



SAMSUNG HMD ODYSSEY

About Fire in the OR™ Virtual Reality Simulation

Fire in the OR™ is a room-scale virtual reality (VR) simulation app using Windows Mixed Reality (WMR) designed to simulate key scenarios related to surgical fires. It requires an active internet connection to function properly.



There are several WMR virtual reality headsets commercially available. The headsets use inside-out room-scale tracking technology, allowing the user to move in 3D space and use motion-tracked handheld controllers to interact with the environment.

First Time Windows Mixed Reality Setup

Before running Fire in the OR, there are a few tasks you'll need to complete first. First, VR runs best when your computer's hardware and software are up-to-date. In fact, some software associated with VR won't run at all unless it is updated to the most current version of the software. To make sure other software can update properly, it is a good idea to make sure your Windows OS is updated to the latest version. You will likely need administrator privileges to do this.

Additionally, the VR software is going to want the latest drivers available for the computer's graphics card. The method for updating the drivers varies by manufacturer but most manufacturers have a control panel that includes information on the driver and whether or not there is an update. The VR software will also let you know if your graphics card driver needs to be updated. You will likely need administrator privileges to do this. You may also need to whitelist the driver manufacturer's website on your firewall.

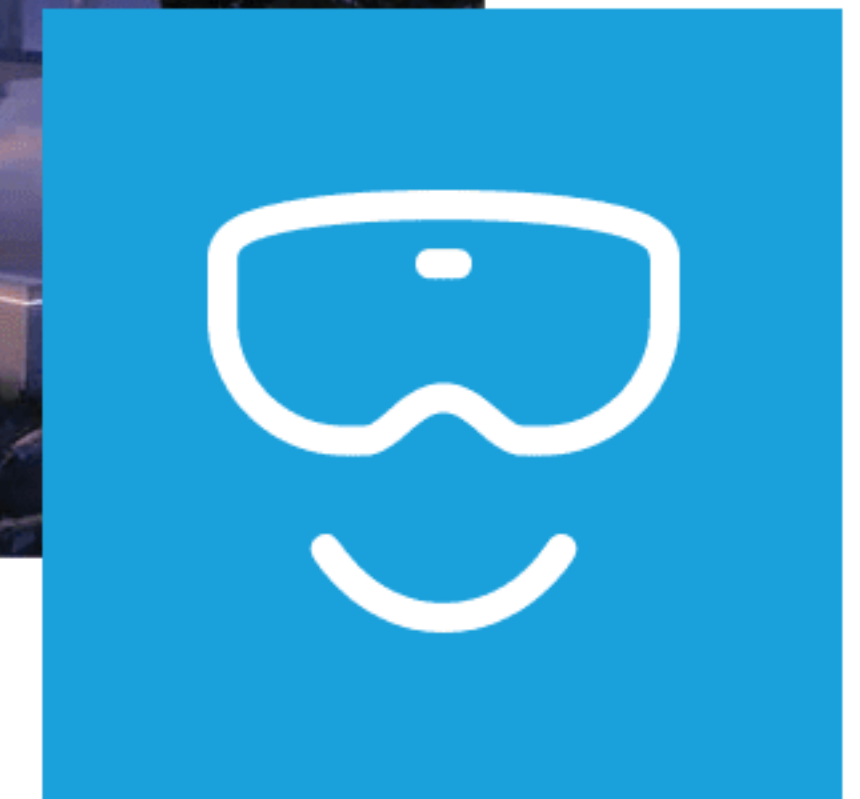
**You'll need to setup the headset and controllers.
This setup is the same regardless of who makes your WMR headset.**

☐ The setup include the following steps:

Get the Mixed Reality Portal.

WMR only runs on Windows 10 version 1803 or newer. If your version of Windows is older than that, you'll need administrator privileges and may need to whitelist Microsoft.com on your firewall to make the update.

NOTE: Depending on the IT procedures at your institution, there may be additional steps involved in being able to update the operating system. Make sure you allow enough time before you plan to launch Fire in the OR to go through proper procedures.



Updating the headset/controllers.

Once the Mixed Reality Portal is installed, plug the headset into the computer.

If using a desktop computer, make sure to plug the HDMI cable from the headset into an HDMI port on the graphics card, not the motherboard. The monitor also needs to be plugged into the graphics card.

The USB cable on the headset is USB 3.0, so plug it into a corresponding USB 3.0 port on your computer. You'll see the super-speed "ss" symbol next to USB 3.0 ports, or they are colored blue.

Turn on the hand controllers by pressing and holding the Windows button on each controller until it lights up.

Windows will detect the WMR headset and launch the Mixed Reality Portal. It will guide you through the rest of the Mixed Reality Portal setup. This includes pairing your controllers via bluetooth.



Download and install Steam.

You will need administrator privileges to install this.

NOTE: SteamVR may refuse to run unless it is updated. You'll want to be able to whitelist the Steam domain (steampowered.com) through your firewall.



Download and Create a Steam account (or login to an existing one).

Your institution needs to have at least one Steam account, which has an email address and password associated with it. The Terms of Use for Steam also say that you are not allowed to have more than one instance of Steam running at a time. You'll need one Steam account per headset if you plan to have multiple running at the same time.

Install SteamVR and Windows Mixed Reality for SteamVR.

You can search for both apps and install them through the Store inside Steam. They're free to download and use. Once installed, they will appear in your Library in Steam.

