

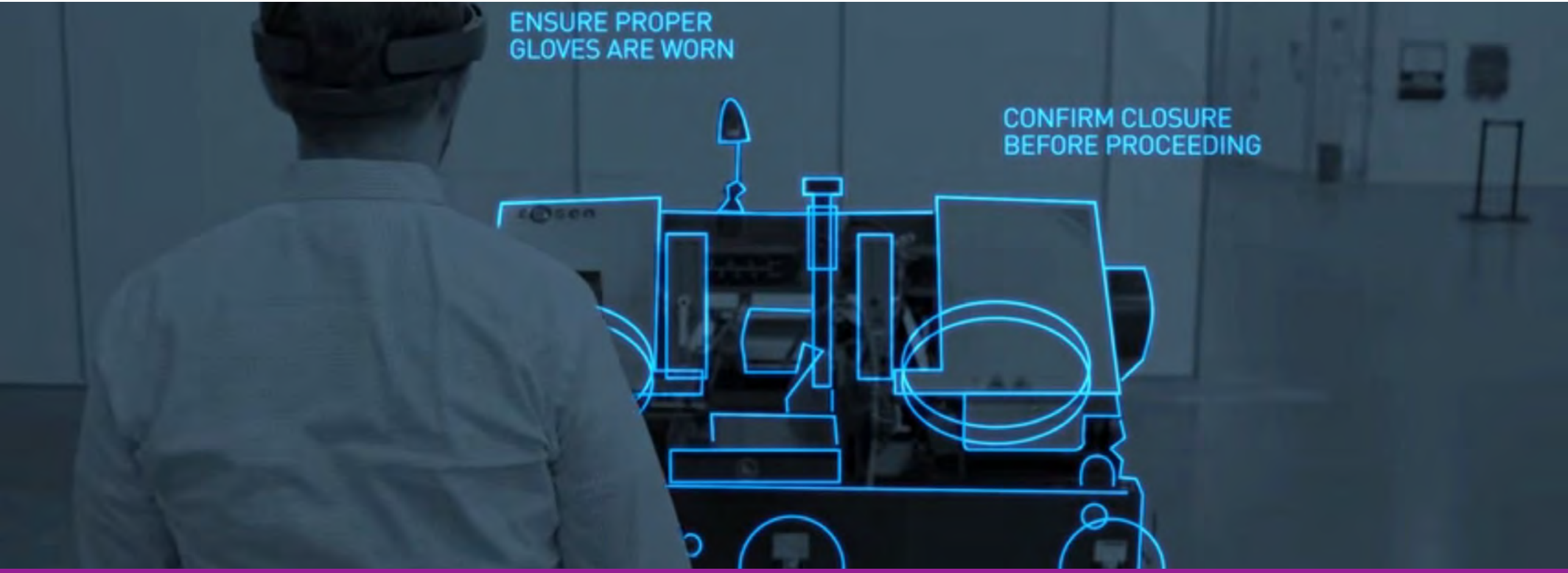
The World as Your Augmented Classroom

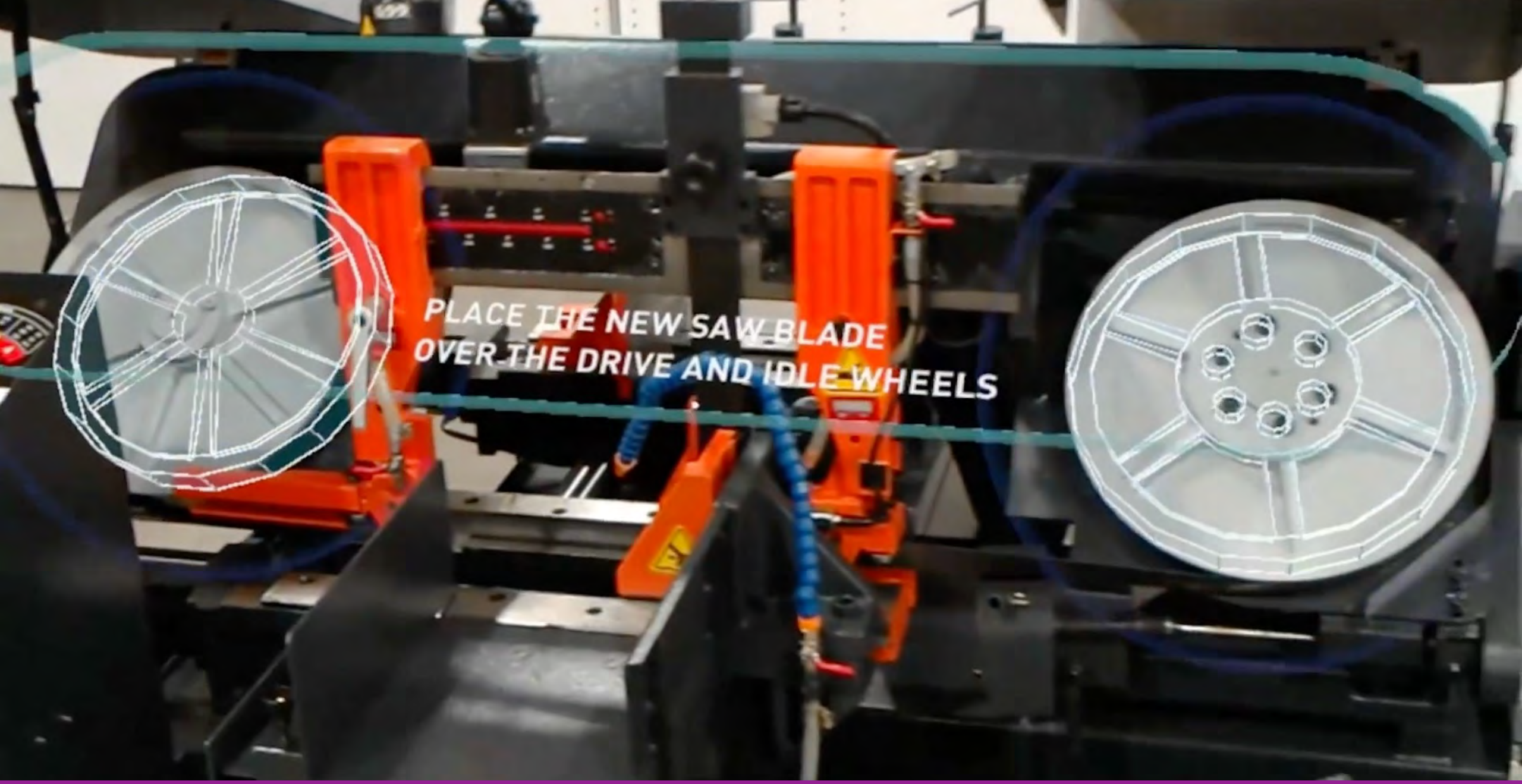
WHAT

Scope AR's Worklink platform can provide guided AR instructions overlaid on top of the real world workspace. Their "Remote AR" product allows for real-time assistance from experts anywhere in the world where they can see and draw on the environment to clarify exactly what and where to do things.

SO WHAT

AR training systems will allow more and more training to be done in the actual workplace with real world equipment and scenarios. Workers