



# INTRODUCTORY GUIDE TO EXTENDED REALITY (XR)

VA IMMERSIVE



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## Introduction

The Introductory Guide to Extended Reality (XR) is a resource to provide staff members a foundational understanding on the most common patient-facing immersive technologies. Through this guide, readers will learn about the different XR hardware and software platforms currently being used across Department of Veterans Affairs (VA) medical facilities.



### What is Extended Reality (XR)?

Extended Reality refers to the use of immersive technologies that *extend* reality and merge the physical and virtual worlds to some degree. XR is used as an umbrella term incorporating virtual reality (VR) and augmented reality (AR).

### What is Virtual Reality (VR)?

Virtual Reality is a computer-generated illusion of reality that immerses the user into a simulated environment through the use of specialized hardware and by engaging visual, audio and sometimes haptic senses. This environment can typically be explored and interacted with by the user. Simulated environments can be based on video footage of real environments, completely computer-generated images, or a combination of both.

Hardware typically includes a head-mounted display, with or without integrated sound/headphones, handheld controllers, and may sometimes require the use of a laptop, tablet, or other smart device.

### What is Augmented Reality (AR)?

Augmented reality is an enhanced, interactive version of a real-world environment. It allows us to see the real-life environment right in front of us but enhanced through digital visual elements, sounds, and other sensory stimuli via holographic technology. AR uses these digital enhancements, real-time interactions, and accurate 3D identification of virtual and real objects to change user experience.

Hardware can be as simple as a smart phone or specialized AR glasses, like the Microsoft HoloLens.



## Common XR Terminology




### Degrees of Freedom (DOF)

Refers to the number of ways a rigid object can move through three-dimensional space. There are six total degrees of freedom which describe every possible movement of an object:

- 3 for rotational movement around the x, y, and z axes (also known as pitch, yaw, and roll)
- 3 for translational movement along those axes, which can be thought of as moving forward or backward, left or right, and up or down.

Overall, an essential concept in VR that allows human movement to be converted into movement within the VR environment.

### DOF in VR:

 <p>ROLLING</p>	<p>Roll is where the head pivots side to side (i.e., when peeking around a corner)</p>
 <p>PITCHING</p>	<p>Pitch is where the head tilts along a vertical axis (i.e., when looking up or down).</p>
 <p>YAWING</p>	<p>Yaw is where the head swivels along a horizontal axis (i.e., when looking left or right)</p>

### 3 DOF: Rotational movement

Simplest form of user tracking in virtual reality and relies entirely on the inbuilt sensors (e.g., accelerometers, gyroscopes, and magnetometers) that phones use to measure movement.

In essence, these tools allow a device to measure how it is moving in three types of directional rotation (i.e., 3DoF). Certain user movements are registered by these sensors and translated so that the VR program running on the phone can respond in real-time.

Headsets that use Three Degrees of Freedom (3DoF) tracking: All phone-based VR headsets including Google Cardboard, Samsung Gear VR, Google Daydream, as well as some standalone headsets such as Oculus Go and the PICO G2 4K.

### 6 DOF: Rotational and Translational Movement

A more sophisticated version of positional tracking is Six Degrees of Freedom (DoF), which incorporates the three rotational measurements (rolling, pitching, and yawing) and adds three further directional movements that allow a person to physically move around in a virtual space, rather than simply standing in one spot.

## **6 DOF: Rotational and Translational Movement (continued)**

This type of tracking is crucial for whole-room VR experiences and gives the user a lot more freedom to explore locations, inspect details.

With Six Degrees of Freedom (6DoF) both the headset and the controllers worn by the user are tracked. This can be achieved either by using external sensors to capture movement (known as outside-in tracking, e.g., HTC VIVE) or using sensors attached to the headset itself (called inside-out tracking, e.g., PICO) which continuously relays the positions of the headset and controllers back to the computer.

Headsets that use six Degrees of Freedom (6DoF) tracking: PC-based headsets including Oculus Rift, HTC Vive, Windows Mixed Reality, and standalone headsets PICO Quest 2, etc.

