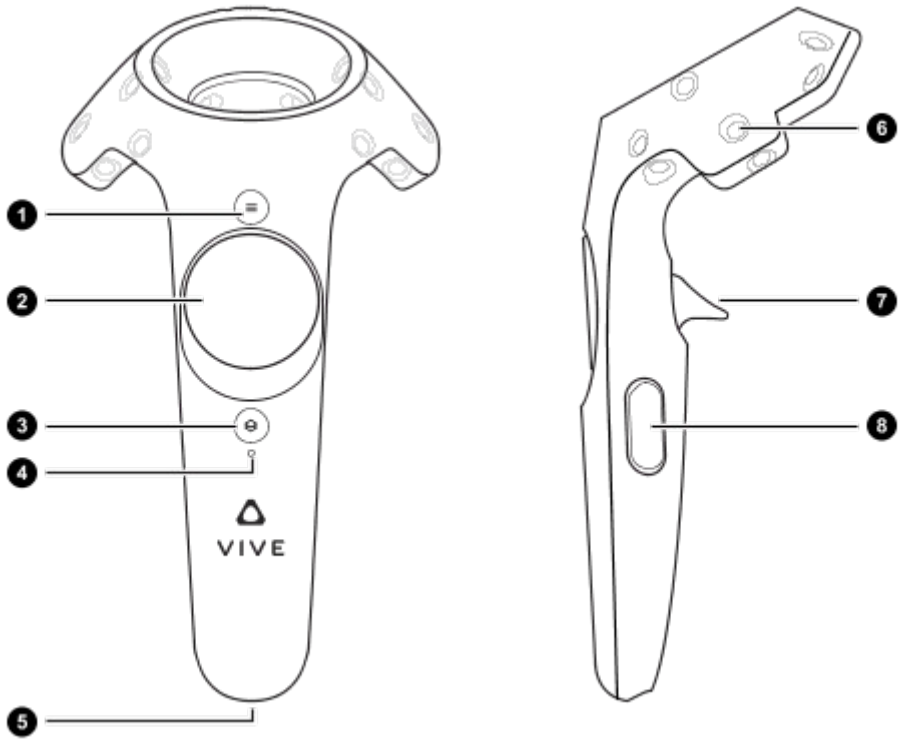
Model Viewer User Guide

Table of Contents

HTC Vive Controller buttons:



Controls used by Model Viewer:

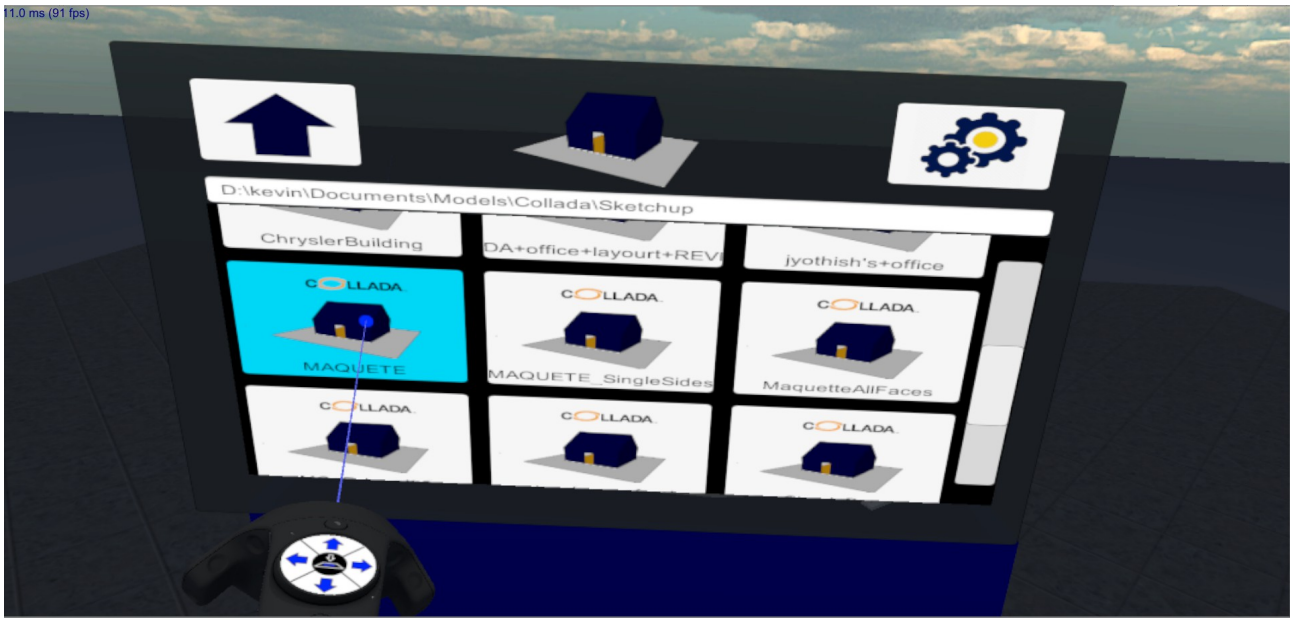
1. Menu
2. Trackpad
3. Steam menu
7. Trigger

