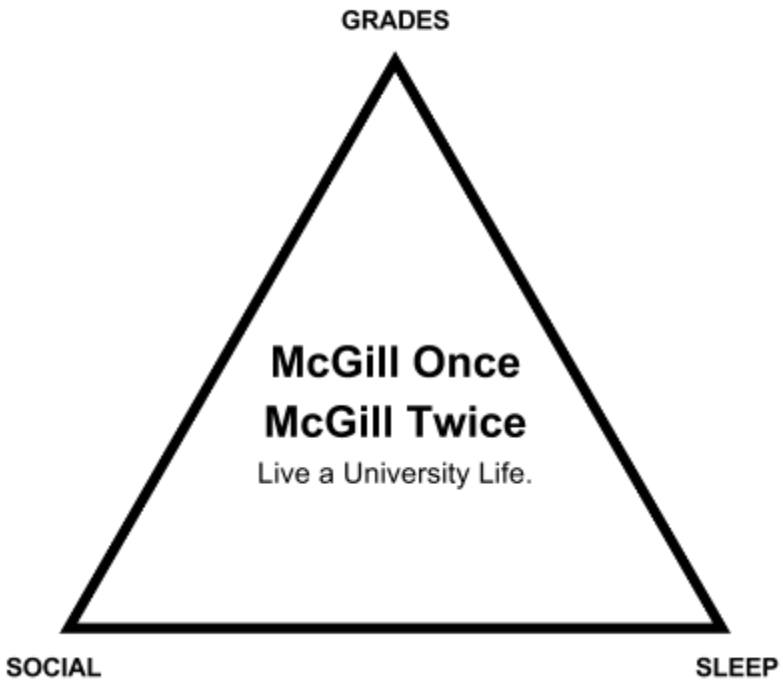

REQUIREMENTS DOCUMENT

COMP 361: Software Engineering Project
School of Computer Science
McGill University, Montreal, QC

Othniel Cundangan	**Aliaa Moharram**	**Tristan Struthers**	**Ching-Chia (Russell) Wang**	**Elizabeth Wu**
260575092	260572705	260568567	260517682	260571586

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1. Introduction

1.1 Purpose

This project promises to facilitate the transition between high school and university by providing clients with an outlet they can use to explore activities that might occur on or around campus. It was created to answer the stakeholder's request for an evolving open world game that allows attendance at optional side adventures. As such, the end product mainly targets future McGill students or potential university students in general and will take the form of a videogame in which players interact with both their friends online and an environment centered around the university.

1.2 Scope

The boundaries set for this project revolve solely around the working game application and online connectivity. Although the final product aims to provide a network enabled application, it is outside the scope of this project to provide a separate dedicated server solution. Therefore, all players will be connected to one another via one player's host machine with server features built-into the game. The project will also refrain from officially supporting moddable content and does not aim to provide DLC iterations.

1.3 Overview

Section 2 of this document depicts the overall flow of the application from start to finish as well as any outside resources. Refer to the use-case templates with names matching those used in the use-case diagrams.