⚠ During the initial setup, Windows may need to update the firmware for the headset and/or controllers.
We recommend restarting the computer after completing the first-time setup because of the driver and firmware installations.

Windows Mixed Reality Portal

The Mixed Reality Portal comes included with the Windows 10 1803 update. It is required to use a WMR headset. When you plug in the headset to the computer, the Windows Mixed Reality Portal will automatically appear. It's also an installed app on the computer and can be found in the Start Menu or by searching for it with Cortana.

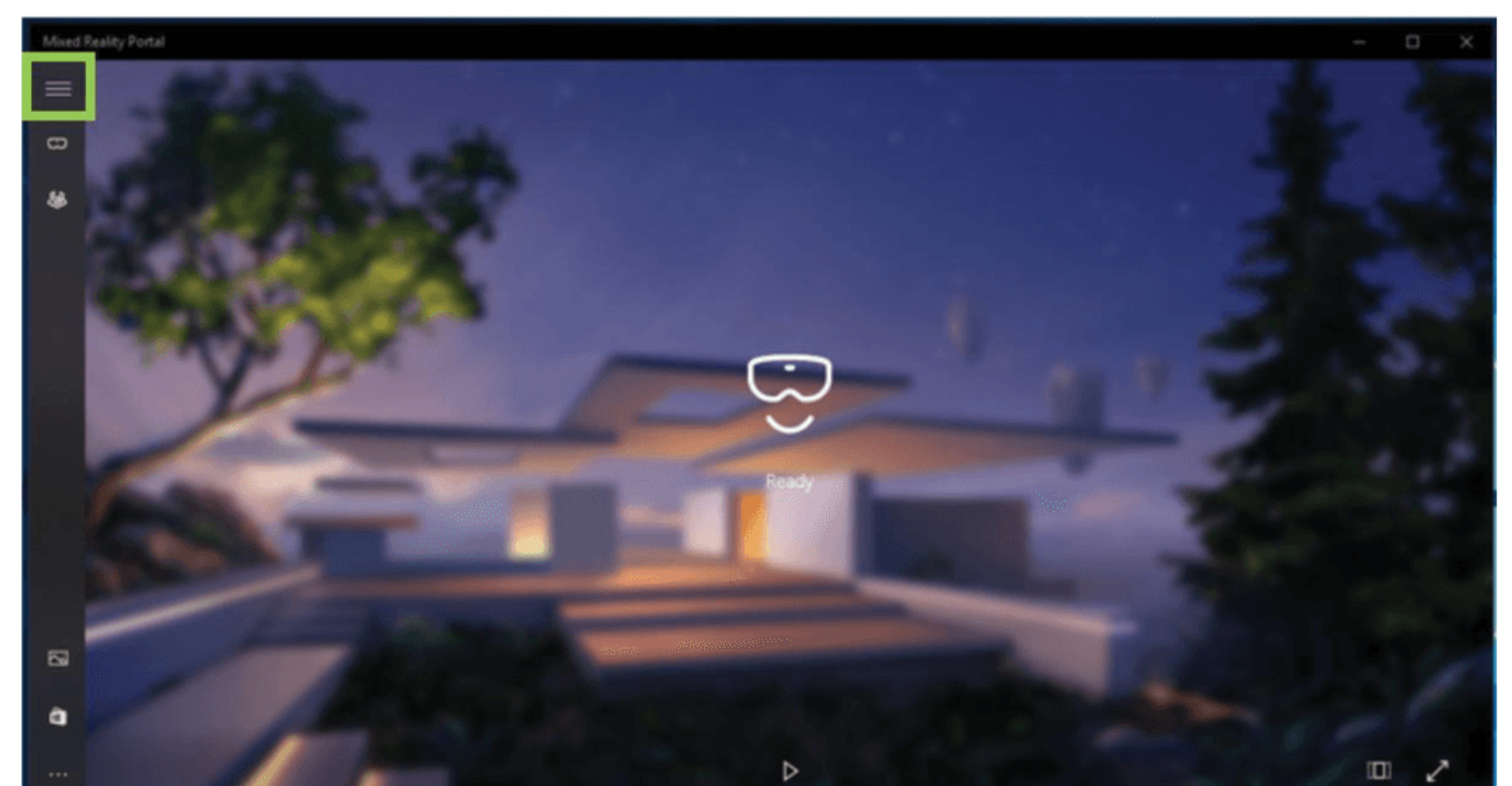
It serves a couple purposes:

- It keeps track of the status of all hardware and lets you know about firmware updates, and errors that might occur.
- It's where all the WMR specific settings are that you may need to change.
- It's where you will do the room setup.



