



# Coalescing spectrums of Ai and XR

- Shivank Shekhar, Global Co-Chair, VRAR Association



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# Who am I ?

- Global Co- Chair for (WebXR) Industry Committee at VRAR Association
- Corporate Consultant for Silicon Valley VR/AR Consortium
- Contributor and Developer for WebXR API and WebVR 2.0 at W3C.



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Companies



50+  
Chapters



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15K  
Professionals



Community



Training  
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Equipment



Research  
& Events



# VRARA Industry Committees

Committees are creating best practices, guidelines, and standards

Existing Committees:

1. Advertising
2. AEC
3. Aerospace
4. Arcade
5. Automotive
6. Criminal Justice
7. Enterprise
8. Entertainment
9. Education
10. Healthcare
11. Marketing
12. Public Safety/Emergency Response
13. Content Licensing
14. Retail & eCommerce
15. Storytelling
16. More at [www.thevrara.com](http://www.thevrara.com)



# Overview

VR/AR Spectrum

WOP\*\*

6DOF Analytics: IBM

QnA

Types of VR/AR

VR/AR applications

AI in VR

XR Approach

Data in VR/AR

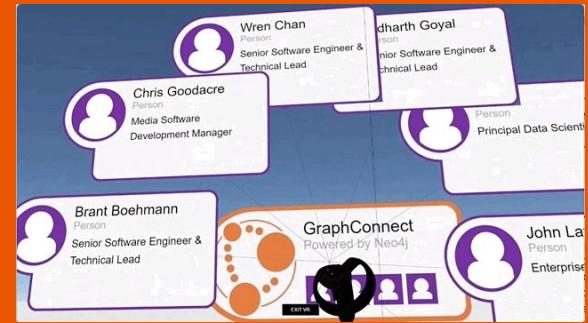
RTVR on Cloud



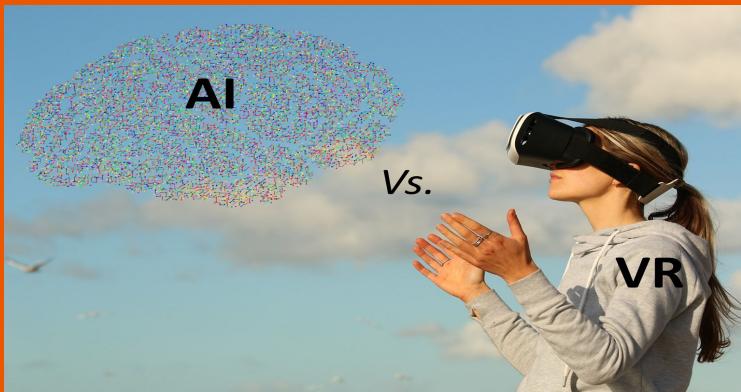
# What I am excited about in 2018 ?



