

The New VR



From Entertainment to Education



The New VR

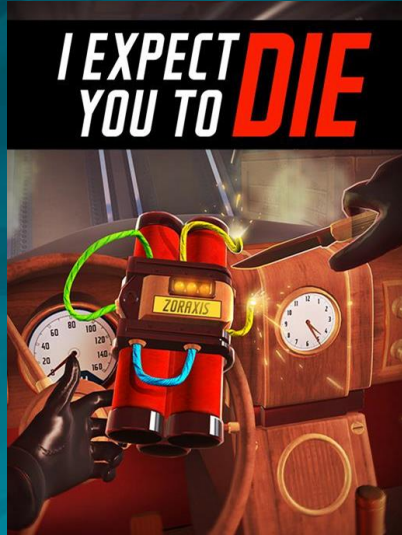


From Entertainment to Education



Shawn Patton

Principal Game Designer // VR Advocate



The New VR



From Entertainment to Education

The background of the slide is a solid teal color with a complex, low-poly geometric pattern. The pattern consists of numerous irregular polygons of varying sizes and shades of teal, creating a textured, crystalline effect.

What is VR?



VR : Virtual Reality

An artificial environment which is experienced through sensory stimuli (such as sights and sounds) provided by a computer and in which one's actions partially determine what happens in the environment.



Microsoft MR



Oculus Go



Vive Pro

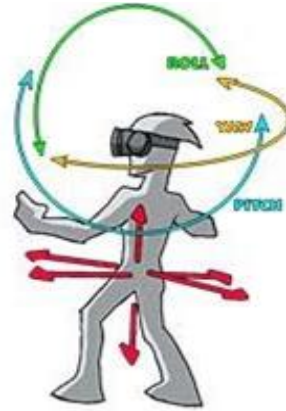
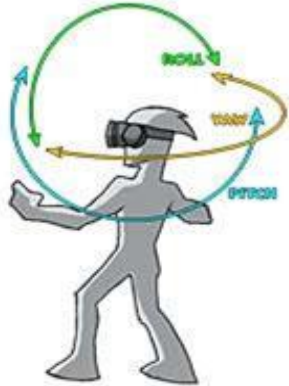


Santa Cruz

DOF : Degrees of Freedom

3 DOF : Orientation: Pitch, Yaw, Roll

6 DOF : Position: X Y Z



Head.Hands : Controls

3.3 DOF : Head Orientation and one hand pointing

6.6 DOF : Position and orientation for head and both hands



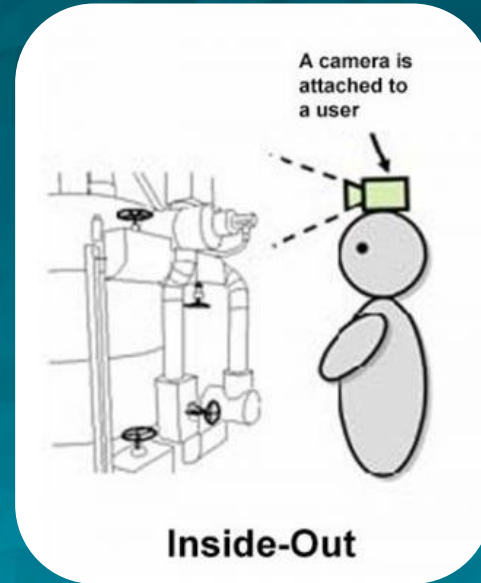
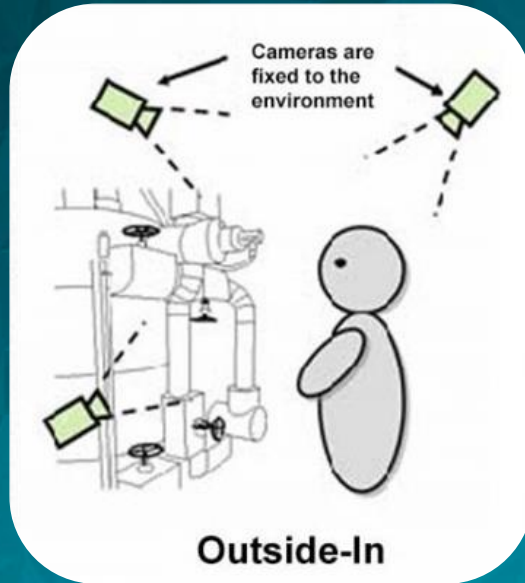
Google Daydream



