Setting up Massless in SteamVR

This is an OpenVR / SteamVR driver to add support for the Massless Pen to the OpenVR ecosystem.
It is currently at an early stage.

We have the basics working, it tracks, it links the coordinate systems up with the Vive Base Station, Oculus tracker or Vive Tracker on top of the Massless Tracker. The capacitive sensor reading is being passed through as a 1D touch slider input, which I've found can be mapped to a "button" like "Right Trigger Press". The surface sensor reading is also being passed in.

Warning

This is incompatible with the installed version of Massless Studio. If you use SteamVR to run Massless Studio, you cannot have the Massless OpenVR driver installed (the "massless" folder in drivers). It will lock the camera and prevent the other application from using it.

A second issue is that the Vive Base Station V2 is not yet supported.

Version

The driver is at version 0.5.2 as it is early stage.

It can be found at the following link:
https://massless.io/DownloadSDK/MasslessOpenVRDriverV0.5.2.zip

Attaching the Vive Tracker to the Massless Tracker

For the Vive Tracker you need to manually line up the serial number rectangle, with the front of the Massless bracket. This is done instead of any other type of 3rd party tracker, after the Massless Tracker is screwed onto the bracket. The charging port of the Vive Tracker should be at the back when you are looking at the whole setup.

Note: There is an issue in V0.5.2 where the Vive Tracker is not correctly detected.

Installation

To "install" this plugin:

Global Install (for all users)

Find your SteamVR driver directory, which should be at:
`C:\\Program Files (x86)\\Steam\\steamapps\\common\\SteamVR\\drivers`
and copy the `massless` directory into the driver directory.

Your folder structure should contain something like this:

- gamepad
- htc
- indexcontroller
- indexhmd
- lighthouse
- massless
- null
- oculus
- oculus_legacy

Local Install (for you)

Place the `massless` directory somewhere sensible on your computer, and remember this directory.

Navigate to `C:\Users\<Username>\AppData\Local\openvr` and find the `openvrpaths.vrpath` file.

Open this file with your text editor of choice, and under `"external_drivers"`, add another entry with the location of the `Output\driver\massless` folder. For example:

```
{
  "config": ["C:\\Program Files (x86)\\Steam\\config"],
  "external_drivers": [
    "C:\\Program Files (x86)\\Steam\\steamapps\\common\\Natural Locomotion\\driver\\00natural",
    "C:\\Users\\<Username>\\Documents\\OpenVRDriver\\massless"
  ],
  "jsonid": "vrpathreg",
  "log": ["C:\\Program Files (x86)\\Steam\\logs"],
  "runtime": [
    "C:\\Program Files (x86)\\Steam\\steamapps\\common\\SteamVR",
    "B:\\Games\\Steam\\steamapps\\common\\SteamVR",
    "B:\\Games\\Steam\\steamapps\\common\\SteamVR\\",
    "C:\\Program Files (x86)\\Steam\\steamapps\\common\\SteamVR\\"
  ],
  "version": 1
}
```

Settings

To tell SteamVR which hand you typically are holding the pen in, you can tell it the handedness of the pen. This is an optional settings that can be configured for this driver. In the `C:\Users\<Username>\AppData\Roaming\Massless\driver_massless.json` file, you can set your handedness, and possibly change the reference serial if you need to. An example file is as follows:

```
{
  "enable_detailed_logging":true,
  "pen_handedness":"right",
  "attach_gizmo": false
  "tracking_reference_serial": "WMHMDSomeOculusSerial_Camera0"
}
```

Tracking Reference Configuration

If you need to explicitly set the tracking reference, ie. which device is attached to the top of the Massless Tracker. You will need to use the serial number of the device, finding out what this number is varies depending on the type.

Oculus Tracker Serial Numbers

The Oculus Tracker does not use its own serial number in SteamVR, it uses the serial number of the headset (HMD) with _Camera0 appended (or _Camera1). You can find your HMD serial number in the Devices tab of Oculus Home.

SteamVR may not maintain consistent serial numbers for the Oculus trackers, so if you put _Camera0 in it may work fine, or it may not, in which case use _Camera1 but then next time you boot that one may be _Camera0. If you have one tracker, it will always be _Camera0.

Vive Lighthouse Serial Numbers

For Vive Lighthouses, find the text marked **ID** (NOT the number marked S\N), and add **LHB-** to the beginning. It is printed on the back of the base station itself.

Vive Tracker Serial Numbers

For Vive Trackers, the serial number printed on it is not the one you need to use. Once paired, you should be able to see it in the SteamVR app. Right-click on it and choose "Manage Trackers" and a window will open where you can select the role for the tracker (I don't think it matters what you select for this application), then you have the serial number of the tracker, and a status indication. The serial number should look like this "LHR-XXXXXXXX" where the X are hex digits.

Errors

Any errors in initialisation or running of the driver will be logged to the SteamVR log file, located at

`C:\\Program Files (x86)\\Steam\\logs\\vrserver.txt`.

Any errors with the Massless Pen tracking itself, along with warnings and information, will be logged in `<UserDirectory>\\AppData\\Massless\\MasslessLogfile.log`.

Bindings

When SteamVR launches an application, you will have the opportunity to assign bindings. These should at least assign bindings for the required inputs, but you may want to assign others. Do not assign both the capsense slider and the capsense front and rear "triggers" these work off the same physical input and therefore it will go wrong and be confusing if they are both bound in the same app.

Extra Notes

- We supply the actual physical inputs (capsense slider, surface sense), but it is easier to map these to other ones for integrating in other software. We supply a front and rear capsense as triggers, these must not be bound at the same time as the capsense slider.
- On the SteamVR Beta branch currently, you can access via settings a controller debug tool that shows the inputs a controller has.