Virtual Reality Beyond Gaming

IMMERSIVE TECHNOLOGIES IN THE INDUSTRY

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Immersive Tech in 2016

Platform Growth

- 2012:
  - Oculus Developer Kit 1
- 2014:
  - Oculus Developer Kit 2
  - Cardboard
  - GearVR Innovator Edition 1
- 2015:
  - GearVR Innovator Edition 2
  - Gear VR
  - HTC Vive Developer Kit 1
  - OSVR
- 2016:
  - Oculus Rift
  - HoloLens Developer Kit
  - HTC Vive Pre
  - HTC Vive
  - Playstation VR
  - FOVE Developer Kit

Today's Technology

Virtual Reality

Fully immersive experience that replaces your physical world

Example: Oculus Rift

Augmented Reality

Overlays digital information about the physical world around you

Example: Google Glass

Mixed Reality

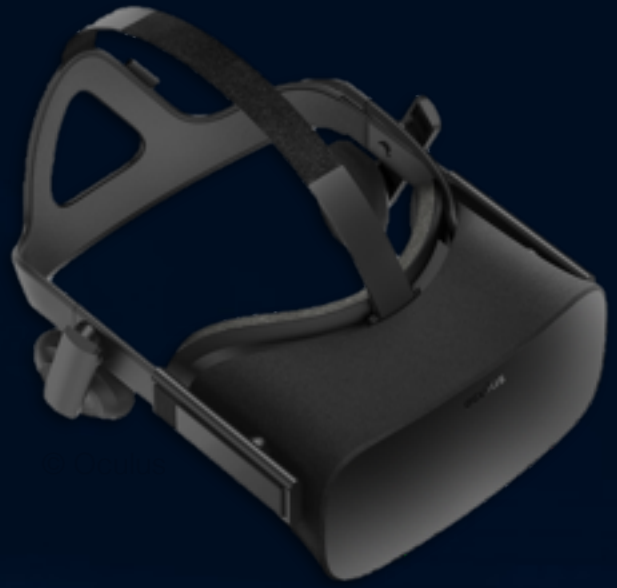
Combines virtual objects and the physical world

Example: Microsoft HoloLens

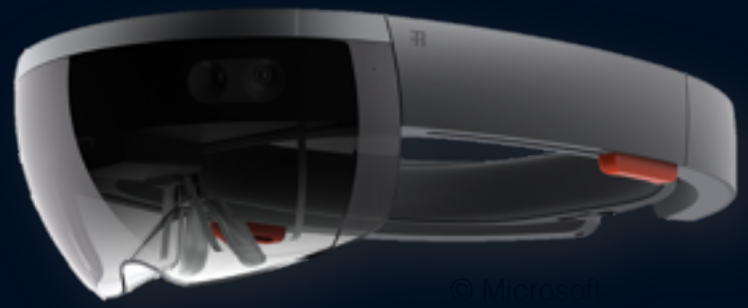
Head Mounted Displays

Mobile

Desktop



Standalone



Immersive Experiences

Why 3D Computing?

- Storytelling is significantly more immersive in an environment that surrounds the user
- Virtual experiences improve empathy in the viewer
- Visualizations of complex data
- New and improved ways of interacting with the technical ecosystem that we've been building for decades
- Intuitive Computing

Types of Immersive Applications

- 360 Photography & Video
  - Recorded on specialized camera rigs, viewer passively sees an experience from a single perspective
- Volumography
  - Reconstruction of real spaces, translated into a 3D object – viewer passively experiences a space from multiple perspectives
- Real-time CGI
  - Entire experience is created through 3D programming – viewer can passively watch or interactively manipulate an environment

Industry Examples

Advertising

- Sponsored 360 videos
  - Showcase brand experience
  - Short & long-form videos
- In-application advertising (virtual product placement, in-world billboards)
- Branded headsets