Oculus Rift

Tracking

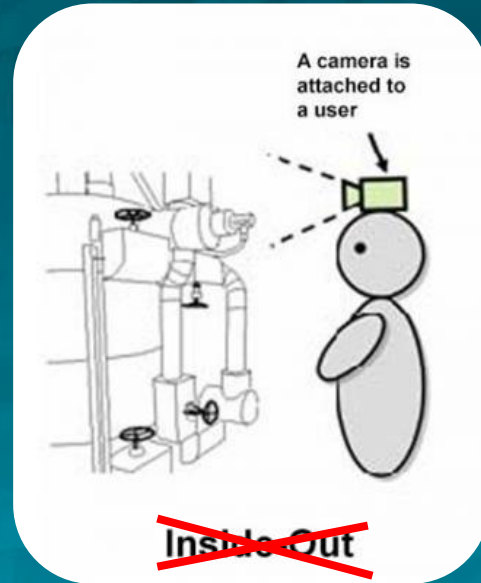
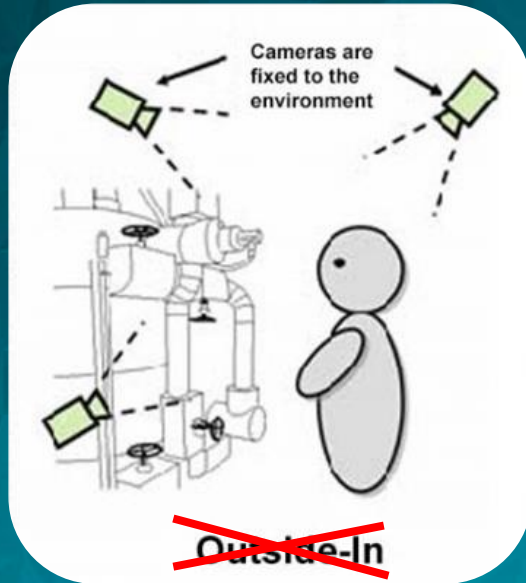
The means by which the Degrees of Freedom are sensed, calculated and sent to the computer.



Tracking

The means by which the Degrees of Freedom are sensed, calculated and sent to the computer.

Hard!



Easy!

Wired vs. Wireless

Whether or not you need to have wires running out of the headset into a computing device.



VR Headsets

3 DOF Wireless

- Samsung Gear VR
- Facebook's Oculus Go
- Google Daydream
- Valve's Vive Focus

6 DOF Wired

- Sony Playstation VR
- Facebook's Oculus Rift
- Microsoft MR
- Valve's HTC Vive

The Future...



6 DOF Wireless

- HTC Vive with casting
- Oculus Santa Cruz

...is Expensive or not here...

\$800 +
Computer
(\$1000)

???

6 DOF
Wireless

- HTC Vive with casting
- Oculus Santa Cruz



AR : Augmented Reality

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 (such as a smartphone camera).

ARKit is iOS

ARCore is Android



HoloLens



Phone



Glass EE



Magic Leap



Intel Vaunt





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HoloLens



Phone



Glass EE



Magic Leap

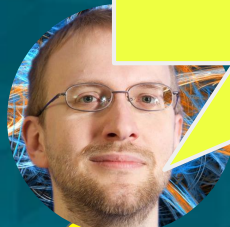


Intel Vaunt

You're crazy, who
wants to wear
glasses!

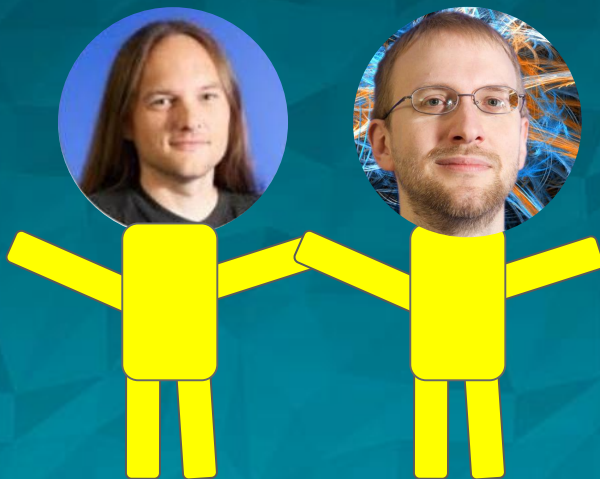


I think smart glasses are really
going to take off. They'll
probably replace phones some
day, who wants to carry a
phone around anyway!



Future Bet of 2015

If, in the year **2030**, more smart glasses are sold than smartphones, Jason will buy Shawn a top of the line pair of smart glasses. If not, Shawn will buy Jason a top of the line smartphone.



