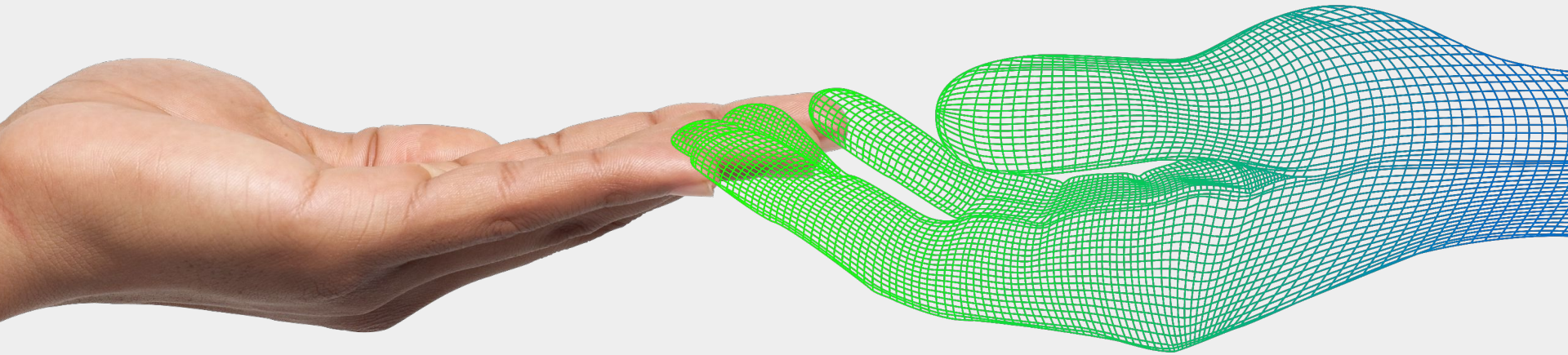


Hybrid Interfaces

By: Richard Corrente

DEFINITION

COMPUTER VISION

TECHNOLOGY BLENDING THE PHYSICAL + DIGITAL SPACES

THE INTEGRATION OF DIGITAL TECHNOLOGY INTO THE PHYSICAL WORLD

TUIs

IoT

VUIs

BCIs

VR

AR

3D-PRINTING

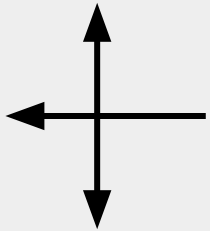
DEFINITION

DEFINITION

AUGMENTED REALITY

AN INTERACTIVE EXPERIENCE

- OVERLAYS DIGITAL INFO ONTO THE REAL-WORLD ENVIRONMENT + OBJECTS
- CREATES A MIXED REALITY EXPERIENCE IN REAL-TIME
- ALTERS THE USER'S PERCEPTION OF THEIR ENVIRONMENT



