

Lunar Landers Project Report

**By: Group 12 - Dan Hrubec, Julian Gonzales, Jake
DiStefano, John Mistica**

Fall 2020

Table of Contents

I Project Description	11 1
Project Overview.....	11
2 The Purpose of the Project	11 2a
The User Business or Background of the Project Effort.....	11 2b Goals
of the Project.....	11 2c
Measurement.....	12
3 The Scope of the Work.....	13
3a The Current Situation.....	13
3b The Context of the Work.....	13 3c
Work Partitioning.....	16 3d
Competing Products.....	18
4 The Scope of the Product	18
4a Scenario Diagram(s)	19
4b Product Scenario List	19 4c
Individual Product Scenarios.....	19
5 Stakeholders	20
5a The Client.....	20
5b The Customer.....	20 5c
Hands-On Users of the Product	21 5d
Maintenance Users and Service Technicians.....	22 5e
Other Stakeholders.....	22 5f
User Participation.....	23 5g
Priorities Assigned to Users.....	24
6 Mandated Constraints.....	25
6a Solution Constraints.....	25
6b Implementation Environment of the Current System	26 6c
Partner or Collaborative Applications	27 6d
Off-the-Shelf Software.....	28 6e
Anticipated Workplace Environment	29 6f
Schedule Constraints.....	30 6g
Budget Constraints.....	31
7 Naming Conventions and Definitions.....	31
7a Definitions of Key Terms	31
7b UML and Other Notation Used in This Document.....	32 7c
Data Dictionary for Any Included Models	33

8 Relevant Facts and Assumptions.....	34
8a Facts.....	34
8b Assumptions.....	34

I Project Description

1 Project Overview

Lunar Landers is a multiplayer extension of the classic arcade game, *Lunar Lander*. The game pits multiple players against each other to see who is able to land their spacecraft on the surface first and prevent their opponents from doing so. The map will look familiar to fans of the original *Lunar Lander* as it is a similarly rocky and dangerous landing site on a moon. However new challenges may face the player during their match, such as lunar wind and worms, in addition to the threat of being blown away by their opponents. This game will challenge the skill and entertain any who choose to pick it up.

2 The Purpose of the Project

2a The User Business or Background of the Project Effort

This product is not catered to businesses, but rather individual gamers. These gamers may not know one another, and only seek to gain entertainment from the product, not profit.

2b Goals of the Project

The goal of this project is to entertain the players, and to offer players a challenge to share with their friends or others they find online. The competitive and simple to understand nature of the game are inherently entertaining for those who play. As the user continues to play with the game, they will hone their skills and become more familiar with new strategies and techniques to play. As the user's skill level increases they will find more value in the product as they best others in challenges and share the game with others.

2c Measurement

We will know that players are entertained by measuring the amount of playtime and matches played, in addition to new users. We can safely assume that players would not play a game that they do not enjoy. We can measure this by observing the amount of matches a user plays over time, and see how long it captures their interest. If a user is playing a consistent amount of matches per week over a period of months, then we can say that we have been successful in entertaining the consumer. In addition looking at sales and new user adoption will help us understand if the multiplayer and party play elements of the game motivate others to play and enjoy it.