Setting up the room-scale play area:

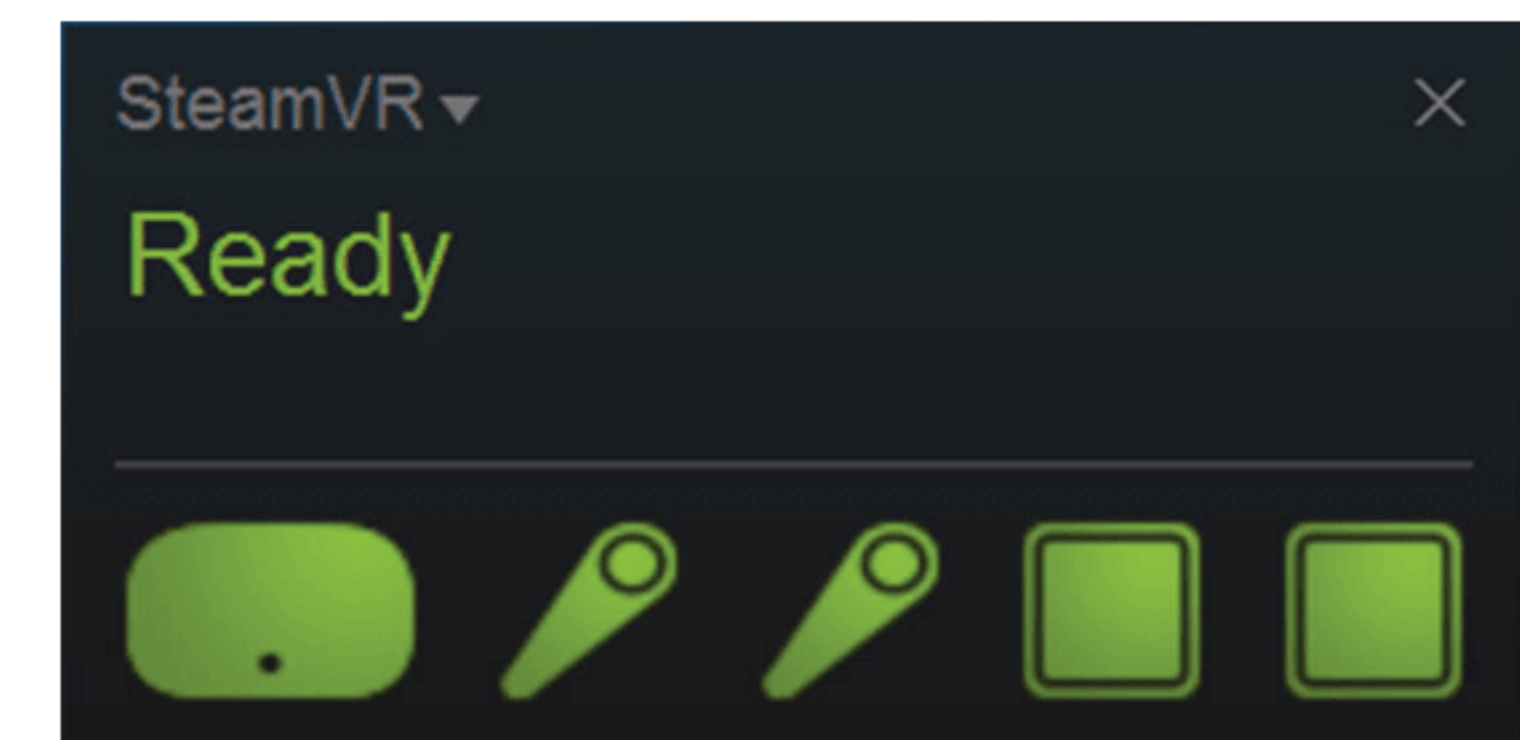
- Go to the settings menu in the Mixed Reality Portal (in the upper-left corner), click on it and choose “Room setup.”
- Follow the instructions to trace out the room setup with the headset.
- The minimum play area for Fire in the OR is 2.4m x 2.4m or 7.8' x 7.8'.
- You'll need to redo the room setup any time you move the location of the computer, or if you transfer the headset to another computer.



SteamVR

SteamVR is required to run VR applications like Fire in the OR.
There are three important functions of SteamVR:

- It receives information from the Mixed Reality Portal that our app can use to keep track of the status of hardware.
- It's where some settings you might need to change live.