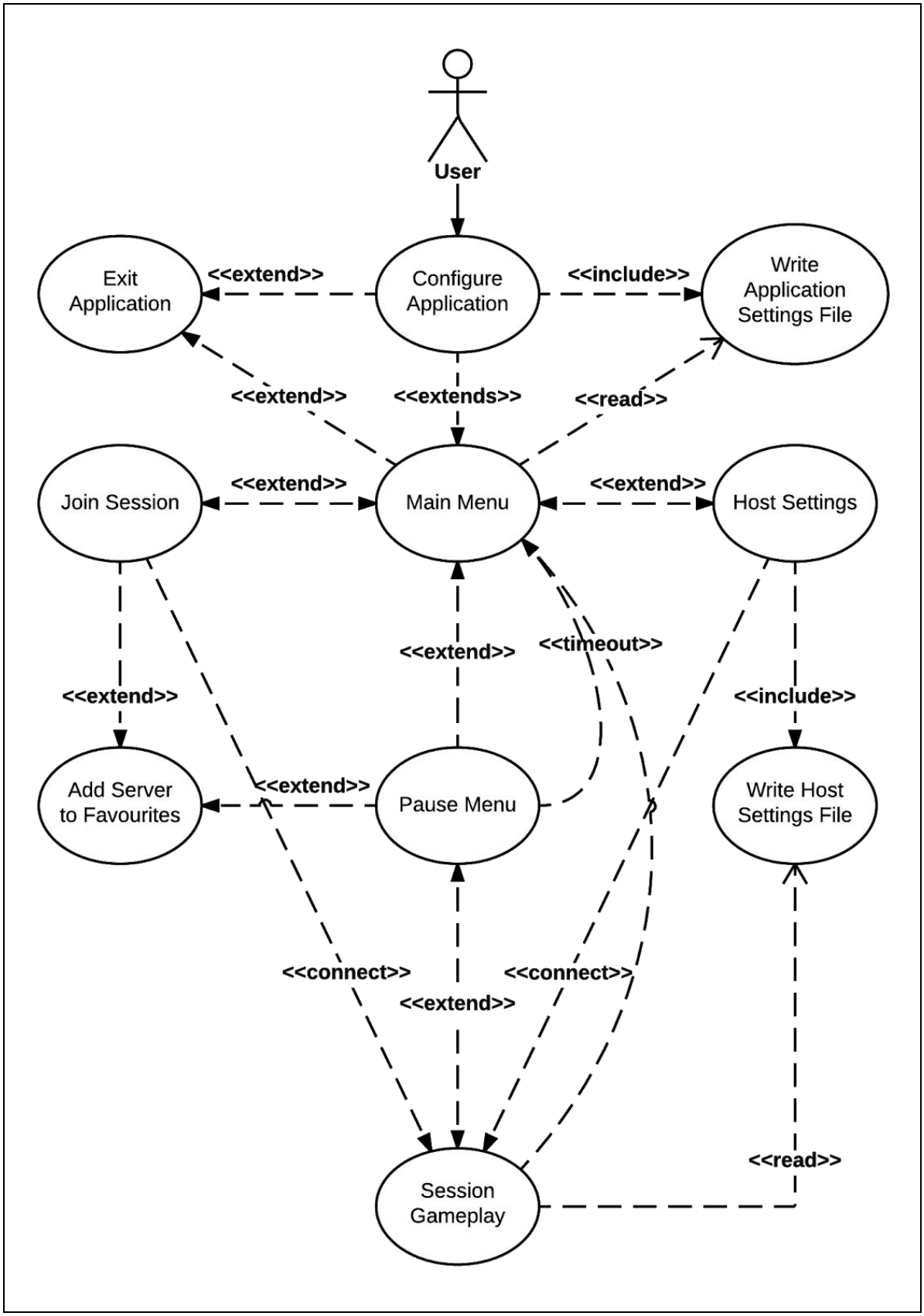
Section 3 provides an abstract view of how the finished game application will interact with other client applications.

Section 4 examines some of the problems that may not have a solution by the end of the project date.