Activating the Menus

Press button (1) to show the menu
Press button (1) again to hide the menu
This can be done on either controller
The menu will appear in front of you in the direction you are looking

If you can't see the menu, it may be behind an object in your model. Either move away from the object or turn your head to a more open space.

Selecting from the Menus



Point either controller at a menu item
If it goes light blue, it is selectable
Select an item by pressing the trigger (7)
To cancel the menu, press button (1)

Model Selection Menu

Selecting the up arrow navigates to the folder above this one. (You can also access other drives using this.)

Selecting the 'cogs' activates the options menu

Model Selection

The buttons in the scrollable list show all of the Collada files that are present in the current folder. These are files that have the .dae extension. Click on a button to open the file.

The list also shows the subfolders of the current folder.

(Subfolders with the same name as a .dae file are not show in the list as these usually just contain other files associated with that model.)

Scene Selection Menu

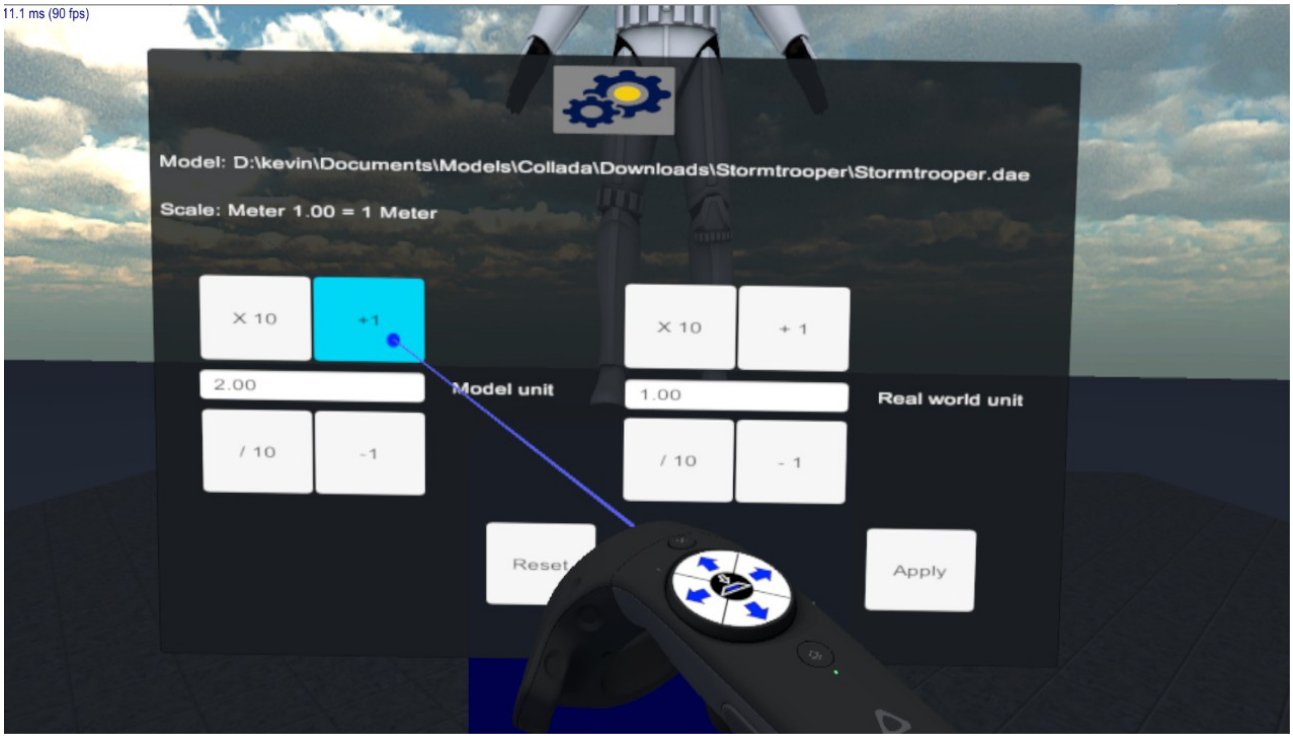
The scene selection menu shows the scenes associated with the model. Scenes created in SketchUp will appear in this list. Select a scene and you will be transported to that camera location in the scene.