will be able to call up AR instructions anytime to allow for just in time delivery of needed information with spatially placed visualizations. AR headsets will become commonplace in workspaces to improve worker knowledge and safety.





XR AFFORDANCES:

Social Learning and Collaboration

“It’s not reality if it can’t be shared”

—Scott Greenwald, Electro Static Playground, MIT

SLANTED THEORY

INSTITUTE FOR THE FUTURE

CISCO

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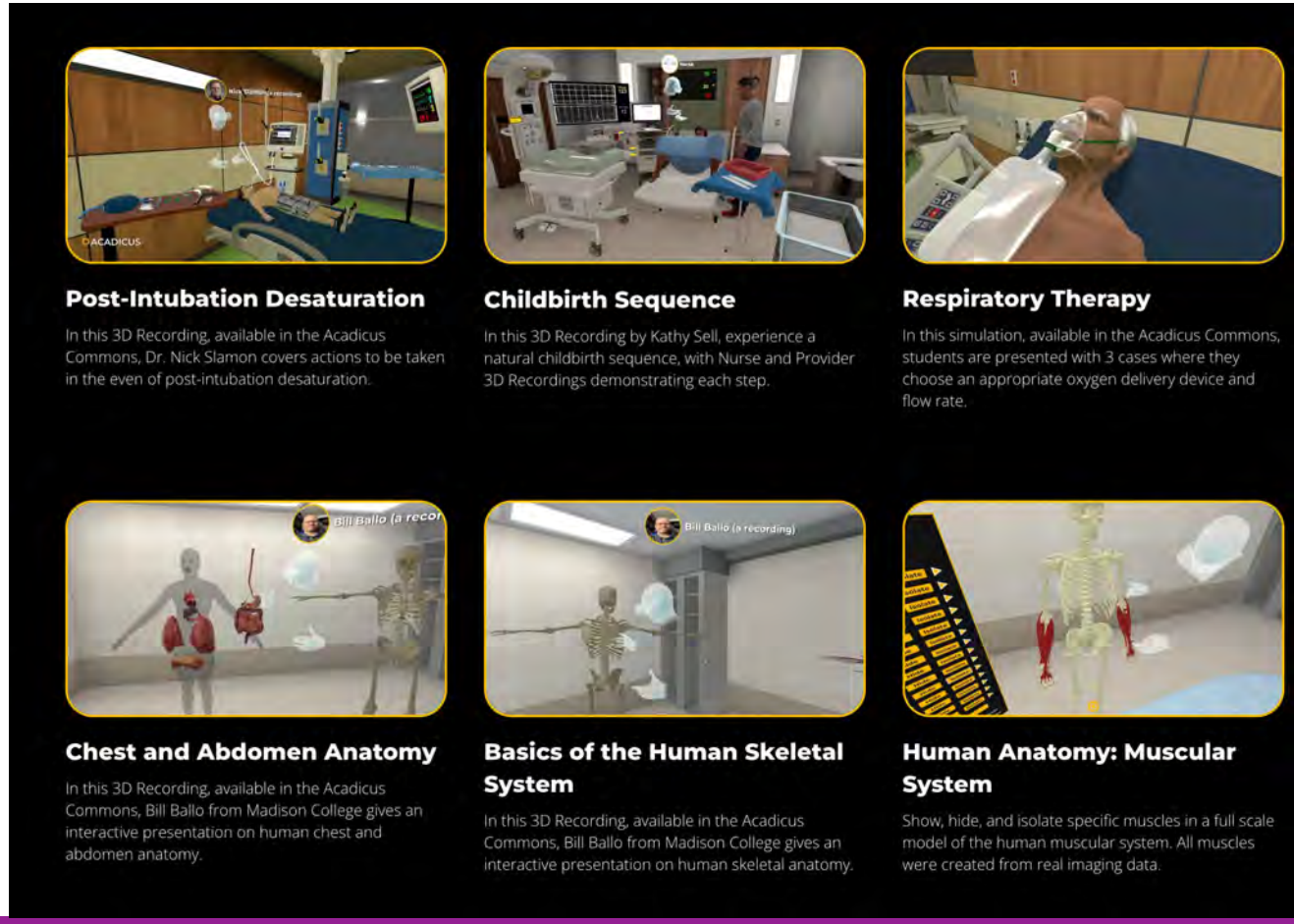
Social Simulations for Medical Training