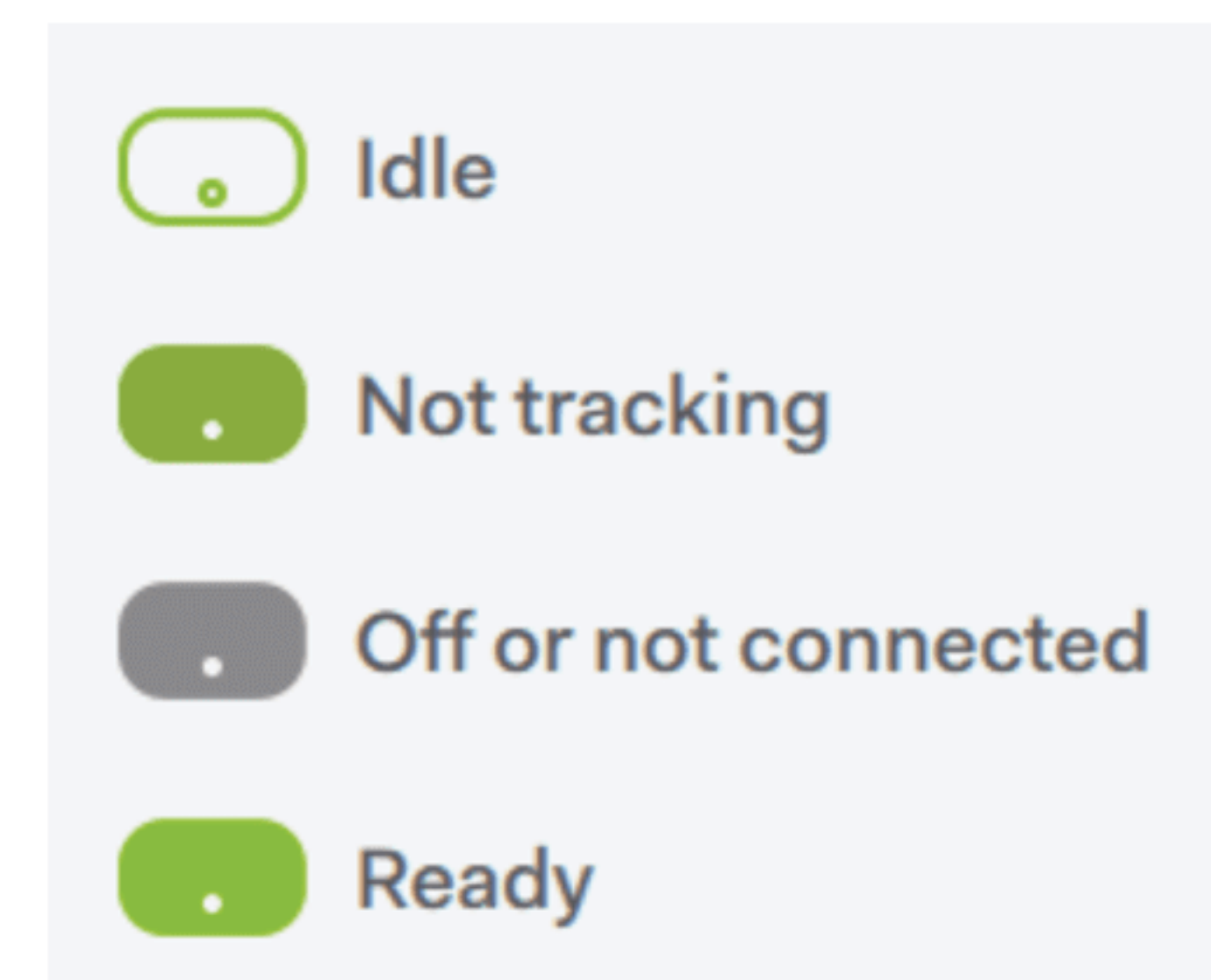


Hardware Status:

Here's an infographic that explains the different states in which the hardware can exist.

Note that "Not Tracking" will be flashing solid green.

Note that this infographic is for a different headset, so yours will differ slightly.



■ Best Practices for VR

SteamVR

Direct Mode is the recommended display option for the headset and comes as the default option.

Windows Mixed Reality Hardware

- For permanent installations, the VIVE Pro comes with a sticky pad for the Linkbox to attach it to a solid surface. This will help prevent the Linkbox from falling off the table as users walk around the play area and help keep the cords from coming out.
 - The WMR tracking system is sensitive to light. For best tracking, make sure the area is well lit and that the lighting conditions don't change often. Changes in lighting (i.e. sunlight through a window throughout the day) can mean the headset will have trouble tracking because the room doesn't look the same to the cameras on the headset.
 - The WMR tracking system was designed to work in normal working environments. Having distinguishing features in the room (decorations, furniture, points of contrast, etc.) improve tracking vs a completely blank room (white walls, white ceilings, etc.) because it gives the system trackable features to scan the room.
 - It's possible that the WMR headset will forget its room scan if it spends too much time outside of the boundaries. This will result in the headset not having all its tracking capabilities and should be fixed before a user attempts to use any VR application, as it may make them feel nauseated.
- The WMR software will normally tell you when it has lost its boundaries and instruct you to stand in the middle of your space and look every direction, to help the headset reset itself.
- You can also redo the room setup if the headset is having trouble repositioning.
- The hand controllers are tracked by the cameras on the front of the headset. Make sure the hand controllers are in direct line-of-sight of the headset.
 - Controllers run on 2 AA batteries each.
 - Both the headset and controllers will fall asleep if they're idle for a period. The controllers go to sleep after about 15 seconds and the headset after 15 minutes

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Before Running Fire in the OR

Download the application from one of the following locations:

- You will receive an email from Health Scholars with a download link to the latest version of Fire in the OR.
- You will also be able to download the application by visiting the [Health Scholars One Blended Learning Platform Portal](#). Click on the “Support” button on the lower left-hand corner of the page. Enter “Fire” in the search bar. Click on “Health Scholars Fire in the OR VR FAQs” and you’ll see a link to the latest version of Fire in the OR.

Installing Fire in the OR

There's no installer for Fire in the OR, just unzip the downloaded folder to the desired location. We recommend creating a desktop shortcut for easy access. It will need to be available to anyone who logs on to the VR computer so you may need to place it in a ‘public’ desktop folder.