Where possible the Model Viewer will position you on the ground at the given location. But if the camera position is in free space, you will be positioned exactly at the camera position.

Back to the Lobby

Selecting this button will return you to the Lobby View.

Options Menu



Model Viewer reads the model units from the Collada file. So in most cases the model will be displayed at the correct scale. If the model has the incorrect units; they can be modified using the options form.

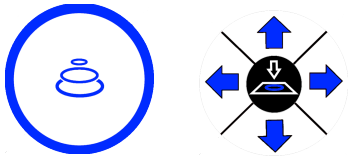
Create a ratio between the model units and the real world units by pressing the buttons.
For example, if the model is twice as big as you want it to appear.
Set the Model unit to 2 and the Real world unit to 1
Press Apply to keep the changes you have made
Press Reset to restore the ratio to 1:1

Top Level Menu

When the currently loaded model has scenes. Selecting the menu with button (1) will show the top level menu. You can then chose whether to change Model, Scene or Options.

Trackpad Controls

If you look at the trackpads in the game they will appear as:



Teleporter

Switch on/off the teleporter by clicking the trackpad. When it is on, a ray will appear from the controller showing where the teleporter is pointing.

If you point the teleporter ray at any object in the model and then press the trigger button (7) you will be transported directly to that location.

The destination of the teleport will be shown with concentric circles at the location.

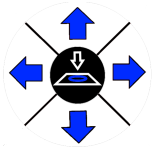
In the lobby, the teleporter can by used to teleport into the model on the table:

The destination of the teleport will show a person standing at that location. The size of the person indicates the scale. This is the size a normal person will appear in the model once they teleport. (So this also helps us tell if the scale of the model is wrong)

When teleporting into a model, the direction of the person also indicates the direction you will be facing when you teleport in.

Model viewer makes no limitations to where you can teleport. Any point on any surface in the original model can be selected.

Relative movement

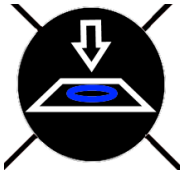


You can move around the model using the controller showing these controls on it's trackpad.

To move forwards, point the controller forwards so that the 'forward' arrow on the trackpad lines up with where you want to go. Then press the trackpad on the 'forward' arrow.

To move backwards, left or right; keep pointing the trackpad in the forward direction, but press the other arrows.

Each click of the trackpad will result in a 1 meter (~3 feet) movement in the given direction. For fine movement, hold in the trigger (7) at the same time as clicking the trackpad. This will result in a 10cm (~4 inch) movement.



