AUGMENTED & VIRTUAL REALITY GLOSSARY

2018
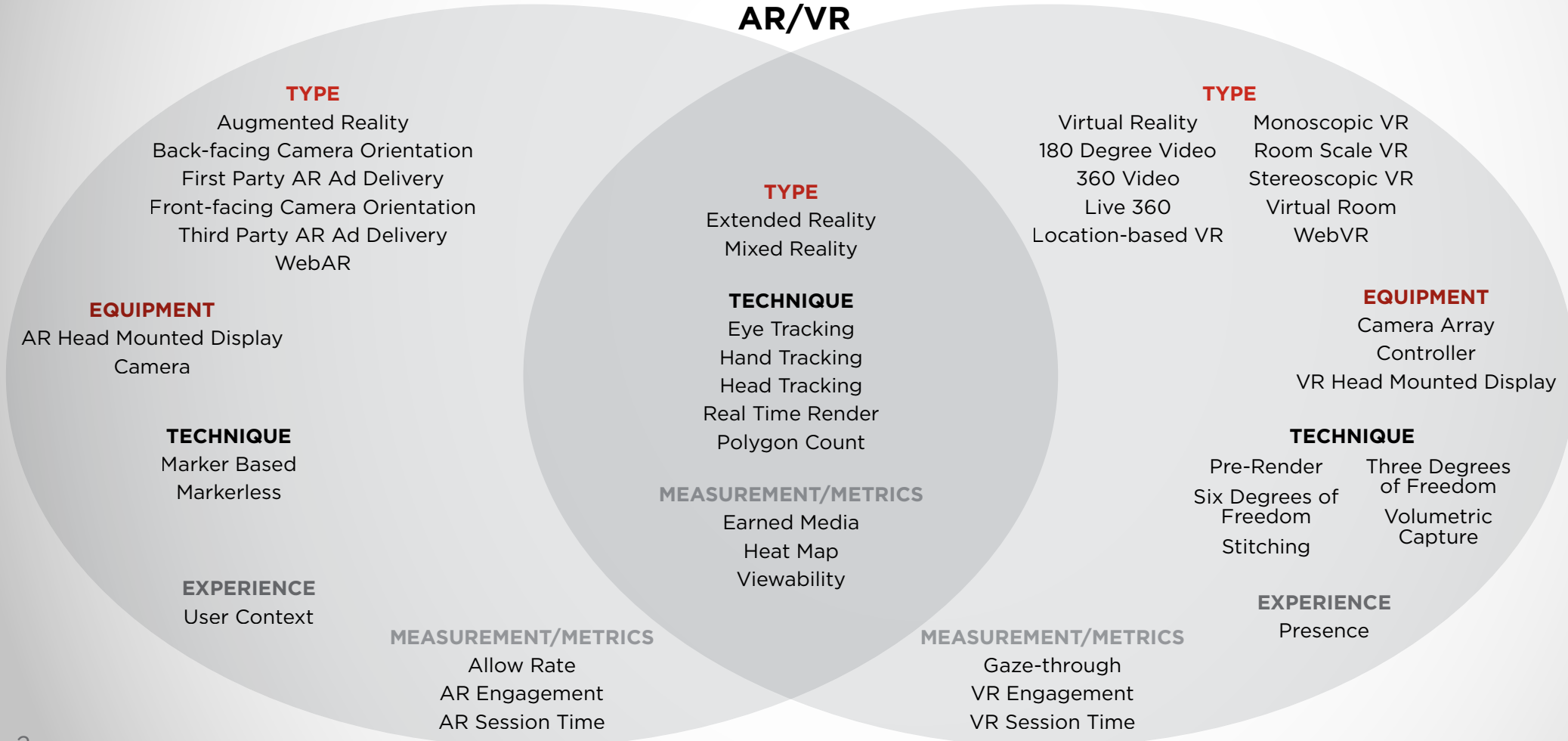
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DISCRETE & SHARED TERMINOLOGY

AUGMENTED REALITY

VIRTUAL REALITY

AR/VR

TYPE
Augmented Reality
Back-facing Camera Orientation
First Party AR Ad Delivery
Front-facing Camera Orientation
Third Party AR Ad Delivery
WebAR

EQUIPMENT
AR Head Mounted Display
Camera

TECHNIQUE
Marker Based
Markerless

EXPERIENCE
User Context

MEASUREMENT/METRICS
Allow Rate
AR Engagement
AR Session Time

TYPE
Extended Reality
Mixed Reality

TECHNIQUE
Eye Tracking
Hand Tracking
Head Tracking
Real Time Render
Polygon Count