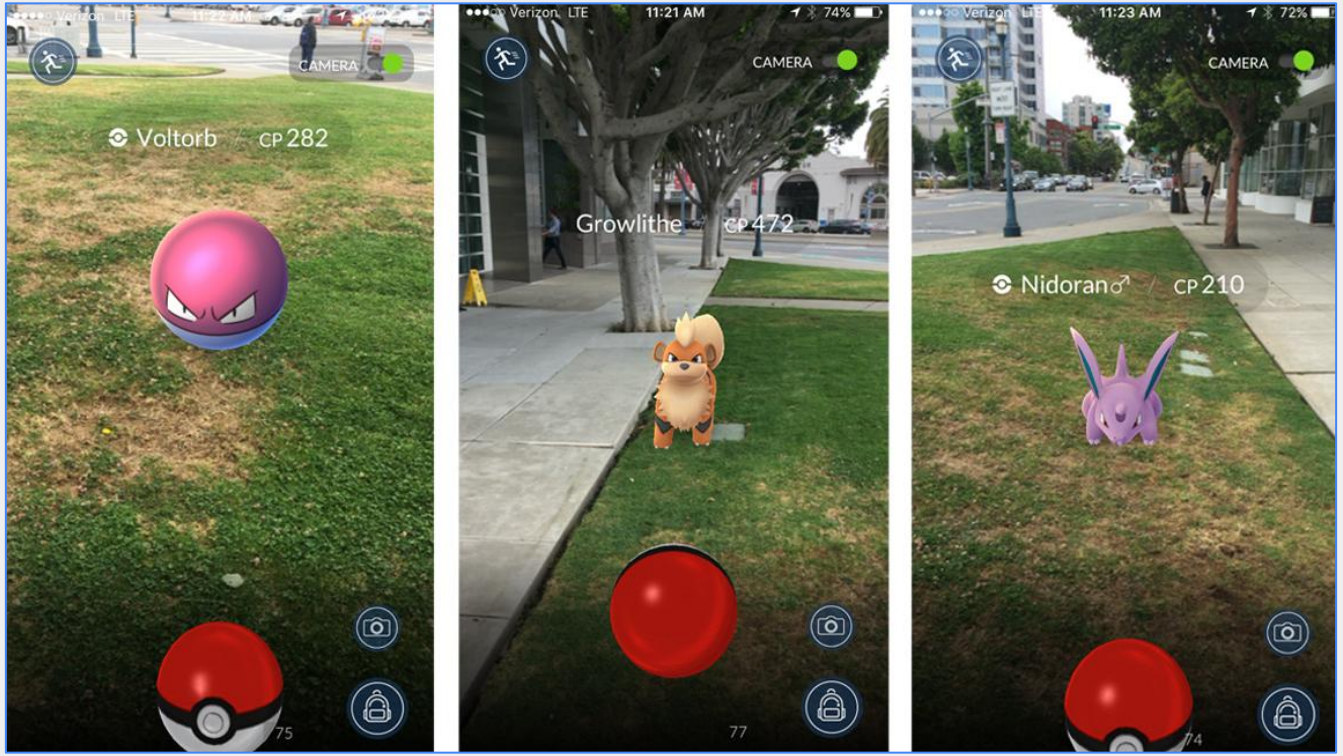
HOW?

