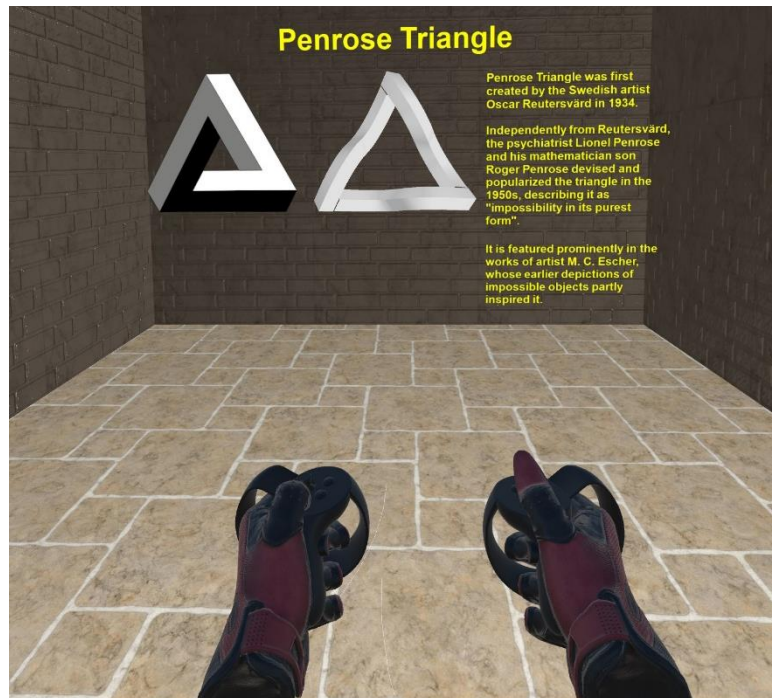# VR support for Clarity Worlds

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Clarity Worlds background

Clarity Worlds Is a presentation tool that is designed to overcome the limitations of contemporary presentation software by providing capabilities to easily create presentations that are 3D,multi-model, continuous, non-linear and interactive. Clarity Worlds was designed and implemented by Danill Rodin as part of his research. The application was implemented in C#.
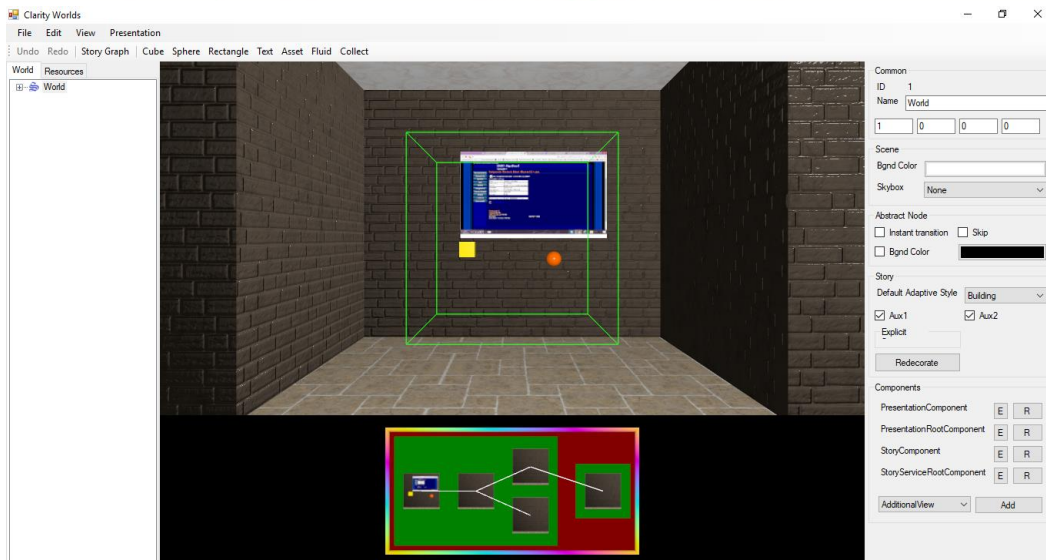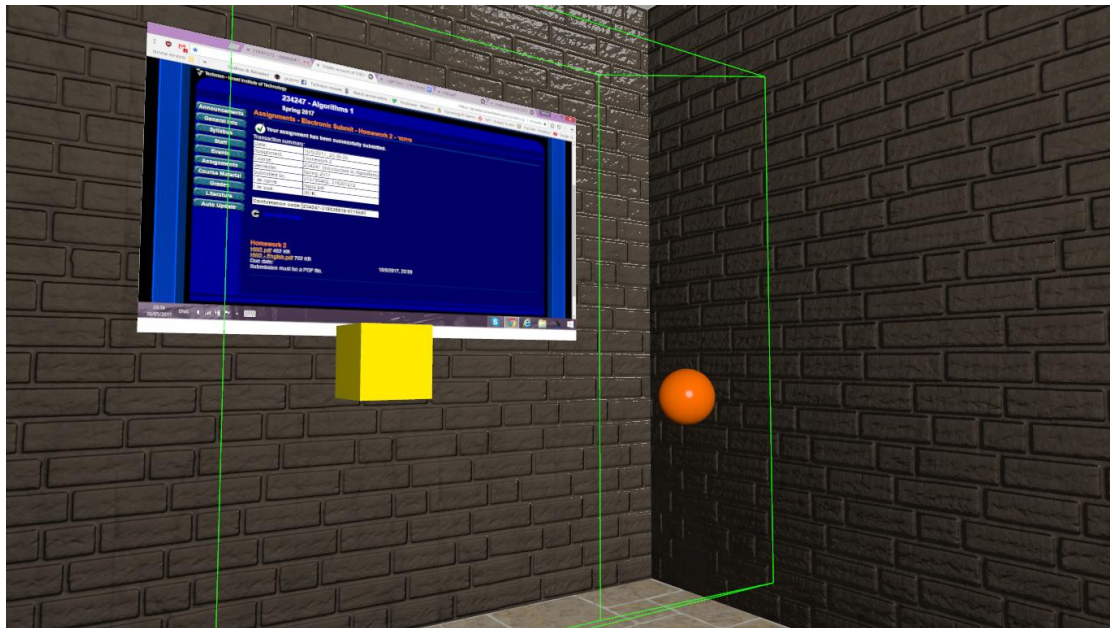
Introduction

The goal of the project was to implement VR support for Clarity Worlds, by integrating Unity Engine support into the original Clarity Worlds. Clarity Worlds aims to provide a 3D alternative to slide based presentations. By using VR we hope to increase the level of immersion in Clarity Worlds and also introduce another layer of interaction with the Clarity Worlds based presentations.

Technologies & Platforms

Clarity Worlds

A 3D, room based, alternative to slide based presentations, developed by Danill Rodin.

Unity

A cross-platform game engine that can be used to create both three-dimensional and two dimensional games, as well as simulations for desktops and laptops, home consoles, smart televisions, and mobile devices. Unity is scripted with C# in Visual Studio.

SteamVR Plugin

A Unity plugin which provides a general API for VR interaction and controller input.

Equipment

Oculus Rift

The **Oculus Rift** is a [virtual reality headset](). The headset uses tracking technology, allowing the user to move in 3D space and use motion-tracked controllers to interact with the environment.