### **DOF in VR - Includes those depicted in 3DOF and also:**

- Elevation - Elevation is where a person moves up or down (i.e., when bending down or standing up)
- Strafe - Strafe is where a person moves left or right (i.e., when sidestepping)
- Surge - Surge is where a person moves forwards or backwards (i.e., when walking)



### **Kiosk Mode**

Essentially only allowing the headset to run one specific app or program that starts automatically when you boot the HMD. This is an important feature for future use of VR HMDs on the VA Network as the headset will not allow the use to open anything else.

### **Screen casting, mirroring, or projecting**

Methods of allowing people other than the current user of the headset to see what the user is seeing. Not all headsets allow this, but more are adding this feature.

### **Immersion**

Describes the sensorial fidelity of the technology so a system that supported being able to perceive using the whole body (bending down to look underneath something, reaching out, looking around an object, etc.) would be at a higher level of immersion than one that just afforded looking at a screen (for as soon as you turn your head away from the screen you are no longer perceiving the virtual world).

### **Presence**

Describes the user's perception of being physically present in the virtual environment.

### **Gaze Control or Gaze-Based Interactions**

Gaze-based interactions refer to interactions between the user and the VR content, where the user's gaze directly impacts the content, (i.e., the direction the user is looking in when wearing a VR headset). This can be used, for example, to control a menu interface, to navigate within a virtual space or to interact with other characters in a VR gaming environment.

### **Eye Tracking**

Eye tracking is a process used in headsets to measure and keep track of the direction of the user's gaze. Using this information, it is possible to reproduce the eyes' natural process of bringing objects into/out of focus depending on what the user is concentrated on. Doing so enhances the feeling of immersion greatly, as simulating normal eye processes makes the users VR experience much more realistic and therefore less likely to break immersion.





## General Guidelines Regarding XR Hardware Selection

Deciding on which type of headset you need depends on your application. This is not an all-inclusive list, but rather some items to consider as you choose.

### Regarding DOF

- It's worth noting that 3-DoF headsets are typically cheaper than 6-DoF ones. Basically, the more movement you need to track, the higher degrees of freedom will be needed.

Here are some examples to highlight applications across the two:

#### 3-DoF:

- Watching 360-degree videos or images
- Practicing delivering a speech at a conference

#### 6-DoF:

- Simulator-based learning
- Interactive games
- Rehabilitation ROM/movement tracking

### Regarding Tethered vs. Untethered

- For most use-cases in healthcare, the standalone options are going to be the better choice.
  - Tethered headsets are physically connected to a powerful computer using wires, allowing them to make use of the processing power available to track positions, movements, etc. Tethered headsets give the user a freedom of movement beyond turning their heads and additional interactivity. However, they require the user to stay within a certain distance of the computer, as the user's headset must stay connected physically to the computer and are relatively expensive compared to their mobile counterparts. Tethered headsets automatically create a mirrored image of what the user is experiencing on the screen of the PC.
  - Standalone headsets can be taken anywhere since they do not require a physical connection to a processor and are cheaper than tethered headsets. While they don't limit the movements of the user, their lack of additional computing power makes them have a slower reaction to the user's movements and limits them to look around the environment without interacting with or moving around it.

### Gaze Control and Eye Tracking

- This function can be particularly useful for those patients with functional limitations, issues with movement/dexterity, in the lower extremities. It is also a helpful function for when you want the patient to use VR, but to not be moving a lot (procedural use).
- Eye tracking also has the potential to create more realistic avatars for some programs.