XR Projects

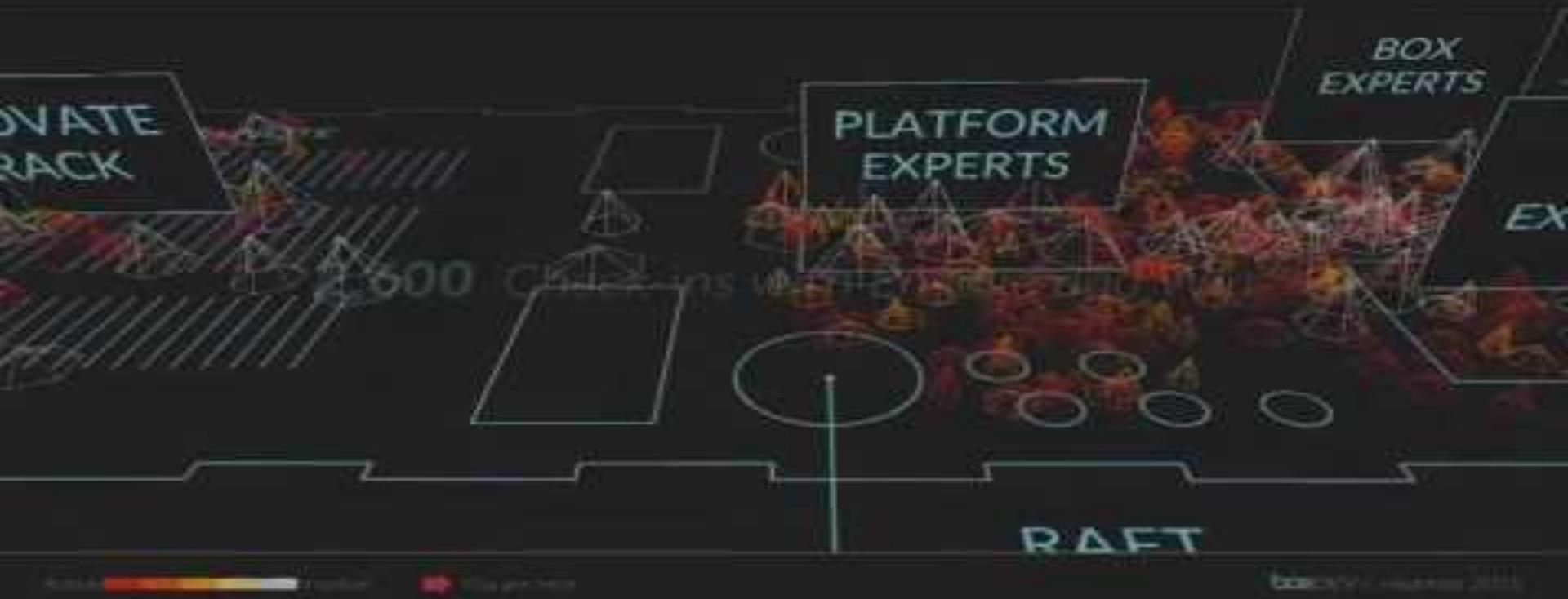


Data Visualisation



1:30pm Execute - Designing for Enterprise

2:50pm





# Understanding VR/AR



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## Realities, like literally!

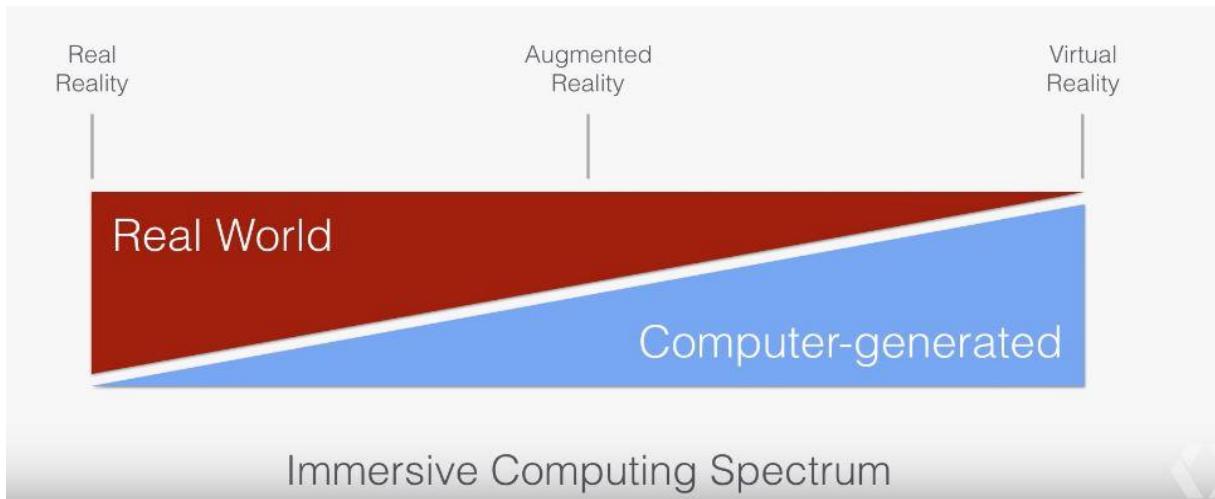


The state of things as they "actually exist" through our human senses without any technology.



Artificially created sensory experiences of people, environments and objects, which can include sight, touch, hearing, and smell.

# The VR/AR Spectrum



## Virtual Reality:

- Immersion into another world
- Usually uses a headset and mobile device
- Does not interact with the real world
- Experiential Information

## Augmented Reality:

- Overlay of objects in world around you
- Use of a phone or viewing device
- Usually uses target image

# VR/AR applications at scale

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## Classical Applications

- Gaming Industry
- Data Visualisation
- Mixed Reality Applications
- Tourism
- Information Industry
- Training Industry

## Artificial Intelligence/ Machine Learning Based Applications

- Digital Assistants
- Image recognition
- Social VR
- Business Analytics Platforms
- AR Cloud



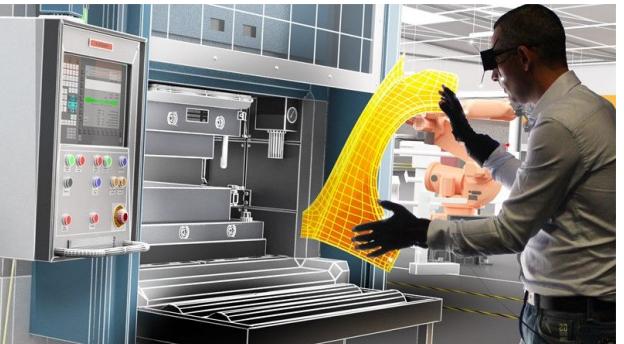
# VR, AR, MR popular applications



Global architecture firm IA Interior Architects is working with InsiteVR to build design models in virtual reality. It's also experimenting with the technology to give clients a "tour" before a project is built.