MEASUREMENT/METRICS
Earned Media
Heat Map
Viewability

TYPE
Virtual Reality   Monoscopic VR
180 Degree Video   Room Scale VR
360 Video   Stereoscopic VR
Live 360   Virtual Room
Location-based VR   WebVR

EQUIPMENT
Camera Array
Controller
VR Head Mounted Display

TECHNIQUE
Pre-Render   Three Degrees
Six Degrees of   of Freedom
Freedom   Volumetric
Stitching   Capture

EXPERIENCE
Presence

MEASUREMENT/METRICS
Gaze-through
VR Engagement
VR Session Time

KEY:

TYPE: Specific types of AR/VR

EQUIPMENT: Physical objects needed to create AR/VR experience

TECHNIQUE: A particular process utilized to create a AR/VR experience

EXPERIENCE: How to describe user experience with AR/VR

MEASUREMENT/ METRICS: How to describe performance of content or ads

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TYPE

AUGMENTED REALITY (AR)

An experience that utilizes a camera to change or enhance something in the user's real world. This augmented reality experience can be app-based or web-based, though app based is more common today. Note: Although the term uses the word "reality", the experience does not need to look realistic.

Ads within AR can be presented in two ways: through the use of markers (such as a QR code) or by placing a brand object in the immediate real world environment using the device camera

(Source: IAB New Standard Ad Unit Portfolio, page 34).

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TYPE

BACK-FACING CAMERA ORIENTATION

An AR experience where the camera is oriented away from a user to showcase and alter the surrounding environment (i.e. environment-based AR, inserting objects on surfaces, etc.). This is the opposite of front-facing camera orientation.
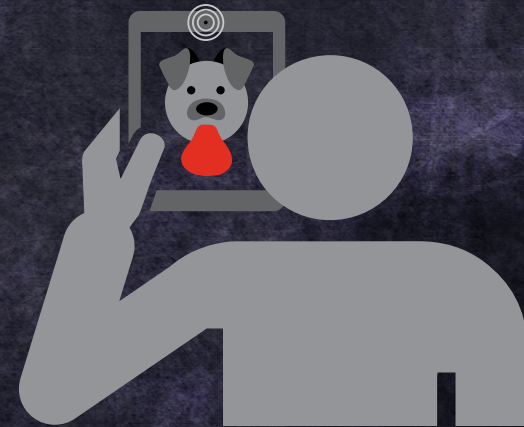
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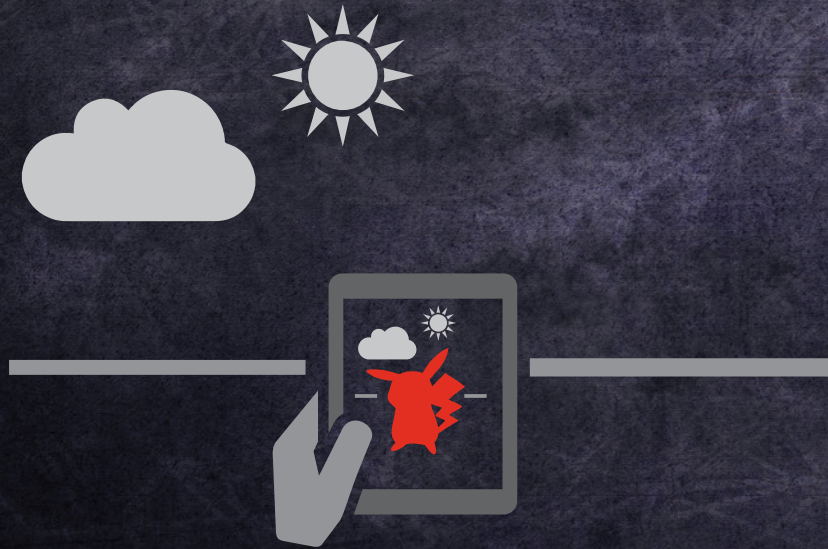
TYPE

FIRST PARTY AR AD DELIVERY

A branded AR experience that is delivered through a brand's proprietary app.

FRONT-FACING CAMERA ORIENTATION

An AR experience where the camera is oriented towards the user's face and alters something related to the face (i.e. selfies, face filters, etc.). This is the opposite of back-facing camera orientation.