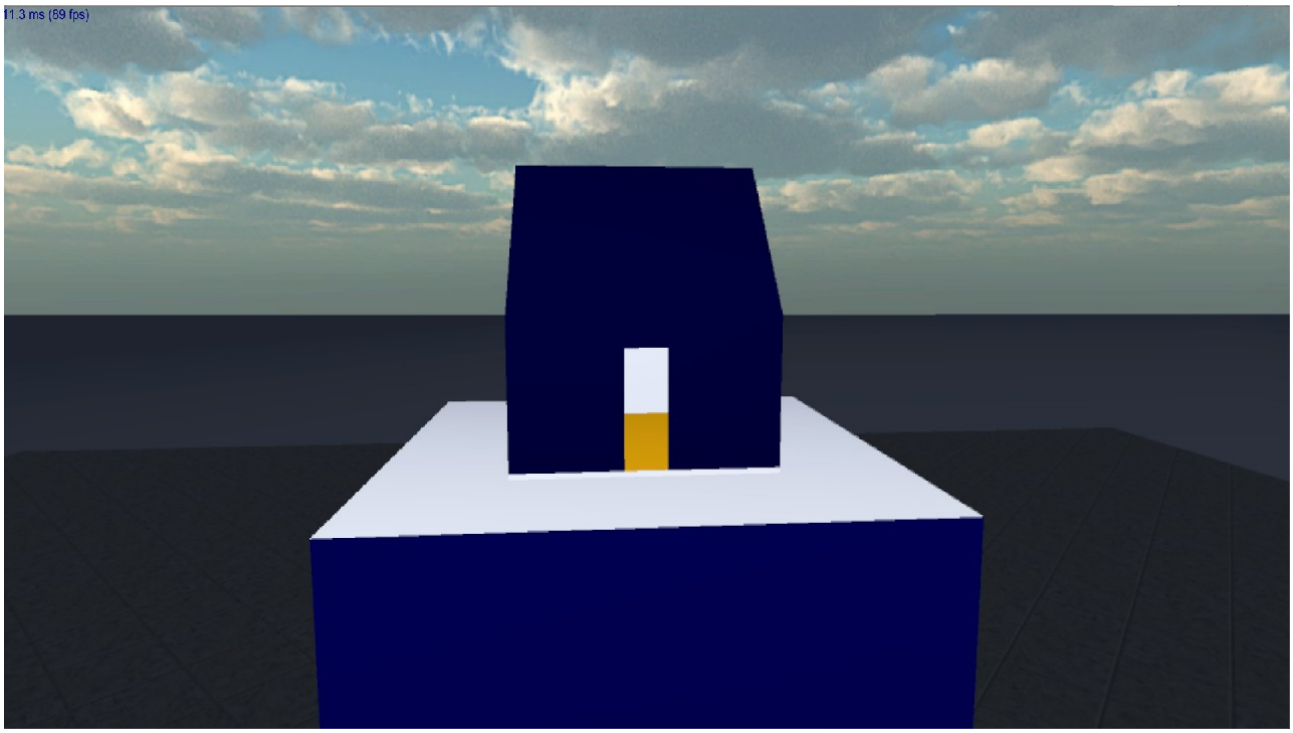
In the centre of the trackpad is the 'drop to ground' button. If you are above a surface in the model by less than 5 meters; pressing the middle of the trackpad will drop you directly down onto the surface.

The Model Viewer tries to sensibly position you on the ground.. When performing movement, if the controller is held horizontal to the ground, and you are currently in contact with the ground. It will try to position you on the ground in the location you are moving to. So for models with undulating terrain, it should be possible to move around the scene using the arrow buttons and remain attached to the ground.

Flying around the scene

The arrow keys on the trackpad are not limited to horizontal movement. Just point the controller where you want 'forward' to be, then use the buttons to move around. For example, pointing the controller directly upwards and then pressing the forward button will move you up in the air by 1 meter.

