https://www.seriousplay-ny.com/

Who? Why? How? And How Much?

Agenda

Non-immersive and immersive virtual learning platforms with multisensory environments are now being used for medical training and assessment

Integration of computers, head-mounted displays, body-tracking sensors, specialized interface devices and 3D graphics is changing how medical students learn.

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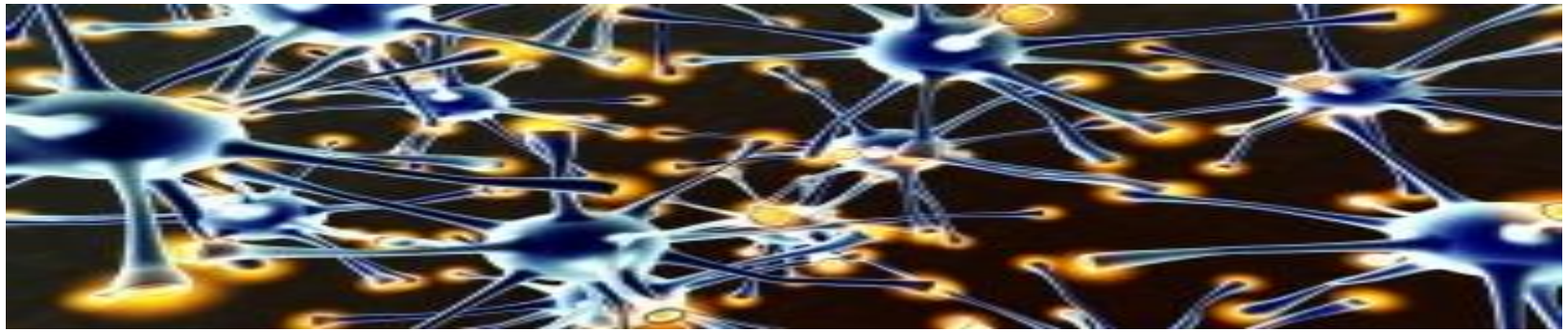
http://www.goldmansachs.com/our-thinking/pages/virtual-and-augmented-reality.html

Multi-Sensory Learning



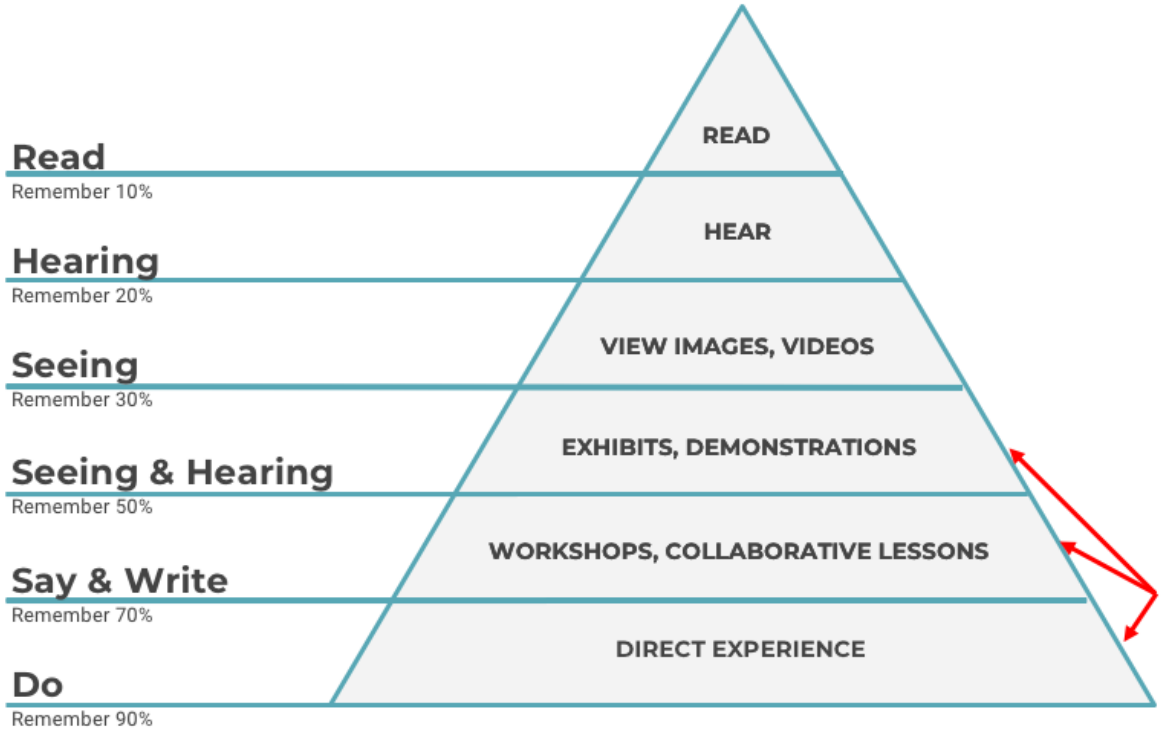
Multisensory learning is when a student has multiple senses stimulated at the same time. When learning, the body can use each sensory system in order to receive information:

- Vision (sight)
- Auditory (hearing)
- Gustatory (taste)
- Olfaction (smell)
- Vestibular (balance/movement)
- Somatic sensation (touch)

Most students have a learning type- a way of receiving information that is optimal to their given personality and cognition.

http://www.yourtrainingedge.com/3-reasons-why-you-should-be-using-multisensory-teaching-techniques/

Knowledge-Based Model of VR training



Source: Edgar Dale - Cone of Experience (1969)

Researchers in China tested the [effects of VR on children's performance in school](). They compared the test results of students that learned about Astrophysics with and without VR. 90% of the students who learned with VR passed their test vs. 40% of students from the other group. Both short-term retention (+27%) and long-term memorability (+32%) improved.

Immersive Learning (VR) ?

The content is replaced in its spatial context, enhancing cognition. In the classroom, we're taught through passive learning.

In VR, we learn through interactions. It is mere common sense, for example, that subjects like anatomy or cosmology are more easily studied by interacting with 3D models than by deciphering 2D sketches.

https://arvrjourney.com/expert-view-3-ways-vr-is-transforming-learning-development-487a021e8334

Skills-Based Model of VR training – teaching practical skills by using the body as a natural interface, and thus developing physical memory through repetition.

The value proposition of Skills-Based VR training is clear. Any number of people can receive first hand skills-training on-demand and on-location, by using virtual or augmented reality solutions. VR removes significant travel & infrastructure not to mention the need to recreate costly and potentially hazardous simulations. However, there is more to immersive training than teaching practical skills.

Immersive VR

Immersive VR can be produced by the integration of computers, head-mounted displays (HMDs), body-tracking sensors, specialized interface devices, and 3D graphics.

Clinical Virtual Reality

These set-ups allow users to operate in a computer-generated simulated world that changes in a natural or intuitive way with head and body motion. Using an HMD that occludes the user's view of the outside world, an engaged immersive virtual experience employs head and body-tracking technology that senses the user's position and movement and sends that information to a computing system that can update the sensory stimuli presented to the user in near real-time, contingent on user activity. This serves to create the illusion of being immersed "in" a virtual space, within which users can interact. When immersed within computer-generated visual imagery and sounds of a simulated virtual scene, user interaction produces an experience that corresponds to what the individual would see and hear if the scene were real.

https://www.researchgate.net/publication/319165844_Is_Clinical_Virtual_Reality_Ready_for_Primetime

http://www.surgicaltheater.net/clinical-gallery/

VR as a tool to deliver exposure therapy (VRET)

The VR delivery of an evidence-based PE protocol is seen as a way to immerse users in simulations of trauma-relevant environments in which the emotional intensity of the scenes can be precisely controlled by the clinician to customize the pace and relevance of the exposure for the individual patient.