VIA CAMERAS, SENSORS, DISPLAYS, CG CONTENT

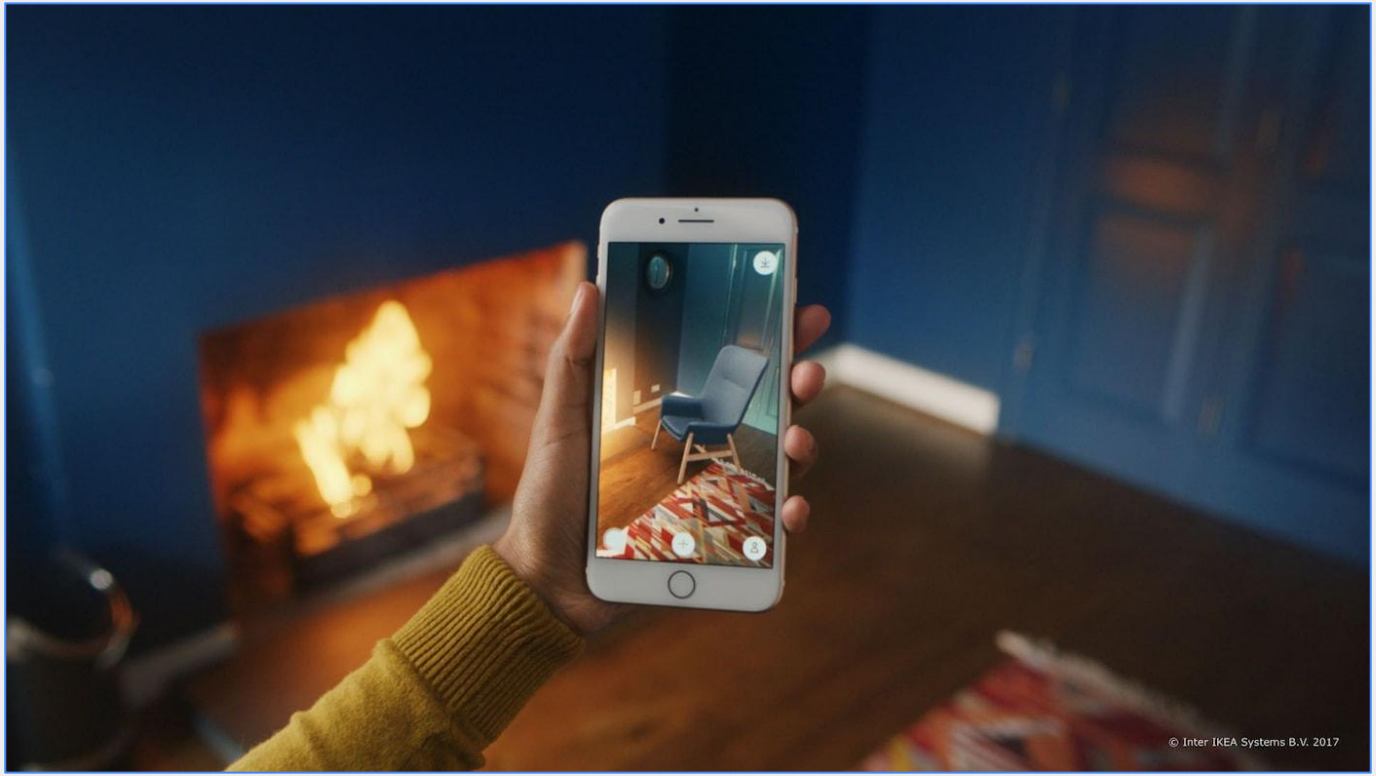
|

SMARTPHONES, TABLETS, HEADSETS, GLASSES, HUDS

AUGMENTED REALITY



AUGMENTED REALITY



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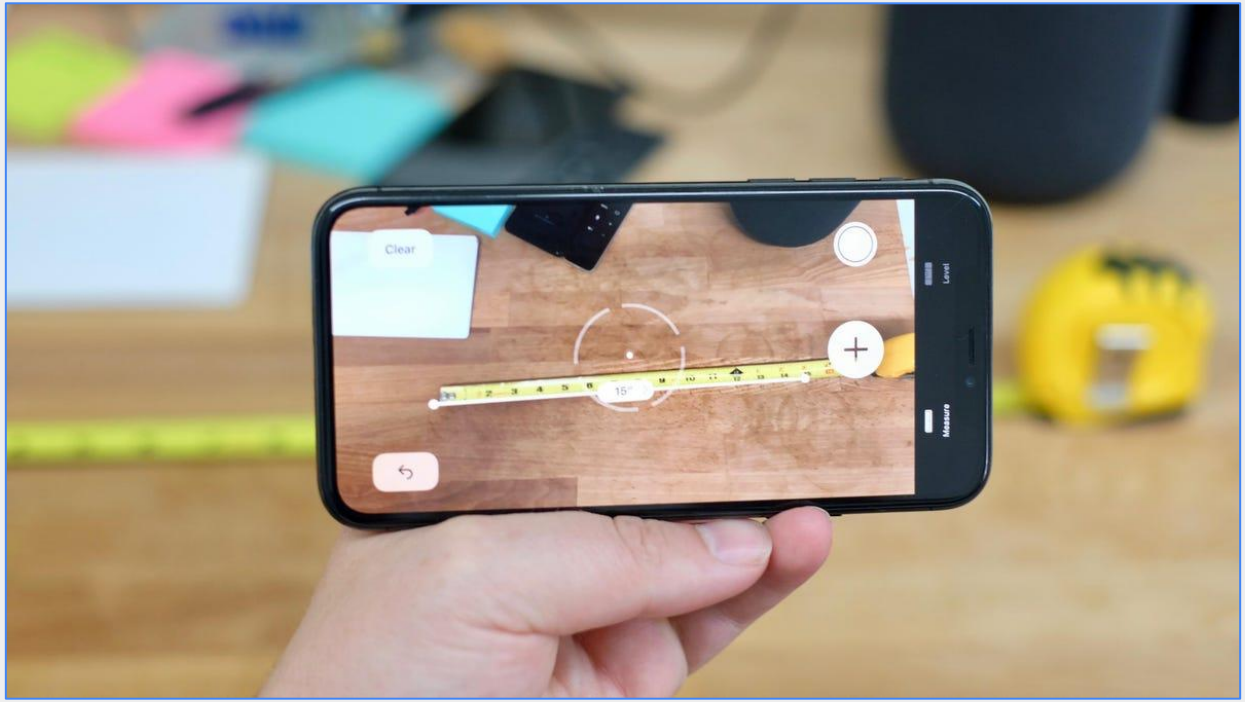