3 The Scope of the Work

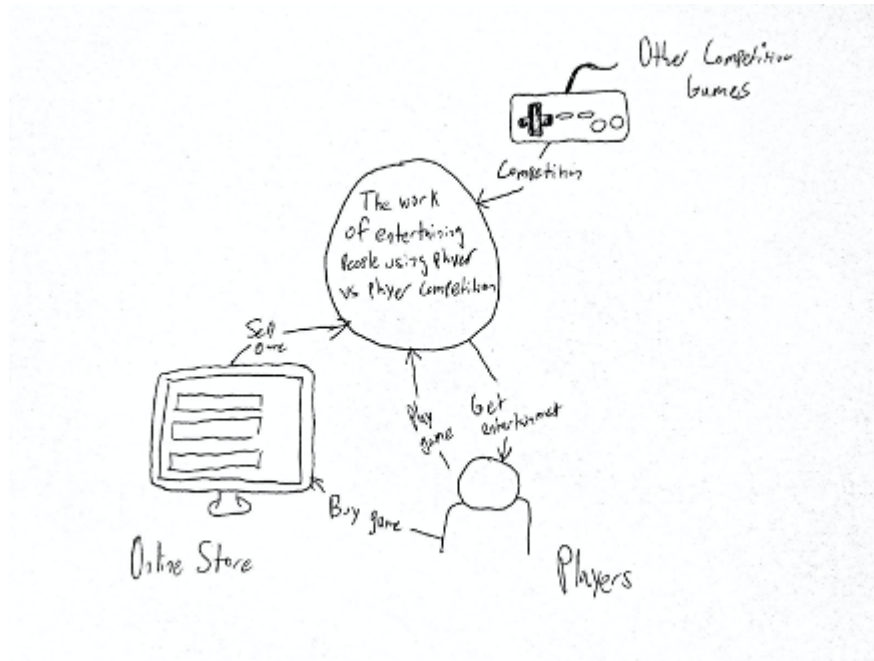
The work addressed with this product would be the entertainment of people by challenging one

another in video games.

3a The Current Situation

Currently there are many games that allow players to challenge one another, on many types of platforms. However many of these games have a high barrier to entry, either monetarily or due to being difficult to pick up and play.

3b The Context of the Work



3c Work Partitioning

Event Input Output

Update Released Development Work on Game Released	App Store is informed of update and sent new version
New Player New Player Logs into Game	Create Server Side Account and Statistics For Player
Game Sold App Store Sells Copy of Game	Update Internal Leaderboard and Send out to other players
High Score Player Gets a High Score in Game	
Update Internal Sales and Growth Figures	

3d Competing Products

Games that force players to compete with one another in short challenges are not uncommon. Many recent examples of *Battle Royale* games also cater to this audience, by pitting players against each other and allowing them to create challenge by competing with one another. The appeal of this game is that the barrier to entry is very low, as the controls are simple and the objective straightforward. In addition the matches are very short in length, allowing users to quickly play a game instead of having to commit a large amount of time to sitting down and playing the game. The short time obligation and low barrier to entry are what sets this game

apart.

4 The Scope of the Product

The work handled by the product would be to create an environment where players can pick up and play the game. As a result, the product would need to have a strong server established to allow client connections and create matches for players to play. Allowing for an entertaining yet simple UI to allow for players to appreciate the game and its simplicity.

4a Scenario Diagram(s)





nice, I'll play
on mobile



I will play
on my pc



4b Product Scenario List

1. People that want a casual game to play for highscores.
2. People that want to play a casual but competitive game to play with friends.
3. People that want to play for some fun.
4. People that played Lunar Lander arcade, but want to play a multiplayer version of the game.
5. People who are experienced with the game and want to show that they are the best of the best.

4c Individual Product Scenarios

People playing for fun: Most players will be attracted to the game for its easy controls and will be playing the game for fun and to relax.

People playing competitively: More experienced players will want to compete with other experienced players to be the best.

People playing alone: Some people will not want to play with others, and can play the game alone and give more of an arcade game feel.

5 Stakeholders

Potential stakeholders may include companies that are interested in cross-platform

capable games or social media companies.

5a The Client

The developing organization will act as the client since the project will have the same features for every customer. However, when releasing the product for schools or large organizations there may be larger lobbies implemented.

5b The Customer

The customers for this product are expected to be a wide range of individuals such as anyone who is interested in a casual multiplayer video game. The customer base would have no association with any companies or organizations.

