EmbarkVR: Outdoor Virtual Reality Experience
CS Senior Capstone
Design Document

Jake Jeffreys, McKenna Jones, Spike Madden, Sean Marty

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Abstract

Abstract Goes Here

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1 Overview

1.1 Scope

We want to create an outdoor virtual reality experience for customers at a Columbia retail store. The application will consist mainly of visual, audio, and tactile experiences to create an outdoor world in which the user can navigate. The main activity available will involve fly fishing in one of the rivers within the environment. Users will also have the ability to interact with virtual Columbia products while in the experience and gain specific product information.

1.2 Purpose

The main goal of the project is to make customers feel more inclined to purchase Columbia gear through the use of an immersive, outdoor Virtual Reality experience. This document exists both for development of the project and to provide a detailed description of the design plans.

1.3 Intended Audience

The intended audience of this design document are the student developers involved (EmbarkVR), project sponsors, and Capstone teachers. The development team will be using this report as a guide and will provide structure for the development process. The sponsors can use this document to understand the vision of the developers and to will give a platform to discuss design ideas. The teachers can benefit from this document by learning about the project as a whole.

2 Definitions

- Virtual Reality (VR): Artificial environment that is created with software
- HTC Vive: A virtual reality headset produced by HTC
- Base Stations: These allow the Vive to track the movement and location of the wands and headset.
- Wands: Controllers that are used with the HTC headset.
- Unity Game Engine: The Unity Game Engine, developed by Unity Technologies is used in this project to develop the virtual reality simulation.
- GitHub: Web-based Git repository hosting service
- Git: version control system used for software development

3 Project Context

3.1 Hardware

- Laptop Computers with the following specifications:
  - Processor: Intel Core i5-4590 or AMD FX 8350, or better

  - Graphics: NVIDIA GeForce GTX 1060 or AMD Radeon RX480, or better
  - Memory: 4GB RAM or better
  - Operating system: Windows 7 SP1 or better
- HTC Vive Headset: Used to track head movements and display application to users.
- HTC Wands (x2): Used to track the users hand movements and to give the user the ability to interact with virtual objects within the application.
- HTC Base Stations (x2): Used to track location of headset and wands. This is information is then sent back to the computer in real time.

3.2 Software

- Unity Gaming Engine: Used to develop the application.
- Unity Asset Store: Used to find objects which can be imported into the application.
- GitHub: Used by developers to collaborate and share files.

4 Design Description

4.1 SDD identification

4.2 Design stakeholders

4.2.1 Intel

4.2.2 Columbia(PFG?)

4.3 Design views

4.3.1 Intel Sponsor (Mike Premi)

4.3.2 Columbia Sponsor (Tim Devlin)

4.4 Design viewpoints

*4.4.1 *subsubsection name**

- Design Concern:
- Analytical Methods
- Rationale

5 Approach

5.0.1 Static Environment

(terrain, static objects, fishing rod, Columbia gear assets)

5.0.2 Animated Environment

(light, sound, water animation, etc)

5.0.3 Tactile User Interaction

(user interaction with gear, Columbia gear info)

5.0.4 Rod mechanics

(user interaction with rod, physics involved)