WHAT

Acadicus offers a versatile VR medical simulation platform that allows educators to create, customize, and facilitate complex scenarios like blood transfusions. Its tools include a Simulation Manager for real-time control, Scene Editing for customization, and 3D Recording for capturing immersive demonstrations. This enables schools to replicate high-risk procedures and save on costly physical supplies.

SO WHAT

As VR technology advances, medical education could shift dramatically towards immersive digital classrooms. The ease of creating and modifying simulations may lead to more personalized, adaptive learning experiences. Future iterations might leverage AI to generate entire virtual hospitals, allowing students to practice in highly realistic, risk-free environments that adapt to emerging medical protocols.



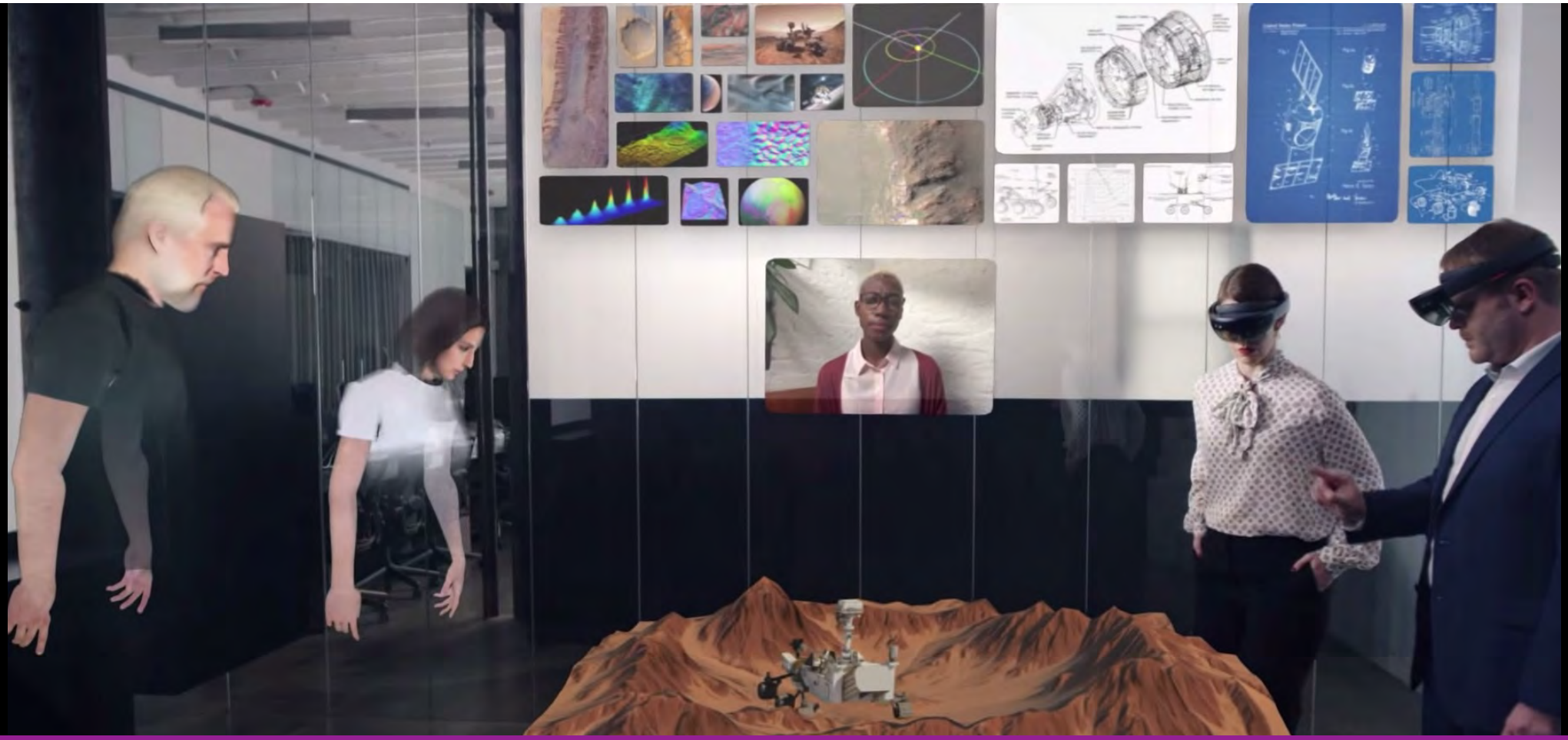
Social XR

WHAT

Spatiate's AR collaboration platform allows multiple people wearing Magic Leap AR headsets to be able to collectively see the same virtual documents, models and even avatars of remote collaborators.

SO WHAT

AR will soon allow groups of people to collaborate, co-located and remotely, in digitally enhanced workspaces blending real and virtual elements.



Creating XR Content

Accessible Tools and Platforms for Teachers and Students

Building XR with Game Engines

WHAT

Most professionally produced VR/AR experiences are being built by software engineers using game engines like Unity 3D and Unreal Engine. These development environments provide powerful tools for working with 3D objects and environments and creating complex interactions for VR users.

SO WHAT

Game design tools and skills are valuable in developing VR/AR content and they have a large install base of skilled developers. This level of professional toolsets are very powerful but not accessible to most people.

Manual World Building in Mixed Reality

WHAT

A new wave of simple drag and drop content creation are empowering non-technical users to build elaborate interactive virtual worlds without writing a single line of code. Tools like Immerse Creator lets users build their world while in VR. Tools like InstaVR let you build VR/AR in a browser and then publish to any XR device. VR app, Figma, allows user to create objects and environments while in headset. No coding required.

SO WHAT

Think PowerPoint for XR. Anyone will be able build VR and AR experiences and virtual hosts. Virtual hosts won't replace actual teachers but can assist as guides for more mundane interactions.