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TYPE

THIRD PARTY AR AD DELIVERY

A branded AR ad experience that is delivered by an entity outside of the brand's content application, such as social media platforms, gaming platforms, 3D rendering engines/platforms, etc.

WEBAR

Enables a consumer to load AR experiences directly from the web on their browser. WebAR minimizes friction that a consumer may experience when trying to view AR content. This is not the standard today for AR content delivery but is being experimented with in the industry.

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EQUIPMENT

AR HEAD MOUNTED DISPLAY (HMD)

A device with clear glasses or goggles that attaches to a user's head and shows virtual images projected on, or in, the real world (i.e. Google Glass).

CAMERA

A camera on a mobile phone, tablet, headset, etc. is needed to render 3D images in the space around the user.

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TECHNIQUE

MARKER BASED

A type of AR experience that uses a specific marker in the real world, such as a QR code or an AI learned concept (recognized object) like a "dog", to trigger the display of AR content (Source: IAB New Standard Ad Unit Portfolio, page 34). It does require a pre-determined image, pattern, or physical object that is recognized by the camera and image recognition software to launch the AR experience. For example, a consumer could point their device camera at a fast food logo and have one experience, then point their camera in the same app at a retail store logo and experience different AR content that was triggered by the appearance of a different logo.

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TECHNIQUE

MARKERLESS

Markerless AR technology is used to recognize patterns or features in an environment that were not previously provided to the application, enabling, for instance, a consumer to scan a real world environment like a tabletop or a room in their apartment using their smartphone camera and virtually place a product there to see how it would look.

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EXPERIENCE

USER CONTEXT

The physical environment in which computer generated images are being inserted. Context is critically important to an AR experience.

MEASUREMENT/METRICS

ALLOW RATE

The percentage of users that allow camera access when they encounter an AR ad through an app or on the mobile web.

VS

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MEASUREMENT/METRICS

AR ENGAGEMENT

When a user interacts with the AR experience in some manner (i.e. clicking an object, swiping up for more information, etc.).

AR SESSION TIME

The amount of time someone was in the AR experience with their camera open.

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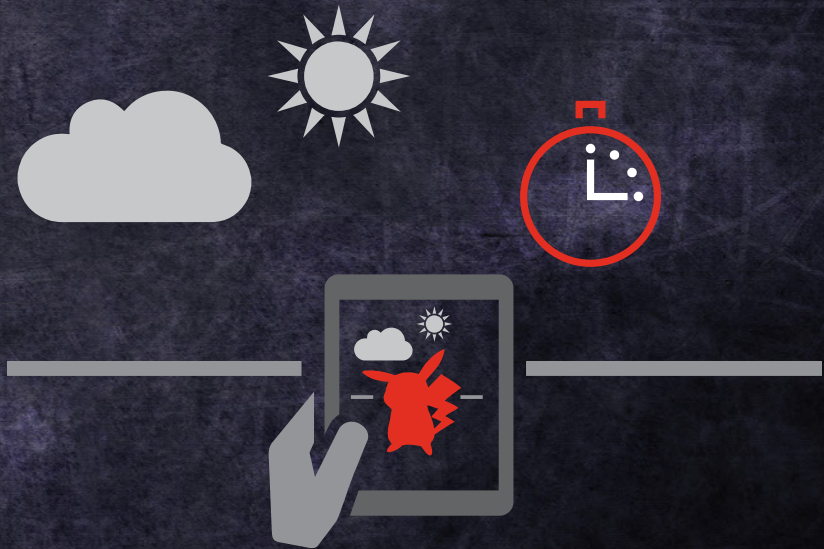
TYPE

VIRTUAL REALITY (VR)

An experience that is made to be significantly more immersive than standard video assets. VR allows a user to be completely immersed into an environment of the marketer's choice.

Ads within VR must occur within either a designated ad space (such as a street side billboard), as a video (that might play in a virtual home TV or virtual movie theater), or as an object (such as a branded bag of potato chips on the table). Fully branded 3D scenes can also be created as '**Virtual Rooms**' (Source: IAB New Standard Ad Unit Portfolio, page 31).

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TYPE

180 DEGREE VIDEO

180°

Video where a consumer is able to look around within the view of a half circle (i.e. 180 degrees). This type of video allows publishers and developers to keep the user's attention to the front where the action of the video often is. It also creates a more seamless consumer experience where users don't have to spin their head or mouse to view the content.