## 13 PLACES WHERE VR IS GETTING REAL

A handful of companies are integrating it into work, while a growing number use it to sell.



Ford designers and engineers use VR to test elements of new cars, saving some \$8 million in one year. Audi is outfitting dealers with VR kits that will enable customers to configure and customize vehicles.



Surgeons at UCLA are using Surgical Theater's medical VR technology and Oculus Rift headsets to test-run highly technical and sensitive surgeries before they operate.



Airbus uses it to demo planes for customers; it patented a helmet that passengers may one day use for entertainment. BAE Systems' VR enables engineers and sailors to "walk through" warships during design.



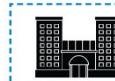
Sotheby's International Realty is using VR to host open houses to sell luxury homes. Other realty companies, such as Halstead and Douglas Elliman, are reportedly planning to use similar technology.



Carnival developed a promotion to give shoppers at some AT&T stores the chance to use Samsung VR equipment to virtually explore its cruise ships and vacation destinations.



The North Face took users to a virtual Yosemite National Park and Moab at its stores. In South Korea, the company's promotion placed customers in dog sleds for extra verisimilitude.



Marriott designed a temperature-controlled virtual phone booth that, using a headset, allowed customers and the public to visit the Apartment, the company's New York City store in SoHo.



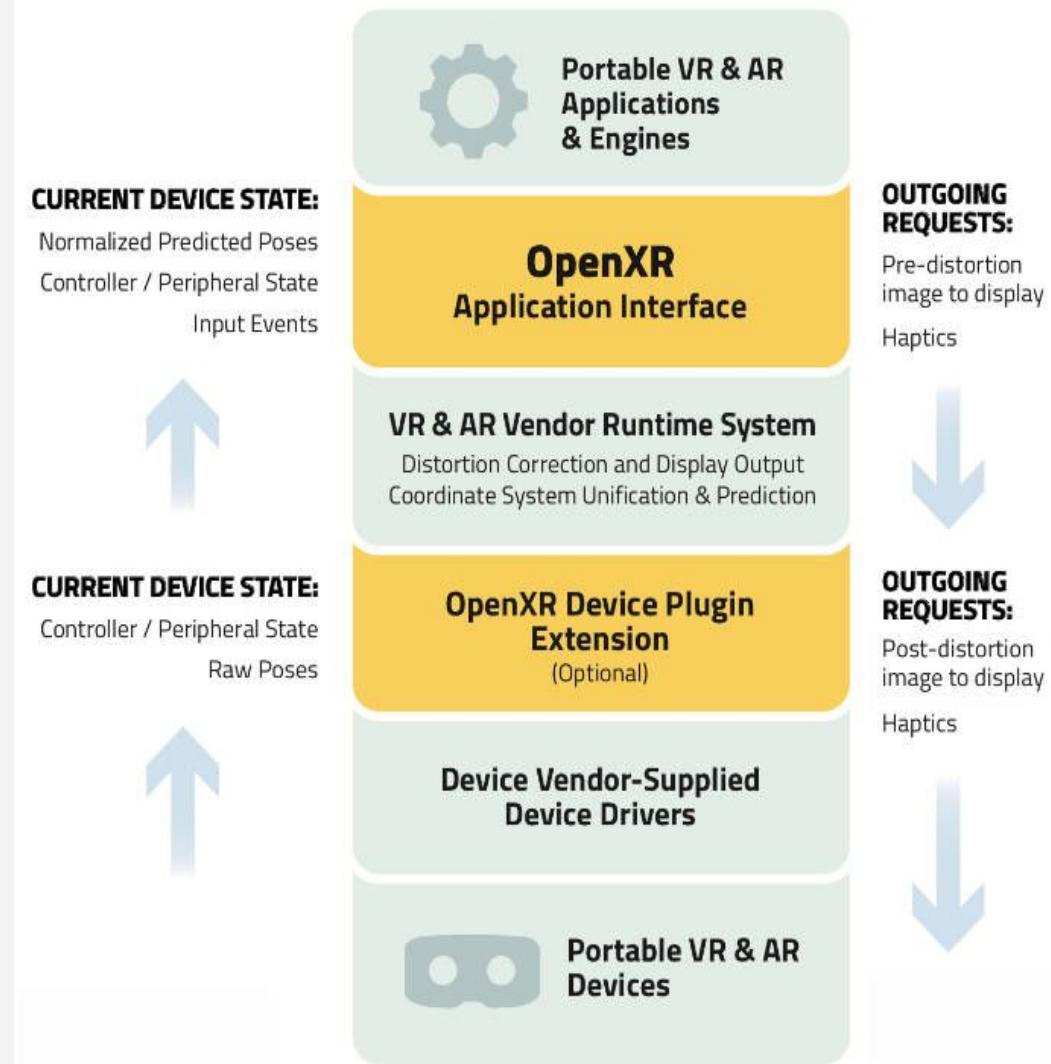
Luxury retailer the Line is using VR to create a virtual pop-up shop that enables consumers to tour the Apartment, the company's New York City store in SoHo.