© Volvo, Google Play Store

Training

- Hands-on practice in a virtual setting where on-site training may be expensive or challenging
  - Flight simulators
  - Surgery simulations
- Simulate "worst case" scenarios or control specific outcomes
  - Virtual weather conditions
  - Hard-to-predict / low-likelihood variables

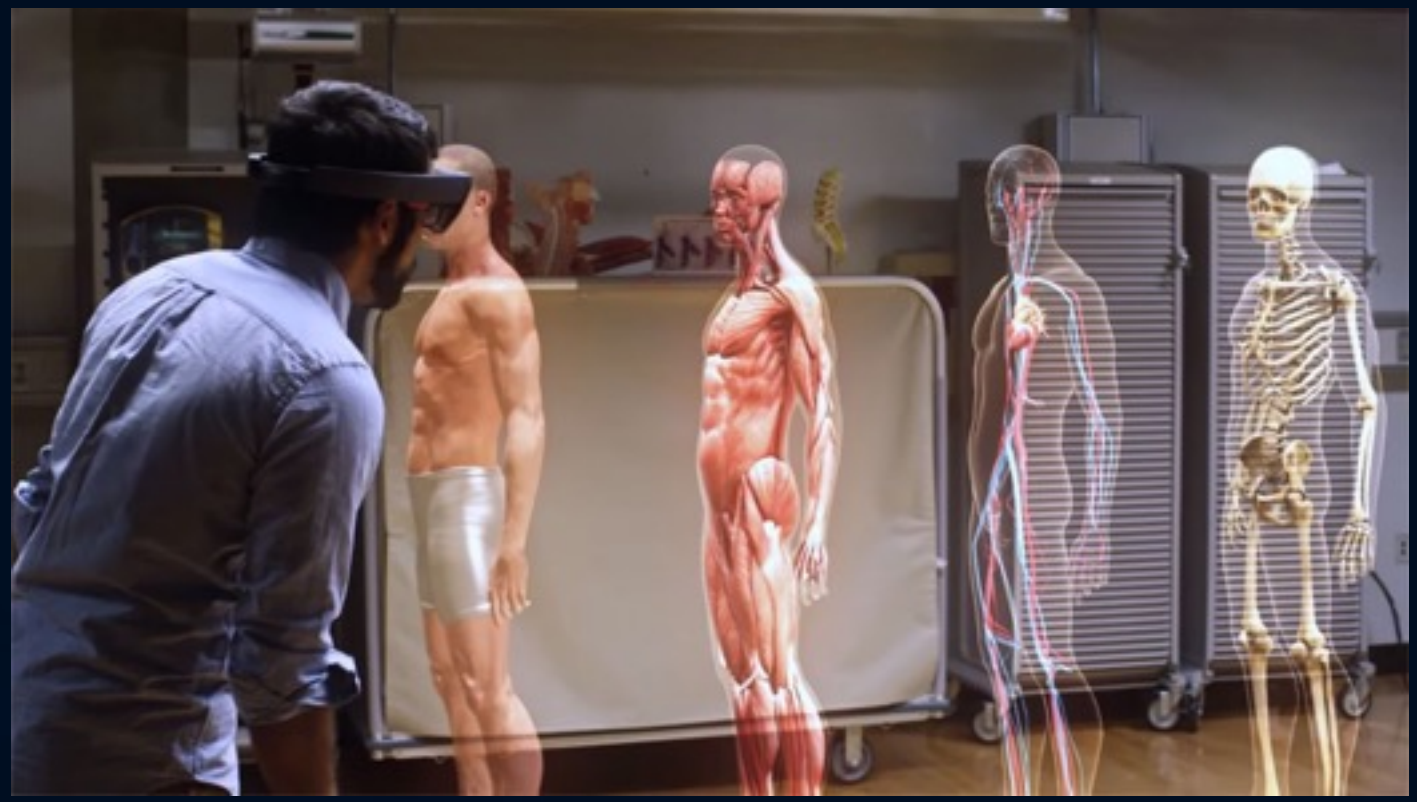
Architecture & Engineering

- Visualize 3D models and walk around within sketches
- Augment plans over physical buildings
- Immersive blueprints