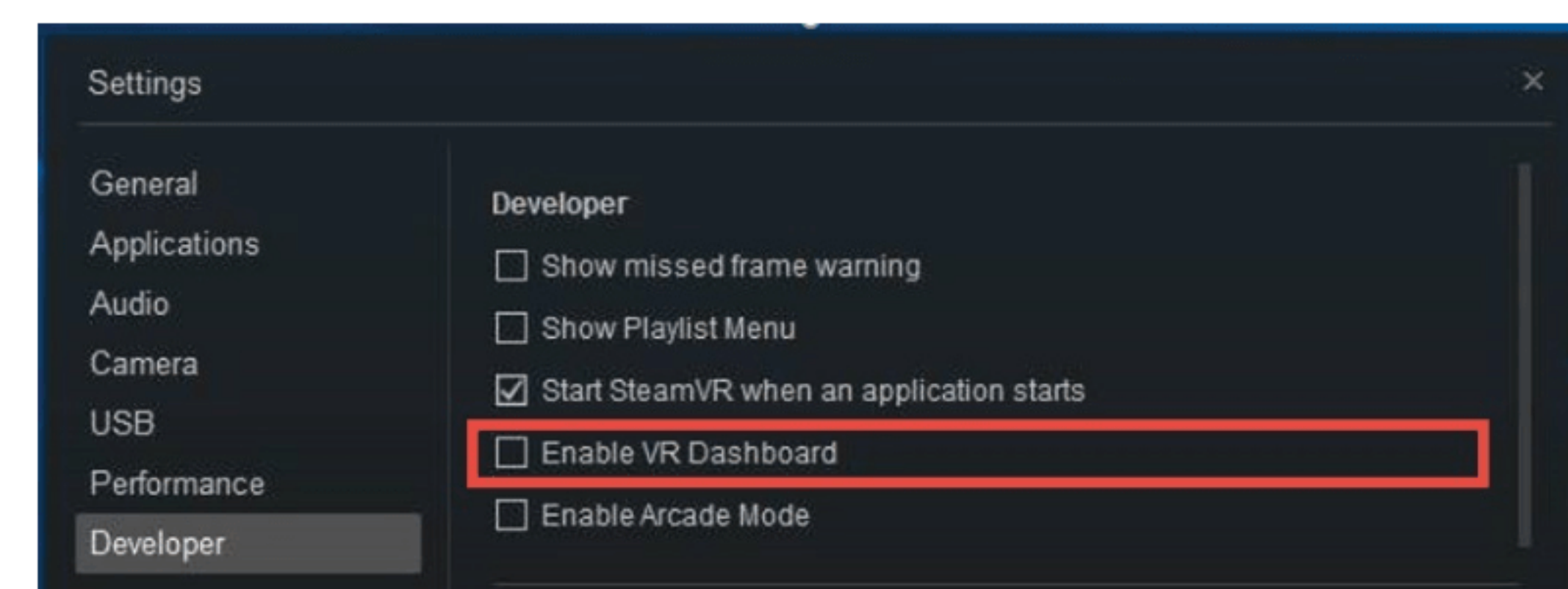


Recommended SteamVR settings

There are a couple important settings that we recommend you change in SteamVR.

SteamVR Dashboard:

We highly recommend turning it off. We can't guarantee parts of the Fire in the OR app will function properly when the SteamVR Dashboard is activated.

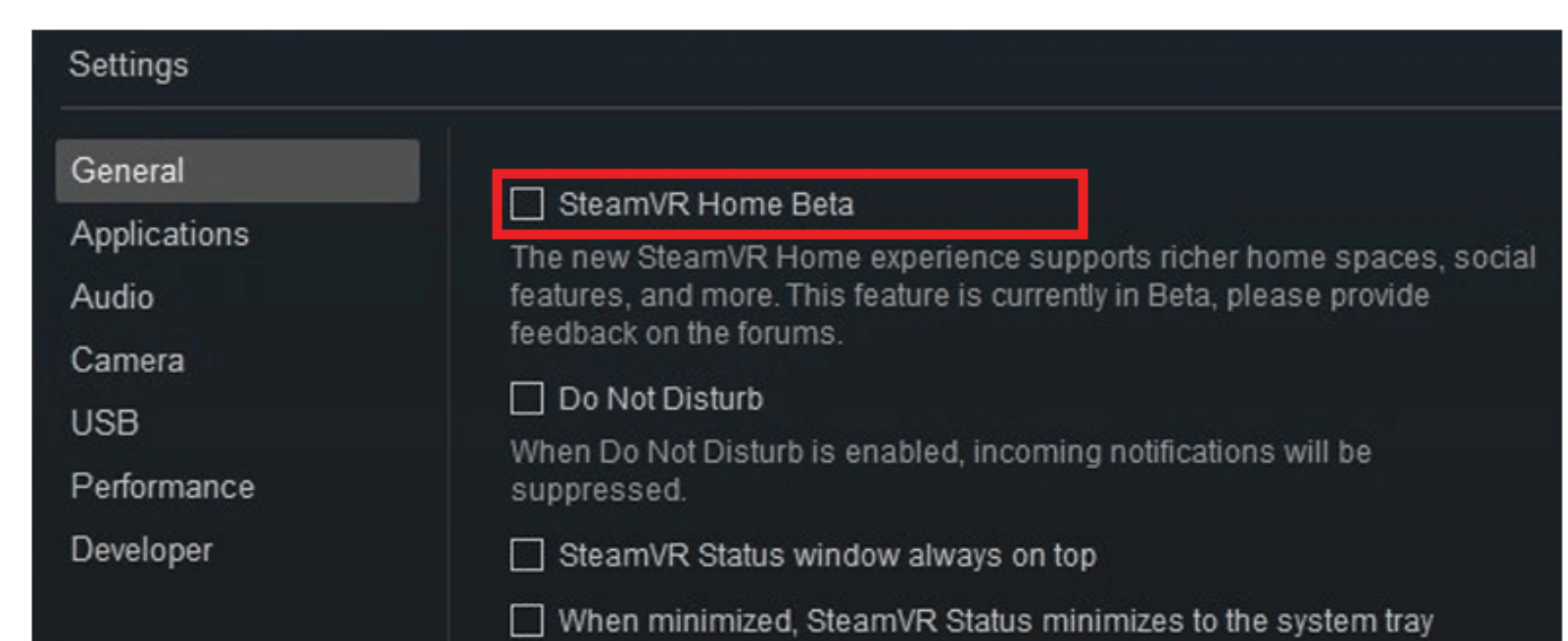


Go to Settings > Developer > Uncheck "Enable SteamVR Dashboard"