# The XR Spectrum

# OpenXR Architecture

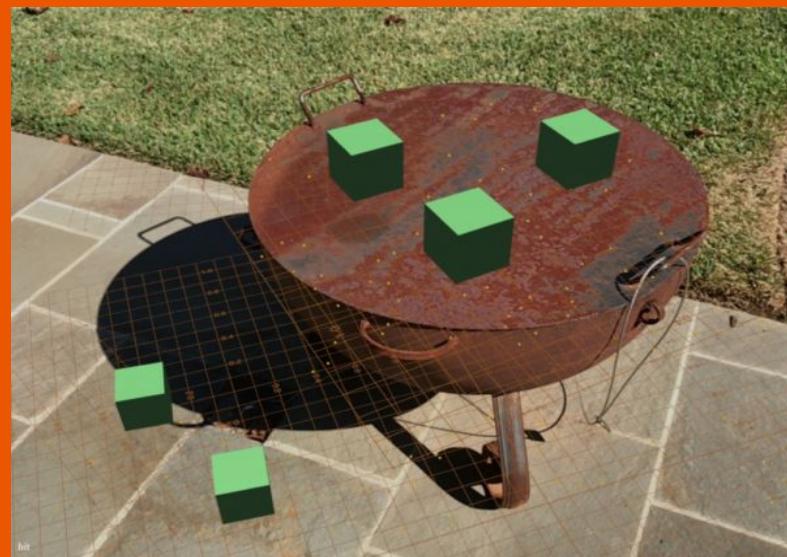




# and who is supporting us?



# WebXR: A combined framework

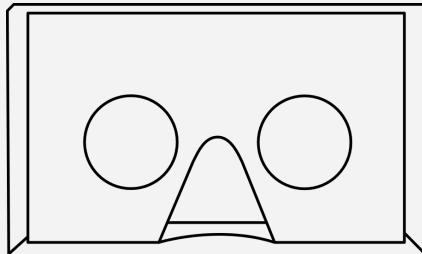
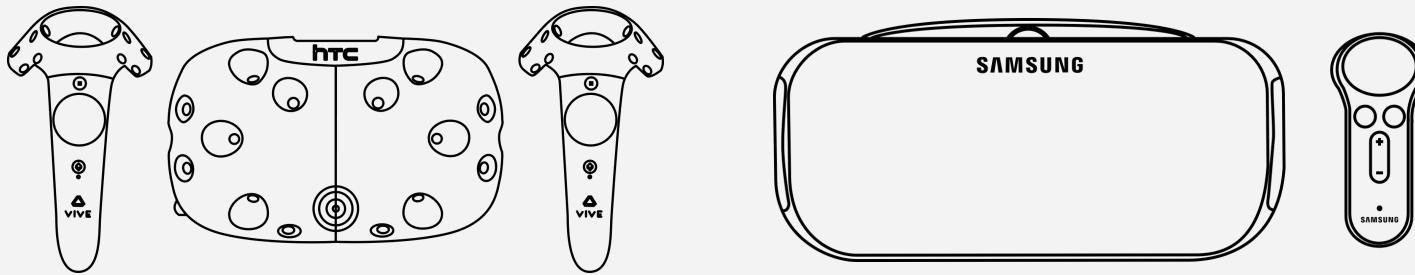


## Proposing a WebXR API

We have created a [draft WebXR API proposal](#) for providing access to both augmented and virtual reality devices.