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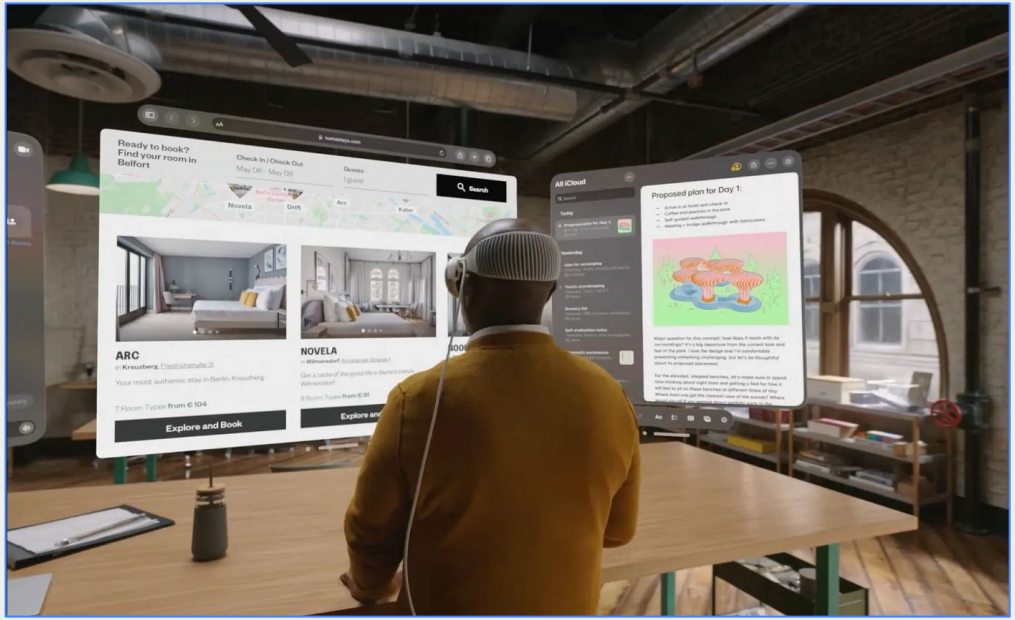
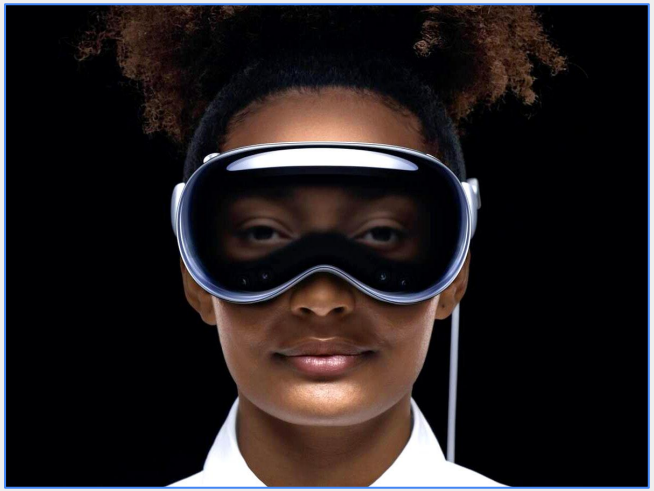
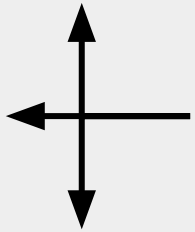




VIRTUAL REALITY

AN INTERACTIVE EXPERIENCE

- REPLACES THE USER'S REAL-WORLD ENVIRONMENT WITH A COMPUTER-GENERATED ENVIRONMENT
- CREATES A 3D IMMERSIVE EXPERIENCE IN REAL-TIME
- PRESENTS THE USER WITH SIMULATED AUDIOVISUAL INFORMATION



HOW?