### Casting

Casting or mirroring in XR is important to be able to allow the clinician to see what the patient is seeing. This is helpful with any patient who has limited knowledge of technology, cognitive impairments, etc. so that the clinician can help the patient to navigate the space





## XR Hardware Devices

VR Head Mounted Display (HMD)	Device Connection Requirements	# of Controllers and Degrees of Freedom	Wi-Fi Requirements	Kiosk Mode Availability	Casting Compatibility	Storage (ROM/RAM)	Other Features
<a href="#">HP VR Reverb G2 Omnicept</a> Software: HP Content Library	Tethered, Smart Device Required, PC not included	2 Controllers – 6 DOF	No <sup>1</sup>	Yes, via laptop	Yes	N/A	Eye tracking, Pupillometry Heart Rate, Face Cam
<a href="#">HTC VIVE Cosmos<sup>2</sup></a>	Tethered, Smart Device Required	2 Controllers – 6 DOF	No	Yes	N/A	N/A	N/A
<a href="#">HTC Vive Flow</a>	Untethered, Smart Device Not Required but can connect	None, can use phone or mobile device – 6 DOF Hands Free	No <sup>1</sup>	Yes	Yes	64GB/4GB	Adjustable diopter lenses, Gaze Control
<a href="#">HTC Vive Focus 3</a>	Untethered, Smart Device Not Required but can connect	2 Controllers – 6 DOF Hands Free Optional	No	Yes	Yes	128GB/8GB	Hand tracking, 5K resolution, IPD Adj., Gaze Control
<a href="#">HTC VIVE Focus Plus<sup>2</sup></a> (Has business edition)	Untethered, Smart Device Not Required	2 Controllers – 6 DOF	No <sup>1</sup>	Yes	Yes – TV, PC or Tablet	32GB/4GB	N/A
<a href="#">HTC VIVE Pro Eye/ Pro Eye Office<sup>2</sup></a>	Tethered, Smart Device Required, though may purchase wireless adapter	2 Controllers – 6 DOF Hands Free Optional	No	Yes	No	N/A	Gaze Control
<a href="#">Meta Quest Pro</a>	Untethered, PC optional, smartphone app required	2 Controllers – 6 DOF Hands Free Optional	No <sup>1</sup>	No	Yes	256GB/128GB	Eye Tracking, Face Tracking, Hand Tracking, Gaze Control Optional
<a href="#">Microsoft HoloLens 2</a>	Untethered, Smart Device Not Required	None – 6 DOF Hands Free	Yes	Yes	Yes	64GB/4GB	Eye Tracking, Hand Tracking, Voice Enabled, Gaze Control Optional
<a href="#">Oculus/Meta Quest 2</a>	Untethered, PC optional, smartphone app required	2 Controllers – 6 DOF	No <sup>1</sup>	No	Yes – to TV or Oculus App	64GB or 256GB	N/A

<sup>1</sup>Depends on the software utilized, but technically, need initial Wi-Fi connection to either download programs or, if PC required, have a laptop preloaded with content, and then would not require Wi-Fi except for updates or if new content were to be added.

<sup>2</sup> Requires SteamVR Base stations as well for positional tracking (outside-in tracking)

ROM, particularly for those headsets without kiosk mode, can affect the amount of content to be placed on the headset independently.

RAM, a higher RAM = less glitches/lags

## XR Hardware Devices (cont.)

VR Head Mounted Display (HMD)	Device Connection Requirements	# of Controllers and Degrees of Freedom	Wi-Fi Requirements	Kiosk Mode Availability	Casting Compatibility	Storage (ROM/RAM)	Other Features
<a href="#">PICO 4</a>	Untethered, Smart Device Not Required	2 Controllers – 6 DOF	No <sup>1</sup>	Yes	Yes	128GB/8GB 256GB/8GB	Hand Tracking
<a href="#">PICO G2 4K Enterprise</a>	Untethered, Smart Device Not Required	1 Controller – 3 DOF Hands Free Optional	No <sup>1</sup>	Yes	Yes	128GB/6GB	Gaze Control
<a href="#">PICO G2 4K<sup>2</sup></a>	Untethered, Smart Device Not Required	1 Controller – 3 DOF Hands Free Optional	No <sup>1</sup>	Yes	Yes	64GB/4GB	Gaze Control
<a href="#">PICO Neo 2</a>	Untethered, Smart Device Not Required but can connect	2 Controllers – 6 DOF Hands Free Optional	No <sup>1</sup>	Yes	Yes	128GB/6GB	Gaze Control
<a href="#">PICO Neo 2 Eye</a>	Untethered, Smart Device Not Required	2 Controllers – 6 DOF Hands Free Optional	No <sup>1</sup>	Yes <sup>2</sup>	Yes	128GB/6GB	Eye Tracking, Gaze Control
<a href="#">PICO Neo 3</a>	Untethered, Smart Device Not Required but can connect	2 Controllers – 6 DOF Hands Free Optional	No <sup>1</sup>	Yes	Yes	256GB/6GB	Gaze Control
<a href="#">PICO Neo 3 Eye</a>	Untethered, Smart Device Not Required but can connect	2 Controllers – 6 DOF Hands Free Optional <sup>3</sup>	No <sup>1</sup>	Yes	Yes	256GB/8GB	Eye Tracking, Gaze Control
<a href="#">Samsung Odyssey +</a>	Tethered, Smart Device Required	2 Controllers – 6 DOF	No <sup>1</sup>	Yes	N/A	N/A	N/A