Powered by
Tilt Brush
Figmin XR

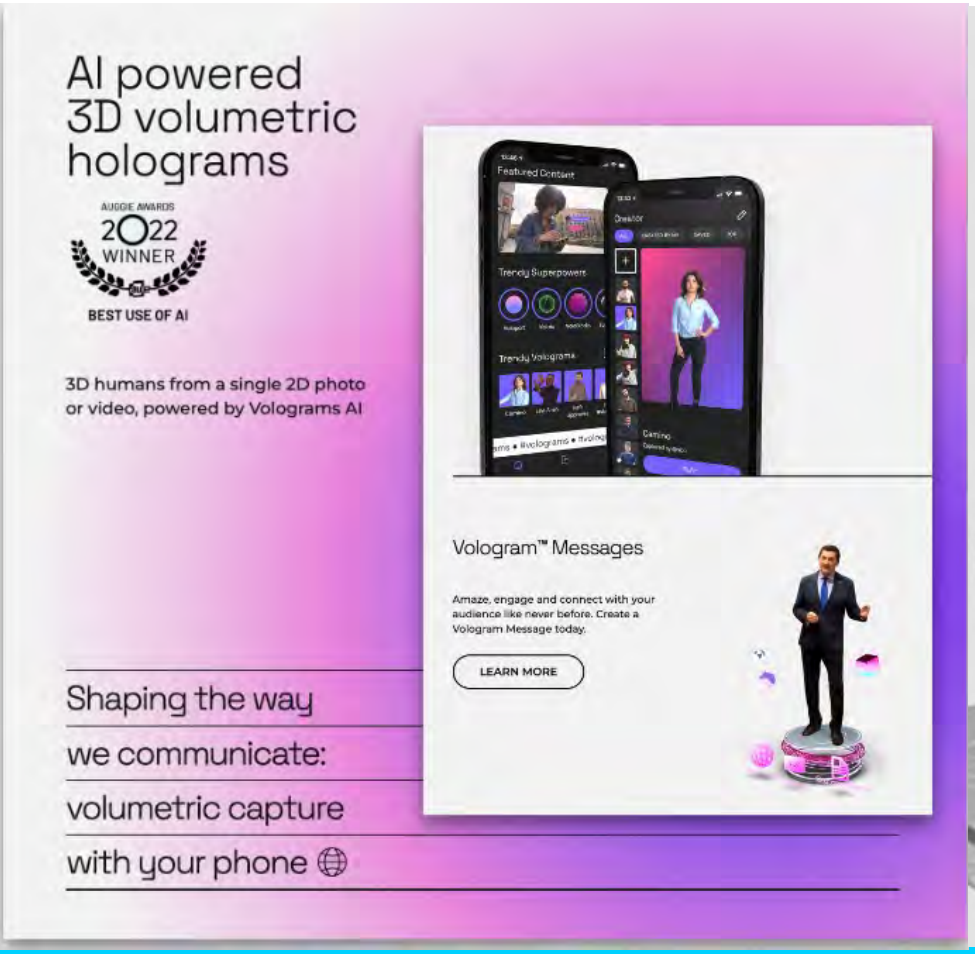
GenAI for XR: 3D Scanning Phones

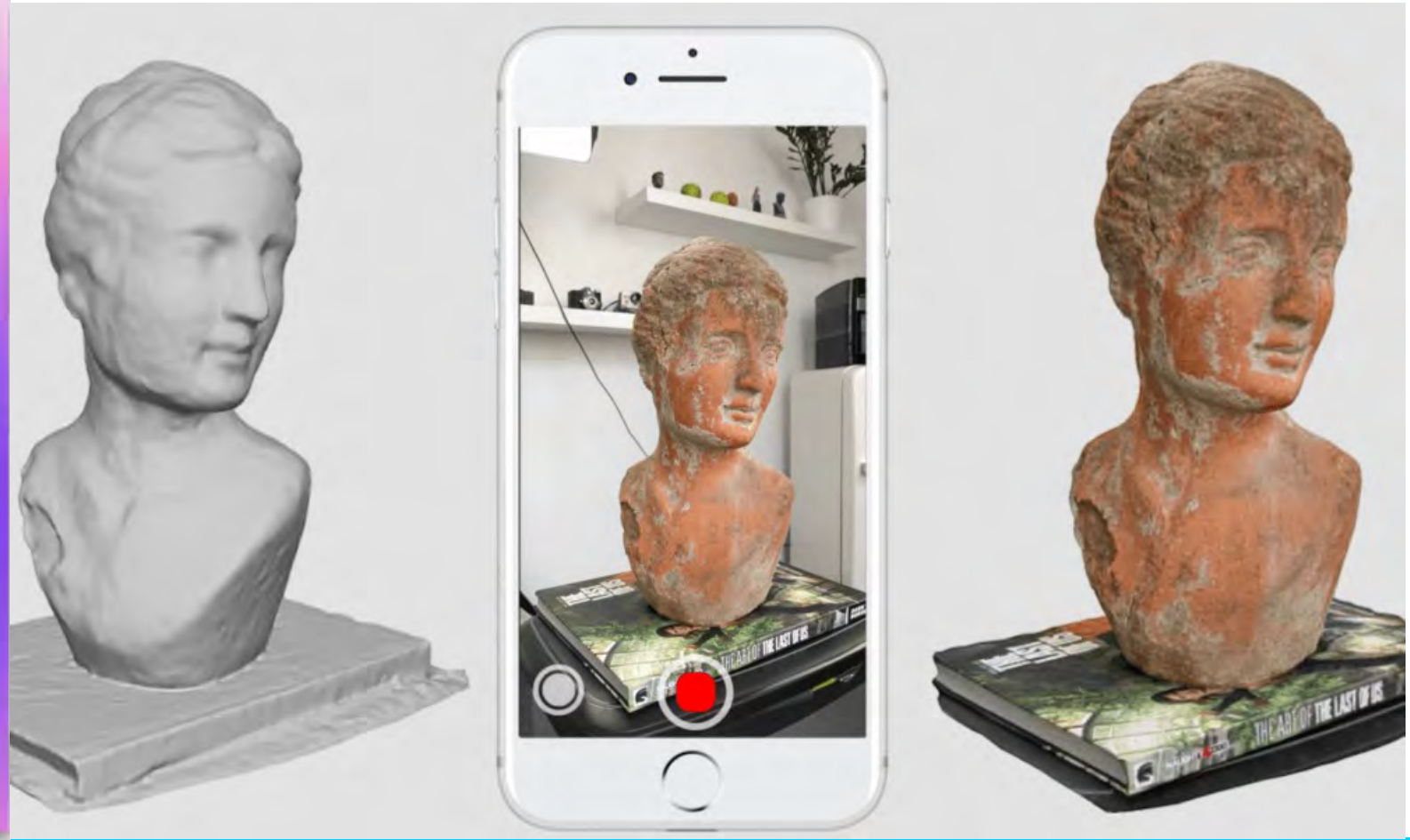
WHAT

Smartphone apps like Vologrames and Luma AI are transforming ordinary phone cameras into powerful 3D scanners. These AI-powered applications enable users to create high-quality 3D models, volumetric holograms, and immersive scenes from simple photos or videos, without specialized equipment.