SteamVR Home

When SteamVR launches, it loads into SteamVR Home by default, which is a VR play-space. Users can also access their Steam account and other features here,. We recommend turning it off, as it causes additional stress on the hardware when idle, as SteamVR Home launches whenever a VR title isn't playing.

- Settings > General > Uncheck "SteamVR Home"



Running Fire in the OR

-  Have at least one charged controller turned on.
-  Ensure SteamVR is running and the status icons of the headset and controller(s), are solid green and working.
-  Launch the Fire in the OR executable.
The file name should follow the format: “FiOR_Release_VersionNumber_Date.exe”

Troubleshooting

STATUS LIGHTS AND ICONS

Controllers

Lights *turn on* and controller *vibrates once* = turning on

Lights *turn off* and controller *vibrates twice* = turning off

Lights *blink dimly* every 3 seconds = sleeping

Controller *vibrates once* = connecting or disconnecting from the computer

Lights *brightly lit* = controllers tracked by headset

Lights *dimly lit* = controllers not tracked by headset

Controller *vibrates three times* and then *turns off* = critical battery level

The outer and inner rings of the *lights blink in an alternating pattern* = updating controller firmware



SteamVR

Green when the device is working and tracking

Flashing Green when the device is connected but not tracking

Outlined Green when the device is idle

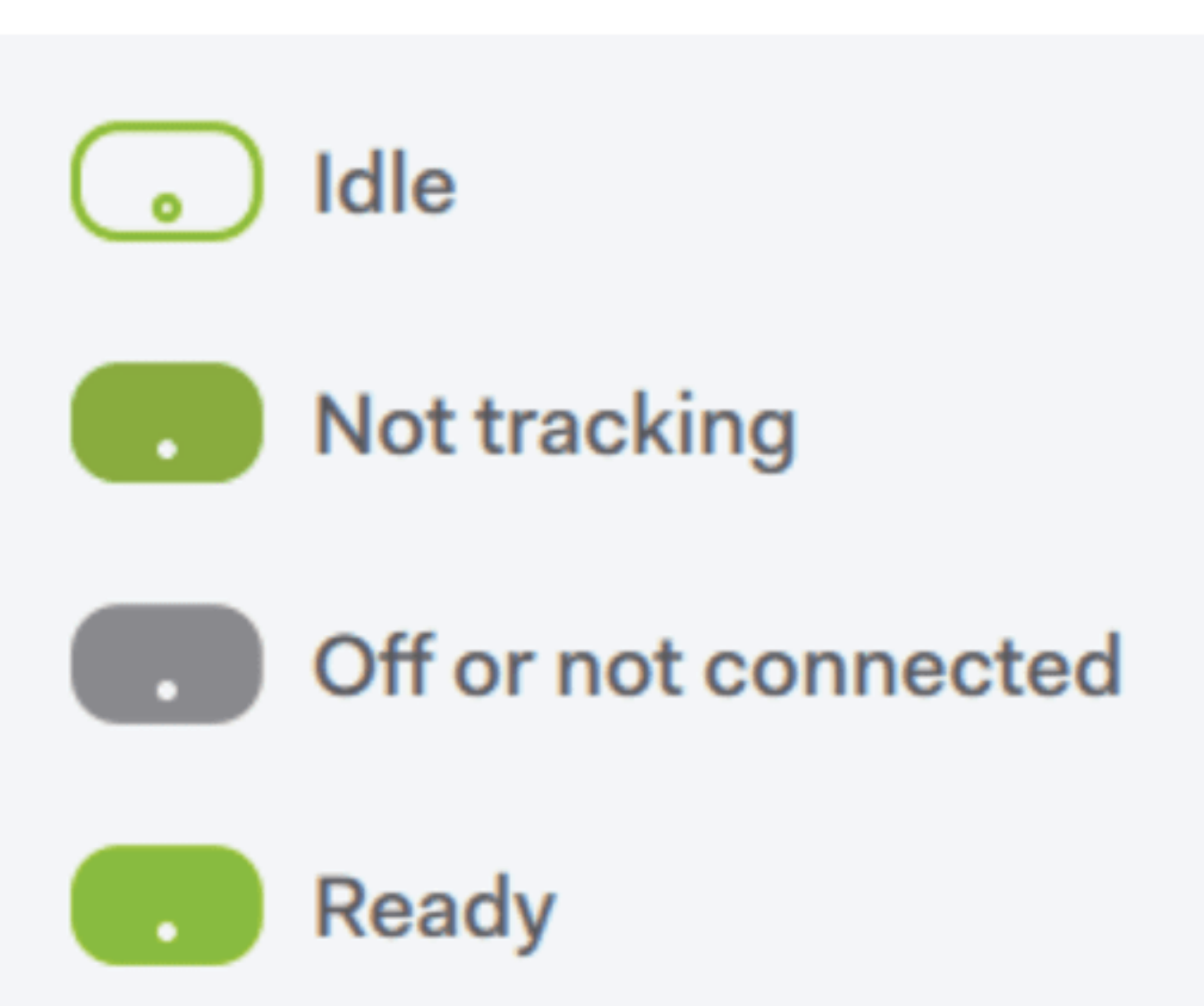
The headset will stop rendering after a few seconds of not being worn

