Advancements in Augmented Reality

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Agenda

- Augmented Reality (AR)
- Virtual Reality (VR)
- AR vs VR
- Microsoft Hololens (AR)
- Oculus Rift (VR)

Augmented Reality (AR)

- AR = Physical world + CGSI
- Gives the user a composite view and offers an enriched experience
- Environment becomes interactive and digitally manipulatable

AR - Working and Applications

- Hardware: Processors, Display, Sensors, etc.
- Software: Computer vision and Video tracking techniques for recording, processing and rendering
- Applications: Medical, Manufacturing, Military Aircraft, Entertainment, etc.

AR - Issues and Challenges

- Spam, Security and Interoperability issues
- Performance and Interaction issues
- Technological limitations
- User Interface limitations

Virtual Reality (VR)

- Creates an environment simulated by multi-projected environments to generate realistic media

- Completely replaces the real world with a computer generated three dimensional one

- Virtual environment becomes interactive and digitally manipulatable

VR - Working and Applications

- Hardware: HMD, Image and Sound generators, Motion and eye tracking sensors
- Software: Media rendering and motion tracking techniques
- Applications: Design, Architecture, Entertainment, Training and simulation

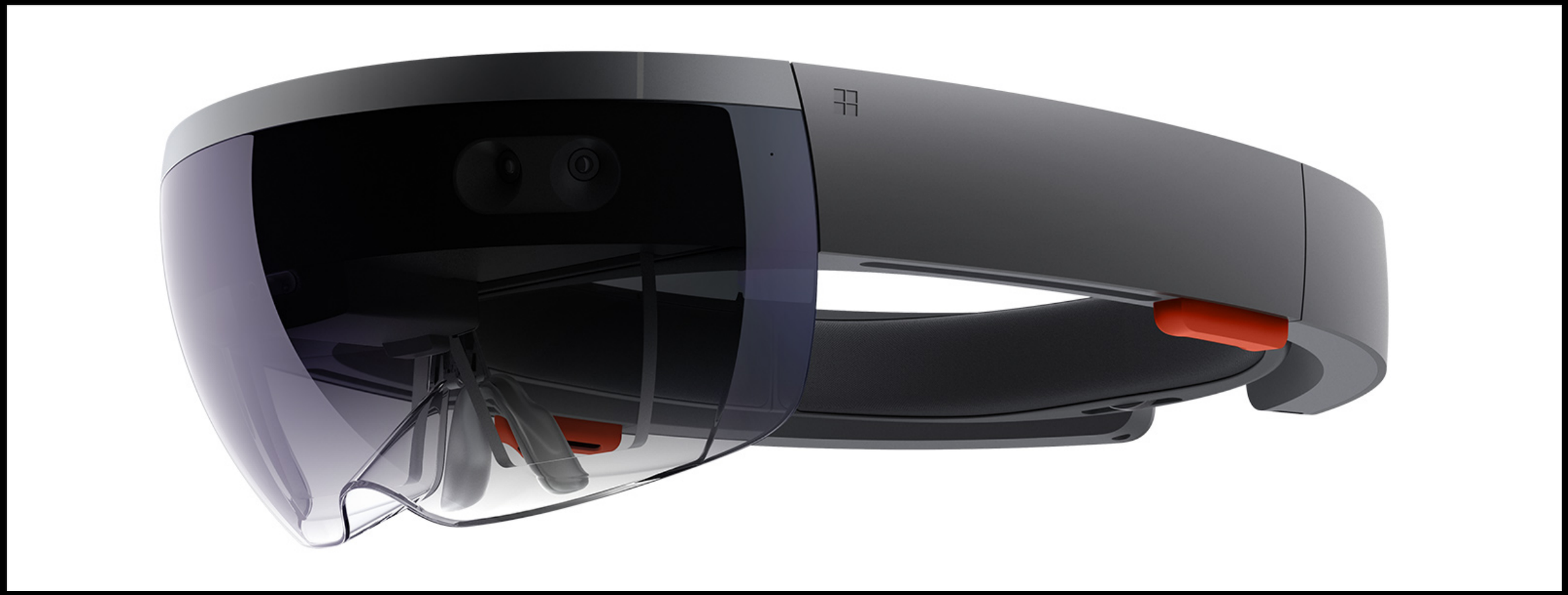
VR - Issues

- Cost prohibitive hardware
- Still an experimental experience and steep learning curve for developers and manufacturers