INTEL MADE SMART GLASSES THAT LOOK NORMAL

Exclusive first look at Vaunt, which uses retinal projection to put a display in your eyeball

By [Dieter Bohn](#) | [@backlon](#) |

Feb 5, 2018, 8:00am EST

Intel is giving up on its smart glasses

So long, Vaunt

By [Dieter Bohn](#) | [@backlon](#) |

Apr 18, 2018, 10:37pm EDT



AR : Augmented Reality

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 (such as a smartphone camera).



HoloLens



Phone



Glass EE



Magic Leap

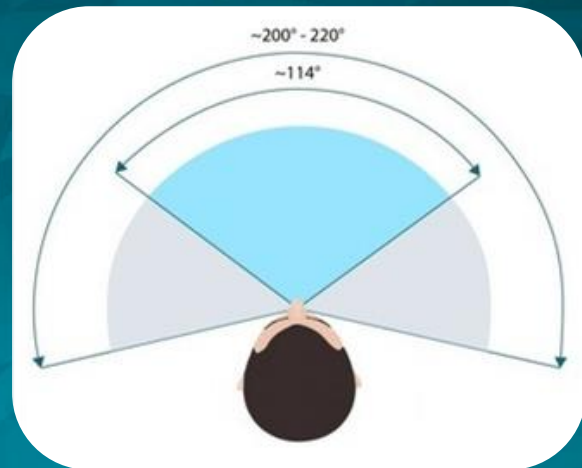


Intel Vaunt

FOV : Field of View

The field of view is the extent of the observable world that is seen at any given moment.
Humans have ~155 degrees horizontally
(~114 biocular, ~200 monocular)

110 : Rift, Vive, Microsoft MR
100 : Gear, Daydream, PSVR
90 : “Put your phone in” systems
70 : Microsoft's HoloLens
?? : Magic Leap



What You Need to Know

- Virtual Reality : Replaces what you see with virtual elements
- Augmented Reality : Layers virtual elements over what you see
- 6 DOF > 3 DOF (6.6 is best)
- Inside Out Tracking is best - nothing to set up
- Wireless is best
- Wide FOV is best
- Big Dreams Coming Soon:
 - Santa Cruz : 6.6 Standalone Inside-Out Wireless VR
 - Magic Leap : 6.6 Standalone Inside-Out Wireless AR

1935 - Imagined by sci-fi authors

1968 - VR system created by Ivan Sutherland



1984 - Jaron Lanier - VPL Research "EyePhone"



1995 - Nintendo's Virtual Boy

Time



1990 - "Virtuality" debuts
in arcades and the
cinema classic Hackers



1998 - DisneyQuest VR

2007 - 2018
VR BOOM!



2007 - Valve starts coding Vive



2012 Oculus Kickstarter \$2.4 million

2015 Samsung Gear VR



2017
Microsoft MR

Time

2009 PSVR work begins



2014 Facebook buys
Oculus for \$2 billion and
Google Cardboard



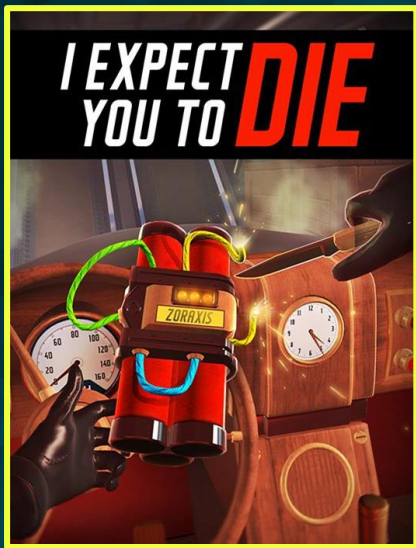
2016 Vive, Oculus,
PSVR, & Daydream!!



First VRDC!

2018
Vive Focus
Lenovo Mirage
Santa Cruz??









Standard Form 1001



CORONER REPORT

No. 00146-11100
AGENT NAME: CLARIFIED

[Signature]

FILE COPY
DECEASED

CERTIFICATE OF DEATH

DECEASED

07

Agent must be notified by 00146-11100



CAUSE OF DEATH LASER BLAST

HOLE



Head Brain was destroyed Back The back no longer exist.

Location of Body: Body could not be recovered at this time.

Part ☐ Body ☒ Heart ☒ Wound ☐

Additional Notes We must not quit, Zoraxis must be stopped

We are sorry for his death at this time, there is nothing left.

Nothing left of him after all of that.

[Signature]









Presence



WHAT IS VR BEING USED FOR?

