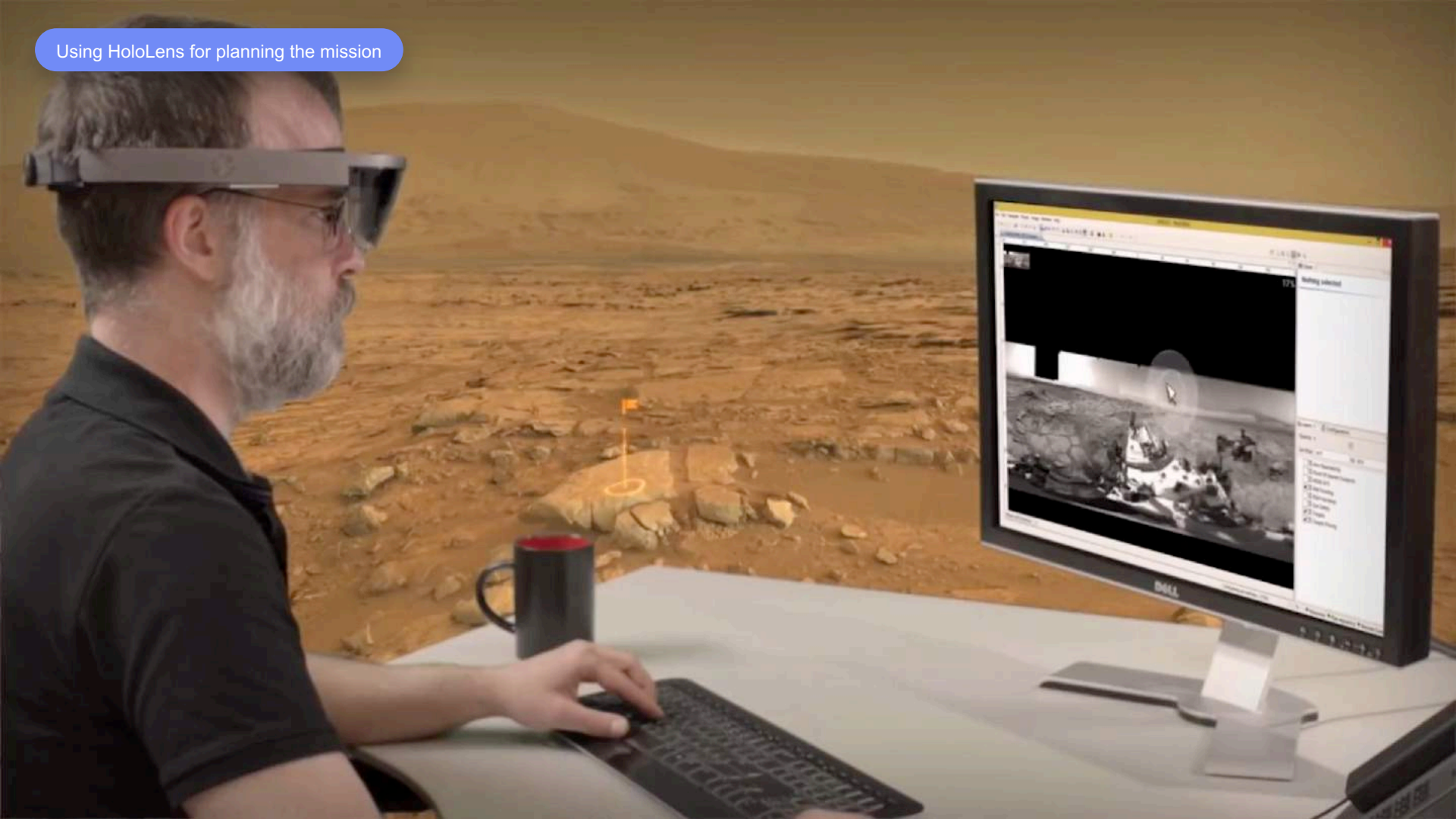
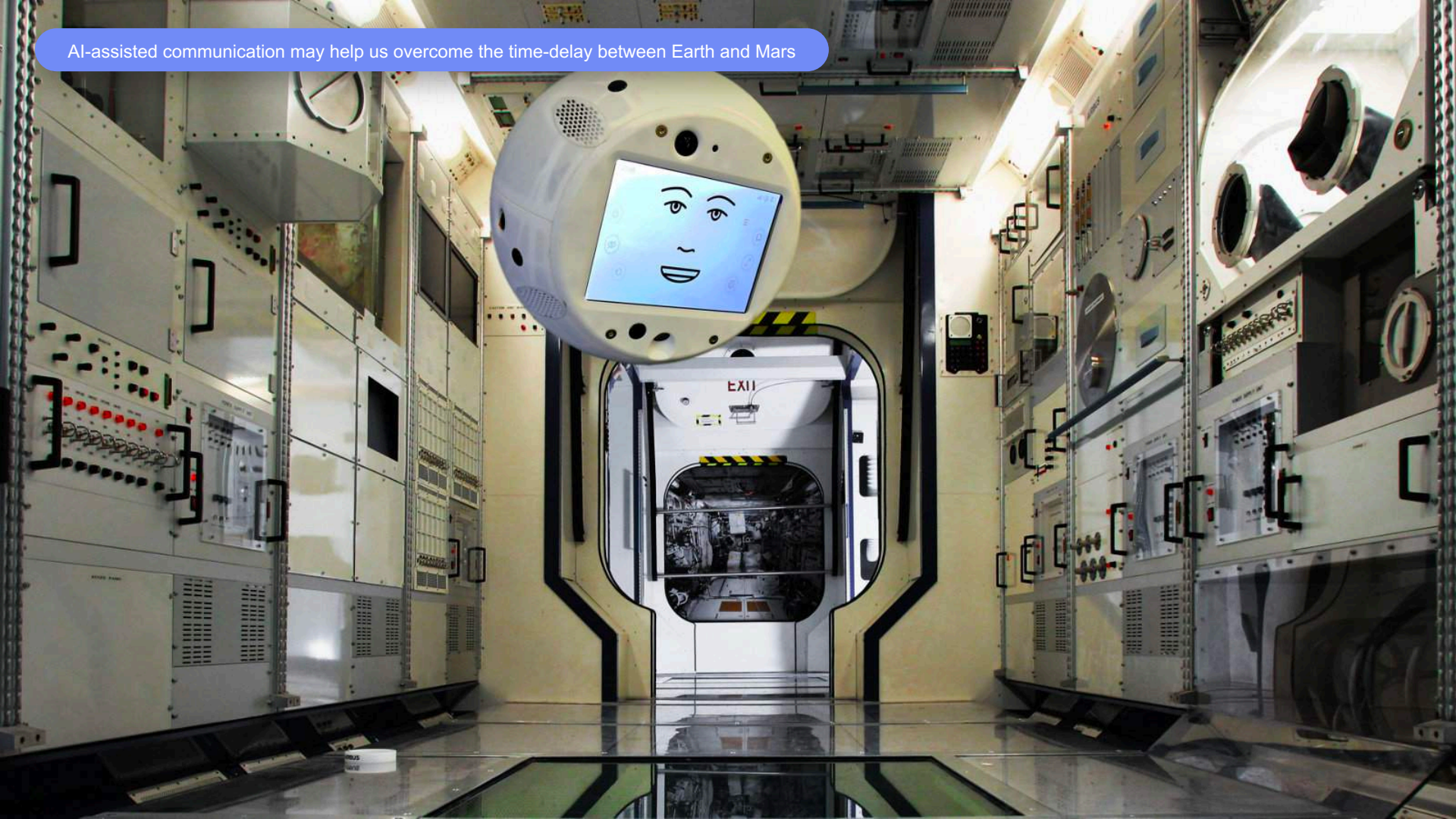
How AR and VR will shape the Command Post of the Future