Application overview

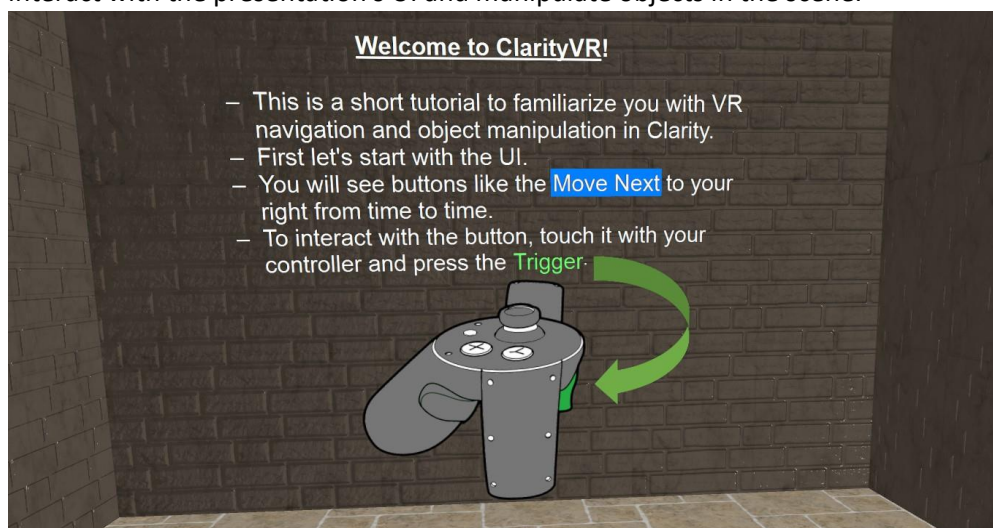The Clarity Worlds VR presentation mode consists of 3 main parts: Main menu, Tutorial, Clarity Worlds Presentation.

The main menu

A menu scene fully compatible with the oculus touch controllers. The menu features two options, start the tutorial or transition to the Clarity Worlds presentation.

The Tutorial

A comprehensive explanation of each of the features that are relevant for the Clarity Worlds VR presentation mode. Upon completion the tutorial the user should have a reasonable idea about how to navigate the Clarity Worlds presentation in VR, interact with the presentation's UI and manipulate objects in the scene.

The Clarity Worlds VR presentation mode

An example presentation powered by Clarity Worlds which the user can navigate in, view the contents of each room, and interact with the intractable objects.

Features

The VR presentation mode supports all the features of the original Clarity Worlds presentation mode. Moreover, we add new features that are natural when experiencing Clarity Worlds in VR, for example new methods of navigation and object manipulation.

Full Tutorial:

As part of the introduction to the new VR support for Clarity Worlds presentation we implemented a tutorial, which aims to quickly familiarize the user with all the features and capabilities of the VR presentation mode.
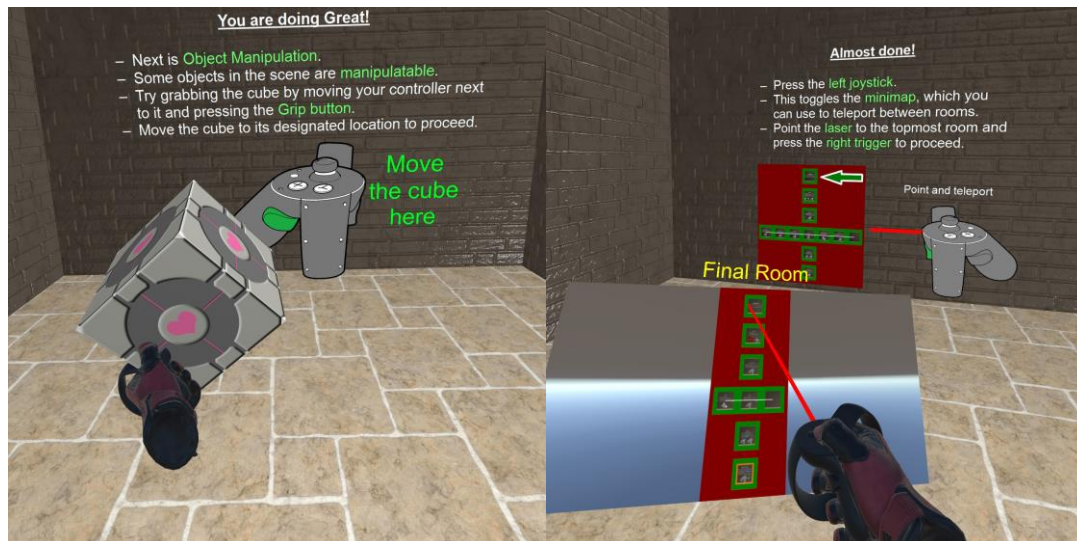
Navigation

The user is able to navigate the scene using 3 modes of navigation:

Jump Navigation

The user is able to jump to a visible, nearby location by aiming pointing the controller in the desired direction and pressing the Joystick on his Right controller.