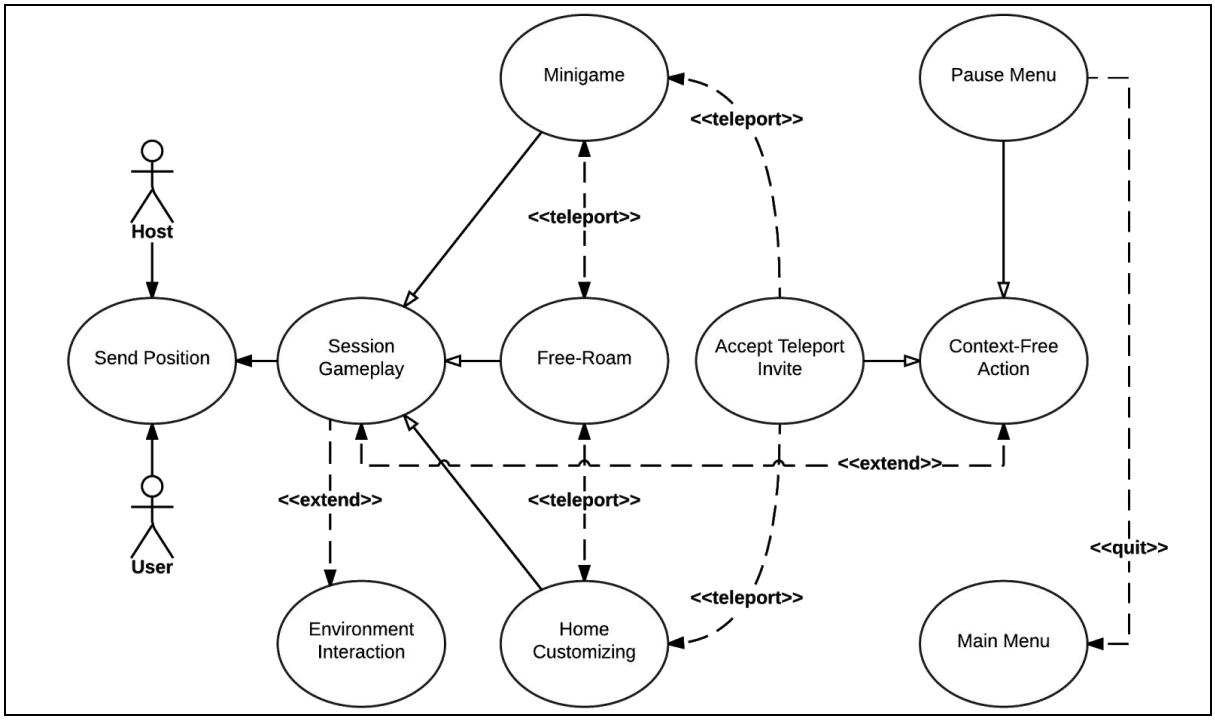
Section 5 illustrates how the client application passes information to itself and other clients over a network.