One emerging form of treatment for combat-related PTSD that has shown promise involves the delivery of exposure therapy using immersive virtual reality (VR). Initial outcomes from open clinical trials have been positive, and fully randomized controlled trials are currently in progress. Inspired by the initial success of our research using VR to emotionally engage and successfully treat persons undergoing exposure therapy for PTSD, we have developed a similar VR-based approach to deliver resilience training prior to an initial deployment.

http://ict.usc.edu/pubs/Virtual%20Reality%20as%20a%20Tool%20for%20Delivering%20PTSD%20Exposure%20Therapy%20and%20Stress%20Resilience%20Training.pdf

VR as a tool to deliver exposure therapy (VRET)

http://ict.usc.edu/prototypes/pts/

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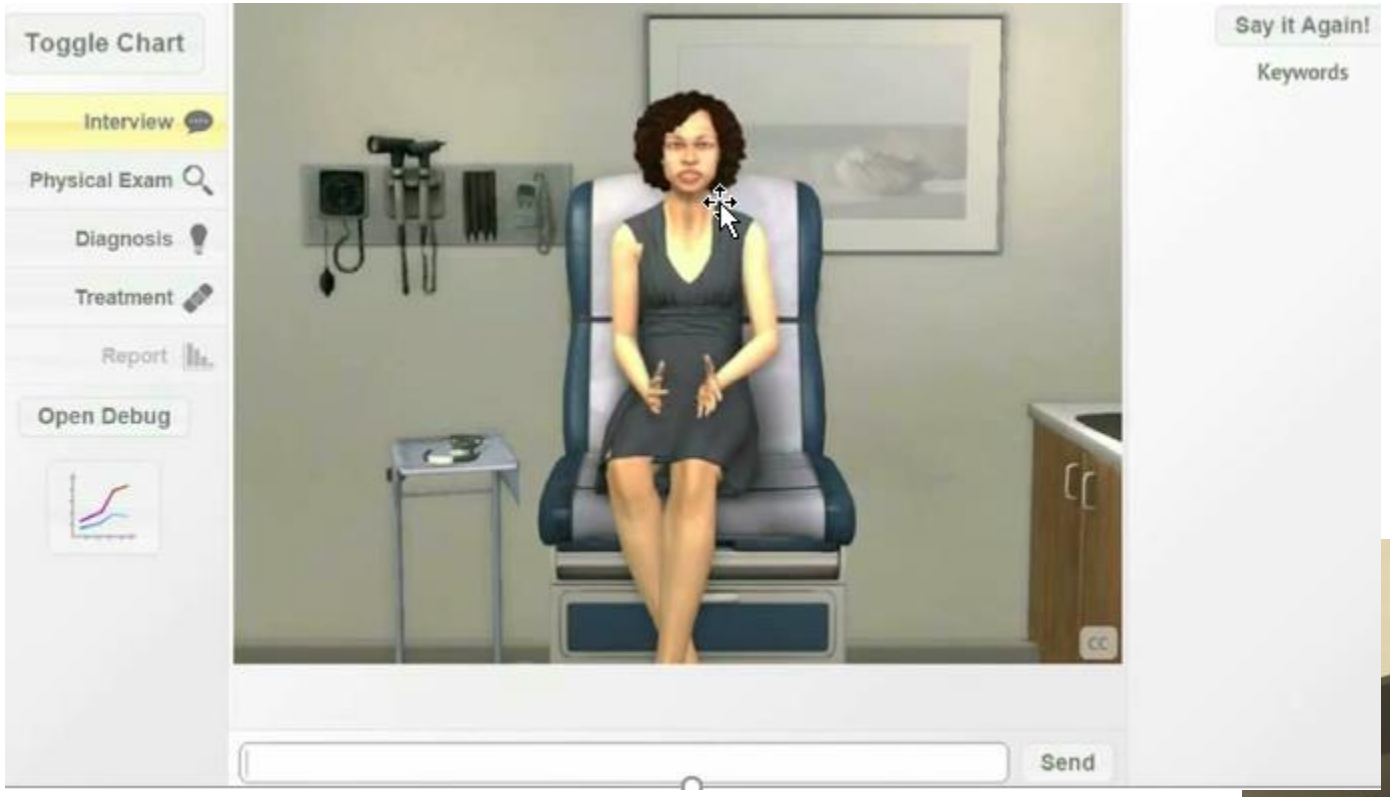