Grey when the device is powered off or SteamVR can't find it

An icon being absent entirely means SteamVR can't find it

No icons/error message

SteamVR will display an error message, which normally comes with instructions to fix the error



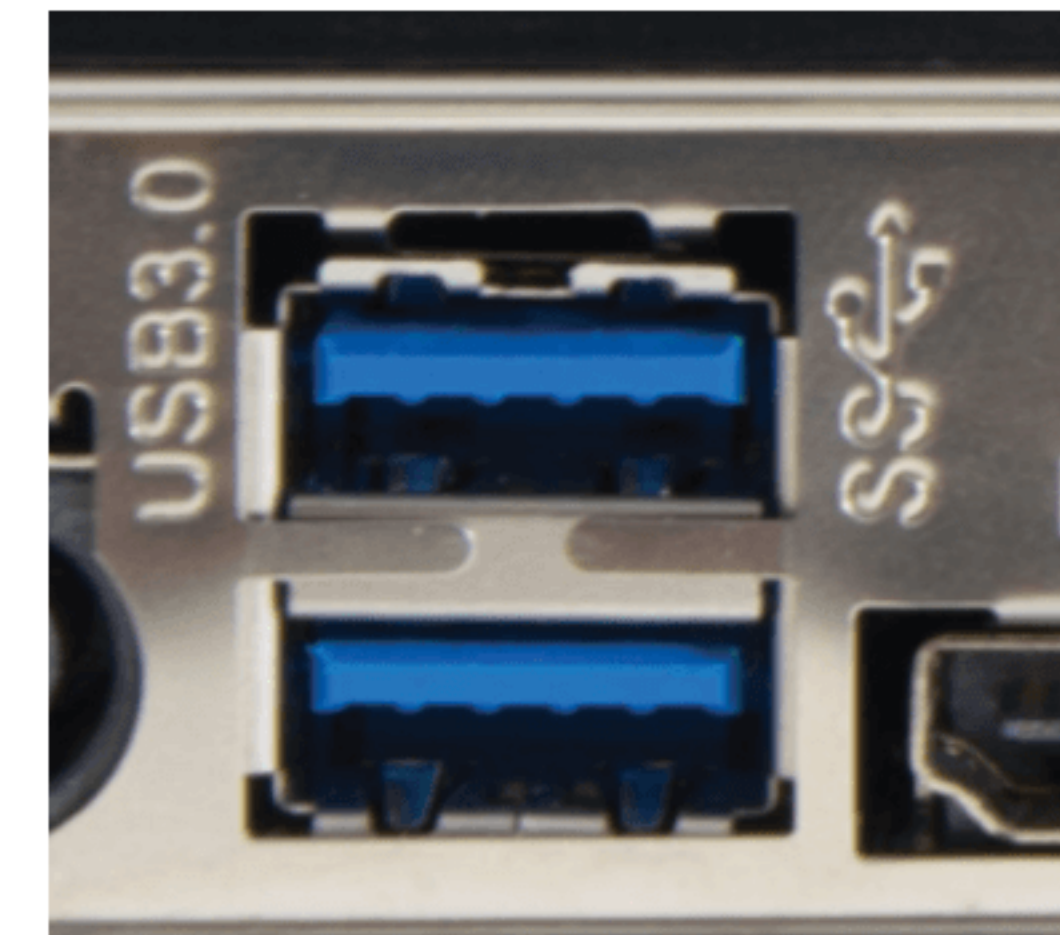
Troubleshooting

COMMON PROBLEMS

SteamVR

Everything is plugged in correctly but SteamVR says it can't detect the headset

- Make sure the USB cable is plugged into a USB 3.0 port that has the "ss" logo.
- Make sure the HDMI cable from the headset is plugged into a HDMI port on the graphics card, not the mother board.



Everything was working and I randomly lost tracking and can't get it back, even if the controllers are directly in sight of the headset

- Sometimes this happens due to the USB power management settings in Windows 10
SteamVR > Settings > Developer -> scroll down to the bottom and find "Disable Power Management."
- This can happen sometimes when the computer goes to sleep, as well
Shut down SteamVR and the Mixed Reality Portal and restart the Mixed Reality Portal (that will restart SteamVR too).
If that doesn't work, restart the computer.

SteamVR error says the compositor is not found

- Occasionally SteamVR can't launch the compositor when launching SteamVR. The compositor renders the view inside the headset.
Click the "Launch Compositor" underlined button in the error message and restart SteamVR.

SteamVR is showing an error

- Restart SteamVR**
Click the "X" at the top right of the SteamVR window and relaunch it. Or:

SteamVR > Devices > "Reboot headset"

Troubleshooting

COMMON PROBLEMS

Fire in the OR

The floor height doesn't match the real-world floor, or the room looks off or slanted

- The Mixed Reality Portal has a feature to set the floor height.