Section 6 gives examples of what the user interface of the game will look like

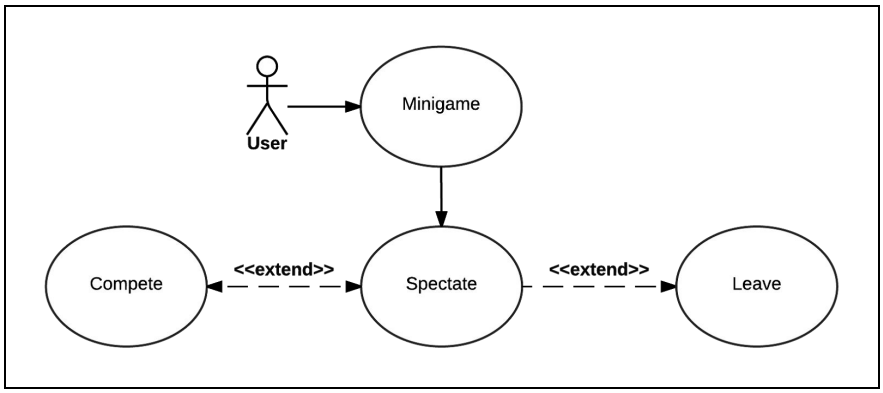
2.1.1 Macro Use-Case Diagram



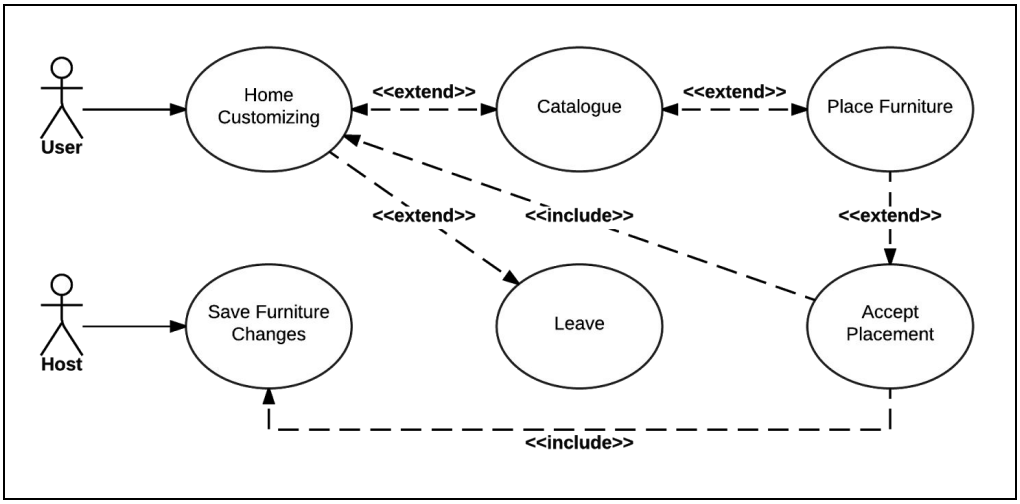
2.1.2 Session Gameplay Use-Case Diagram



2.1.3 Minigame Use-Case Diagram



2.1.4 Home Customizing Use-Case Diagram



2.2.1 Use-Case Templates

Use Case Name	Configure Application
Iteration	Facade
Summary	Upon launching the application, the user is given a set of options to configure the game's graphics and input settings.
Basic Course of Events	1. User launches the application. Before the game portion of the application runs, a configuration window appears. 2. The user uses the configuration window to edit graphics and input settings 3. When the user is finished configuration, a "Launch Application" button is available to close the window and launch the game portion with the saved settings
Alternative Paths	Once the user has passed step 1 and opened the configuration window, they may also 1. Close the window or cancel configuration resulting in unsaved settings and the game *not* launching. 2. Save the settings for later use and close the configuration window without launching the game portion.
Exception Paths	None
Extension Points	None
Triggers	Application launch
Assumptions	None
Preconditions	None
Postconditions	An application settings file exists that the application has access to and uses to set up the game portion.
Related Business Rules	None
Author	Othniel (Facade)
Date	Nov. 27, 2015 (Facade)

2.2.2 Use-Case Templates

Use Case Name	Main Menu
Iteration	Facade
Summary	The user is presented with a collection of options at the main menu. The game performs a series of corresponding actions depending on the selection.
Basic Course of Events	1. The user selects a menu item 2. The application responds to the selection
Alternative Paths	None
Exception Paths	None
Extension Points	In step 2, the responses may extend to ● Host Settings ● Join Session ● Exit Application
Triggers	Game portion launches.
Assumptions	None
Preconditions	An application settings file exists.
Postconditions	None
Related Business Rules	None
Author	Othniel (Facade)
Date	Nov. 27, 2015 (Facade)

2.2.3 Use-Case Templates

Use Case Name	Host Settings
Iteration	Facade
Summary	The user is given a series of settings to choose from to configure the hosting session. The game session is launched as a host and players can connect to it.
Basic Course of Events	1. The user can decide the map size, max players, and other configurations for the session 2. The user chooses to launch the game or go back to the main menu
Alternative Paths	None
Exception Paths	In step 2, if a network connection cannot be established, the session fails to launch and the user is brought back to the menu.
Extension Points	None
Triggers	Create Host
Assumptions	None
Preconditions	A host settings file already exists with either previously set host settings or the default host settings.
Postconditions	A host settings file exists on the local machine.
Related Business Rules	None
Author	Othniel (Facade)
Date	Nov. 27, 2015 (Facade)