Ski Navigation

The user is able to Navigate inside the presentation by Pressing the grip button on either of his controllers while moving them up and down repeatedly.

Minimap Navigation

The user is able to, at will, open a minimap which shows a graph representation of the current presentation. In addition, the user is able to select a room in the minimap and teleport himself there.
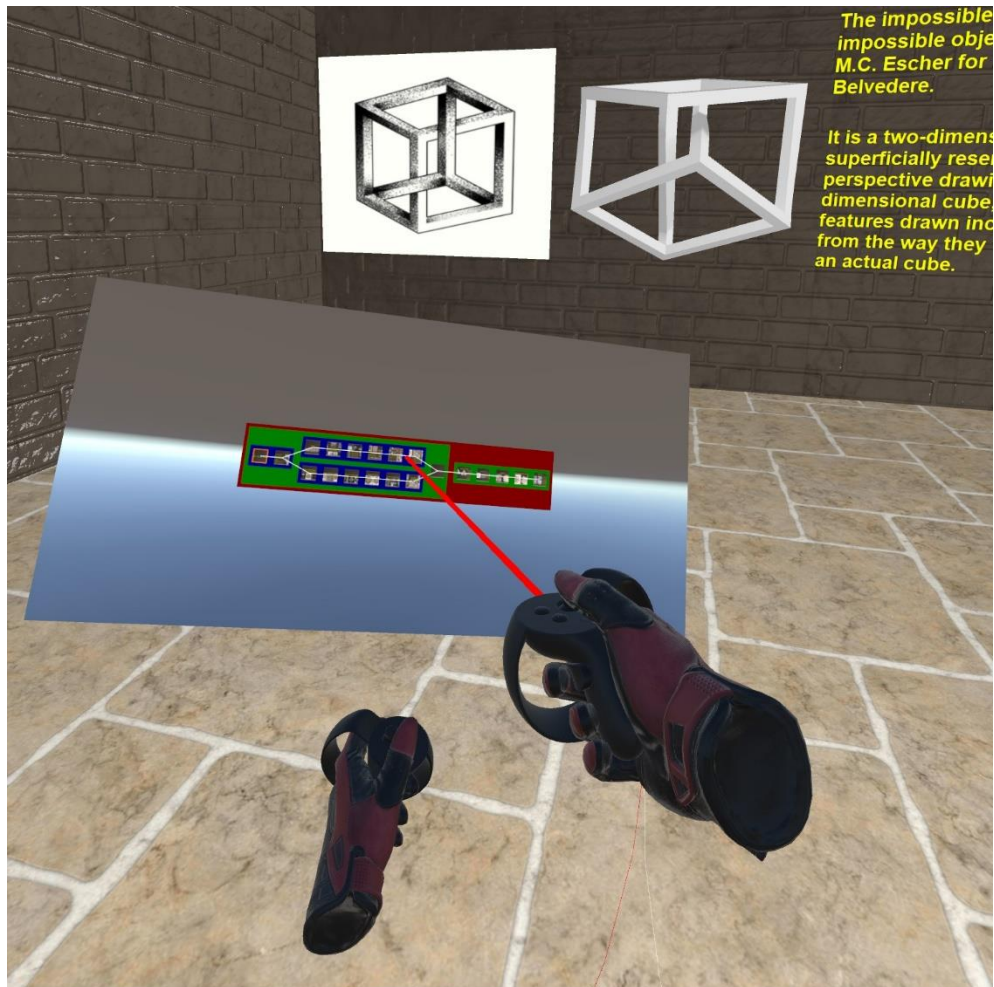
Object Manipulation