360 VIDEO

360-degree videos are video recordings where a view in every direction is recorded at the same time, shot using an omnidirectional camera or a collection of cameras. During playback, the viewer has control of the viewing direction like a panorama. These types of ads can be served without requiring a VR headset, using keyboard/ mouse/touch controls, or motion sensors in smartphones/tablets to control the viewing orientation. (Source: IAB Digital Video Glossary)

360°

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TYPE

LIVE 360

(ALSO REFERRED TO AS LIVE VR)

Virtual reality live video (often 360 degree video) that can be viewed as the event or experience is actually happening through apps such as Facebook, YouTube and other compatible 360 players.

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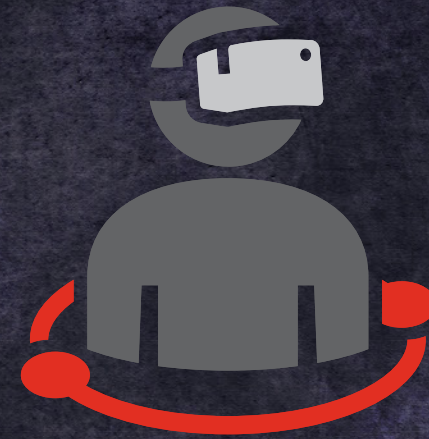
LOCATION-BASED VR

## (ALSO REFERRED TO AS EXPERIENTIAL MARKETING OR SITE ACTIVATIONS)

A VR experience that takes place outside the home—in a movie theater, mall, amusement park, etc. In location-based VR, a user is wearing a head mounted display and the location itself is designed in a way to heighten the experience further (i.e. if the user walks past a virtual air conditioner, they will feel cold air). One of the benefits of location-based VR is that it provides the user the opportunity to interact with other people. While these experiences have less scale, they can be a value add for advertisers in terms of additional foot traffic and word of mouth from visitors.
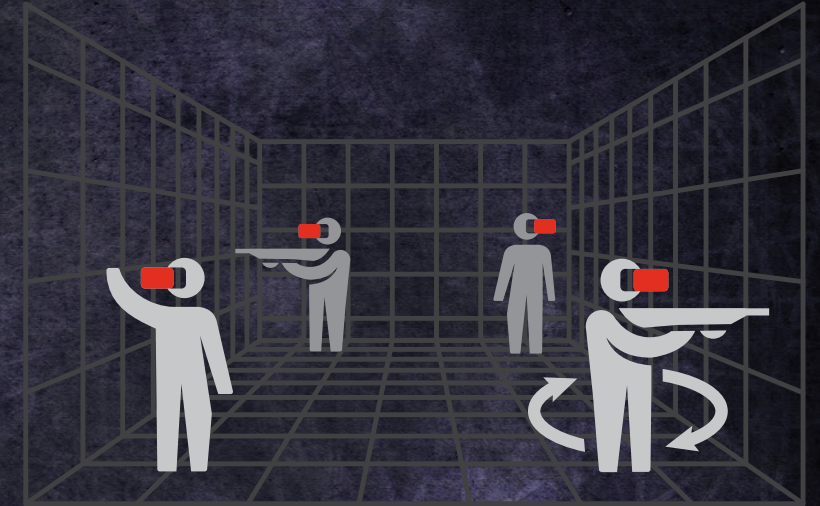
MONOSCOPIC VR

A form of VR that is captured with one lens. Monoscopic VR is used to create flat 360 degree images and is typically less immersive than stereoscopic VR.

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TYPE
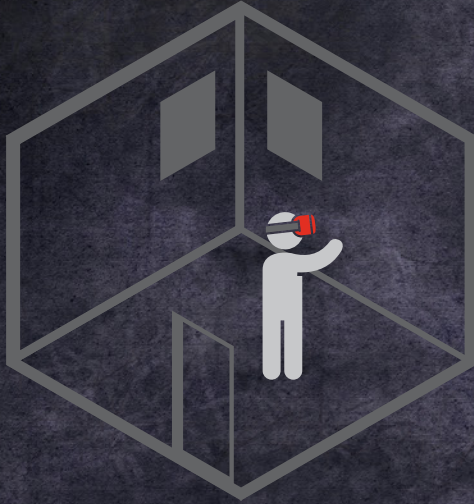
ROOM SCALE VR

A highly immersive VR experience where the user can explore the experience as though they were physically present. The user is able to move in all directions with 6 degrees of freedom motion tracking (i.e. forward/backward, up/down, left/right). This is available today within tethered headsets that use computer generated graphics environments.