2.2.4 Use-Case Templates

Use Case Name	Session gameplay
Iteration	Facade
Summary	Once in a game session, the user interacts with the environment and players. Once the user is finished with the session, they may choose to leave the session.
Basic Course of Events	1. The user enters the session and spawns 2. The user may perform a multitude of gameplay actions ranging from maneuvering the player avatar, to interacting with the pause menu
Alternative Paths	None
Exception Paths	None
Extension Points	In step 2, the gameplay actions may extend to ● Context-Free Action ● Environment Interaction ● Teleports
Triggers	Start Host, Connect to Session
Assumptions	None
Preconditions	Network connectivity is available. In the case of starting a host session, a host settings file exists on the local machine.
Postconditions	The user is in gameplay.
Related Business Rules	None
Author	Othniel (Facade)
Date	Nov. 27, 2015 (Facade)

2.2.5 Use-Case Templates

Use Case Name	Pause Menu
Iteration	Facade
Summary	During gameplay, the user may decide to pause the game at any point in time.
Basic Course of Events	1. The user presses the key binding triggering the pause menu 2. The user may select from a range of pause menu items
Alternative Paths	None
Exception Paths	None
Extension Points	None
Triggers	Pause Button
Assumptions	Gameplay is currently in a pausable context (ex. not loading).
Preconditions	The user is in gameplay.
Postconditions	The user is interacting with the pause menu.
Related Business Rules	None
Author	Othniel (Facade)
Date	Nov. 27, 2015 (Facade)