http://ict.usc.edu/prototypes/usc-standard-patient-hospital/

Non-immersive VR

Non-immersive VR is the most basic format and is similar to the experience of someone playing a modern computer or console videogame. Content is delivered on a standard flat-screen computer monitor or TV with no occlusion of the outside world. Users interact with three-dimensional (3D) computer graphics using a gamepad, a joystick, specialized interface devices as well as basic mouse or keyboard. Modern computer games that support user interaction and navigation within such 3D worlds, even though presented on a flat-screen display, can technically be referred to as VR environments.

https://www.researchgate.net/publication/319165844_Is_Clinical_Virtual_Reality_Ready_for_Primetime

http://www.creativevet.com/daarcDetails.html

Non-immersive VR

https://shop.aana.com/

Overview of Course

This course offers technology-based learning through gamification in the form of virtual simulation. This simulation course contains 3 individual, interactive case scenarios in which the user will learn to utilize the 2016 CDC Guidelines to reduce overall opioid prescriptions and look towards multimodal methods of pain control.

Learner Outcomes

Upon completion of this course, the learner will be able to:

1. Understand and calculate Morphine equivalent.
2. Use “CDC Opioid Guidelines” to learn safe prescribing strategies for opioids in the acute and chronic pain setting.
3. Use “CDC Opioid Guidelines” to offer alternative and complementary non-opioid pain control measures.

Verification of Participation

This simulation contains 3 individual, interactive case scenarios. Players are scored on the correct and incorrect actions and decisions they make within the game. A passing score must be achieved in each of the 3 modules to complete the overall task of beating the game. Incorrect responses will prompt a retry of the module.

Accreditation Statement

This course has been prior approved by the AANA for **3.0 Class A CE credits**; AANA Code Number: 1035942.

The American Association of Nurse Anesthetists designates this program as meeting the criteria for up to **3.0 CE credits in Pharmacology/Therapeutics**.

Course Expiration Date: 2/28/2019

Non-immersive VR

https://shop.aana.com/

Apple CEO Tim Cook says iPhone AR update is 'a profound day'

12:31 PM ET Tue, 19 Sept 2017

The CEO touted Apple's ability to offer widespread access to the previously limited technology.

https://www.cnbc.com/video/2017/09/19/apple-ceo-tim-cook-says-iphone-ar-update-is-a-profound-day.html

https://www.apple.com/ios/augmented-reality/

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Augmented reality is defined as “an enhanced version of reality created by the use of technology to add digital information on an image of something.” With AR, a virtual image is laid over the room you’re in. You can see what’s around you, but part of it is blocked by whatever video projection is playing through the AR device. To experience AR, you can put on a headset (i.e. Google Glass) or simply look through a smartphone/tablet screen for dedicated AR apps. AR apps use your phone’s camera to show you a view of the real world in front of you, then put a layer of information, including text and/or images, on top of that view.

https://www.youtube.com/watch?v=SKpKlh1-en0

Who? **Why?** How? And How Much?

https://www.augmedix.com/

Who? Why? How? And How Much?

How do you make a young doctor really understand what it's like being 74? Virtual reality.

