The design of the interfaces between Human and Computer interaction is designed so that the user can get the easy feel of the environment as if they were there. In this project we have multiple different types of displaying our interface. Our interfaces change depending on our device interaction with the user. The user can choose between the uses of multiple devices to achieve their goal in the simulation. The idea is to test which selection of devices would be most suited to solve the problem. Each set of devices contains its own interface to bring the user into the simulation.

The design of the interfaces between software and non-human entities are almost the same for every selection of the devices. The drivers which are installed on the computers are the direct link between our program and the devices. Our program is then written to hand certain inputs from the devices as given by the device drivers. We program our interfaces according to what we need to perform in the simulation. Unity is what is being used to setup our programming interface and our main link between our code and the devices.

Inputs: Each device has different input methods.

Occulus Rift – Windows Kinect

The input for these devices are the motion and movement sensor of the Kinect and the head rotation and movement sensors of the Occulus. When the user has put the Occulus Rift headset on they can move their head to move their head in the simulation. If the user is standing in the line of sight of the Kinect the user may now move their own body parts with correct results in the simulation to the max extent of the Kinect capabilities.

Some of the finer inputs with the Kinect will be using the gesture control that is inbuilt into the Kinect sensor. We can use these gestures to give the user some other options as we do not want them walking around the room. We will make use of gestures to move the user forward when they pull with both hands and stop when they push. More gestures may be added in later for more control over the simulation.

The Occulus movement follows through with all the combinations.

Occulus Rift – Razer Hydra

The Razer Hydra is controlled by holding the joysticks supplied. They have multiple buttons on then which allow the user to perform certain actions with their hands. Unlike the Kinect they do not have full control over every limb of their body and may only use their hands. The user can use the buttons on the side of the Razer Hydra to perform certain hand gestures. Left joystick on the Razer Hydra is for player movement. The right joystick is for camera movement(Debugging purposes).

Occulus Rift – Leap Motion

The leap motion is a hand sensor so the user just has to put the Occulus Rift head set on and the leap motion should be attached and ready to receive hand movement information. Some gestures can be recorded to perform certain actions like moving the user forward, stopping and picking items up.

Occulus Rift – Keyboard/Mouse

This is mainly our testing input selection of devices. The keyboard and mouse is used for the times when a group member does not have access to a certain piece of equipment so this is used as a supplement.