Richie’s Plank experience - https://toast.gg/theplank/
TETHERED VR
MOBILE VR
STANDALONE VR
HEADSET AR
HANDHELD AR
Reality
ENVIROMENT AWARENESS

Hit testing
Anchoring
Point clouds
Meshes
Lighting
Semantic labeling
USER AWARENESS

Location in 3D space
Input sources (motion controllers, hands)
Eye tracking
Facial expressions
THE IMMERSIVE WEB

Yes, but what is it?
And why should I care?
The Westin Convention Center, Pittsburgh  ★★★★★  3.9 (553 reviews)
1000 Penn Avenue, Pittsburgh, PA, 15222, United States • Weather: Clear, 21°C / 70°F
1:48am  1:48pm  412-281-3700  888-627-7053

RESERVE YOUR STAY

Check in  Check out 1 Room, 1 Adult, 0 Children

BOOK NOW

Rooms & Suites

View:  ft²  m²

Traditional Guest Room
Room size: 408 ft²

Premium Guest Room
Room size: 500 ft²

Corner Suite
Room size: 500 ft²
WHAT IS WEBXR

“The WebXR Device API provides access to input and output capabilities commonly associated with Virtual Reality (VR) and Augmented Reality (AR) hardware” – WebXR explainer

With it you can:

1. Detect available VR/AR devices
2. Query the devices capabilities
3. Poll the device’s position and orientation
4. Display imagery on the device at the appropriate frame rate
5. Respond to user input
PROGRESSIVE ENHANCEMENT

https://unboring.net/workflows/progressive-enhancement/video/progressiveEnhancement.mp4

Credit: Arturo Paracuellos
USER CONSENT AND PRIVACY

Within the Immersive Web
AREAS OF CONSIDERATION

Fingerprinting during bootstrapping
Real World Geometry
Camera Access and Perception of Camera Access
Object or Image Identification
Permissions
FINGERPRINTING DURING BOOTSTRAPPING

Issues:
- Sites need to put a button for entering VR or AR
- Some experiences require specific hardware behavior (ex: world-scale tracking)
- Multiple devices may be connected
- Spinning up the full hardware just to reject isn’t a good experience

Proposed mitigations:
- "Supports" checks only for VR vs. AR
- Inline vs. Exclusive data restrictions
- User action required to enter Exclusive
- Consent requested
- Actual hardware bootstrapping happens as a last step
REAL WORLD GEOMETRY

Issues

- Room geometry may be used to identify when two sessions are occurring in the same space
- Real-world geometry may indicate a specific location. (ex. the Eiffel Tower)
- Inferred location history
- Estimating the size of the user’s house, to estimate user income
- Facial Geometry
- Gait analysis
- Credit card # geometry
CAMERA ACCESS AND PERCEPTION THEREOF

Issues

- See-thru vs. pass-thru
- Can users reason about the difference?
- Is there a meaningful difference if real-world geometry is available?
- Polyfills will blur the line
OBJECT AND IMAGE IDENTIFICATION

Issues
- Registered images/objects can be anything
- Can be used to profile users (ex: identifying the presence of a specific brands of TV)
- Can be used to blackmail users (ex: “this embarrassing thing was just found in your house!”)
PERMISSIONS

Issues

- Bundling XR permissions
- Bundling with non-XR permissions
- Upfront vs. just-in-time
- Duration