The key aim of these immersive systems is to perceptually replace the outside world with the virtual world to psychologically engage users with simulated digital content designed to create a specific user experience.

https://www.researchgate.net/publication/319165844_Is_Clinical_Virtual_Reality_Ready_for_Primetime

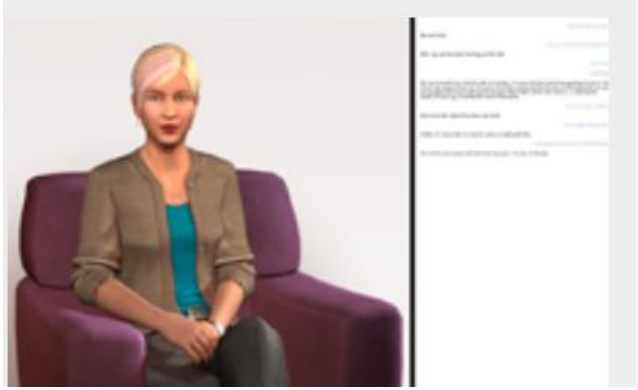
http://www.upworthy.com/how-do-you-make-a-young-doctor-really-understand-what-its-like-being-74-virtual-reality?c=huf1

Who? Why? How? And How Much?

IT DEPENDS

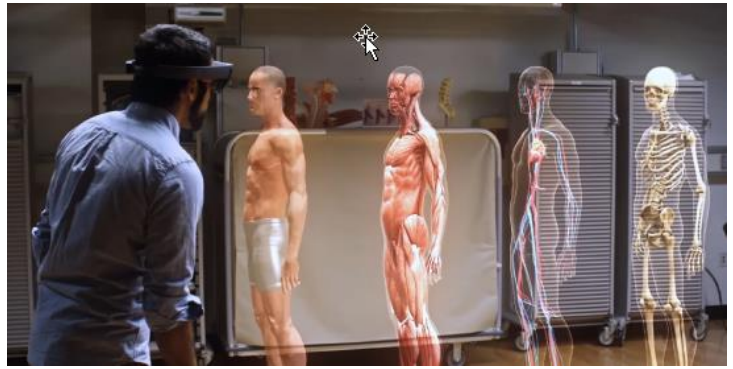
https://vr.google.com/cardboard/

https://vrscout.com/news/oculus-go-vr-headset/#



http://ict.usc.edu/prototypes/usc-standard-patient-hospital/

https://skarredghost.com/2018/02/27/amazon-sumerian-hands-review/



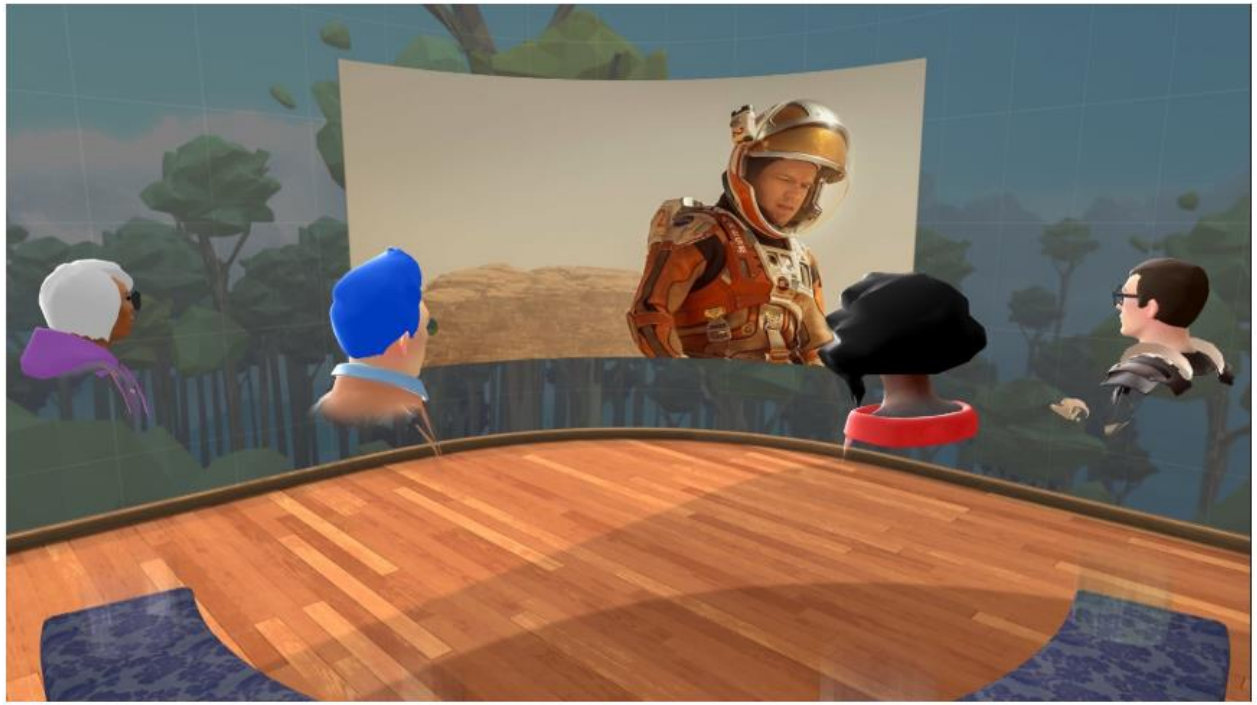
https://www.lifewire.com/hololens-4157920