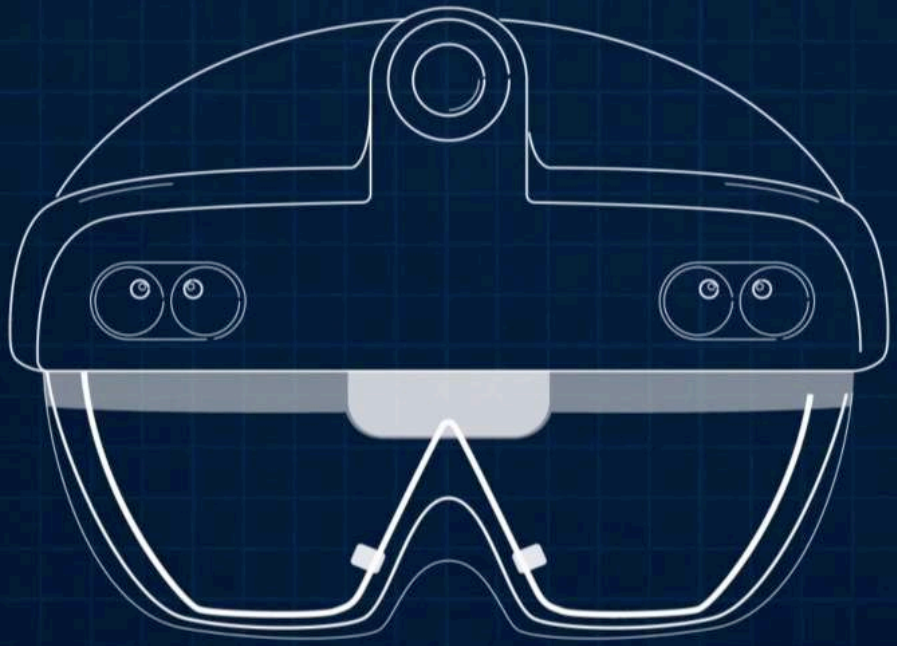
MARCUS ANZENGRUBER


Using HoloLens for planning the mission


NASA BASALT 2017


AI-assisted communication may help us overcome the time-delay between Earth and Mars