The WebXR API formalizes the different ways these technologies expose views of reality around the user, and it exposes concepts common in AR platforms such as the Anchors found in Hololens, ARKit, and ARCore.

# Cross Device Support for VR/AR/MR





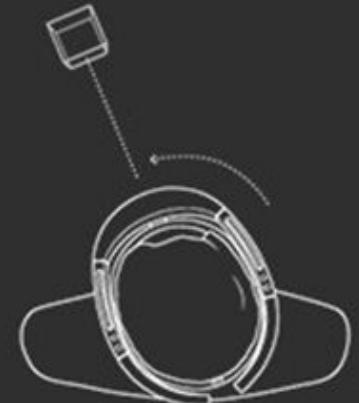
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# How do VR devices work?

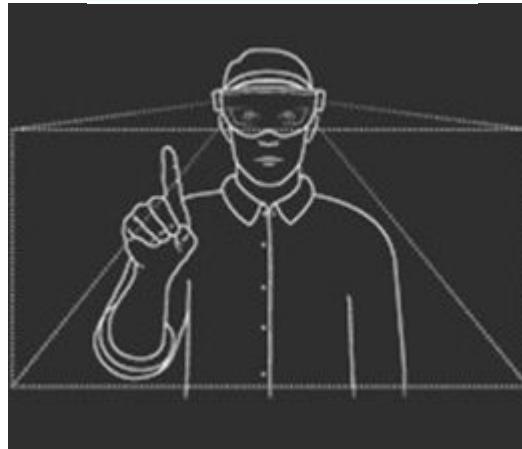




Gaze



Gesture



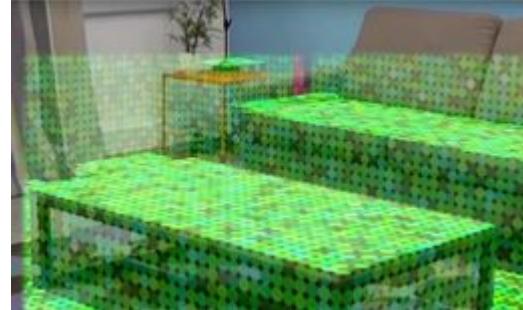
Voice commands



Spatial sound



Spatial mapping



World coordinates





# Data in VR



# Data Trends

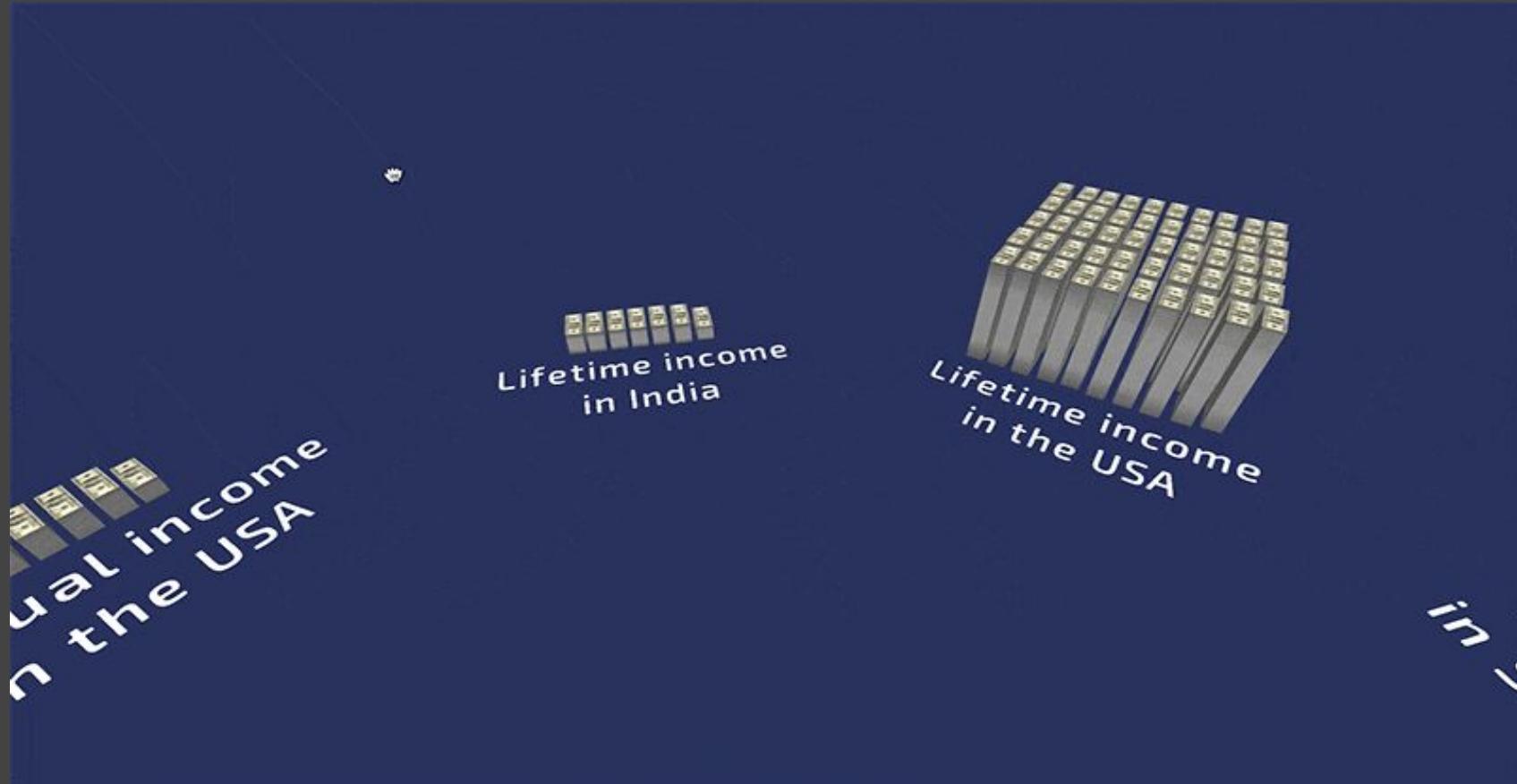
Random Numbers



Did you know?



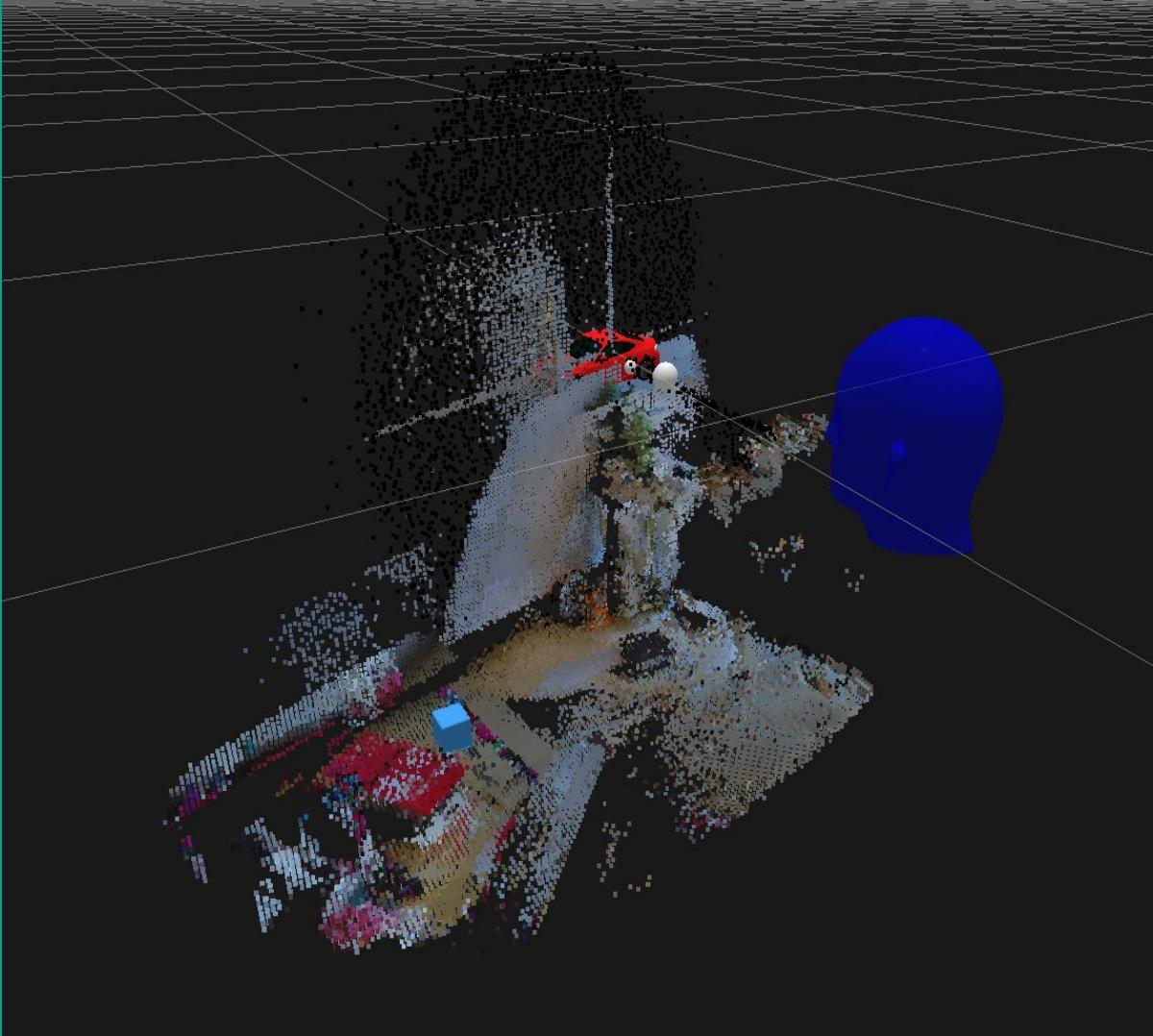
# Turns to something like this .....





