User interface mock-ups specifying input or display adjustments required across platforms ensuring that the UI and HUD design is aligned with industry best practice. • An identification and discussion of player control issues across platforms, • Screen size and aspect ratio differences, • API or software version requirements, • Deployment methods, • Platform-specific features or constraints, • Industry standard tools, APIs, or methods for handling cross-platform development issues, and • Identification of any environmental considerations involved with using the technologies used in the project creation, and/or with the final product. Include in your planning document an analysis of how extended realities are used in games and/or alternative industries. For your selected industry (i.e. games, simulation, serious games, etc.) include: • A brief discussion on the history of AR/VR for the selected industry, • Research on target markets and demographics for the selected industry, and • A list of successful or competing AR/VR products for the selected industry. This discussion will help guide and justify your own design decisions regarding industry best practice in extended reality application design and development. You are also to report on the technology you will use. Ensure you discuss the physiological constraints of the selected platform, including how these constraints are addressed by developers; whether haptic feedback is supported, and a discussion of its potential in applications or games; optimization and performance considerations; market size; technical specifications; and any other pertinent information Your planning document need not be a complete technical design document, although it does need to thoroughly identify expected issues you will face when developing and deploying your game, along with proposed strategies for dealing with these issues.

**Planning Document**

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# User Interface Mock-Ups

## Main Menu

The main menu brings attention towards the game, so it is can be interacted with the player. The title screen will be displaying a ‘PLAY’ button which will explode on being interacted by player. The options will be displayed on the top left of the screen, as a cog. For VR players, they only need to press the menu button on the controller.

Figure 1.0   
Displays the Main Menu screen.

## Main Game Stage

The main game stage is where the player will spend most of their time. The player will be displayed a score meter (refer to Figure 1.2), a timer (refer to Figure 1.3), and the main playing arena. The main playing arena is displayed below.   
  
The game entices the player through using the bright and flashy colours, especially with the addition of VR. The player uses the given toy gun, to shoot the Mechanical Cubes. They will be increasing in speed from the increments of 5 from player score.

**Feeling Constricted**The Player at times will feel constricted at times during playing the VR version. This problem is only natural since the player will feel locked in this world not able to move. The measures taken to address this issue is to create a scene of darkness with a few lights inside the arcade shelter. This gives player motive to not move around, and stay inside of the lit place.

# Screen Size & Aspect Ratio

|  |  |  |
| --- | --- | --- |
| PLATFORM | SCREEN SIZE | ASPECT RATIO |
| PC | FullScreen and Windowed | 1980/720 |
| OCULUS | 2,560×1,440 LCD | 16:10 |

# Software Requirements

Minimum Software Requirements-

* 8 GB RAM
* 1280 AMD Radeon
* Windows 10 and 8

# Deployment Methods

The game can be installed by downloading PC and VR optimized version on the company domain. The link to the website is [www.jinuzumaki.weebly.com](http://www.jinuzumaki.weebly.com). By downloading the file, unzipping the contents and using the installer provided, you can play both VR and PC, by connecting either controller. The steps required to install the game are also present on the website.

# Platform Specific Features and Constraints

## VR

|  |  |
| --- | --- |
| Features | Constraints |
| * VR allows players to escape reality and adventure through a virtual world of fantasy. This benefits the player in gaining knowledge, and experience through a safer environment. * VR is able to create free movement which is able to allow the player to be in full control of the entire game. The given ability of full control to player makes them more interested in the physics of this world and behavior of objects. | * The player must **feel** they are in the world. Some of the constraints many beginner VR developers fall into is not able to create a relatable world and interesting world. The world may not entice all players, making them more distant to the concept of another reality and more towards fake reality. * VR allows the user to be able to interact with nearly all objects, but there are relative constraints placed on those interactions. The player may not move beyond the control of their given controller, VR is still in development to create a free hand controller to interact. |

## PC

|  |  |
| --- | --- |
| Features | Constraints |
| * Games created in PC are the basic standard of many developers’ standpoint. The creation of games in PC allow the players to play games with a wide variety of controls. The controls may include the entirety of the keyboard, but increase with combinations using the mouse. | * Games created in PC hold a large variety of unique controls and give players and developers more choices with controls. The user-input created in PC games have better response, with the PC specification of hardware being better than most consoles. |

# Methods for Handling Cross-Platform Issues

|  |  |
| --- | --- |
| Issues | Methods For Handling |
| Screen HUD & GUI Design | The development of the game in both PC and VR makes the creation of HUD more complicated. The measures taken to avoid player nausea and sickness in VR, are to create a diegetic HUD. Such features like ‘Score’, ‘Targets’ and ‘Timer’ will be world objects present in the game. This will eliminate the nauseous effect on the player. |
| Camera Movement | The camera used in the VR headset, is directed and manipulated through the player’s view point. The player uses the controller to point at things in the VR world to interact with the world. In PC the world is interacted through a fixed camera being controlled by a mouse, in a fixed location (TPS). This problem will be fixed by adding in an algorithm which checks if the mouse is used, if used it will lock the screen as if a PC player is playing. Otherwise if a VR controller is used it will free the mouse from the middle of the screen. |