The user is able to "Grab" objects in the presentation (if they have the matching component) and is also able to move and rotate them to his will.
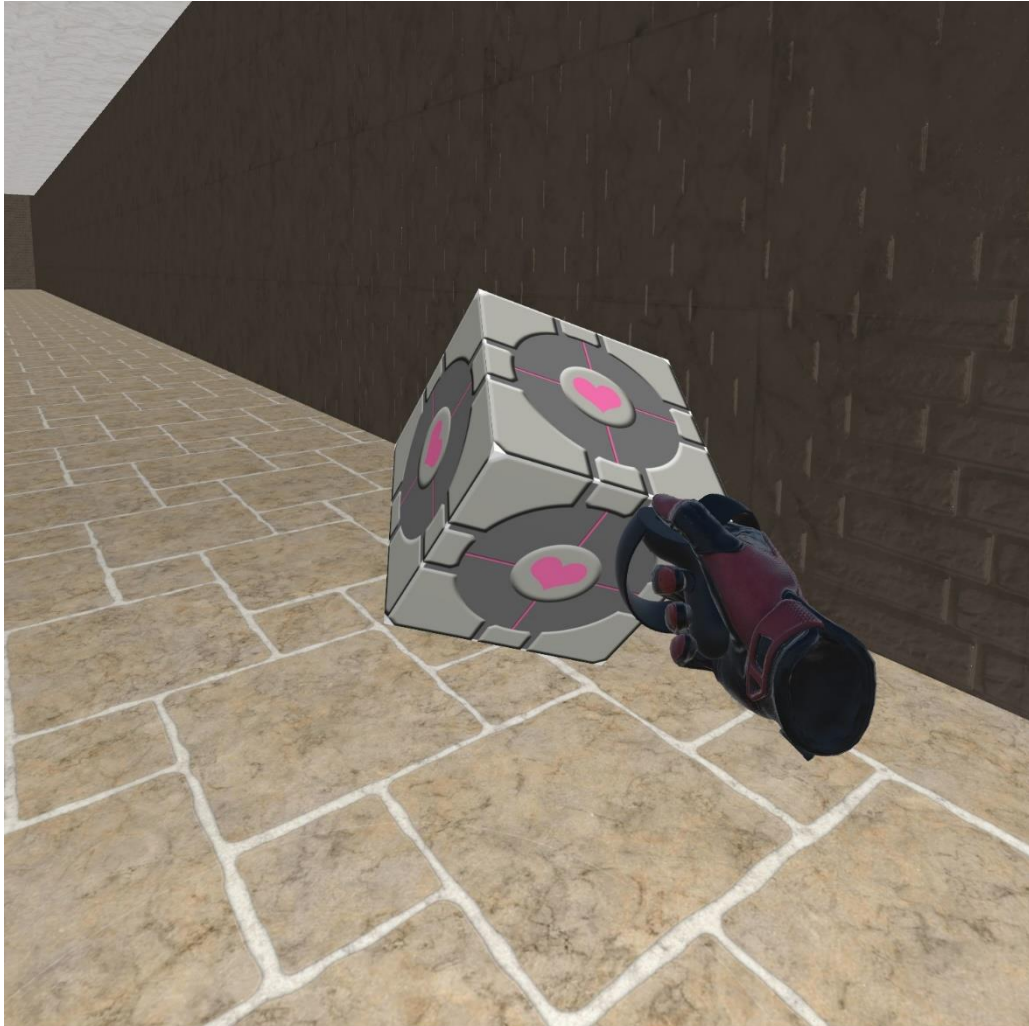
UI Interaction

The user is able to interact with specific VR UI such as "VR Buttons" by using their Oculus Touch Controllers.