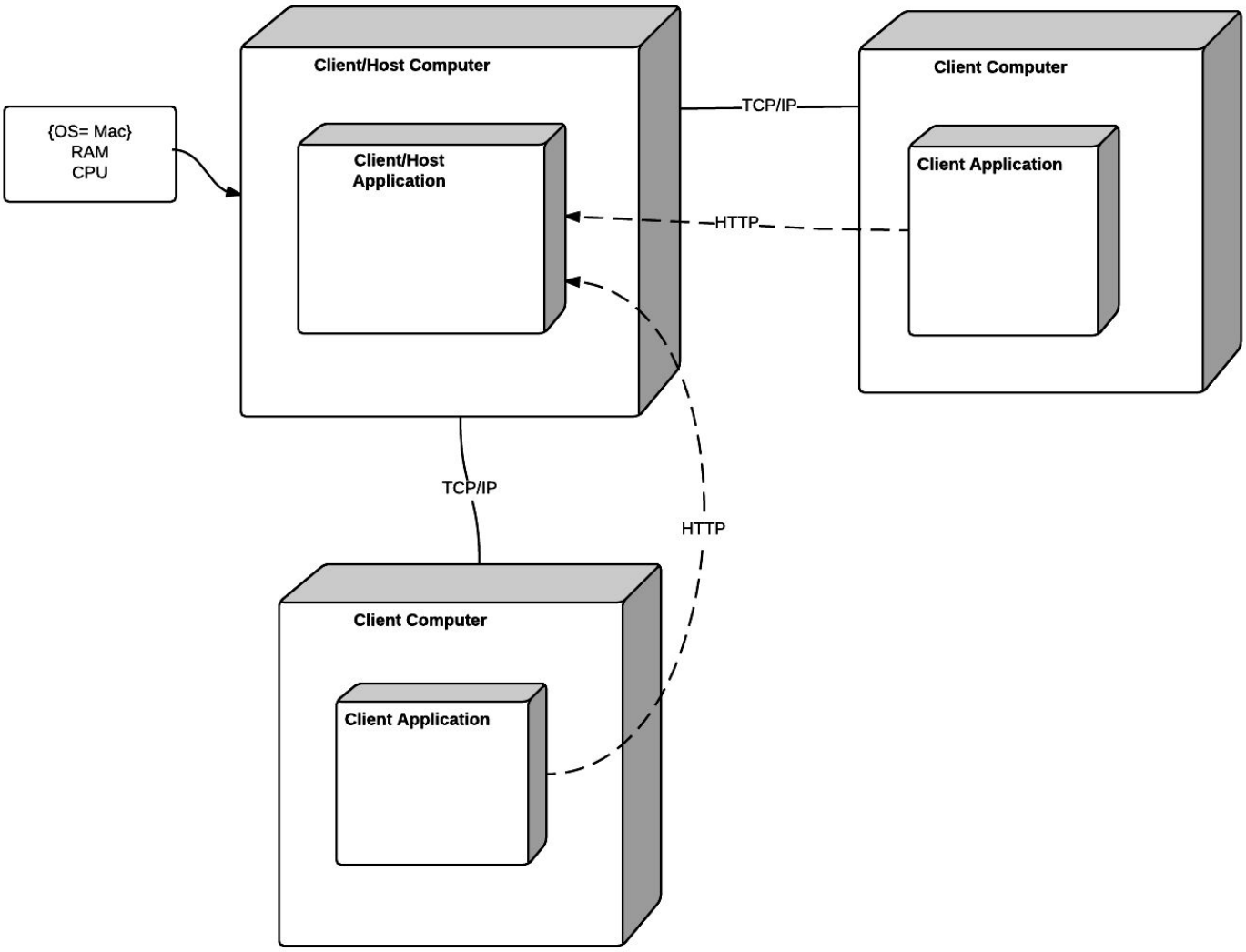
2.2.6 Use-Case Templates

Use Case Name	Minigame
Iteration	Facade
Summary	When the user enters a minigame location, they may participate by playing or spectating
Basic Course of Events	1. The user enters a minigame location 2. The user is given instructions and rules of the minigame 3. The user spectates the minigame 4. If the user chooses, they may compete in the minigame given it's not full
Alternative Paths	None
Exception Paths	None
Extension Points	None
Triggers	Entering a minigame.
Assumptions	None
Preconditions	The user is in gameplay.
Postconditions	The user is located in a minigame.
Related Business Rules	None
Author	Othniel (Facade)
Date	Nov. 27, 2015 (Facade)

2.2.7 Use-Case Templates

Use Case Name	Home Customization
Iteration	Facade
Summary	When the user is inside a home, they may customize the space by adding furniture from a catalogue.
Basic Course of Events	1. The user enters a home 2. The user may open a catalogue of furniture to add to the home 3. The furniture item selected from the catalogue is given a ghost representation in the home space as a placement guide 4. Accepting the placement saves the furniture to the home and the host records its position in space
Alternative Paths	In step 2, instead of choosing to add furniture, the user may choose to move existing furniture around.
Exception Paths	None
Extension Points	The user can go back to the catalogue in step 3, or exit the catalogue in step 2.
Triggers	Entering a home.
Assumptions	None
Preconditions	The user is in gameplay.
Postconditions	The user is located in a home.
Related Business Rules	None
Author	Othniel (Facade)
Date	Nov. 27, 2015 (Facade)

3. UML Deployment Diagram



4. Technology Constraints

4.1 Bandwidth Constraints

The data that the game will send and receive will have to do mostly with object position, stats, and map seeds. This allows us to keep the bandwidth usage to a minimum, but it is still possible for the client's network to be unable to support the minimum specification required for multiplayer. Multiplayer constraints will be tied directly to the client's network constraints.
Latency will also be an issue even for network connections that perform well, so to deal with this, prediction and interpolation techniques will be used to smooth out gameplay.

4.2 Local Permissions

Ideally, we'd like to support as many platforms as possible, but there are some constraints regarding local write permissions depending on end system. In order for the game to run and load previously saved data, it will need read/write permissions to a dedicated space on the hard drive to make use of texture, mesh, and script resources. Unfortunately web apps prevent this for security reasons so we will not be able to deploy the final game as a web applet.