<sup>1</sup> Depends on the software utilized, but technically, need initial Wi-Fi connection to either download programs or, if PC required, have a laptop preloaded with content, and then would not require Wi-Fi except for updates or if new content were to be added.

<sup>2</sup> The PICO G2 4K (+ enterprise) and Oculus Go have soft head straps that are not easily cleaned between patients.

<sup>3</sup> Difference between Neo 2 and Neo 2 Eye: Eye has enhanced eye tracking and an increased frame rate for better graphics.

## Legacy Devices

VR Head Mounted Display (HMD)	Device Connection Requirements	# of Controllers and Degrees of Freedom	Wi-Fi Requirements	Kiosk Mode Availability	Casting Compatibility	Storage (ROM/RAM)
<a href="#">Oculus Go</a>	Untethered, Oculus Mobile App Required	1 Controller – 3 DOF	No <sup>1</sup>	No	Yes – to TV or Oculus App	32GB or 64GB
<a href="#">Oculus Rift (S)</a> <sup>2</sup>	Tethered, Smart Device Required	2 Controllers – 6 DOF	No <sup>1</sup>	No	Yes – to TV or Oculus App	N/A
<a href="#">Oculus Quest</a>	Untethered, PC optional, smartphone app required	2 Controllers – 6 DOF	No <sup>1</sup>	No <sup>3</sup>	Yes – to TV or Oculus App	64GB or 128GB

## XR Software Platforms\*

Vendor	Hardware Utilized	Platform/Content Description	Populations Useful For
<a href="#">Amelia Virtual Care</a>	Various	Provides VR content to be used by therapists who perform mental health assessments and interventions. Amelia VC offers more than 70 environments and scenes that can be used for psychoeducation, gradual exposure, systematic desensitization, relaxation, distraction, acceptance and commitment, mindfulness, eye movement desensitization and reprocessing (EDMR), etc. VR content also supports anxiety (phobias, panic, agoraphobia, generalized anxiety, public speaking, exams, etc.), attention management, eating disorders, obsessive compulsive disorder (OCD), attention deficit hyperactivity disorder (ADHD), and pain management.	<ul style="list-style-type: none"> <li>Acute Inpatient Setting</li> <li>Outpatient Clinics</li> <li>Community Living Centers (CLC), including short- term and long- term rehab and hospice</li> <li>Telehealth</li> <li>Group sessions</li> <li>Mental Health</li> <li>Whole Health</li> </ul>
<a href="#">AppliedVR</a>	PICO G2 4K	The RelieVRx™ program teaches the patient how to recognize and adjust cognitive, emotional, and physical responses to chronic lower back pain.	<ul style="list-style-type: none"> <li>Home-based</li> </ul>

\*This table is not all-inclusive, please reach out to [VAImmersive@va.gov](mailto:VAImmersive@va.gov) if there are specific questions/concerns regarding information shared in this document.

<sup>1</sup> Depends on the software utilized, but technically, need initial Wi-Fi connection to either download programs or, if PC required, have a laptop preloaded with content, and then would not require Wi-Fi except for updates or if new content were to be added.