Microsoft HoloLens 2 Army version

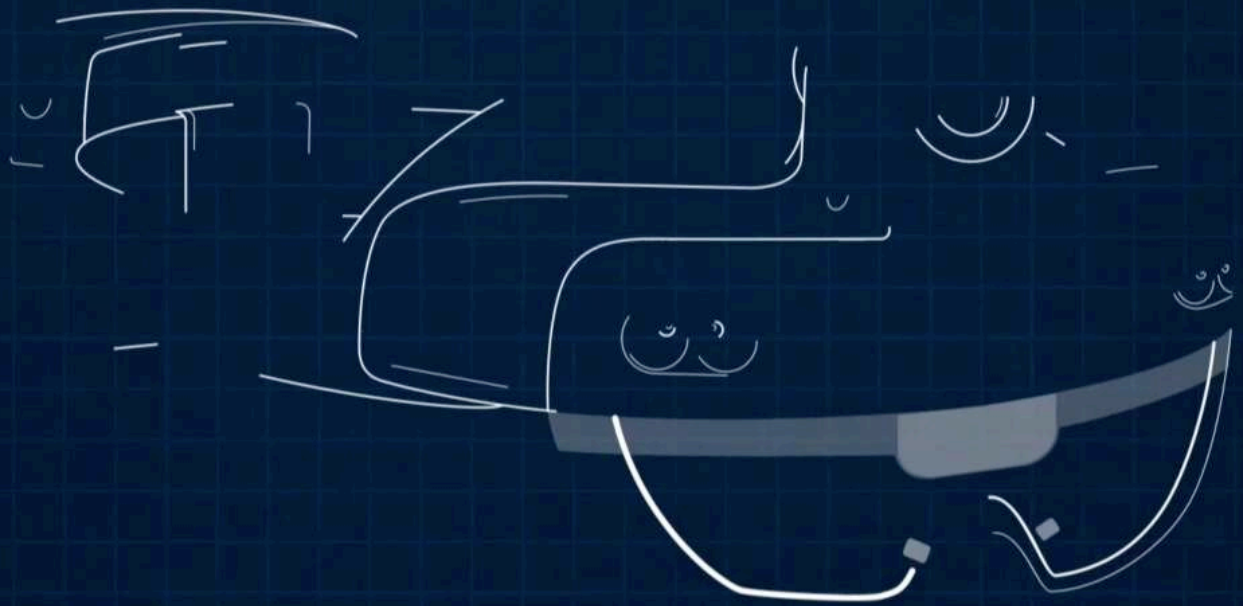


Microsoft HoloLens 2 Army version


Microsoft HoloLens 2 Army version
CNBC

Microsoft HoloLens 2 Army version

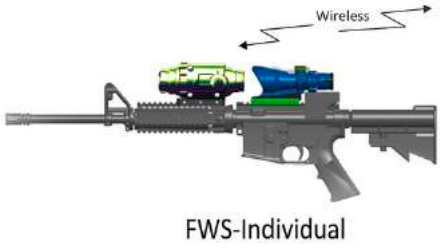
Microsoft HoloLens 2 Army version




Microsoft HoloLens 2 Army version
CNBC

IVAS requirements

- Auto-target detection (personnel and weapon detection)
- Day/Night Rapid Target Acquisition (RTA) from Family of Weapon Sights-Individual (FWS-I) and remote viewing from Family of Weapon Sights–Crew Served (FWS-CS)
- Target Cueing



FWS-Individual

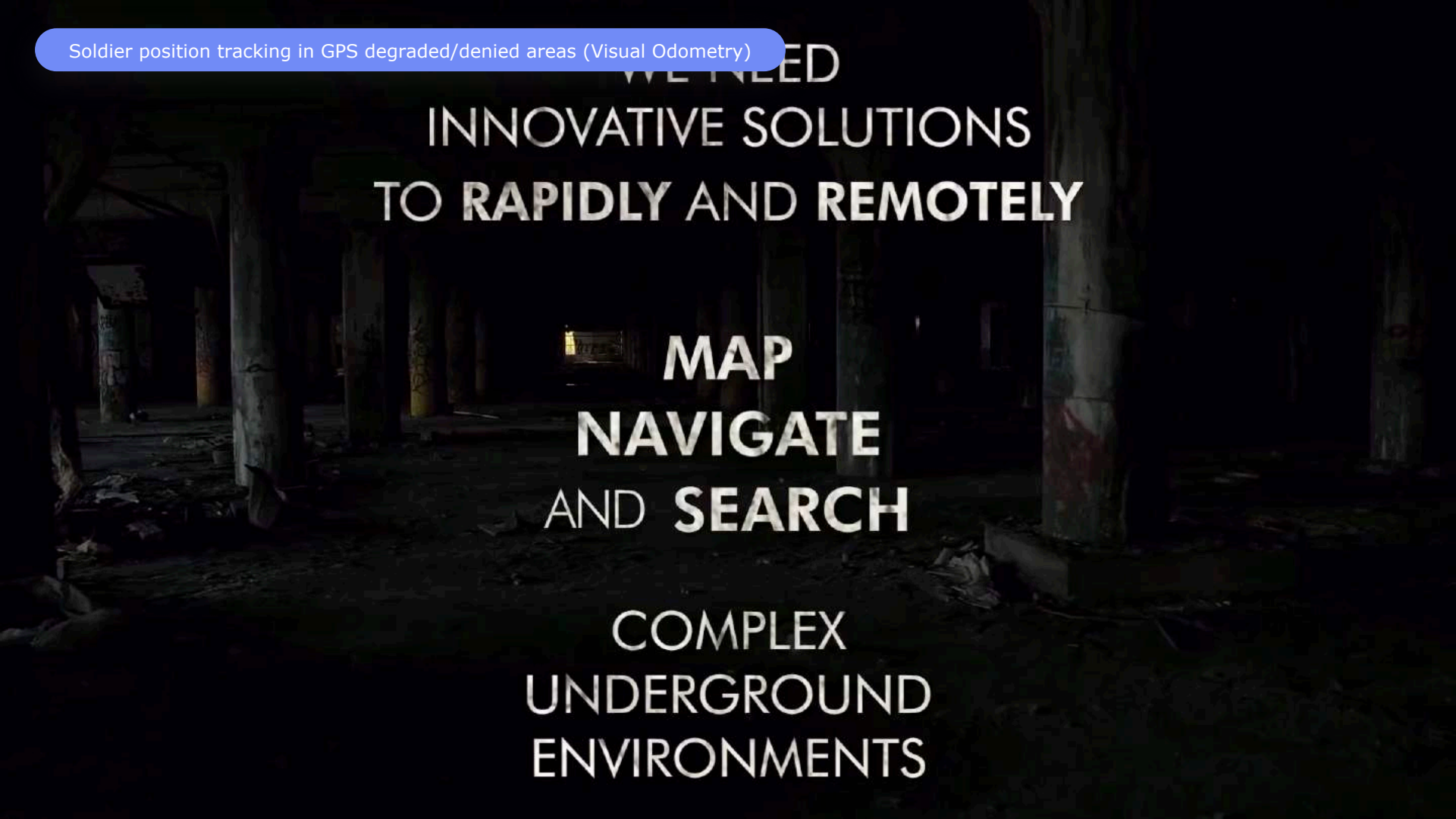
FWS-Crew Served

IVAS requirements

-

- Route planning
- Trip Wire Detection
- Camera based foreign language translation
- Audio based foreign language translation
- Anticipate user needs and provide courses of action