SO WHAT

This shift towards easily created spatial media signals the dawn of a new era in user-generated 3-D content. As 3D creation becomes commonplace, we may see a revolution in social media, e-commerce, and entertainment. The proliferation of user-generated 3D content could accelerate the development of augmented and virtual reality applications, potentially reshaping how we interact with digital information and each other in both virtual and physical spaces.





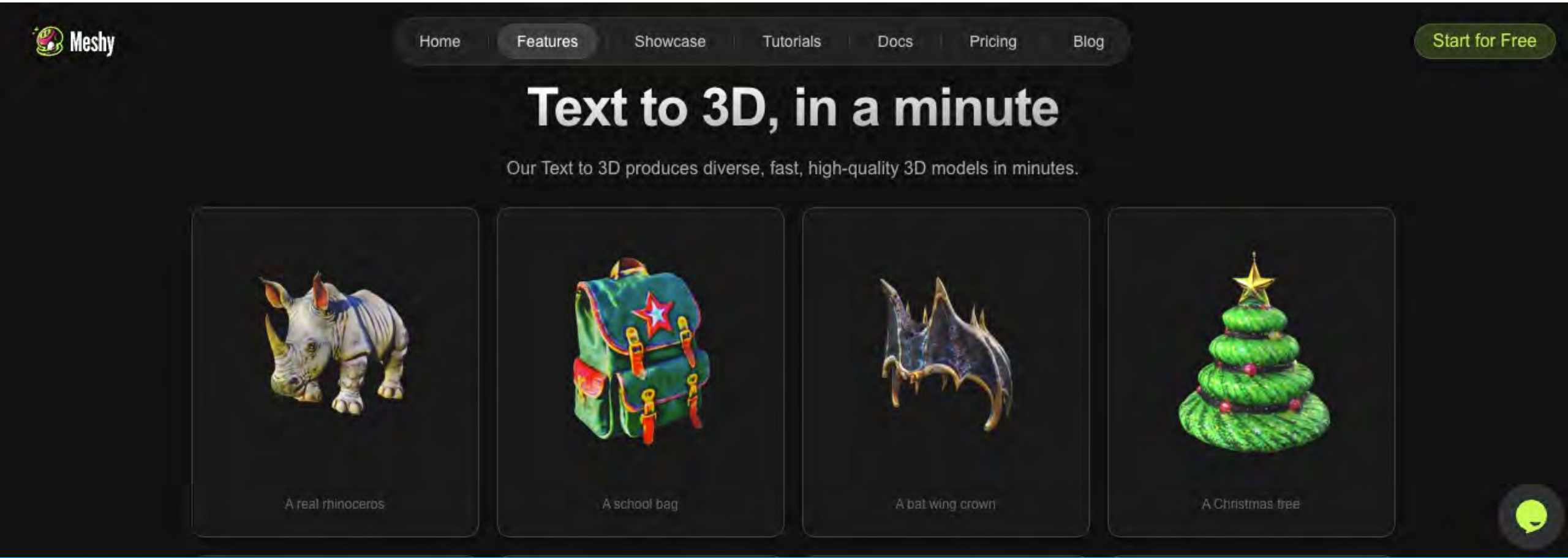
GenAI for XR: Text-to-3D

WHAT

Meshy.ai, a new Text-to-3D service, is revolutionizing 3D content creation. Users can generate detailed 3D models from simple text prompts, with options for refinement and various export formats. This AI-powered tool significantly reduces the time and skill required to produce 3D assets, making it accessible to non-experts and streamlining the creation process for XR applications.

SO WHAT

Democratizing 3D asset creation could revolutionize education through XR. As Text-to-3D technology advances, it may enable real-time simulation creation, transforming classrooms into dynamic environments where abstract concepts materialize on demand. This could lead to holodeck-like experiences, allowing students to instantly conjure historical events or scientific phenomena, revolutionizing teaching methods and enabling unprecedented levels of experiential, personalized learning across all subjects.