© Iris VR

Medical

- Reconstruct and explore medical imagery
- Augmented surgical tooling
- Medical school training



The VR Web

VISUALIZING EXCEL GRAPHS IN VIRTUAL REALITY WITH WEBVR + .NET

The VR Web

- Enables multi-platform virtual reality applications that work on desktop and mobile
- Seamlessly transition between VR and non-VR modes
  - Integration of the WebVR API in Firefox Nightly and certain builds of the Chromium browser
  - Mobile VR supported automatically within default mobile browsers
- Utilize existing libraries
- Built on top of WebGL

Data Visualization in VR

- Excel charting in 3D within the browser
- Built on top of the .NET framework with Three.JS on top of WebGL
- WebVR Library for stereoscopic rendering & VR tracking

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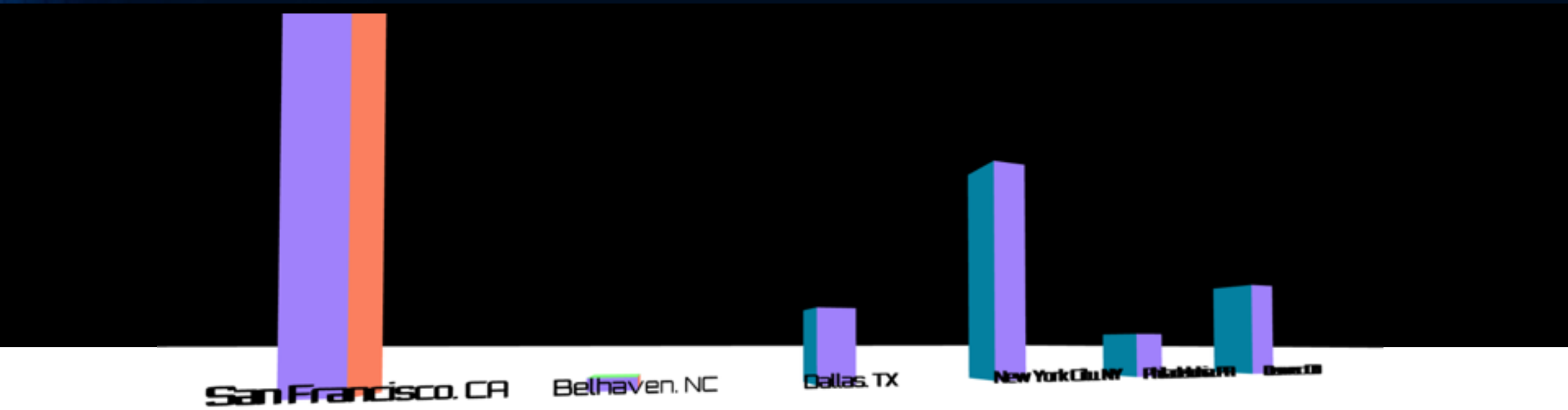
- Parse Excel data and convert to JSON
- Grab values from JSON
- Create 3D scene & Geometry from JSON data
- Update on VR device orientation

Data Visualization in VR



Let’s See it in Action!

WEBVR.AZUREWEBSITES.NET

Experimentation

GETTING STARTED WITH VR & AR TODAY

Platform

- Native applications
  - More powerful, harness graphics card and CPU capabilities
- Mobile applications
  - More easily accessible and generally lower cost options
  - Distributed through app stores
- Web applications
  - Great for proof of concept, but performance still is lower than other options
  - Easiest to integrate into existing content

Development Tools

- 3D Engines
  - Unity, Unreal, CryEngine
- Web
  - Three.js, WebGL
  - A-Frame
- Native
  - DirectX (Desktop)
  - Java / GLES (Android, Mobile)

Define Next-Generation Computing

- This wave is still just beginning
- The rules are resetting
- We have an entirely new way of utilizing data to help change the world

Q & A

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Thank you!