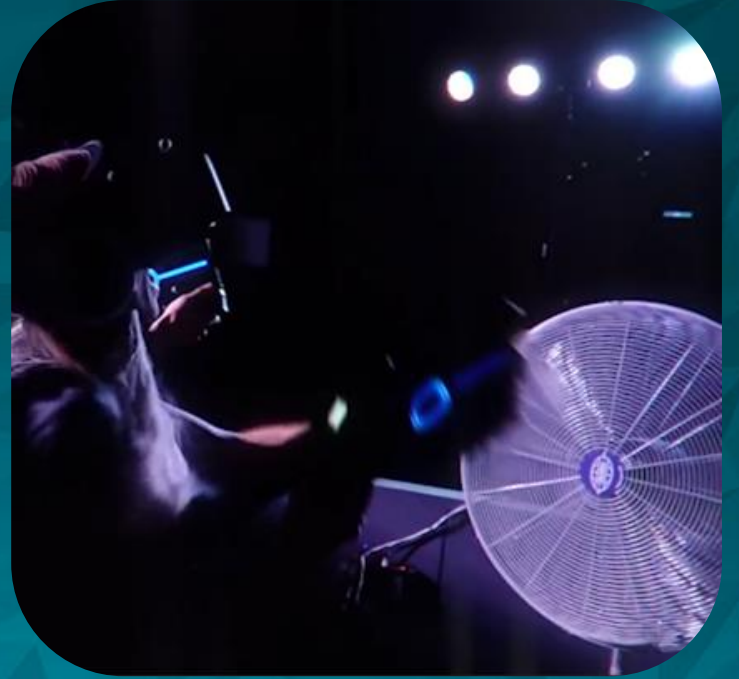
- Entertainment

- Movie & TV watching
- ~2700 Vive games / experiences
- ~2000 Oculus games / experiences
- ~200 PSVR games

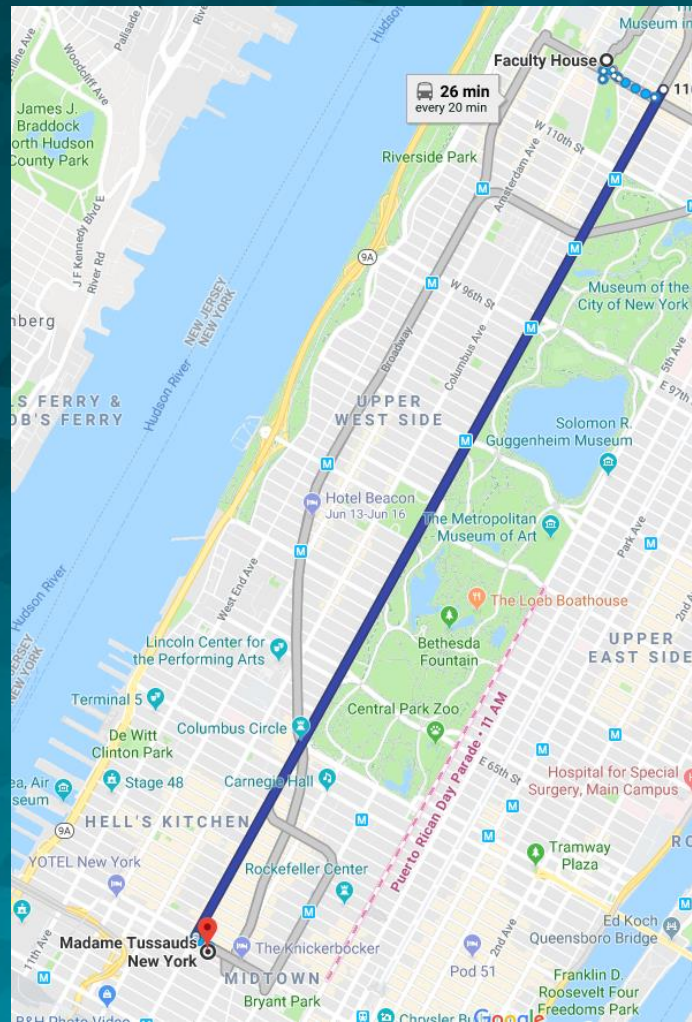
WHAT IS VR BEING USED FOR?

- Location Based Entertainment
 - VR roller coasters
 - IMAX VR
 - The Void









WHAT IS VR BEING USED FOR?

- Live Sports and Events
 - LiveLikeVR.com
 - YouVisit.com
 - Wemersive.com
 - 360VirtualTours.co.uk
 - Olympics!



WHAT IS VR BEING USED FOR?