4.3 Client Hardware

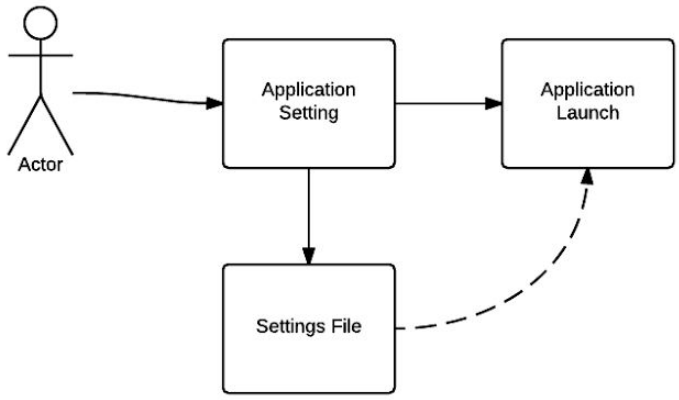
Frame rate and overall playability of the game will correspond to the client's hardware capabilities. CPU, RAM, and GPU will all have an effect on the performance of the game. To allow a good degree of flexibility, graphics settings will be available to the client as seen in the Configure Application use-case to reduce or increase graphical intensity.

4.4 User ID & Progress Security

Since it is outside the project's scope to provide a dedicated server solution, it is also outside the scope to provide a public, always-on user database that stores user progress and stats. As an alternative, all the relevant data pertaining to a session will remain on the host's machine and the unique ID of a user will be their chosen user name in the session.

5. Data Flow Diagrams

1



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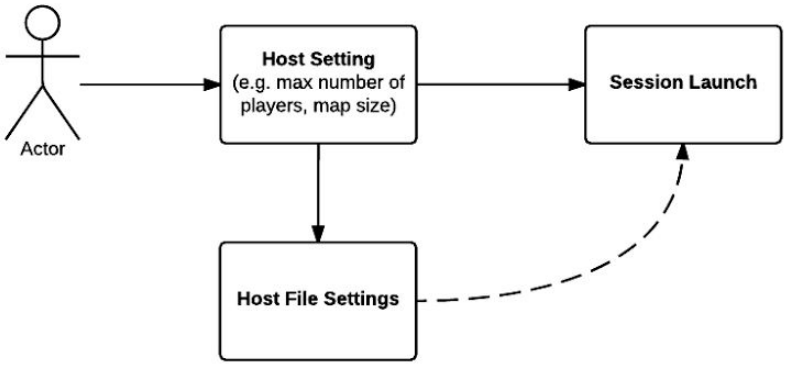

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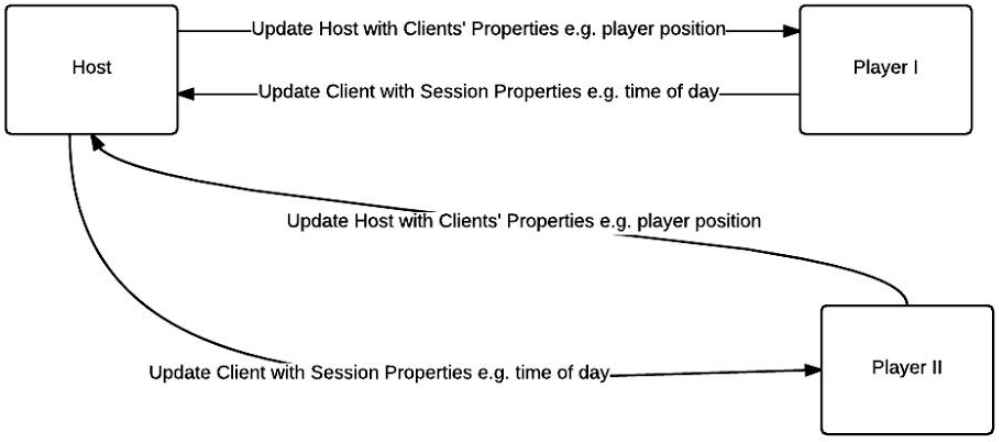

6. Storyboards