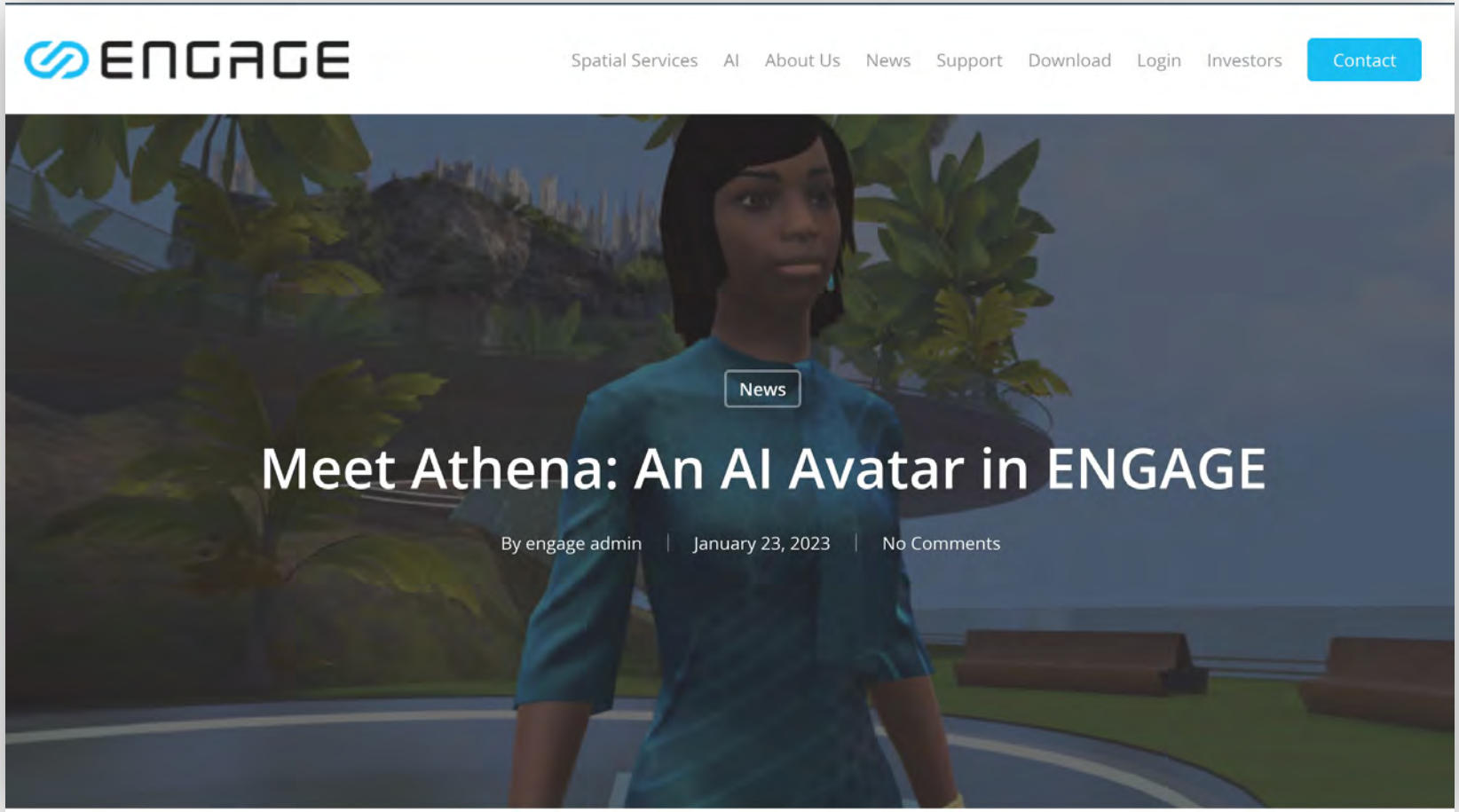
GenAI for XR: Personalized Learning Guides

WHAT

ENGAGE has launched Athena, an AI-powered avatar integrating ChatGPT-3 and DALL-E into their metaverse platform. This augmented reality employee can engage in full conversations, complete tasks, answer questions, and create complex installations within the virtual environment. Athena learns from interactions, improving her responses and capabilities over time.

SO WHAT

This advancement could usher in a new era of "hyper-adaptive learning," where AI tutors tailor entire educational experiences in real-time. Learners might step into accurately recreated historical events, manipulate complex molecular structures, or experience abstract mathematical concepts physically. This immersive, personalized education could dramatically accelerate learning speeds, potentially compressing years of traditional education into months.



Building XR Ready Campuses

Preparing for and Leveraging XR Grassroots Experimentation

VR Community College Campuses

WHAT

Several AFIT member colleges that have XR initiatives including: Yavapai College, under the leadership of Dr. Lisa Rhine, is teaching in the metaverse: Metaversity at YC - Yavapai College. Chippewa Valley Technical College, under the leadership of Dr. Sunem Beaton-Garcia, is using a VR simulator for healthcare training (CVTC Debuts Virtual Reality Simulator) and firefighter training (CVTC adds virtual reality to firefighting training)

SO WHAT

University labs are experimenting to figure out how to utilized spatialize computing systems to visualize the massive collections of data we have about the world to best support new forms of pedagogy. While headsets provide personalized experiences, immersive projection systems can provide group experiences. Collaborative VR systems offer other benefits and challenges.