## Case Study: Meta2 AR Headset

Using onboard IR sensors over the Meta2 AR device capturing, saving and replying the spatial data IRL.





# Some Popular AR trendsetters



Vs.

ARCore



Immersive

Ambient

Digi-Capital™ Reality Matrix

<i>Virtual</i>	<i>Augmented</i>
<b>htc VIVE</b>	<b>magic leap</b>
<b>oculus</b>	<b>Microsoft HoloLens</b>
<b>SONY</b>	<b>ODG</b>
<b>FOVE</b>	
<b>Samsung Gear VR</b>	<b>EPSON</b>
<b>Google Cardboard</b>	<b>DAQRI</b>
<b>merge VR</b>	<b>ZEISS</b>
<b>castAR</b>	<b>SULON</b>
<b>athreer labs</b>	<b>SKULLY</b>
<b>VUZIX</b>	<b>rucon</b>

© Digi-Capital 2015

Virtual

Augmented



# Case 2: IBM Watson

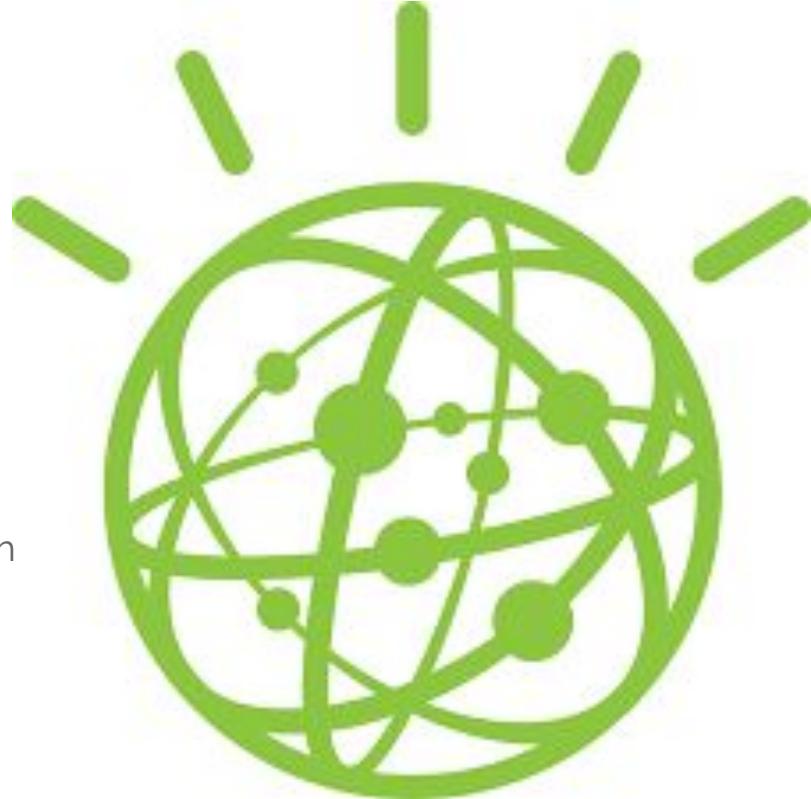
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# AI in VR Analytics

Enabling a world of "6DOF" Analytics

The combination of VR and AI is only now becoming possible due to:

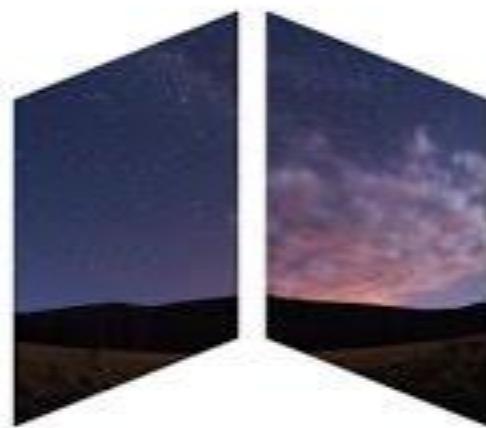
- Recent developments in AI, particularly deep learning, that foster real-time image and speech recognition
- Increased availability and reduced cost of local processing and storage
- Expanding network bandwidth, allowing richer data streams
- Availability of AI and VR/AR services in the cloud





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# How is IBM Visualising High Dimensional Data using Augmented Reality?