- Mapping
 - Google Earth
 - Google Expeditions



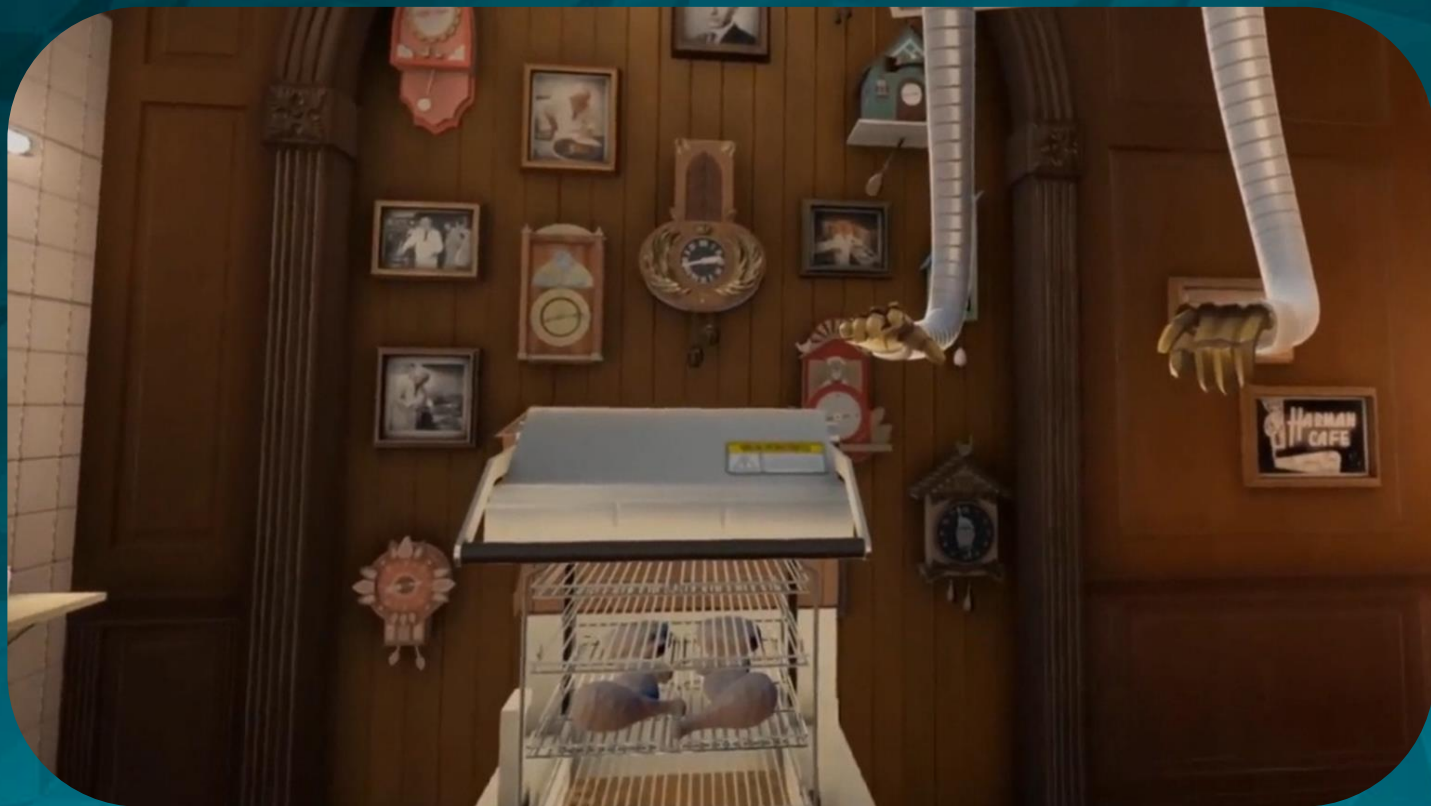
WHAT IS VR BEING USED FOR?

- Creating Art :
Tiltbrush, Quill, Sketchfab, Paint VR, Blocks, Medium



WHAT IS VR BEING USED FOR?

- Training
 - **Devs:** Simcoach Games (Pittsburgh), Strivr, Sentient Computing, VirTra, Google, Virtual Therapeutics, ZeroLight, Deloitte Digital
 - **Clients:** NFL, Walmart, UPS, Police, Military, Hospitals, Factory Workers, HR Departments, Trucking, and KFC



Wiedersehen Kennedy

Schell Games

- History of Transformational games
- Bring knowledge of creating immersive experiences that support presence to education







Schell Games

- The Transformational Framework
- HoloLAB Champions (Virtual Lab practice. Real Lab Mastery.)