<sup>2</sup>The PICO G2 4K (+ enterprise) and Oculus Go have soft head straps that are not easily cleaned between patients.

<sup>3</sup>The Oculus Quest does have hand tracking to allow for a controller-free option.

Vendor	Hardware Utilized	Platform/Content Description	Populations Useful For
<a href="#">BehaVR</a>	PICO Neo, Oculus Quest 2	<p>Utilizes VR in the following focus areas: Stress Reduction, Anxiety Regulation, Maternal Health, Pain Management, Mental Wellness.</p> <p><b>Stress Reduction/Anxiety Regulation (CenteredVR)</b> Provides foundational knowledge for mindfulness to overcome fears, triggers, and worries around perceived future threats.</p> <p><b>Maternal Health (NurtureVR)</b> NurtureVR: Tailors program to fearlessly face the complexities of becoming a mother and the most challenging moments of the journey.</p> <p><b>Pain Management (PNE + Mindful Movement)</b> Explores solutions that are proven to support how patients feel and function.</p> <p><b>Mental Wellness (First Resort)</b> Offers cognitive reframing exercises, including labeling distortions, gathering evidence, and usefulness.</p>	<p><b>Stress Reduction/Anxiety Regulation</b></p> <ul style="list-style-type: none"> <li>• CLC</li> <li>• Home-based</li> <li>• Inpatient Clinics (MH)</li> <li>• Outpatient Clinics (MH)</li> </ul> <p><b>Maternal Health</b></p> <ul style="list-style-type: none"> <li>• Home-based</li> <li>• Outpatient Clinics</li> <li>• Women's Health</li> </ul> <p><b>Pain Management</b></p> <ul style="list-style-type: none"> <li>• Acute Inpatient Setting</li> <li>• CLC</li> <li>• Home-based</li> <li>• Outpatient Clinics</li> </ul> <p><b>Mental Wellness</b></p> <ul style="list-style-type: none"> <li>• Inpatient Clinics (MH)</li> <li>• Outpatient Clinics</li> <li>• Outpatient Clinics (MH)</li> </ul>
<a href="#">Bravemind</a>	Samsung Odyssey +	Bravemind is a clinical, interactive, VR-based imaginal prolonged exposure therapy tool being used to assess and treat post-traumatic stress disorder (PTSD).	<ul style="list-style-type: none"> <li>• Inpatient Clinics (MH)</li> <li>• Outpatient Clinics (MH)</li> </ul>
<a href="#">CAE Healthcare</a>	Microsoft HoloLens 2	<p>Simulated and facilitates the learning process for cardiac, lung, abdominal and OB-GYN ultrasound – all on one common platform. With its software and manikin-based system and live, remote learning features, CAE Vimedix accelerates the development of essential psychomotor and cognitive skills for ultrasound probe handling, image interpretation, diagnoses, and clinical decision-making.</p> <p>CAE AresAR helps learners clearly visualize the physiology and accelerate the training to manage life threatening medical emergencies</p>	<ul style="list-style-type: none"> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul>