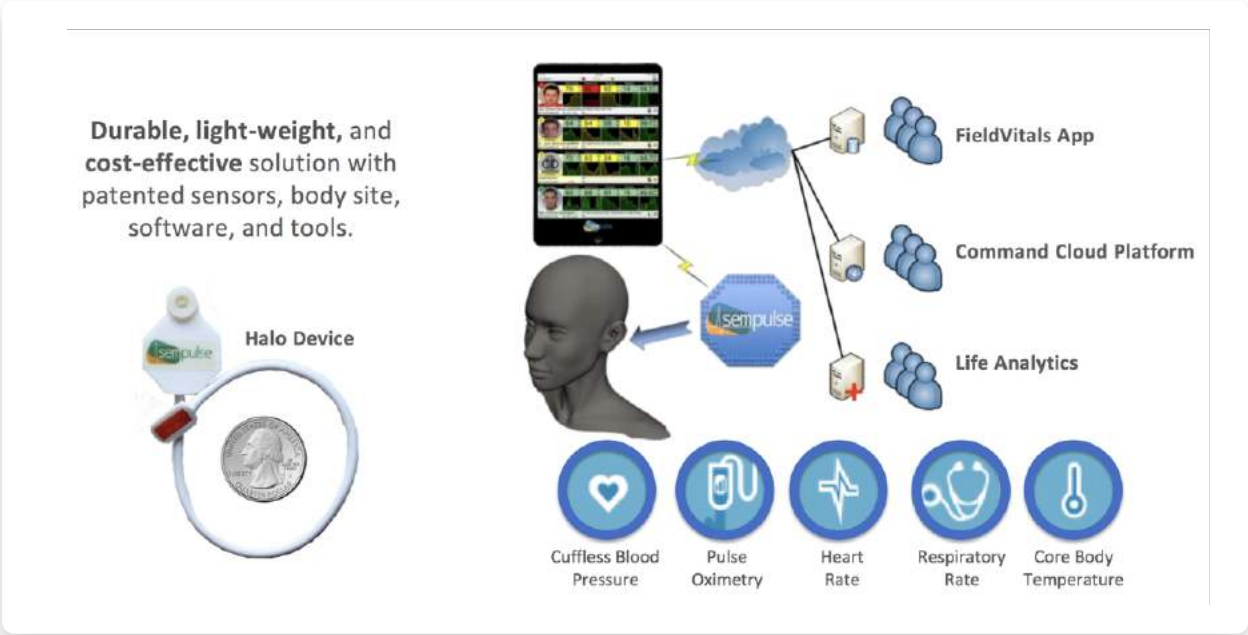
Soldier position tracking in GPS degraded/denied areas (Visual Odometry)