(with grant from Institute of Education Sciences)

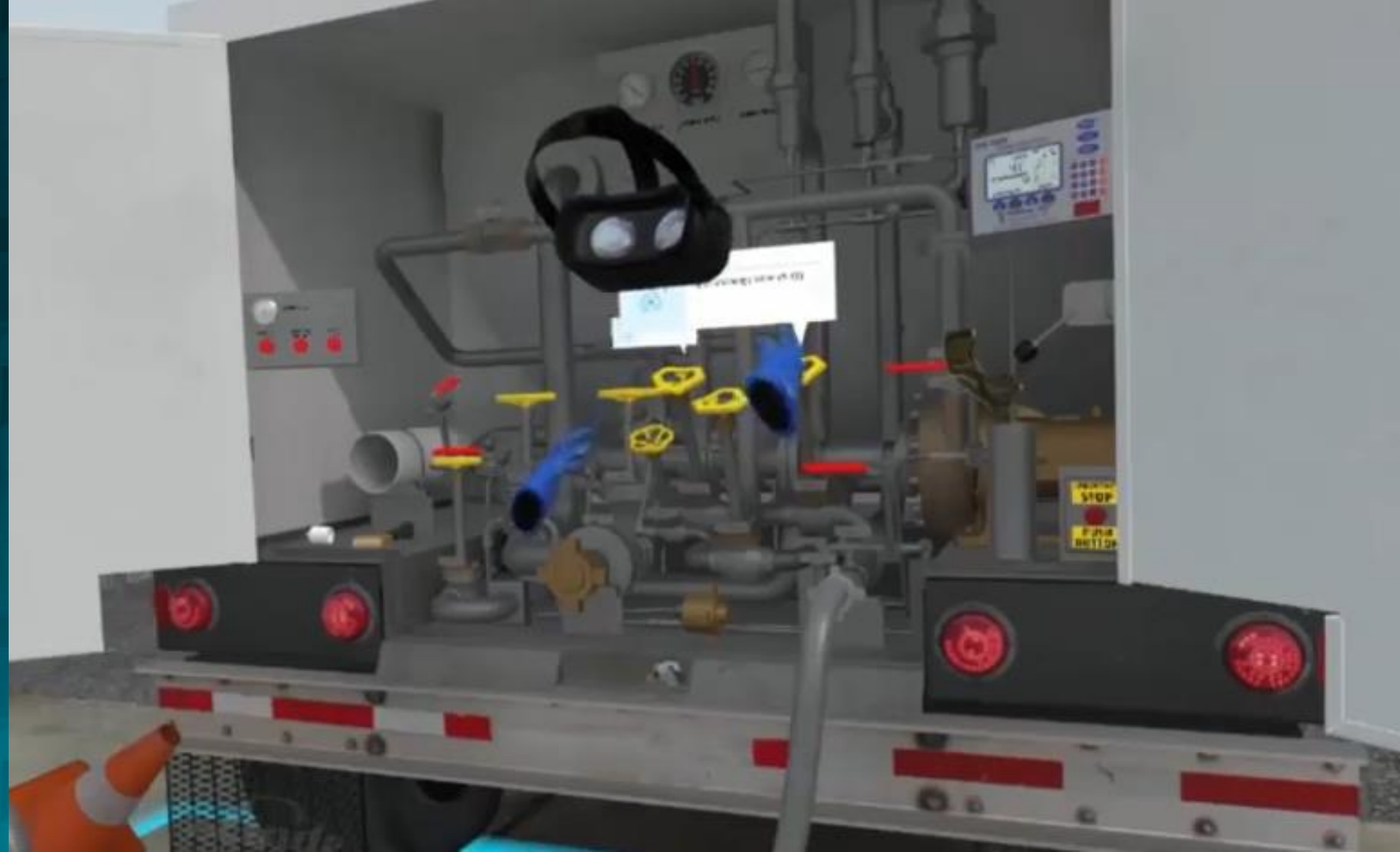




Deloitte Digital

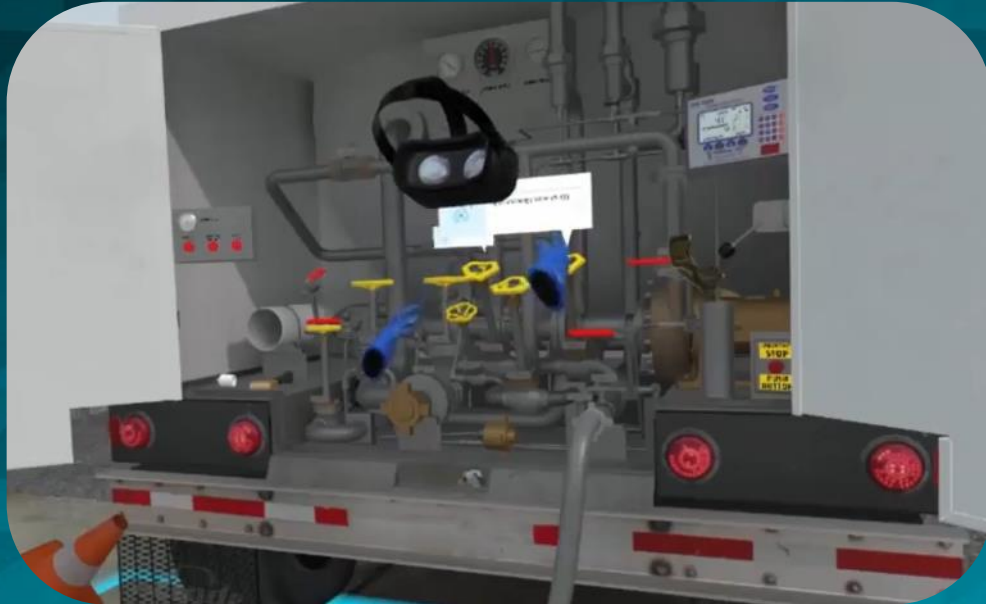
- Joint venture between Deloitte and Linde North America
- Train drivers and operators of hazardous chemical trucks