VIA TRACKING SENSORS + DISPLAY SCREEN

HEADSETS/DISPLAY DEVICES

VIRTUAL REALITY

WIRELESS EXPERIENCE

- FULL-COLOR VIDEO PASSTHROUGH (MIXED-REALITY CAPABILITY)

CPU:
- Qualcomm Snapdragon XR2 Gen 2

RAM:
- 8GB

DISPLAY:
- 2 LCDs
- 2064 x 2208 per eye
- 90Hz refresh rate
- 110° horiz. FOV
- 96° vert. FOV
- Pancake optics

BATTERY LIFE:
- approx. 3 hours

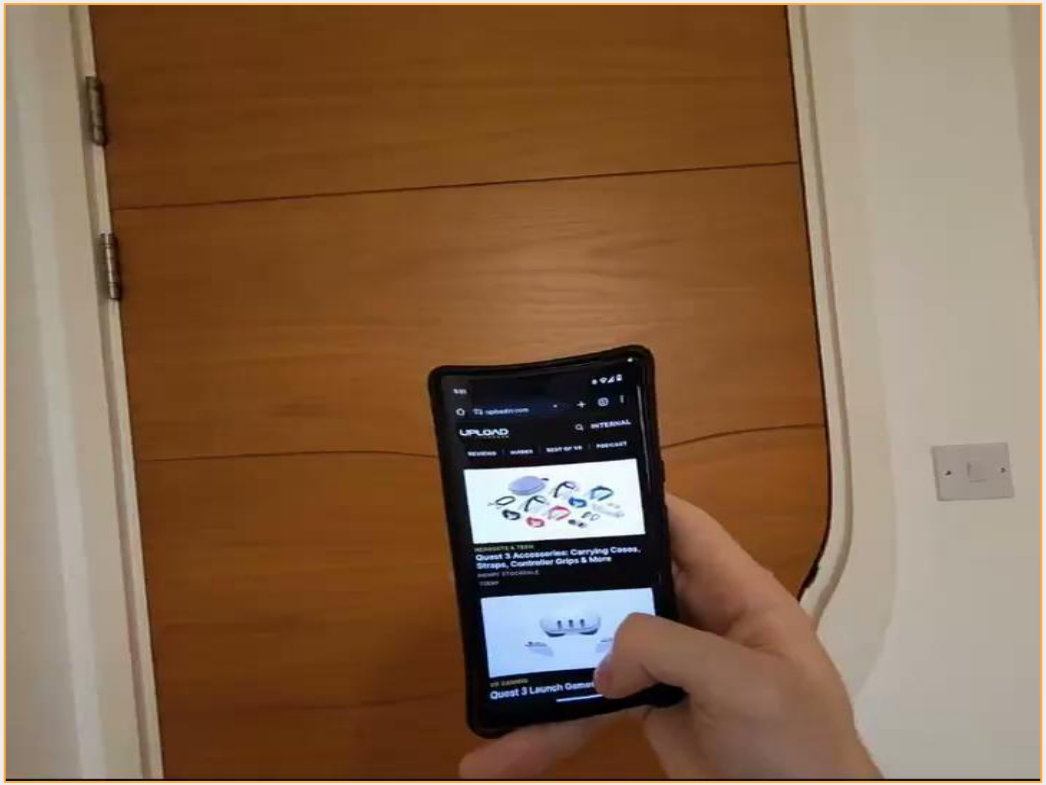
VIRTUAL REALITY

VIRTUAL REALITY

VIRTUAL REALITY

VIRTUAL REALITY

VIRTUAL REALITY



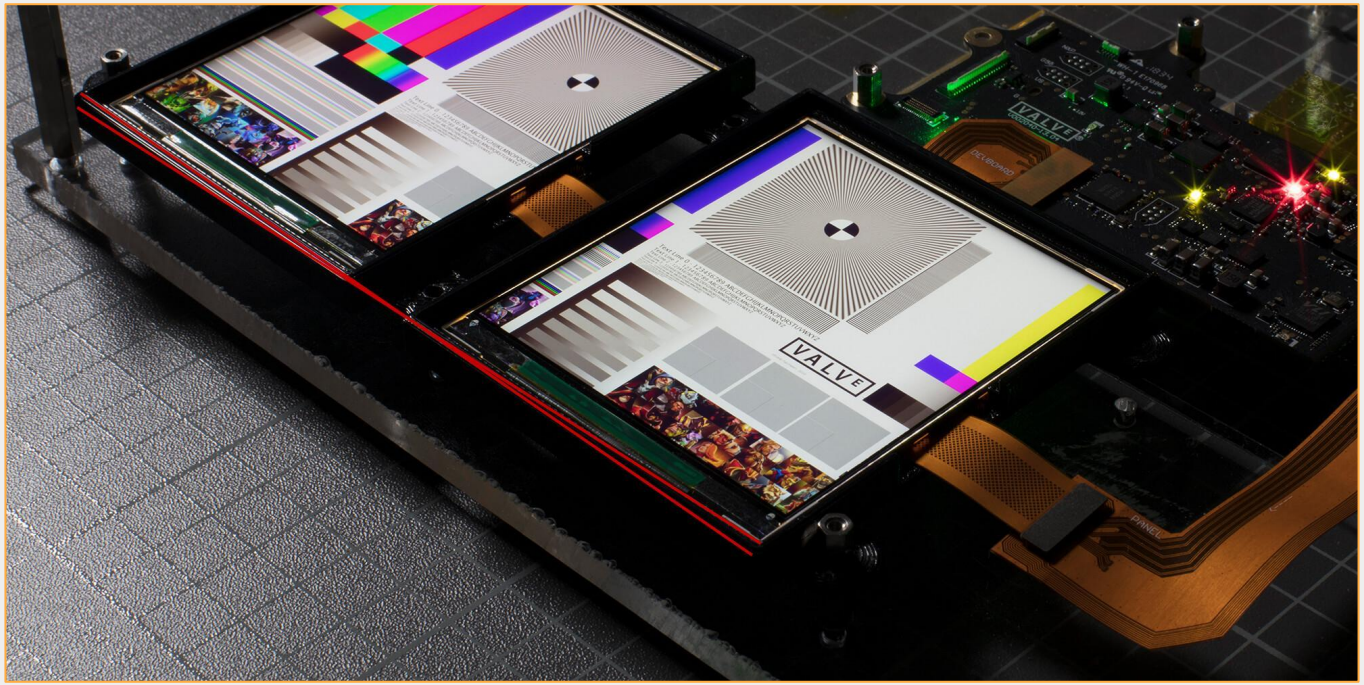
VIRTUAL REALITY

WIRED EXPERIENCE

DISPLAY:

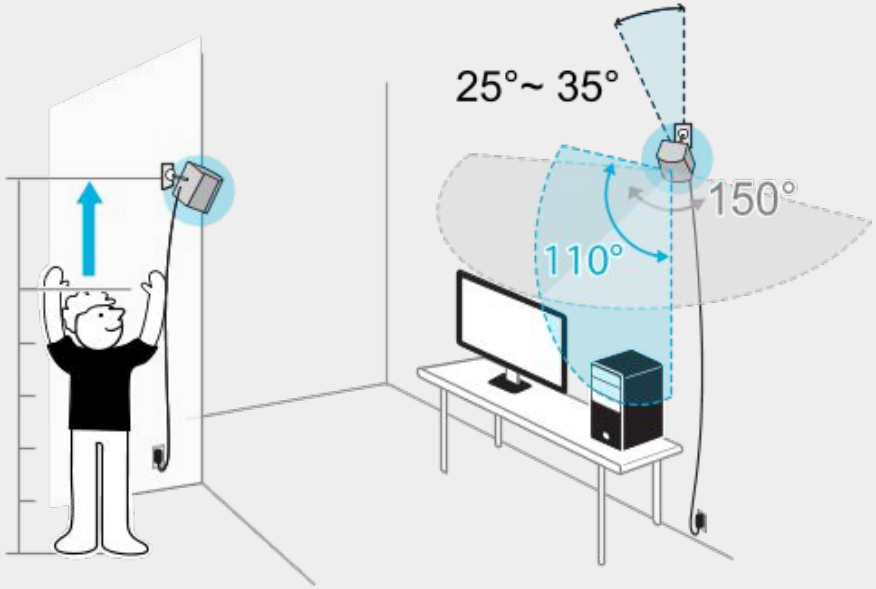
- 2 LCDs
- 1600 x 1440 per eye
- Up to 144 Hz refresh rate, basically 120 Hz
- Up to 130° FOV
- Canted optics