Hostile fire locator
SOUND TRIGGERED

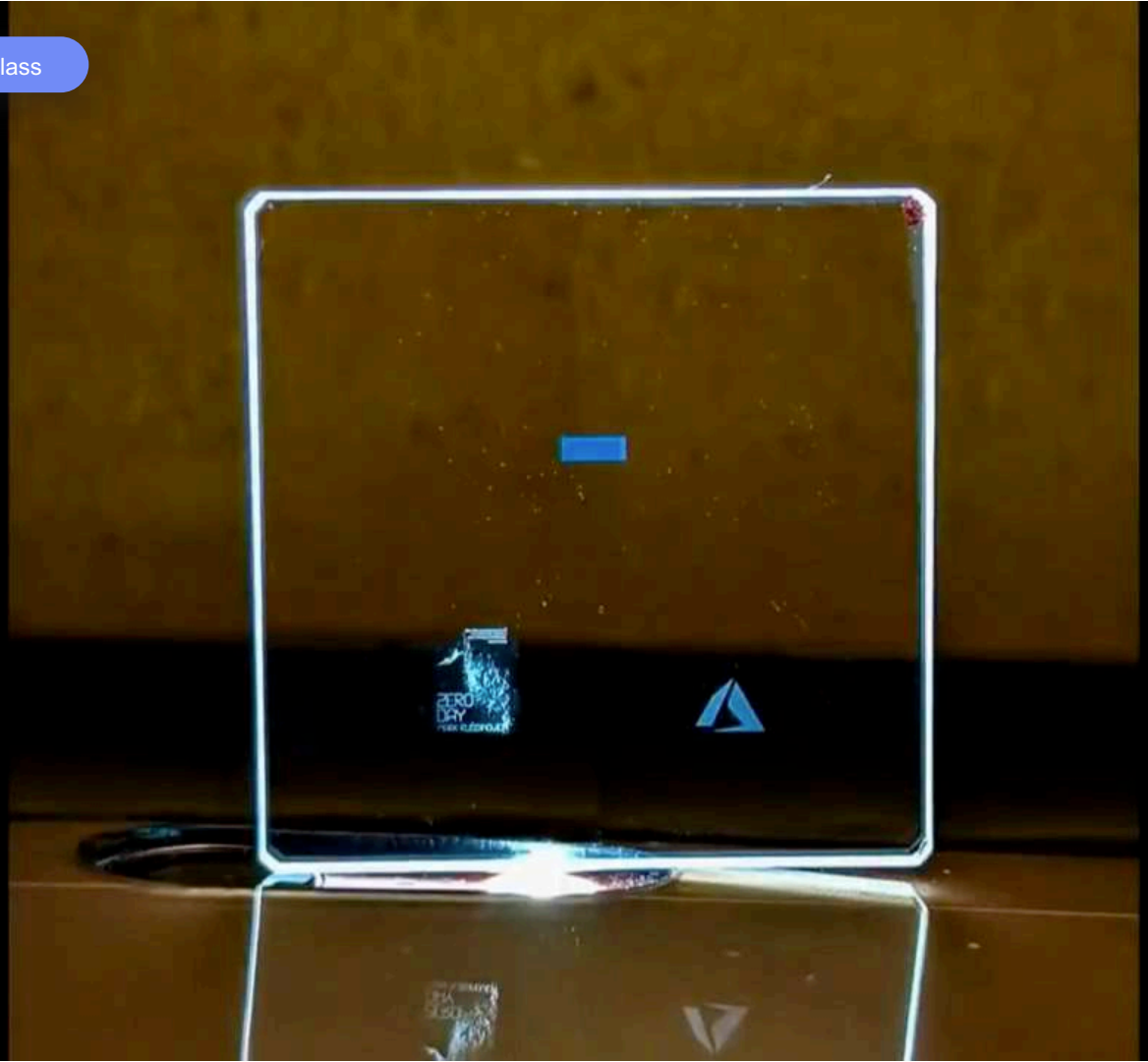
Biometrics data

- Biometrics i.e. heart rate, blood pressure, eye tracking, and temperature



Medical evacuation

Microsoft storing data on glass




Write once, store forever

Technology available today

New HMDs with improved resolution

Varjo VR-1

$5,995

- 87° FOV
- Bionic 20/20 display
- 90 Hz Refresh rate

HP Reverb

$599

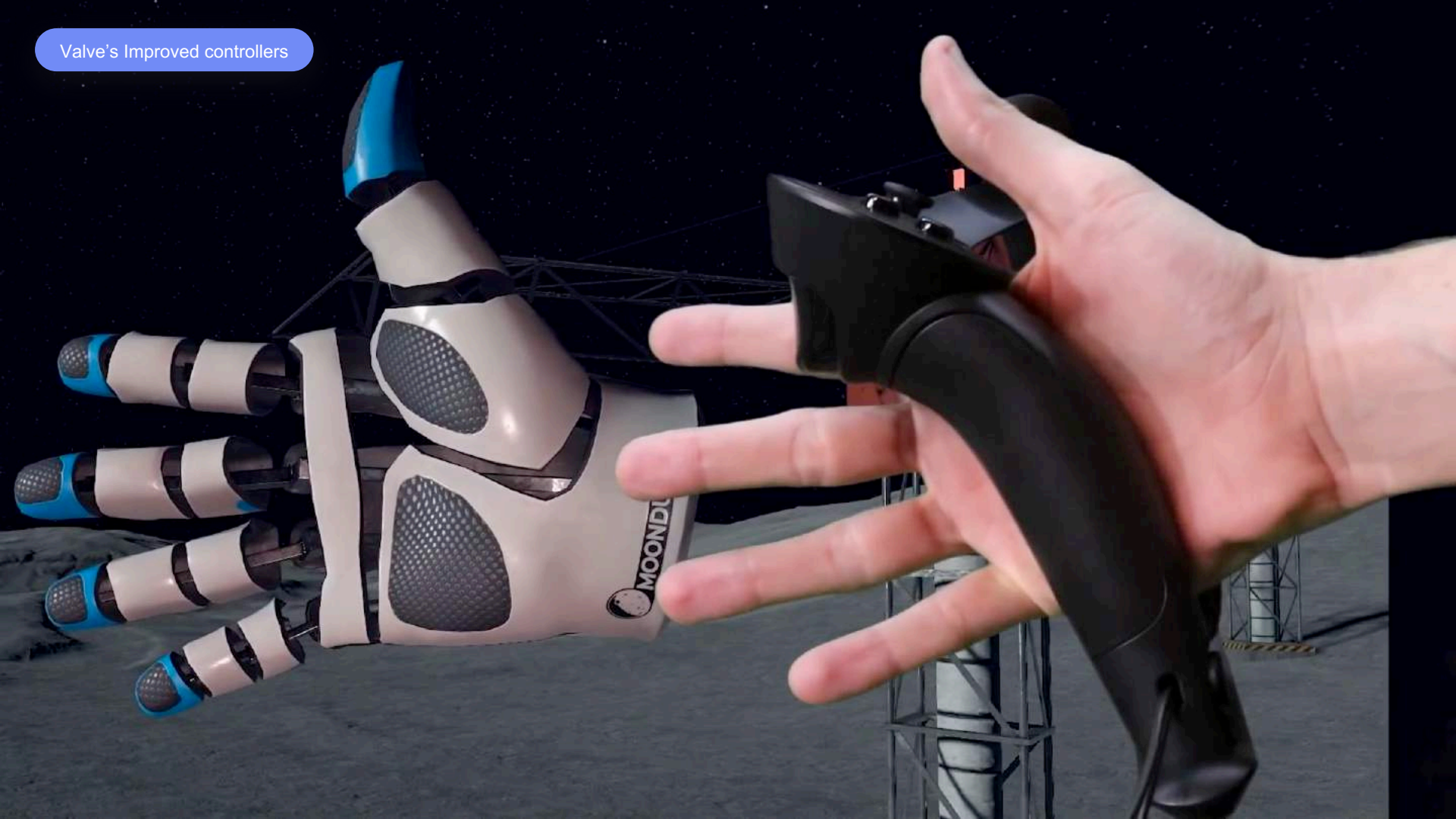
- 114° FOV
- 4k display
- 90 Hz Refresh rate