Yavapai COLLEGE

VICTORYXR

Yavapai College has its eyes set on the future of education by teaching classes in the metaverse. 'Metaversity' is an immersive way for students to learn through virtual and augmented reality.

Explore locations around the world without leaving your classroom

Interested in learning in the Metaverse? Click Here

CHIPPEWA VALLEY TECHNICAL COLLEGE

CVTC commons

TUESDAY, SEPTEMBER 14, 2021

CVTC DEBUTS VIRTUAL REALITY SIMULATOR

COLLEGE CELEBRATES HEALTHCARE SIMULATION WEEK WITH STATE-OF-THE-ART EQUIPMENT

Deanna Hoyord, CVTC health care simulation technician, demonstrated the college's new virtual reality simulator last week. She said it truly transports students into patient-centered scenarios.

CVTC adds ' training

Chippewa Valley Technical College

ghting

By Leeann Stapleton

Published: Nov. 2, 2021 at 4:08 PM PDT

XR Hubs at Universities

WHAT

The XReality Center at Parsons School of Design was established to provide a hub for the wider community of learners, teachers, administrators and support staff to begin to get exposure to XR technologies. The XReality Center provides introductory workshops, a lab space with a variety of VR/AR equipment, and support for teachers and students looking to conduct experiments in how XR can be integrated into learning processes. The center is located in the IT building to also provide opportunities for the technical support staff to begin to understand the unique needs and capabilities of XR.

SO WHAT

Community hubs like the XReality Center, provide a home for emerging technologies to be organically introduced into wider university communities and allow for a wide range of people to experience, explore and adopt XR on their own terms and at their own pace. No one likes a new tool forced on them, and the more valuable use cases will likely emerge from grassroots experimentation.

THE NEW SCHOOL
XREALITY CENTER

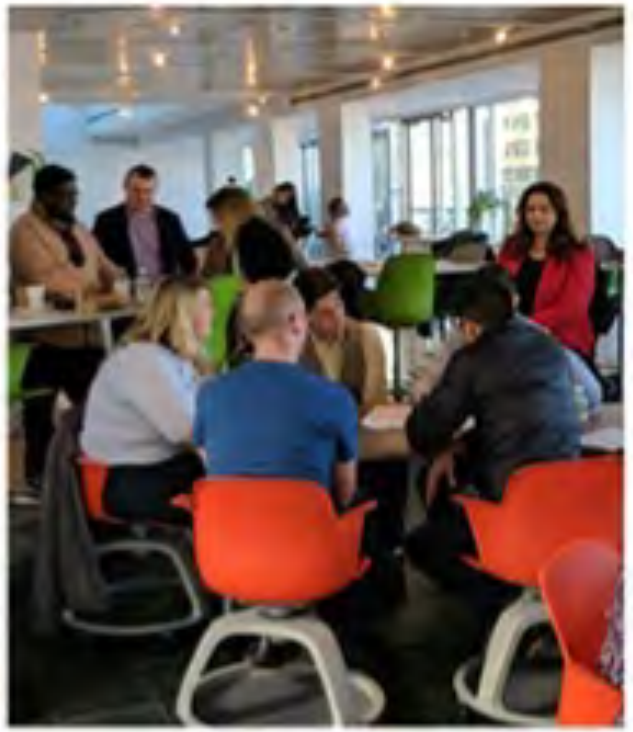
XReality Lab News Projects Learning About Visit XReality Lab

Proposal for an Immersive Learning Lab

The first proposed design is for an Immersive Learning Lab, which we developed in our conversations with the Steelcase Education team based on a post-and-beam structure that can take on different shapes and configurations. As shown in figure 2a, a honeycomb structure with different zones is mapped to activities associated with immersive learning. The zones create multiple spaces and opportunities for collaboration, viewing, co-creation, and reflection. This design is lightweight and modular, one that can easily fit into existing open spaces.

The space includes two options: option A with a free-roaming central area for high-end VR experiences, and option B, with swivel chairs designed for 360° videos. Outside the central experiential space, there are adjacent areas with storage for student belongings, monitors, whiteboards, and tables for group discussion and learning. Adjacent, there is a lounge seating area where students could take a break after an intensive immersive experience or engage in conversation with peers.

Figure 2a. Open floor in central space (option A); 360° swivel seating in central space (option B)
Images courtesy of Steelcase Education



Fostering Community XR Media

WHAT

Since 2015 the Public VR Lab in Brookline, MA has been offering classes, hosting dev jams, and providing access and training in XR technologies to their community of all ages and backgrounds. The Public VR Lab grew out of of the local Community Access Television station from the understanding that community media centers are a vital hub of civic engagement.

SO WHAT

Communities benefit from having access and training in XR technologies, but they also benefit from supporting in community based media projects and using XR as a medium to explore local news and issues, and community discussions. Our educational systems need to focus not just on producing workers, but to also develop activated citizens that are informed and engaged in their communities and society at large.