Exit Fire in the OR but keep on the headset.

Press the Windows button on the hand controller.
A menu will appear and you'll point at and click on the Home icon.


If you didn't turn off the SteamVR home, you'll be taken there and you'll need to press the home button again.

You'll be in the Windows Mixed Reality Home.

Click on "All Apps" and another menu will appear.

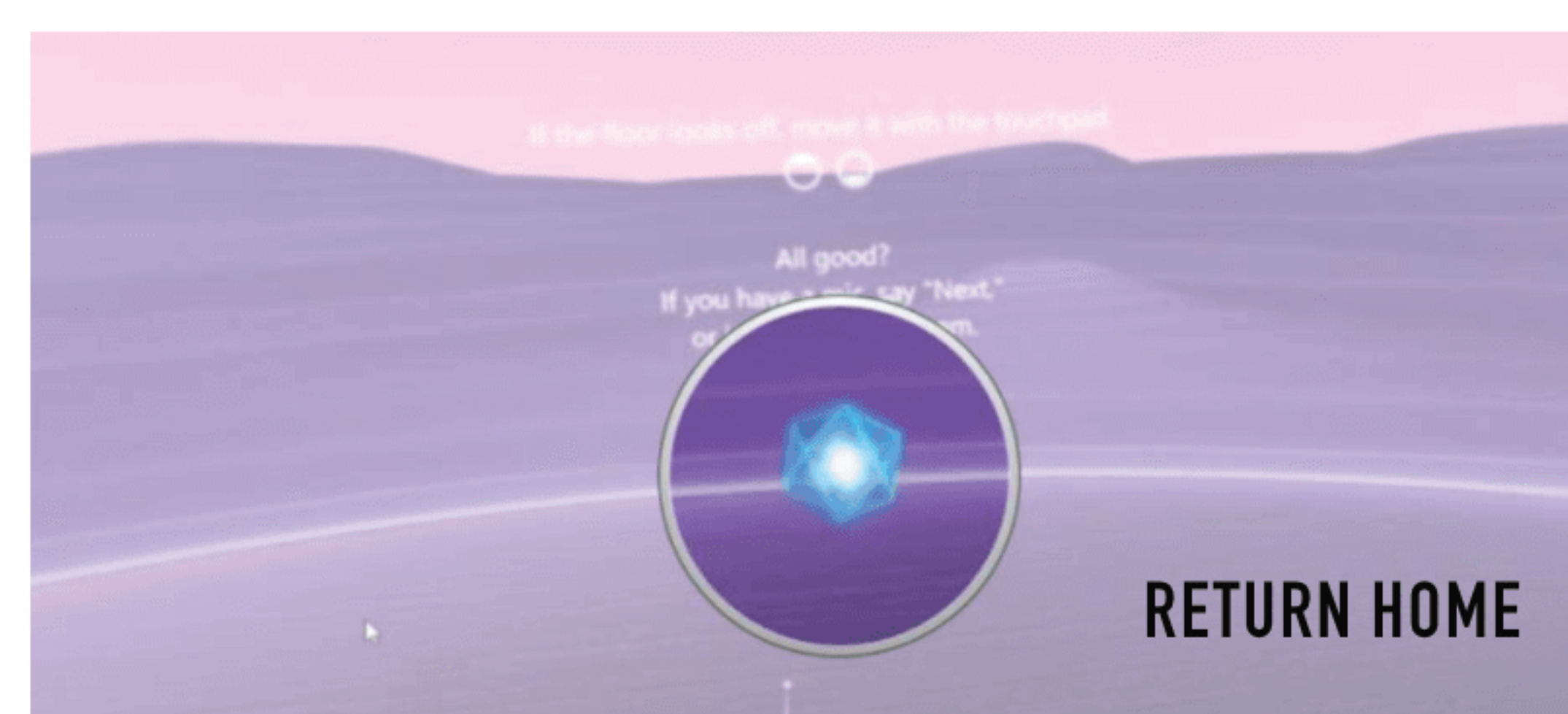
Click on "Room Adjustment"

Place the hand controller on the physical floor.
If the height is wrong, the controller will either appear to be floating or it will partially/completely disappear into the floor.

Tap up or down on the hand controller touchpad to raise or lower the virtual floor to match the physical floor. 

When you're finished, click the glowing orb to return home.

Restart Fire in the OR



Troubleshooting


COMMON PROBLEMS

Fire in the OR

The application isn't frozen but none of the controls work and you can't continue

- This is likely because the user accidentally pressed the Home button on either the headset or the hand controls. If this is the cause, you'll see the SteamVR dashboard in the headset. To get rid of the dashboard and continue, press the Home button again. The Home button is the small depressed button above the big round touchpad on the hand controllers.

All of the sudden I could see a black and white view into the physical world in my VR headset

- This occurs because the user has accidentally activated 'flashlight' mode in WMR. To deactivate it, press the Windows button and the Grab button. 



Getting Additional Help

For additional help with Windows Mixed Reality visit:

<https://docs.microsoft.com/en-us/windows/mixed-reality/enthusiast-guide/troubleshooting-windows-mixed-reality>

For additional help with Steam and SteamVR, visit:

https://support.steampowered.com/kb_article.php?ref=5254-FJKZ-7829

For addition help with Fire in the OR and all other questions, contact us at:

<https://healthscholars.com/> or [888.584.8845](tel:888.584.8845)