



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
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DEPARTMENT OF COMPUTER SCIENCE

WHOOSH DIVISION

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## OcuViz - EpiUse Labs

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Vukile Langa	u14035449
Wynand Hugo Meiring	u13230795
Nontokozo Hlastwayo	u14414555
Gerome Schutte	u12031519

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# 1 Introduction

When presented with fairly large or small numbers we as human beings tend to struggle. One struggles to grasp the sheer magnitude of how much a trillion dollars is for example or the distance light travels in a second.

The aim of OcuViz is to create a platform for the visualization of data in 3D space using virtual reality to provide an immersive and presence depth.

## 2 General Information

### 2.1 System Overview

#### 2.1.1 Description

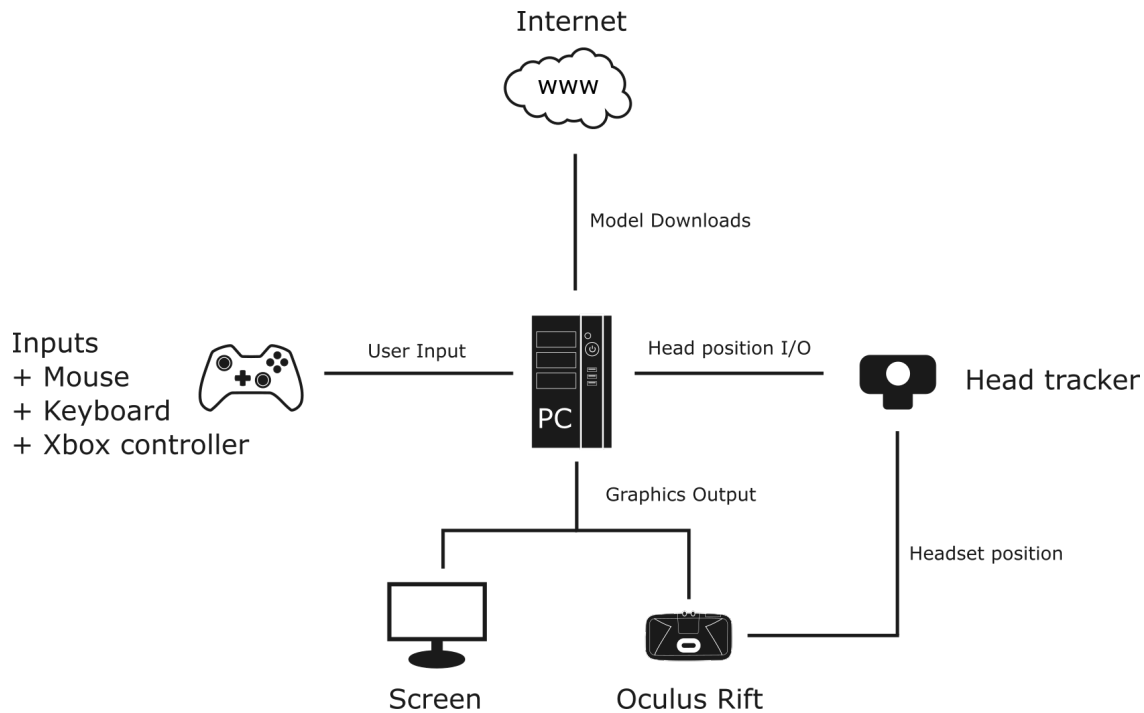
OcuViz is a platform for the visualisation of data in a virtual 3D space to allow users to conceptualise large numbers more accurately and naturally. Leveraging the power of VR we are able to create awe-inspiring and immersive scenes for users to experience. As well as, allowing users to create their own scenes through either modular CSV files which are interpreted into 3D scenes or a simplified editor without requiring the user having to be a graphics experts.

#### 2.1.2 System Configuration

Minimum hardware requirements to run OcuViz

- VR Headset: Oculus Rift DK2
- GPU: GTX 970 or AMD R9 290
- CPU: Intel Core i5-4590
- RAM: 8GB
- USB: 2 USB 3.0 ports
- OS: Windows 7 SP1

**Communication diagram**



OcuViz receives input from the user through either keyboard, mouse and xbox controller. Or from the head tracker camera which sends location based input to OcuViz with regards to user height, head orientation, etc.

OcuViz is able to retrieve models for scenes from either local storage or via the internet where it can download specified models.

Finally graphics output is pushed to both the screen and the Oculus Rift headset.

### 2.1.3 Installation

#### OcuViz Prerequisite

- Oculus Rift Runtime Setup - <https://www3.oculus.com/en-us/setup/>

OcuViz will be provide in both portable and installer formats. To install simply unzip the files (portable format) or follow in the installation instructions.

## 3 Getting Started

OcuViz is straight forward to use. Ensure your Oculus Rift Headset, controller and head tracker are plugged in. Then launch Oculus Store. Ensure that your headset is showing a blue light. If not check Oculus Store to see the issues that exist. Also accept the health warning message displayed by the h Finally simply run OcuViz.exe to use the software. No login is required and would not make sense for this system.

#### Launching OcuViz

OcuViz aims to be a user friendly experience. To start using OcuViz is a straight forward procedure.

1. Ensure Oculus Rift headset, head tracker and controller (or keyboard and mouse) is plugged in.
2. Launch Oculus Rift Runtime.
3. Check that Oculus Rift headset is showing a blue light.
4. Accept the health warning message if one is displayed on the headset.
5. Run OcuViz.exe

## 4 Using the system

## 5 Troubleshooting

### **Why is the headset is not displaying an image?**

Firstly ensure that the headset is showing a blue light. If an orange light is being displayed, exit OcuViz. Restart Oculus Rift Runtime and relaunch OcuViz.

### **Why am I feeling motion sick?**

Firstly with OcuViz you are not limited with what you can place in the scene. Thus if you try and add a billion objects, your computer will attempt to render it, albeit poorly.

With VR performance is vital to ensure not only a smooth performance but also one free from motion sickness. Specifically OcuViz is intended to run at a minimum of 75 fps (frames per second) for DK2 and 90 fps for CV1. Besides this, a maximum latency of 16.6 ms needs to be maintained to prevent motion sickness.

In order to see a scene's performance, go to settings in OcuViz and enable the performance option. In your scene HUD you will now see both the scene's fps and latency. If these numbers are green it means that motion sickness is not a result of hardware.

What else can cause motion sickness? Well how long have you been using OcuViz? Using it for an extended period of time can result in motion sickness but this is user and scene dependant.

Finally if someone else moves you this will cause motion sickness.