STEREOSCOPIC VR

A form of VR where different images are delivered to each eye to create an experience that has more depth. This type of VR is captured with two lenses to replicate the placement of your eyes. Stereoscopic VR is more immersive than monoscopic VR and leads to the highest sense of presence for the user.

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TYPE

VIRTUAL ROOM

A virtual reality native ad format in which the viewer can choose to enter a room filled with sponsored advertising content. Key components of a virtual room include the environment (the world the user sees in the room), the objects (interactive 3D, 2D and 360 video ads, audio tracks represented in the room), and interactions (produces a transition to another part of the scene or introduces new visual or interactive element). (Source: IAB New Standard Ad Unit Portfolio, page 33)

Enables a consumer to load VR experiences directly from the web on their browser. WebVR minimizes friction that a consumer may experience when trying to view VR content. This is not the standard today but is being experimented with in the industry.

WEBVR

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EQUIPMENT

CAMERA ARRAY

A system of multiple cameras arranged in order to capture multiple images of the same moment that can later be stitched together to create a spherical image.

CONTROLLERS

A piece of equipment that users hold in their hands and enables them to interact with virtual environments. Controllers allow the user to maneuver more easily and can lead to greater sense of presence. Some companies are experimenting with controllers that have haptic links that enable the user to feel movement, texture, etc.

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EQUIPMENT VR HEAD MOUNTED DISPLAY (HMD)
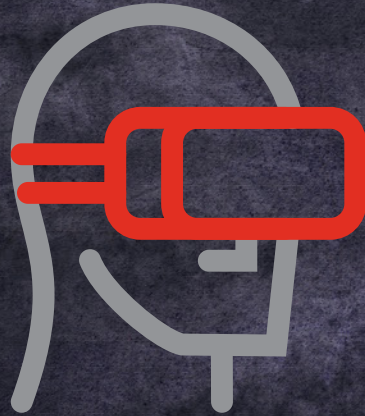
A device that attaches to your head and presents VR content directly to your eyes. There are three types:

- **Phone-based HMDs:** A mobile phone is placed within a head mounted display to view VR content (Google Cardboard, Samsung Gear).

- **Tethered HMD:** A head mounted display is connected to a high-powered PC to view VR content. This type of HMD offers the highest quality VR (HTC Vive, Oculus Rift).

- **Standalone HMD:** A cordless headset that does not require a phone or being tethered to a PC to view VR content. The computer is inside the headset with the display. In terms of VR quality, it is in-between phone-based and tethered HMDs (Oculus Go).

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TECHNIQUE

PRE-RENDER

When the computer runs content along a defined sequence that cannot be changed on the fly, like with real-time rendering. Since the content is pre-rendered, it will generally be of higher realism and detail.
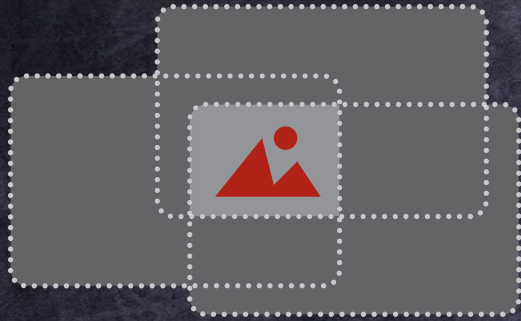
SIX DEGREES OF FREEDOM (6DOF)

Refers to the ability of a user to move around in space. With six degrees of freedom, users are able to move forward, backward, up, down, left, and right in a virtual reality experience. Tethered headsets like HTC Vive and Oculus Rift enable six degrees of freedom.

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TECHNIQUE STITCHING

The combination of two or more images or videos in order to create a product that is larger and/or has a higher resolution than the original. This technique is often used to create 360 videos. Stitching can be done manually or automated. Automatic stitching is often cheaper but the stitching may not be as seamless.

THREE DEGREES OF FREEDOM (3DOF)

Refers to the ability of a user to move around in space. With three degrees of freedom in VR, a user is able to look in every direction but is not able to move around the scene as is possible with six degrees of freedom (i.e. cannot jump or walk). For example, mobile VR and 360 video have three degrees of freedom.