AR - Microsoft Hololens

- Hololens: Pair of mixed-reality head-mounted smart glasses
- Hologram is the basic entity
- Holographic objects pinned to the real physical world
- World's first computer running Windows mixed-reality platform powered by windows 10

AR - Microsoft Hololens



Hololens - Components

- Lenses and Display
- Sensor
- Computer
- Camera
- Vent
- Control buttons

Hololens - Applications

- Remote Instruction
- 3D Aided Computer Design
- Education
- Gaming and Entertainment
- Architecture and Decorations
- Heads-up GPS

Hololens - Applications

VR - Oculus Rift

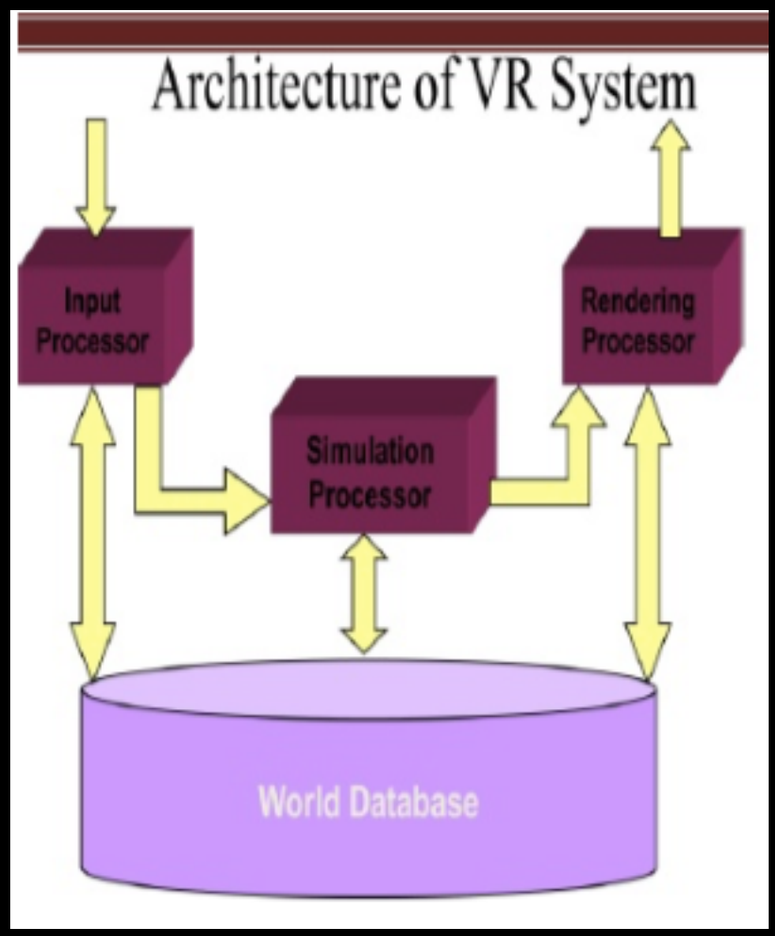
- A Virtual reality headset developed by Oculus VR.
- Most advanced VR system currently

Oculus Rift - Components

- OLED Panel
- Constellation
- Touch controllers
- Requires a PC with an i5 processor, 16G RAM and NVIDIA GTX 970 Graphic card

Oculus Rift - Working

- Input Processor
- Simulation Processor
- Rendering Processor
- World Database



Oculus Rift - Applications and Scope

- Gaming
- Media
- Social Applications
- Industrial Applications
- Medical Training: Laparoscopy Surgery
- Virtual Conferencing

Thank you!