Valve Index

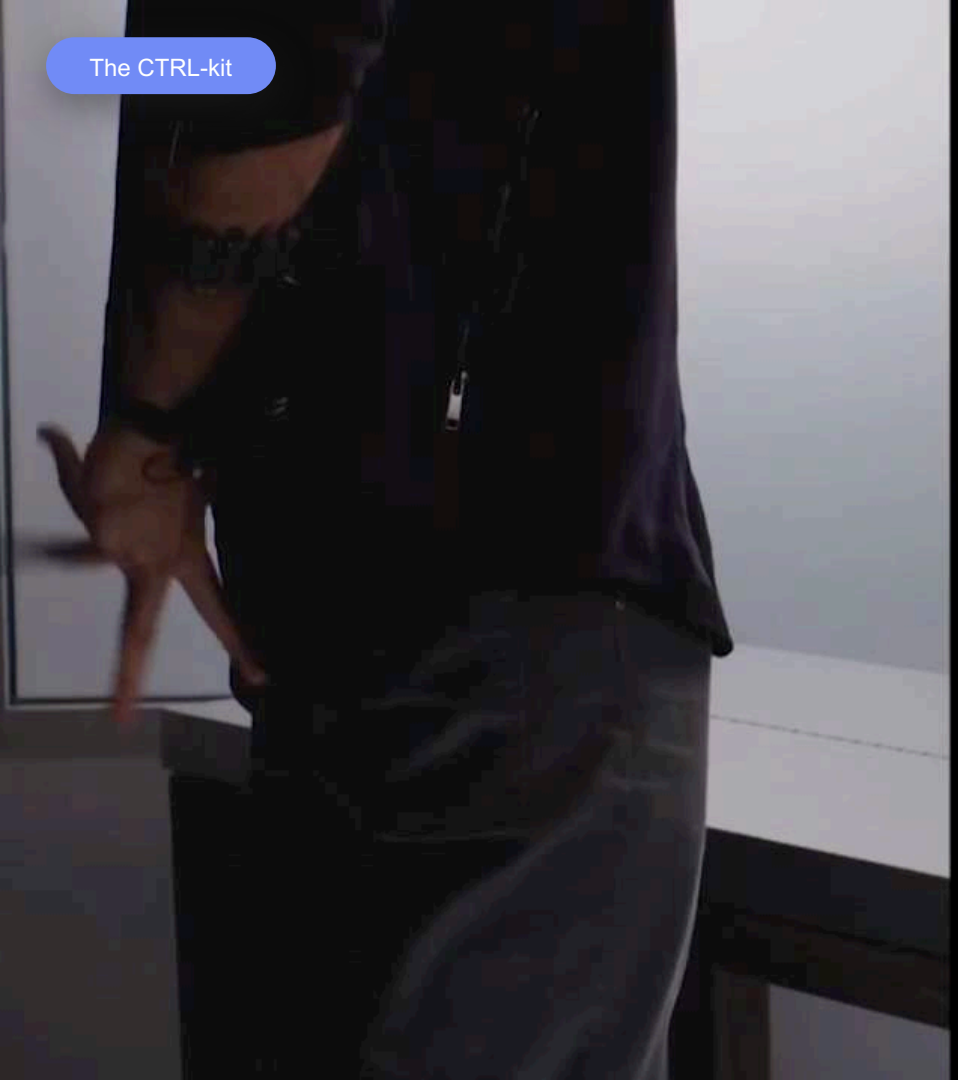
$499

- 135° FOV
- 2.3k (same as Vive Pro)
- 120-144 Hz Refresh rate

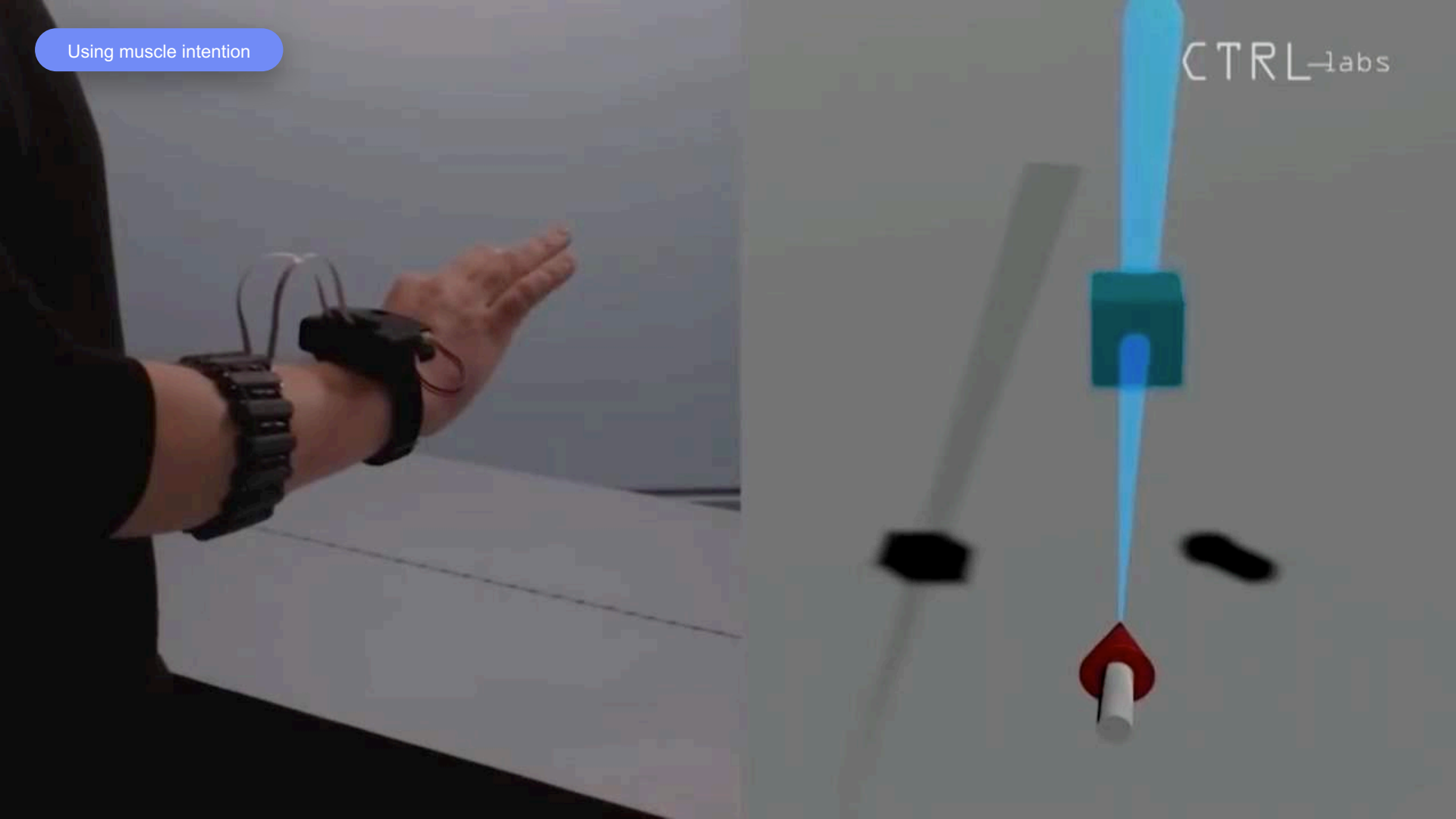

Video based AR

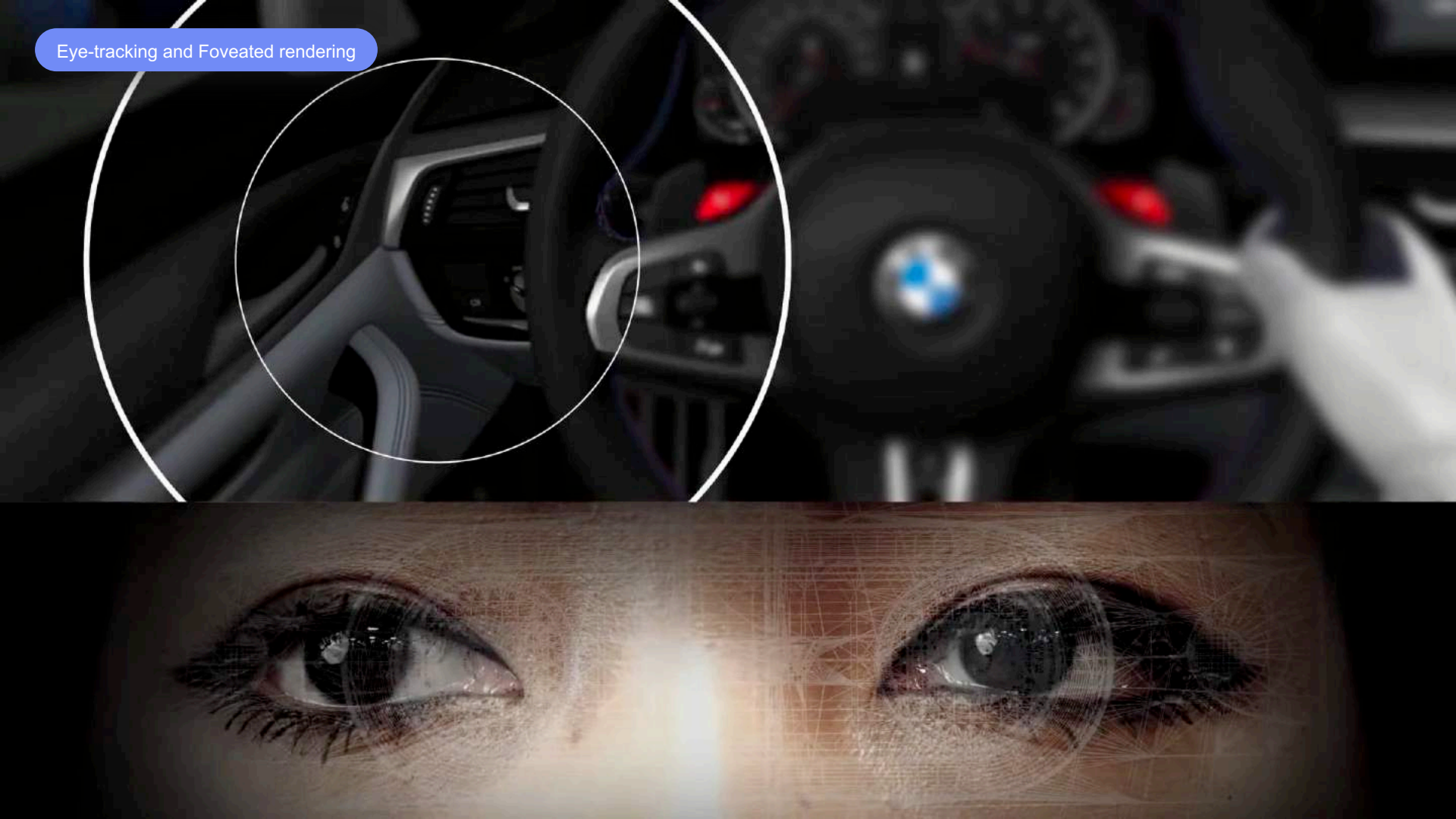

Valve’s Improved controllers

The CTRL-kit



CTRL-labs


Using muscle intention
CTRL-labs


Eye-tracking and Foveated rendering


HTC 5G Hub

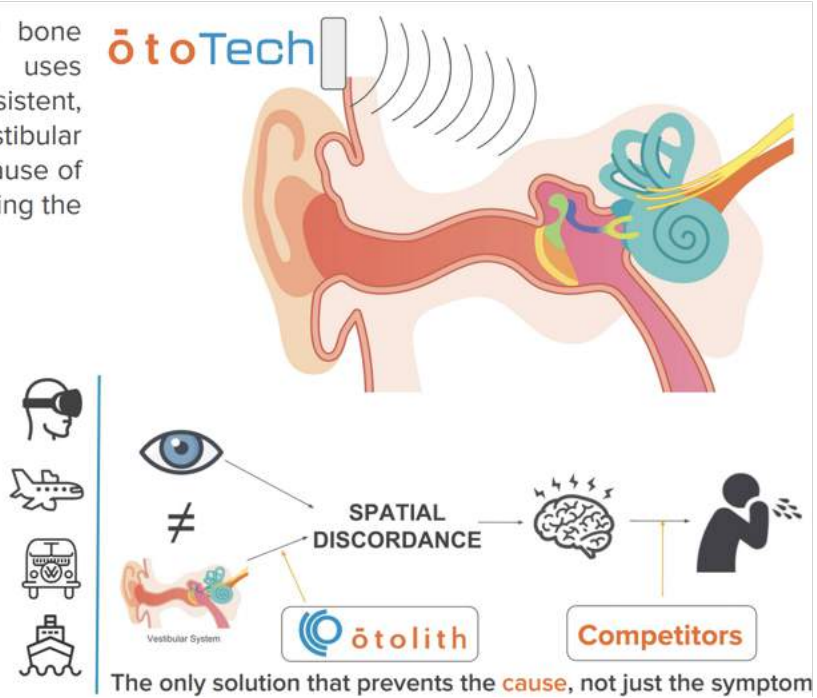
Controlling robots in VR

The Importance of low latency

Preventing motion sickness