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TECHNIQUE

VOLUMETRIC CAPTURE

The ability to capture real people or objects in 3D to be used in VR environments. The opposite technique would be to start with a 3D object and try to make it look realistic. With volumetric capture, a real world object (i.e. a car or sofa) is scanned and re-rendered into a 3D scene.
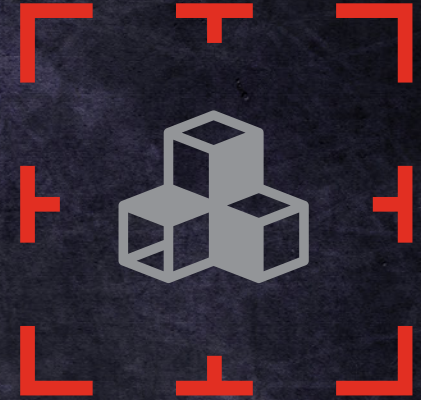
EXPERIENCE

PRESENCE

A feeling that tricks at least three of the five senses of your brain into believing that you've been taken to another place. The more immersed a user is in an environment, the higher the level of presence they feel.

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MEASUREMENT/METRICS

GAZE-THROUGH

When a user views a VR advertisement and accepts a call to action. It is the functional equivalent of a click-through and helps measure ad effectiveness. For example, the user is looking at an ad for a specified amount of time and triggers some sort of action (i.e. see more branded content).

VR SESSION TIME

The amount of time a user spent in the VR experience.

VR ENGAGEMENT

When a user interacts with something within a VR environment or a VR video experience (i.e. when an object or target is looked at or tapped on).

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TYPE

EXTENDED REALITY (XR)

Can be utilized as an umbrella term that encompasses any type of immersive content (i.e. virtual reality, augmented reality, mixed reality, 3D, etc.).
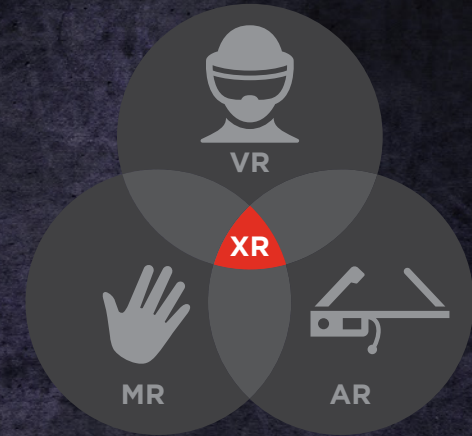
MIXED REALITY

Refers to an experience that is a hybrid of AR and VR. The viewer is still able to see the real world but virtual objects are incorporated seamlessly into that environment. These virtual objects are anchored to the real world and thus, the objects change perspective. For example, objects will get bigger as a user approaches them. This differs from AR where virtual objects do not change perspective as a user moves.

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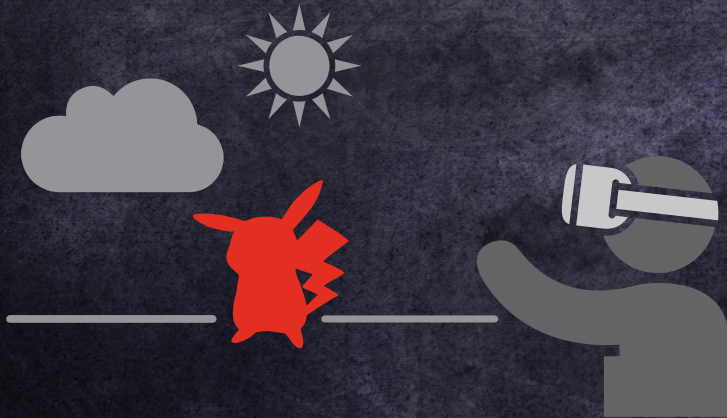
TECHNIQUE
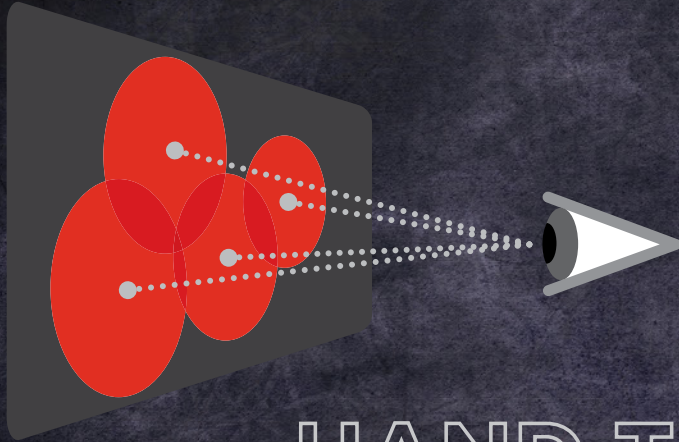
EYE TRACKING

A technique that tracks where a user's eyes are looking. Eye tracking allows developers to optimize the performance of AR/VR experiences by focusing system resources on where the user is looking. Understanding eye movements could also help mitigate motion sickness during VR experiences.