Deloitte Digital

- Joint venture between Deloitte and Linde North America
- Train drivers and operators of hazardous chemical trucks



“I love your game, by the way! It’s definitely one of my favorites and it has been a really good reference point for me for VR design.”

-Josiah Hunt

Deloitte Digital - Details

- Pilot stage
- New drivers train in VR prior to real truck
- Sim available for periodic practice
- Mentor shadowing is basis of existing training, VR makes it more flexible: trainees can do procedures real customers don't often need; even multiple times to help with learning retention
- Tested with range of drivers from 30's to 50s
- Drivers acclimated more quickly to VR than traditional keyboard and mouse equipment sims
- Time to readiness is proving to be a third of traditional training

SimCoach Games

- Skill Arcade : Attract Diverse, Pre-Qualified, Applicants Through, Video Games
 - Harness Hero
 - Site Coach: Start Smart



Site Coach: Ladder
Safety Construction



Hooked!



Road Builder Blitz



JobPro Get Hired:
Construction



Harness Hero: Bridge
Edition

Walmart

“We started with one VR headset in one Walmart Academy, with a single-use case: We placed an associate in a virtual store environment and asked her to look for potential problems such as litter on the floor, a spill, or a sign hanging incorrectly. The other trainees observed, in real time, the associate’s interaction with the environment on screens in the classroom. The trainees were fully engaged in the experience, able to clearly visualize the surroundings and the corresponding behaviors. It worked so well that we’re now expanding VR-based training and a wide variety of use cases to all 200 academy locations.”

-Judith McKenna, Exec. VP & COO Walmart US

Virtual Therapeutics

- Creating VR experiences to help patients with therapies.



Virtual Therapeutics

- Certain conditions require techniques like resonant breathing and mental exercises
- Patients perform these while hooked up to a biometric machine for feedback, but it's not interesting
- Now they can enter a virtual world, a game experience where they can use the stress management techniques to explore a fantastical world, help characters, and solve problems
- This leads to better retention and, hopefully, they will be better prepared to apply them in stressful situations in real life

ZeroLight

- Sales Training
- Consumer Virtual Showrooms
- Both AR & VR Experiences



Vantage Point

- Leverages VR for education and training around sexual assault
- Places users in the same room as a survivor
- Helps teach techniques such as bystander intervention.
- Increased employee retention - over 90% of the training material

Google Glass EE & AGCO

- Proceedix made suite of tools for Glass EE for AGCO
- Glass used with training reduces time taken to a third
- Employees can access training videos, images annotated with instructions, or quality assurance checklists
- Glass EE brings supervisors into the work environment
- 30 percent reduction in processing times
- 50 percent reduction in new hire and cross functional employee training time

Accumulated Tips

- Make environments as realistic as possible
- Stay away from teleporting if at all possible
- Provide after training tools to analyze performance
- Keep interactions short, allowing quick replay
- Make experience convenient and accessible
- Create meaningful interactions - helps retention
- Keep feedback very focused
- Let player control the flow
- Doing is learning

Ways to Measure Results

- Run academic studies on change in attitude and/or knowledge (pre/post)
- Compare locations that use a game intervention vs. similar locations within the same company that don't
- Collect before/after data on key metrics
- Collect data on total usage of app or experience
- Provide all data to partners
- Collect feedback from clients/partners and players