Vendor	Hardware Utilized	Platform/Content Description	Populations Useful For
<a href="#">Embodied Labs</a>	Hardware agnostic, Laptop	Offers caregivers, medical students, and health professionals web-immersive and VR-based training from the perspective of the aging person, creating empathy and a better understanding of the challenges aging adults face. Platforms focus on Alzheimer's Disease, End of Life Discussions, Lewy Body Dementia & Parkinson's Disease, Macular Degeneration and High Frequency Hearing Loss, Social Isolation, and Trans Health & LGBT Aging.	<ul style="list-style-type: none"> <li>• Caregivers</li> <li>• All Employees</li> </ul>
<a href="#">Firefly VR</a>	Hardware agnostic	Utilizes behavioral health and digital therapies, wearable biosensor technology, and immersive virtual environments to develop next generation products and improve the treatment of mental healthcare.	<ul style="list-style-type: none"> <li>• Inpatient Clinics (MH)</li> <li>• Ketamine therapy</li> <li>• Outpatient Clinics (MH)</li> <li>• Substance Use</li> <li>• Disorder (SUD)</li> </ul>
<a href="#">Healium</a>	Hardware agnostic, Laptop	Utilizes nature-based VR experiences to help healthcare workers self-manage stress, anxiety and sleep while enhancing performance through mental fitness.	<ul style="list-style-type: none"> <li>• CLC</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul>
<a href="#">InnateVR</a>	PICO Neo 3, Samsung tablet	DawnVR is a platform that leverages VR for stress reduction, relaxation, and positive distraction.	<ul style="list-style-type: none"> <li>• CLC</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul>
<a href="#">Karuna Labs</a>	Oculus Quest 2, PICO	Employs KVET™ Virtual Embodiment Training to help patients improve function and reduce chronic pain. Karuna Labs also utilizes exposure therapy, pain neuroscience education, and cognitive retraining tools for chronic pain.	<ul style="list-style-type: none"> <li>• Home-based</li> </ul>
<a href="#">Medivis</a>	HoloLens 2	Leverages AR and artificial intelligence to improve surgical outcomes for patients and drive cost savings for institutions.	<ul style="list-style-type: none"> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul>
<a href="#">Magic Horizons</a>	PICO	Offers a unique combination of elaborately produced 360-degree environments in 3D, calming music, and relaxing VR environments for VR glasses.	<ul style="list-style-type: none"> <li>• CLC</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul>
<a href="#">MyndVR</a>	PICO Neo 2, HTC Flow	<p>Utilizes VR to decrease the feeling of isolation and focuses on improving quality of life for the following areas:</p> <ul style="list-style-type: none"> <li>• Community-based (senior living spaces)</li> <li>• Distraction Therapy</li> <li>• Recreational Therapy</li> <li>• Reminiscence Therapy</li> </ul> <p>Content library includes adventure and travel, music/arts, nature, and pets.</p>	<ul style="list-style-type: none"> <li>• CLC</li> <li>• Group sessions</li> <li>• Inpatient Clinics</li> <li>• Mental Health</li> <li>• Outpatient Clinics</li> <li>• Telehealth</li> <li>• Whole Health</li> </ul>



Vendor	Hardware Utilized	Platform/Content Description	Populations Useful For
<a href="#">MyndVR</a>	PICO Neo 2, HTC Flow	Utilizes VR to decrease the feeling of isolation and focuses on improving quality of life for the following areas: <ul style="list-style-type: none"> <li>• Community-based (senior living spaces)</li> <li>• Distraction Therapy</li> <li>• Recreational Therapy</li> <li>• Reminiscence Therapy</li> </ul> <p>Content library includes adventure and travel, music/arts, nature, and pets.</p>	<ul style="list-style-type: none"> <li>• CLC</li> <li>• Group sessions</li> <li>• Inpatient Clinics</li> <li>• Mental Health</li> <li>• Outpatient Clinics</li> <li>• Telehealth</li> <li>• Whole Health</li> </ul>
<a href="#">NeuroRehabVR</a>	Samsung Tablet, PICO Neo 2, Lower Extremity Strap Adapters	Uses VR to assess the following health complications: stroke, dementia, older age, back pain, total knee arthroplasty, and/or dizziness. The patient's movement is tracked within the application, based on the clinician-provided goals for each exercise. NeuroRehabVR promotes therapist-led rehabilitation to improve Upper Extremity/Lower Extremity/Trunk/Cervical function, Chronic Pain, Anxiety, Cognition, Balance, ADL performance.	<ul style="list-style-type: none"> <li>• CLC</li> <li>• Home-based</li> <li>• Neuro/Spinal Cord Injury (SCI)</li> <li>• Post-operative Physical Therapy (PT)/Occupational Therapy (OT)</li> <li>• PT/OT Clinics</li> </ul>
<a href="#">Oxford VR</a>	HTC Vive Focus Plus	Creates simulations in which psychological difficulties occur and utilized evidence-based immersive treatments for Serious Mental Illness (SMI) and behavioral health to reduce patient's fear and concerns.	<ul style="list-style-type: none"> <li>• Inpatient Clinics (MH)</li> <li>• Outpatient Clinics (MH)</li> </ul>
<a href="#">Penumbra, Inc.</a>	HTC VIVE	Offers engaging, immersive, gaze-based apps and experiences to a broad range of care providers and mental health professionals who support people with depressed and anxious moods, pain and discomfort, loneliness, and age-related challenges. <p>i-Series Cognition and Mental Well-being focused on positive distraction.</p> <p>y-Series Physical and Cognitive Rehabilitation</p> <p>x-Series Pain and suicide prevention (VA only; in development)</p>	<ul style="list-style-type: none"> <li>• CLC</li> <li>• Home-based</li> <li>• Inpatient Clinics</li> <li>• Inpatient Clinics (MH)</li> <li>• Outpatient Clinics</li> <li>• Outpatient Clinics (MH)</li> </ul>