The Lobby



This is the main location of the Model Viewer. When a new model is loaded, it will be shown on the table in the lobby. From the lobby you can move into the model, either by teleporting in, or by using the scene selection menu.

You can move back to the lobby from inside the model by pressing the menu button (1) and selecting “Back to Lobby”

The same controls work in the lobby as in the model. i.e. teleporting and relative movement.

But pointing the teleporter at the model in the lobby has extra features (See teleporter above)

When the Model Viewer is first started, a simple placeholder house is shown on the table. This will be replaced when another file is loaded.

Exporting Collada files from SketchUp

(For useful information See: https://help.sketchup.com/en/article/3000168)

File -> Export -> 3d Model

The default choice is Collada format

Select the "Options button"
The following choices are required for the best results:
- Don't select "Export hidden geometry"
- Select "Triangulate all faces"
- Select "Export Texture Maps"

Other options can be selected/de-selected as you wish.
- Don't select "Export two sided faces" - unless you need to be able to view objects from the inside.
- Export Edges - Model Viewer doesn't currently display these. But they can be exported if you want.

Exporting Collada files from Blender

File-> Export-> Collada

If this export option doesn't exist, you will need to install the collada export plugin to Blender first.

Export options:

You will need to modify the default export options.

Export Data options:

Mirroring:
Make sure the "Apply Modifiers" choice is selected if the model has mirroring:
http://stackoverflow.com/questions/26269003/blender-mirror-modifier-doesnt-export-mirrored-half

Textures:
Select "Include UV textures"
Select "Include Material Textures"
Select Copy

Collada Options:
Select "Triangulate"
Select "Use Object Instances"

Exporting Collada files from other tools

The Model Viewer supports a subset of the complete Collada specification. So if the tool you are using has options for the type of output to be generated. The following guidelines will help:

- Where possible export models using Collada meshes
- Collada polylists with a vertex count of 3 is also OK
- lines, trifans, tristrips and linestrips are not rendered in the Model Viewer
- Don't create meshes with more than 64k vertices
- Only create two sided objects when you need to be able to view the object from inside and outside.
- Only use textures that are of the supported types: PNG, JPG, TGA and 24 bit BMP

Note: Model Viewer has only been tested with SketchUp and Blender output. So feedback/sample files would be useful if you are using another tool and the ModelViewer doesn't correctly display the Collada output.

Limitations:

I have used Blender 2.76b and can see that the Collada exporter is not working correctly. The exported .dae file does not contain correct references to the textures used. The Model Viewer will show a Blender exported file, but the texturing will be incorrect.

The Model Viewer can represent the Collada object types 'mesh' and 'polylist'. Polylist is restricted to lists that have a vertex count of 3.

Meshes and polylists have a limitation of 64k vertices. Any mesh with more than this number of vertices will not be shown.

The model viewer does not show Collada 'lines' (for performance reasons).

Textures stored in JPEG, PNG or Targa formats can be read by the model viewer. 24Bit BMP files can also be used. But no other BMP subtypes are supported.

When exporting your model, you must decide if two sided faces are required. If your model is complex and Model Viewer is struggling to render it, then change the model to single sided faces.

Flashing in the model (Z-fighting)

Model Viewer tries to reduce Z-fighting by limiting the depth of the camera depending on the size of the model. However if the original model has Z-fighting issues, Model Viewer cannot fix them. If you see Z-fighting in your SketchUp model, then try to fix it in the model. Due to the high frame rate of the Model Viewer, the appearance of the Z-fighting in the Model Viewer will be worse than it is in SketchUp.

Optimisation:

The Model Viewer has a simple method of optimisation. When the framerate drops below 60fps for more than 5 seconds, the secondary meshes will be disabled. This means that for a particular object in the Collada model; if it has multiple associated meshes, only the first mesh will continue to be shown.

As SketchUp uses multiple meshes associated with an object to represent two sided faces. This approach will optimise out the 2nd faces from a SketchUp model.