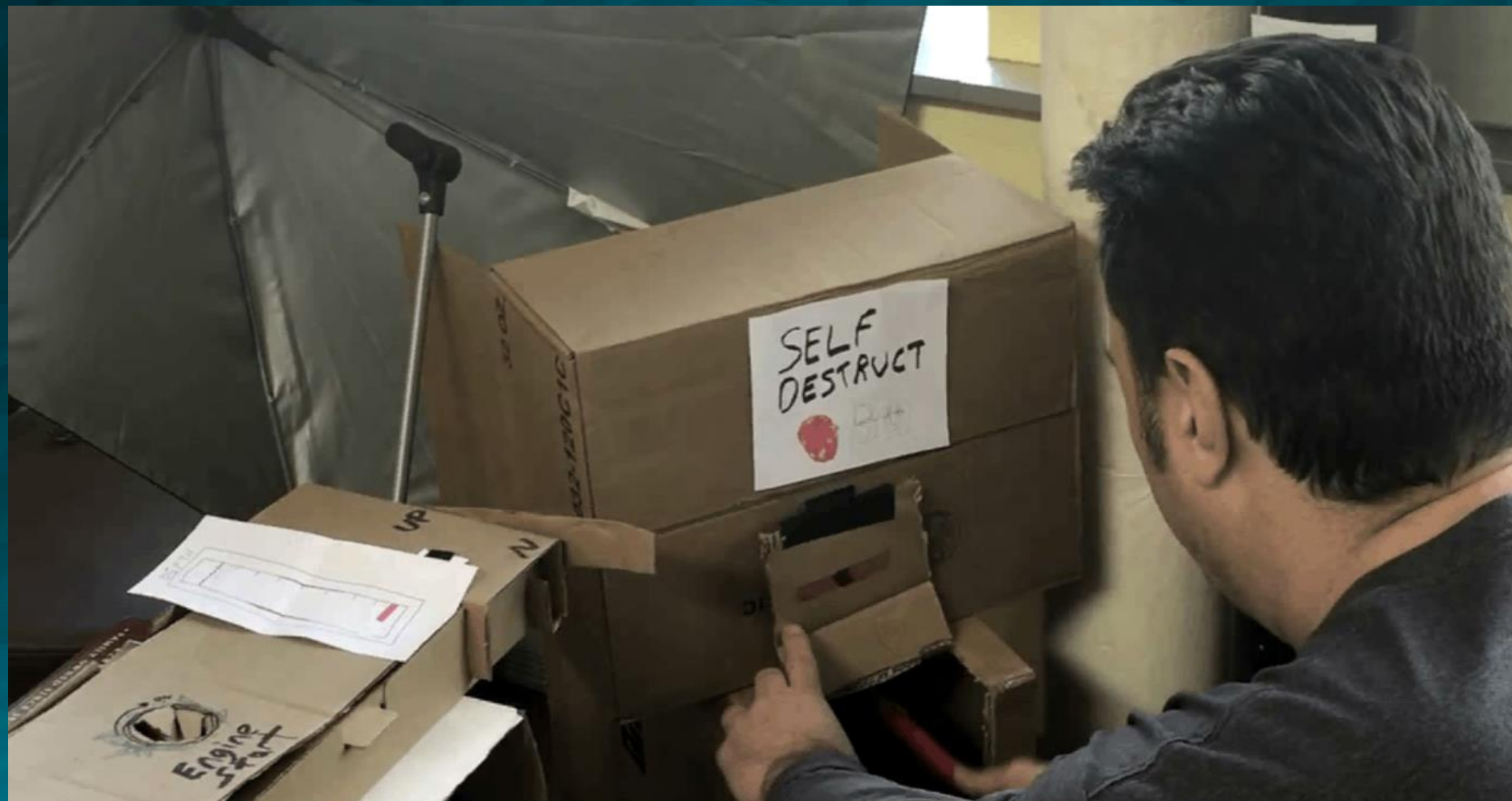
What's the catch?

Cons of VR/AR Training

- New Technology
- Harder Development

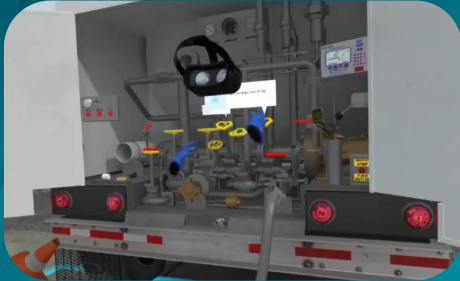
Considerations of VR/AR Training

- New Technology - Embrace it! Use the new Standalone 6.6 DOF VR!
- Harder Development - Plan for it!
 - Bigger budget for longer timelines
 - Embrace Rapid Iteration



Future of VR/AR Training?

- Proven effective
- Tech is only getting better, cheaper, and more versatile







Thanks! Questions?

shawn@schellgames.com

Twitter : [@shawndesign](https://twitter.com/shawndesign)

Other VR Talks: shawnpatton.com

(I'm serious about the Void, let's go!)