The cost of VR app development

Oculus Go Has Arrived and It's a Big Deal

Oculus Venues isn't available yet but the app is expected to let you watch live concerts, sports, comedy and other events around the world with your friends and thousands of other people in VR. Venues that Oculus is planning to launch with include Major League Baseball games, artists like Vance Joy in partnership with AEG, emerging musicians from School Night at the Bardot in partnership with NextVR, and standup events like Gotham Comedy Club.

Oculus TV is another potentially killer app that is coming in May to Oculus Go. It's an entirely new way to experience and watch your favorite – you guessed it – TV shows. Oculus is building a 3D environment with a massive screen and seating area, letting you fire up apps like **Netflix**, **Hulu**, and **Showtime**. Oculus TV also has partnerships in the works that strive to make Oculus Go an entertainment portal for other content as well including **Redbull**, **Pluto TV**, **Facebook video**, and even **ESPN**, including the new service ESPN+ coming later this year.

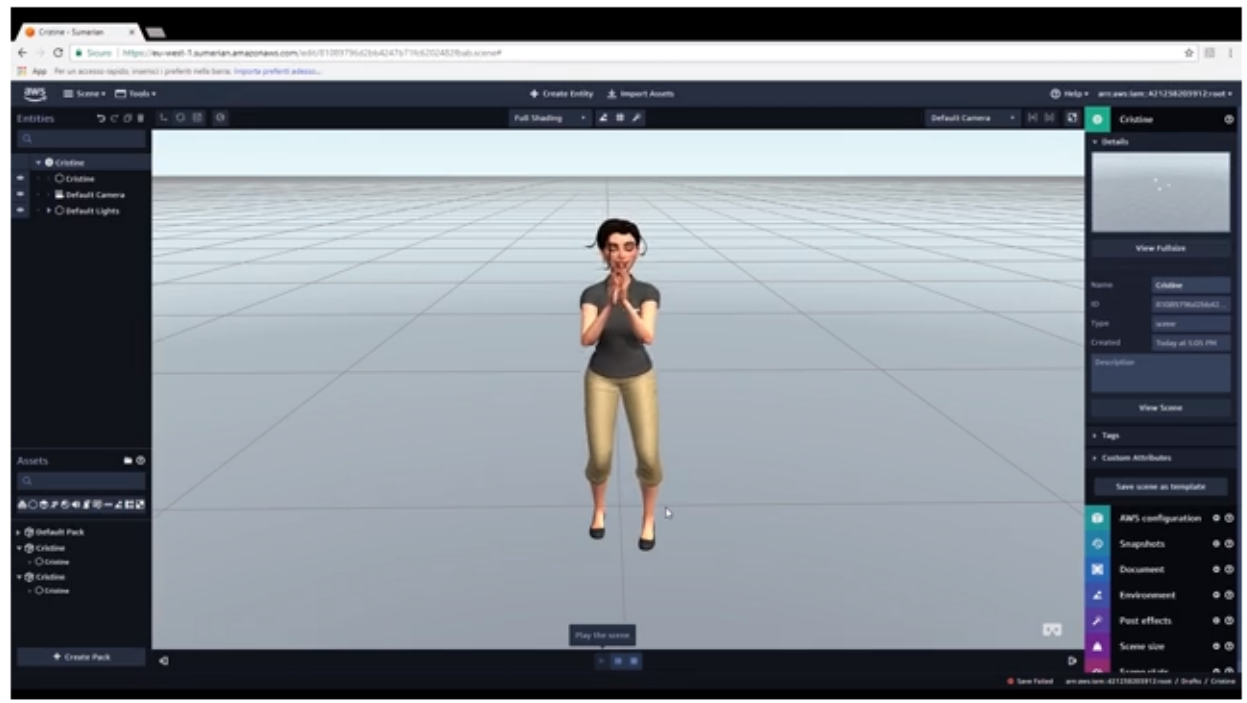


https://vrscout.com/news/oculus-go-vr-headset/

https://skarredghost.com/2018/02/27/amazon-sumerian-hands-review/

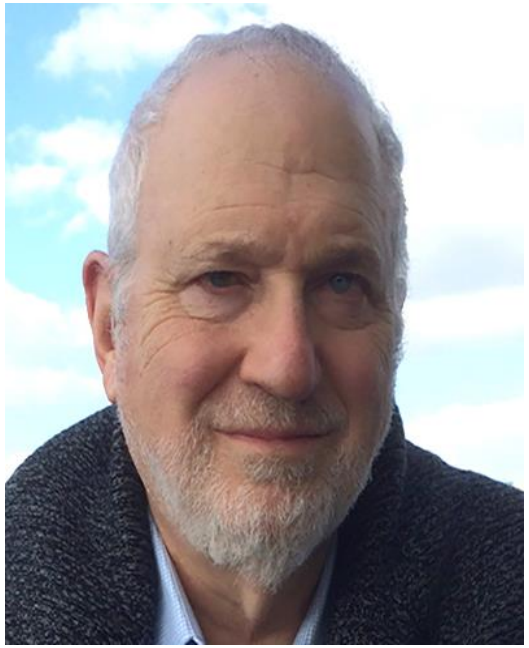
Final opinion