VIRTUAL REALITY



VIRTUAL REALITY

VIRTUAL REALITY



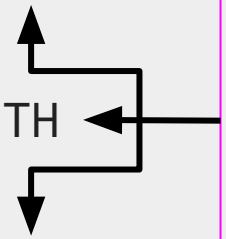
VIRTUAL REALITY

VIRTUAL REALITY

BRAIN-COMPUTER INTERFACE

AN INTERACTIVE EXPERIENCE

- TRANSLATES NEURONAL INFO INTO COMMANDS + CONTROL INPUTS
- COMBINES MIXED REALITY WITH NEUROTECHNOLOGY + AI
- CAN DYNAMICALLY CHANGE/ADAPT THE ENVIRONMENT + SYSTEM IN RESPONSE TO BRAIN ACTIVITY



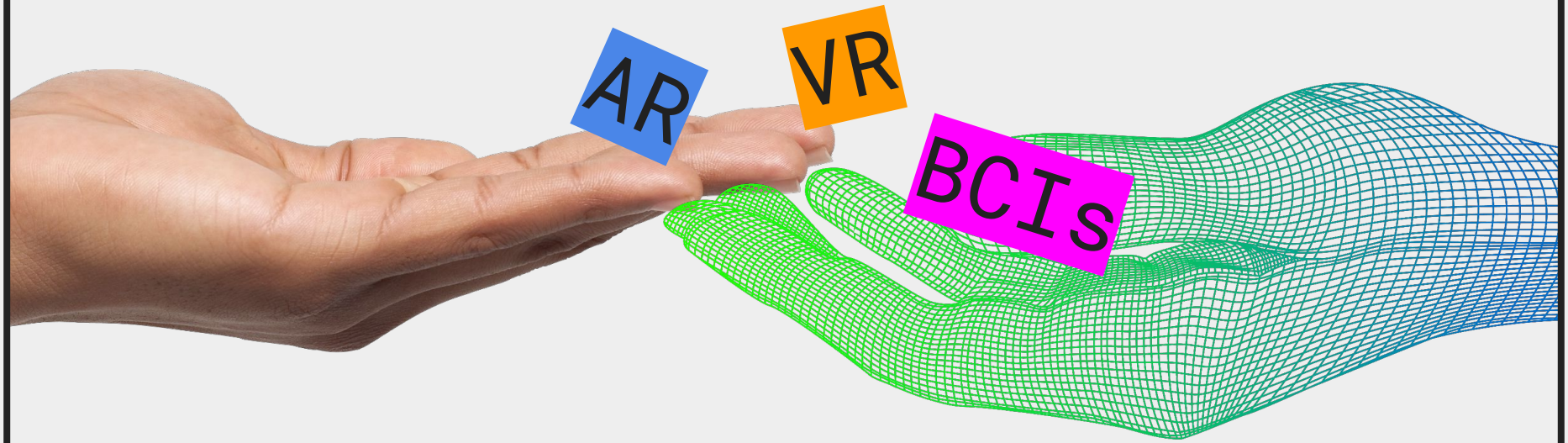
HOW?

VIA OPENBCI PLATFORM, MEASURES EEG + EMG + EKG w/ SCALP SENSORS

HEADSETS/DISPLAY DEVICES, SCALP SENSORS

BRAIN-COMPUTER INTERFACE

BRAIN-COMPUTER INTERFACE

BRAIN-COMPUTER INTERFACE

IMPLICATIONS