

# **Project Deliverable G: Prototype II GNG1103 – Engineering Design**

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## Abstract

*The following deliverable outlines the testing procedure in prototype II which is due for November 14th. Prototype II was a focused prototype. The objective of this implementation was to refine the core functionality of the prototype (mainly VR stereoscopic video player) in Unity.*

*The tests were successful and feedback was received from the client.*

## Introduction

The Ottawa Hospital is looking to provide a VR system for cancer patients. The objective of the project is to create a safe and informative environment for patients for their upcoming medical procedure. The hospital will upload videos to an interface to allow patients to experience their upcoming medical procedure. The objective of the project is to build a program which allows the client to build and run VR simulations. The purpose of the final project is to reduce anxiety and fear while increasing knowledge of a patients procedure.

In order to build a fluent and functional program for this project, the different functionalities must be tested. Without testing the prototype, issues can occur when in use. These issues can be: bugs in the program, broken functionality (such as buttons not doing the proper task), and difficulty of use. The general objective of this prototype is to reduce the risk of issues with the program, become familiar with the building process of a VR program with Unity, as well as receiving general feedback on the direction of the project from the client.

## Related Work

For the project, the OCULUS SDK and HTC VIVE will be used. These two headsets are virtual reality (VR) headsets. VR headsets are used to create a “virtual world” where the user is able to view a 360 degree rotatable canvas that is responsive to movements. The project will be developed through UNITY (v2019.2.9f1). Unity is a game engine that is used to create VR games with C#. The final program will run through the games launcher STEAM VR.

## Testing Objectives

The general objective of the testing for prototype II is to refine the program’s fluidity, test with a VR headset, and to properly implement the URL inputs of the “Create Simulation” menu. Feedback on the direction of the project from the client will also be noted after prototype II is completed. The menu application will be tested to see if it functions correctly and fluently, some sub-menus (language menu is now a new scene) have been altered. The VR player will be tested to see if it functions fluently and with a VR headset. The “Create Simulation” will be tested to see if it captures a URL and displays its title on the main menu as well as load a new video in the VR player. The results of this prototype will be used to

reevaluate the future and current functionality of the app. The criteria for a successful test is if the VR player works fluidly and that there are no issues concerning the “Create Simulation” menu of the program.

## Testing

The prototype is a focused prototype because it focuses on two specific parts of the prototype (VR player and “Create Simulation” menu). The table 1.1 lists the testing and results of prototype II. The tests will be conducted incrementally as the functionality of the program is built out. The final tests will be run on a built version of the program through Unity and run on the computer and with HTC VIVE headset. The program will run and the functionality will be tested by the user. The functionality will be evaluated one at a time and noted if it was successful or not.

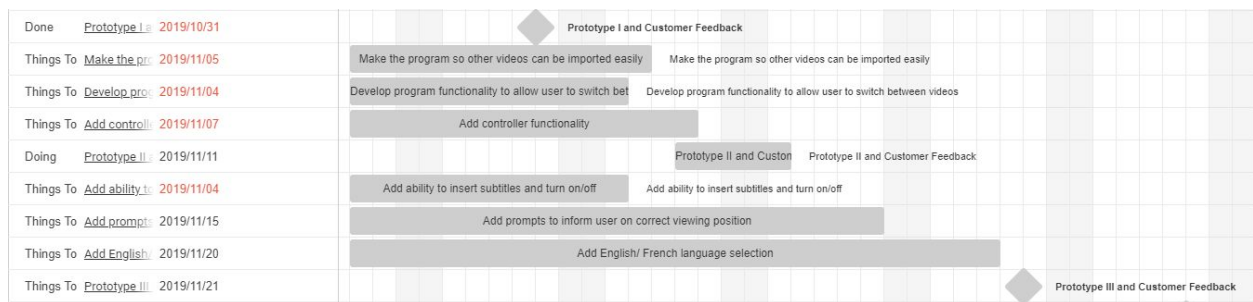
Table 1.1: Prototype Tests

Test	Desired Result
Open Application and Navigate Application	Application is easily navigated
Test English Button	Goes to English Menu
Test headset in VR	Video Plays Stereoscopic video on headset
Test if “Create Simulation” menu takes a URL input	Inputted URL is correctly stored as a test file
Video player changes video depending on URL input	Video play plays corresponding video
Menu displays corresponding files from URL input	Menu plays corresponding file names
Add Audio file to play over video	Audio file plays over video when running

## Timeline

The development of the “Create Simulation” menu and the testing and refinement of the video player can be done in parallel, but must be both finished by November 9th so they can be integrated together. The testing will last until November 10<sup>th</sup> because it will be done incrementally. The final test on the prototype, before the feedback is received, will occur on November 10<sup>th</sup> where a 30 minute testing phase will take place. The testing is dependent upon if the functionality of the program is built out by the 10<sup>th</sup>, if it is not complete, many functions cannot be tested.

Figure 1.1: Gantt Chart



The results from this test will be used to evaluate the current and future functionality of the project. If a current test fails, then the difficulty of implementing the current functionality, if feasible it will be implemented in the next version of the prototype (prototype III), if not then an alternative method of implementing the functionality will be developed. Depending on what needs to be re-evaluated, then the new functionalities will be implemented in the next revision of the prototype. These new functionalities include: working options (volume, brightness, etc); adding subtitles; and a English/French versions of the program.

## Results

Table 1.2: Test Results

Test	Desired Result	Result
Open Application and Navigate Application	Application is easily navigated	Application Opens on Language menu without issues

Test English Button	Goes to English Menu	Goes to English Menu
Test headset in VR	Video Plays Stereoscopic video on headset	-Video plays on VR headset -Still have issues with how smoothly video plays
Test if "Create Simulation" menu takes a URL input	Inputted URL is correctly stored as a text file	Inputted URL is correctly stored as a test file
Video player changes video depending on URL input	Video play plays corresponding video	Video play plays corresponding video
Menu displays corresponding files from URL input	Menu displays corresponding file names	Menu displays corresponding file names
Add Audio file to play over video	Audio file plays over video when running	-Audio file plays over video when running -Volume is adjustable