My final opinion is that **Amazon Sumerian is an incredible tool**: it is the **best framework I found to develop high-quality WebVR applications.** It is full of features: it is almost like Unity ("almost" because Unity is on the market since a lot, so it has an enormous set of features), but in the web. And it is easy to learn if you are already skilled with Unity or a similar engine. And the seamless **integration with all the other Amazon cloud and AI services** is something incredibly powerful that makes Sumerian ideal for a lot of enterprise applications. **I have been impressed by it.**



https://thumbs.gfycat.com/OrderlyAntiqueJunebug-mobile.mp4

Dennis Glenn, **MFA** is President and Chief Learning Officer and an adjunct professor at DePaul University Graduate School for New Learning. His instructional design and eLearning experience was honed when he joined Northwestern University as manager of the advanced media production studio. In 2001Glenn was promoted to assistant dean for distributed education at the School of Communication where he was the Director of the Distributed Learning Center. Dennis has designed interactive virtual patients for the medical industry that assess the cognitive decision-making abilities of surgeons, doctors, and nurses. He has created learning and assessment simulations for Pearson Learning, Baxter, Abbott Labs, American Association of Nurse Anesthetists. He has taught at Northwestern, Columbia College Chicago, Lake Forest Graduate School of Management, and DePaul's Graduate School of New Learning, where he teaches in two domains: engaging social media, and mastery learning using serious games.



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