**IBM Immersive Insights**



# Ai in VR (NVIDIA and OpenAI Research )





# Deep-learning Autonomous Simulation

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# Deep Learning Based Simulation Engine

State-of-the-art deep learning simulation engine leverages reality-grade city mesh combined with DNN (deep neural network) and AI capabilities.

Cognata's virtual reality simulator and engine enable autonomous car manufacturers to run thousands of different scenarios based on various geographic locations and driver behaviors, and sharing the road with other users.



# Star Trek VR Voice Assistants

The coolest part? I don't need to memorize hyper-specific phrases -- because Ubisoft teamed up with [IBM Watson](#), the closest thing we have to a real-life Star Trek computer, to process my voice in near real-time.





# OpenAI



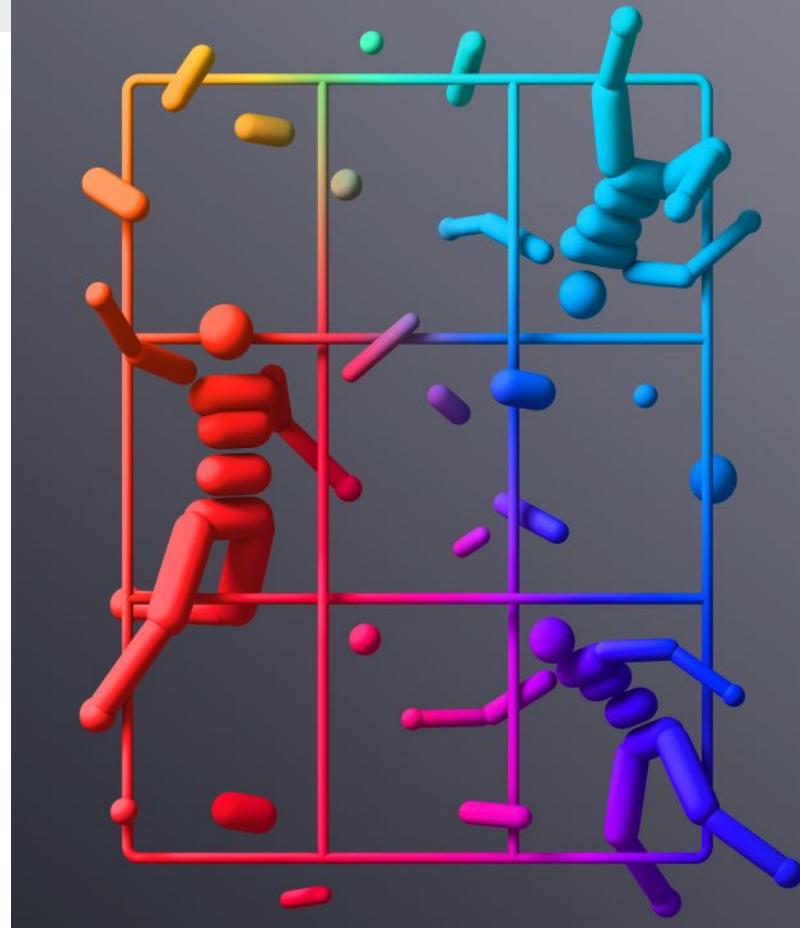
## OpenAI : Dota2 BotPlayer

\*\*Window of opportunity

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## Competitive Self Play : OpenAI

It was found that self-play allows simulated AI's to discover physical skills like tackling, ducking, faking, kicking, catching, and diving for the ball, without explicitly designing an environment with these skills in mind





# Real Time VR/AR Delivery Systems



# The AR Cloud

# HOW TO MAKE AN AR CLOUD



- 1. A SCALABLE SHAREABLE POINT CLOUD**
- 2. AN INSTANT UBIQUITOUS LOCALIZER**
- 3. REAL-TIME MULTI-USER INTERACTION**



# Questions?

Connect with me:

[www.geekyshiva.xyz](http://www.geekyshiva.xyz)

Twitter: @shivank1995





# Ciao!!