OtoTech is a precisely-tuned bone conduction transducer that uses vibrations to provide consistent, noninformative stimuli to the vestibular system. This prevents the root cause of motion sickness rather than treating the symptom of nausea.

- Effective in Seconds
- Stays Effective Indefinitely
- No Side Effects
- Non-Invasive
- Non-Distracting
- Comfortable
- Virtually Silent (<50 dB)
- No Gel
- Can be Integrated with Headlamps, Helmets, Headphones, and Other Equipment

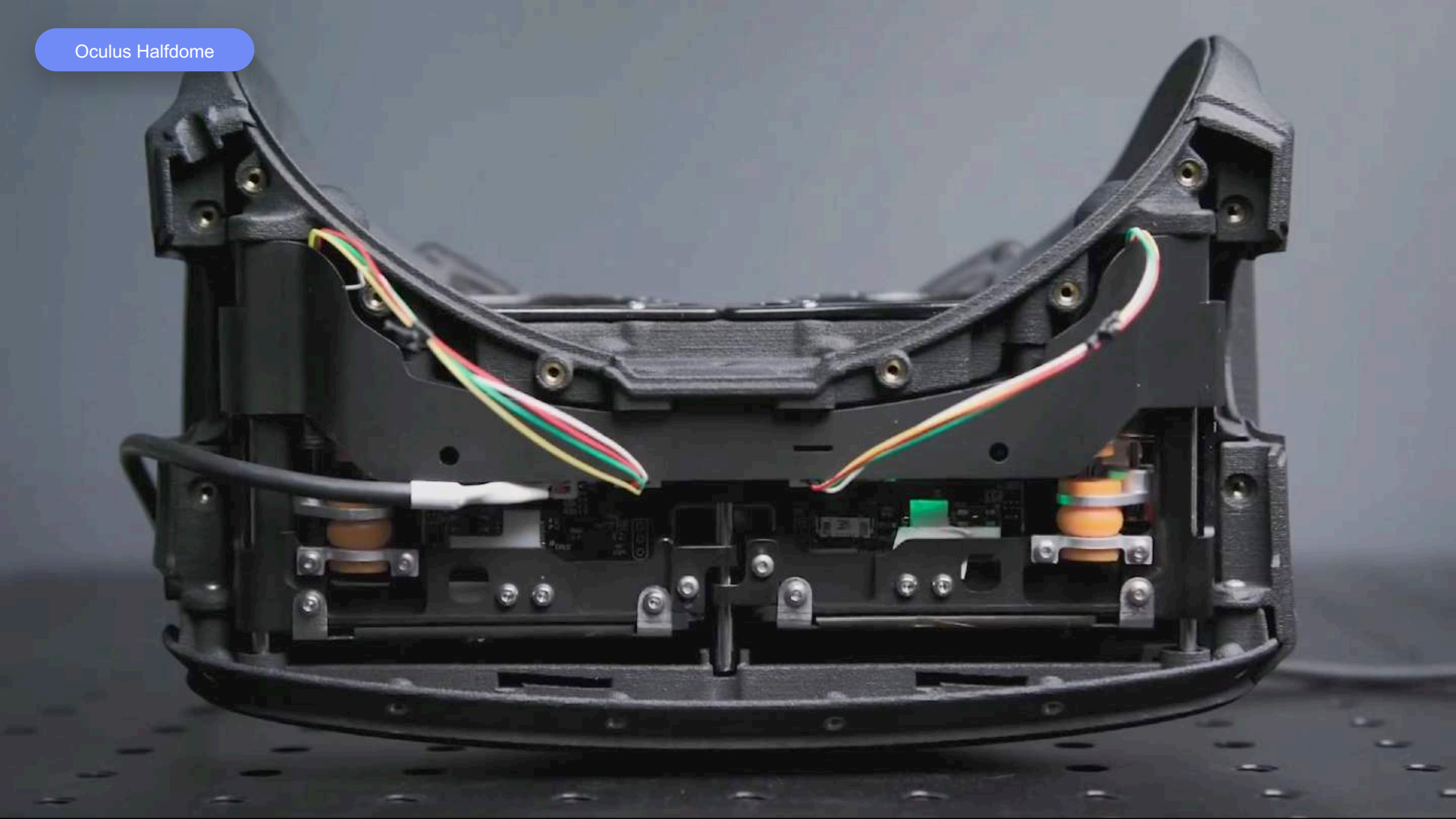


Preventing motion sickness

DRIVING SIMULATORS

- Currently Deployed with Driving Simulators Produced by VR Motion
- Actively Used by US Air Force
- Over 1000 Use Cases
- 20-30% Dropout Rate Reported without Otolith Technology
- Less Than 1% Dropout Rate Reported with Otolith Technology


Varifocal rendering


Oculus Halfdome

Light field displays

Light field displays

Thank you!

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