HAND TRACKING

A technology that tracks the location of a user's hand in an AR/VR experience in order to bring more control to the experience and create more realistic avatars.

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TECHNIQUE

HEAD TRACKING

A technology that communicates the location of the user's head in the space to the software. Head tracking allows the software to update what the user sees based on where the user's head is. An accelerometer is needed to conduct head tracking. This technology is widely used in AR headsets and VR headsets.


REAL-TIME RENDER

When the computer creates and displays content in real time. This technique allows the AR/VR experience to change in real time. AR is often coded for phone apps and renders reactively depending on the user's location. With AR, objects must update when the scene updates – otherwise there would just be a filter hanging over the scene.

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TECHNIQUE

POLYGON COUNT
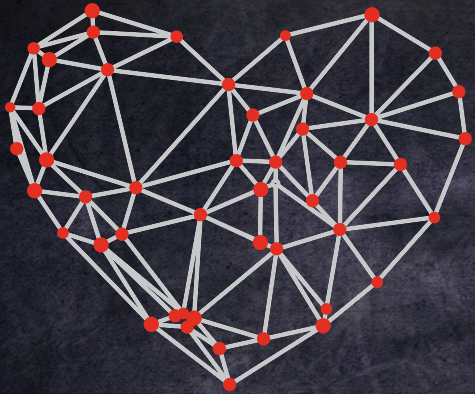
Polygons are digital figures that join together to make a 3D object. Publishers and developers need to define the minimum and maximum polygon count per device for each 3D object to ensure the object blends into the environment and that there aren't long load times because the count is too high. While there is no industry standard, some refer to a general guideline of no more than 12k polygons for mobile and between 25 to 50k polygons for a PC (depending on processing power of computer).

MEASUREMENT/METRICS

EARNED MEDIA

Refers to publicity gained through efforts other than paid media advertising. It is when the user becomes the marketing channel and takes a screenshot of a AR/VR experience, shares an AR/VR experience on social media, etc. Earned media can be another metric of success for AR/VR.

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MEASUREMENT/METRICS

HEAT MAP

A visual color-coded analysis of an AR or VR experience that indicates what parts of the scene people are paying most attention to. The heat map can be generated based on where the user is gazing or by where the user is within the scene (i.e. positional or foot traffic for room scale VR). Note: This type of analysis will not be available for every experience but can be done through certain platforms and partners.
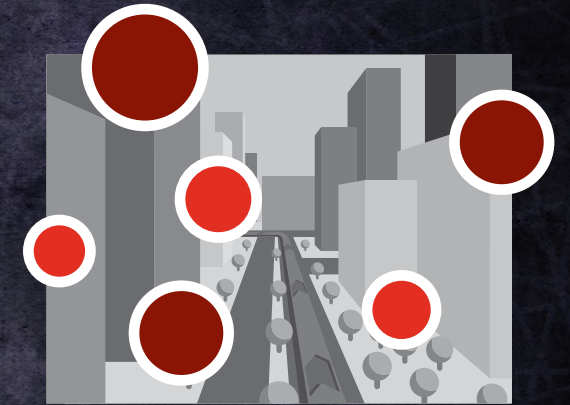
VIEWABILITY

When a user enters into an augmented reality or virtual reality experience after it has fully rendered. While there are no industry standards today in regards to what constitutes a view, there are many factors to consider, such as how long the user was in the scene, what the distance was between the user and the area of the action/ad, where the user was looking in that experience, etc.

If the objective is to measure viewability of a specific 3D object, that 3D object must be within the user's field of view. Viewability does depend on the scale of the object. For example, a soda can may not need to fill as much of the screen to be viewable as a vehicle would need (Source: IAB New Standard Ad Unit Portfolio, page 32).

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ACKNOWLEDGMENTS

Thanks to all contributing companies!