Vendor	Hardware Utilized	Platform/Content Description	Populations Useful For
<a href="#">Rendever</a>	PICO G2 4K Enterprise	Creates customized VR experiences that are in turn used for those organizations' elderly populations. Rendever's content platform focuses on improved relaxation, stress reduction, and mental well-being.	<ul style="list-style-type: none"> <li>• CLC</li> <li>• Infusion Clinics</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> <li>• Procedural</li> <li>• PTSD</li> <li>• SCI</li> <li>• TBI</li> </ul>
<a href="#">TRIPP</a>	Oculus, Meta HMDs, PlayStationVR *Hardware not included with subscription	TRIPP® is a collection of immersive experiences available on consumer and enterprise virtual reality platforms paired with mobile support to help you find calm, focus, and build emotional resilience. TRIPP also uses the power of virtual and augmented reality to develop transformative toolkits that incorporate mindfulness structures, targeted visuals, sound frequencies, and gameplay mechanics.	<ul style="list-style-type: none"> <li>• CLC</li> <li>• Group sessions</li> <li>• Inpatient Clinics</li> <li>• Mental Health</li> <li>• Outpatient Clinics</li> <li>• Telehealth</li> <li>• Whole Health</li> </ul>
<a href="#">Waya Health</a>	PICO Neo 3, PICO Neo	Utilizes VR in the following clinical use cases: Senior Vitality, Adult Procedures, Physical Therapy, Post-Operative Recovery, Falls Risk Assessment, Neurological Assessment, Palliative Care, Anxiety, and Creative Arts Therapy.	<p>Senior Vitality</p> <ul style="list-style-type: none"> <li>• CLC</li> <li>• Home-based</li> </ul> <p>Adult Procedures</p> <ul style="list-style-type: none"> <li>• Endoscopy</li> <li>• Heart Cath Lab</li> <li>• Interventional Radiology</li> <li>• Outpatient Clinics</li> <li>• Pre-, intra-, and post-operative</li> </ul> <p>Physical Therapy</p> <ul style="list-style-type: none"> <li>• Home-based</li> <li>• Inpatient PT/OT</li> <li>• Outpatient PT/OT</li> <li>• Pain Management Clinics</li> </ul> <p>Post-Operative Recovery</p> <ul style="list-style-type: none"> <li>• Acute Inpatient Setting</li> <li>• CLC—Short-term Rehab</li> <li>• Home-based</li> </ul>

Vendor	Hardware Utilized	Platform/Content Description	Populations Useful For
<a href="#">Waya Health (cont.)</a>			<p>Falls Risk Assessment</p> <ul style="list-style-type: none"> <li>• Acute Inpatient Setting</li> <li>• CLC</li> <li>• Outpatient PT Clinics</li> </ul> <p>Neurological Assessment</p> <ul style="list-style-type: none"> <li>• Acute Inpatient Setting</li> <li>• CLC</li> <li>• Inpatient Clinics (MH)</li> <li>• Outpatient Clinics (MH)</li> <li>• Parkinson's/Stroke dx</li> <li>• SCI units</li> </ul> <p>Palliative Care</p> <ul style="list-style-type: none"> <li>• Acute Inpatient Setting</li> <li>• CLC</li> <li>• Home-based</li> <li>• MH</li> <li>• Outpatient Clinics</li> </ul> <p>Anxiety</p> <ul style="list-style-type: none"> <li>• Acute Inpatient Setting</li> <li>• CLC</li> <li>• ER</li> <li>• Home-based</li> <li>• Inpatient Clinics (MH)</li> <li>• Outpatient Clinics</li> <li>• Outpatient MH</li> </ul> <p>Creative Arts Therapy</p> <ul style="list-style-type: none"> <li>• Acute Inpatient Setting</li> <li>• CLC</li> <li>• Group Therapy</li> <li>• Inpatient MH Clinics</li> <li>• Outpatient MH Clinics</li> <li>• Telehealth or Home-based</li> </ul>

Vendor	Hardware Utilized	Platform/Content Description	Populations Useful For
<a href="#">XR Health</a>	PICO Neo 2, Oculus Quest, Oculus Go, HTC Vive Focus	Provides clinical services - OT, PT, Speech-Language Therapy, Behavioral Health Clinical conditions - neurological, pain management, mental health, ADHD, memory/cognitive training, and Post-COVID Rehabilitation.	<p>Speech-Language Therapy</p> <ul style="list-style-type: none"> <li>• CLC</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul> <p>Physical Therapy</p> <ul style="list-style-type: none"> <li>• CLC</li> <li>• Home-based</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul> <p>ADHD</p> <ul style="list-style-type: none"> <li>• Outpatient Clinics</li> <li>• Home-based</li> </ul> <p>Stress / Anxiety / Depression Management</p> <ul style="list-style-type: none"> <li>• CLC</li> <li>• Home-based</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul> <p>Occupational Therapy</p> <ul style="list-style-type: none"> <li>• CLC</li> <li>• Home-based</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul> <p>Post-COVID Rehab</p> <ul style="list-style-type: none"> <li>• Home-based</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul> <p>Pain Management</p> <ul style="list-style-type: none"> <li>• Home-based</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul> <p>Support Groups</p> <ul style="list-style-type: none"> <li>• Home-based</li> <li>• Outpatient Clinics</li> </ul>

Vendor	Hardware Utilized	Platform/Content Description	Populations Useful For
<a href="#">XR Health (cont.)</a>			<p>Memory &amp; Cognitive Training</p> <ul style="list-style-type: none"> <li>• CLC</li> <li>• Home-based</li> <li>• Outpatient Clinics</li> </ul> <p>Physical and Occupational Therapy [i.e., ADL Training, Cognition, Core and Balance, Low Stimulation Environments, Pain and Stress Management, Upper extremity]</p> <ul style="list-style-type: none"> <li>• CLC</li> <li>• Home-based</li> <li>• Inpatient Clinics</li> <li>• Outpatient Clinics</li> </ul>

## Infection Control Resource for XR Hardware

Vendor	Product Description	Specifications	Cost
<a href="#">Cleanbox Technology</a>	Cleanbox is a smart tech hygiene product for disinfecting AR, VR, and Communication Headsets, Controllers, and Eyewear that effectively eliminates 99.999% of all contagions in just 1 minute. Cleanbox is engineered to impact every surface and shadow of the device you're cleaning, we exploit the virus, bacteria, germ, and fungi-killing power packed inside UVC light. Cleanbox products disrupt the DNA and RNA strands of contagions, making them powerless.	<ul style="list-style-type: none"> <li>• CX4 (Cleans 4 HMDs in 1 minute)</li> <li>• 49" h x 15.5" w x 12.5" d - 34lbs</li> <li>• 124.46 cm h x 39.37 cm w x 31.75 cm d - 15.4 kg</li> <li>• Lights certified for 10,000 hours of continual use</li> <li>• Suitable for large operations</li> <li>• Cleanbox engineering for maximum efficacy</li> </ul>	Reach out to <a href="mailto:VAImmersive@va.gov">VAImmersive@va.gov</a> for more information.