5c Hands-On Users of the Product

Companies that are interested in cross-platform games such as Epic Games would have hands-on-users ranging from teenagers to adults. Most of these hands-on-users would be highly experienced with cross-platform games and would be highly competent in learning how to play. Cross-platform video game companies could host tournaments for games which could allow for larger lobbies where multiple individuals compete with each other. Another organization that would be interested would be schools. The hands-on-users would include students which would already be proficient in playing multiplayer games online with their friends. The school could host after school clubs that relate to competitive gaming (such as a competitive gaming club or after school social). The product could be used as a way to bring people together for social activities and entertainment.

5d Maintenance Users and Service Technicians

The consumer will be responsible for installing and updating the product. Similar to how most applications work, there will be an update available for users to download and install via the online store where they downloaded the product from. The user simply has to navigate to the store and update the newest version of the product. The maintenance will be solely delegated to the organization. All server updates, bugs or glitches, and patches will be the organization's responsibility.

5e Other Stakeholders

There would be some stakeholders that may not regard the product as a useful tool for their mission statement. Some stakeholders may include companies that value health and physical activity for their customers. They would see it otherwise as a distraction and setback for customers. K-6 educational institutions may also not value the product as much as they would potentially be a distraction for their young students rather than an enhancement.

5f User Participation

Users will have the ability to aid in development by participating in closed alpha and beta versions of the product where user feedback will be used to fix any shortcomings or bugs. The feedback will be essential to the final release of the product.

5g Priorities Assigned to Users

Key users would include any hands-on-users of cross-platform video game companies. These users are the most important as they comprise a large majority of the products expected user base. Secondary users would include students because while their requirements are valued key users have higher priority. Unimportant users include anyone outside the former user base.

6 Mandated Constraints

6a Solution Constraints

The product must be an online multiplayer game. This will create an engaging experience that will keep users playing. It must also be compatible with mobile devices. This is because most of the population and younger population have a mobile device and can play the game and create a larger audience

6b Implementation Environment of the Current System

The product should be compatible with ios and android specifically ios 12.4.8 or newer since that is the latest ios version that the iphone 6 is compatible with. The Iphone 6 is still popular so allowing users to download on older devices should be done. In the case for android anything above 8.0 should be fine since newer affordable android phones come with more recent versions of android installed. It should also be compatible with pc and cross platform.

6c Partner or Collaborative Applications

It does not require any partner applications

6d Off-the-Shelf Software

Does not require any off the shelf software

6e Anticipated Workplace Environment

The product is expected to be played by the younger population using the mobile application. Because this is the case the game is expected to have easy and simple game controls and possibly different options for game controls to give users a preference. The game will be used outdoors which could make darker color schemes difficult to see in the sun, the product should implement a brighter color scheme to avoid this problem.

6f Schedule Constraints

The product should be released in at most 2 years with more features being added over the following 2 years. For the complexity of the game this should be more than enough time and create profit over the 2 years of features being added. Releasing the game in this short time span will create profit early and also start creating a fanbase early.

6g Budget Constraints

The product should not exceed more than 100 mb on the mobile side since users with lower

quality devices have smaller storage space. This will prevent the user from wanting to delete the application because of storage space. On the PC side the product can be much bigger around one gigabyte max. This is including features which means the game could start with much less storage space and work itself up to the 100mb cap. The budget should be 300k based on other games with the same complexity and being online. For example hearthstone being a large online multiplayer game had a cost of around 300k.

7 Naming Conventions and Definitions

7a Definitions of Key Terms

Cross-Platform: A term used to describe how a software can be used across different types of computers.

Cross-Platform Gaming: A term used to describe players using different video game hardware while playing with each other at the same time. For example being able to play in the same online session with players using Xbox, PS4, or a Nintendo Switch.

Cross-Platform Gaming Companies: Used to describe companies that hold an interest in investing in games that can be played on multiple computers/consoles simultaneously. Such examples of companies may include Epic Games or Blizzard.

7b UML and Other Notation Used in This Document

Diagram in 3b: Arrows indicate an action or relationship between objects.

7c Data Dictionary for Any Included Models

N/A

8 Relevant Facts and Assumptions

8a Facts

Feedback and data collected from the target users and the strategies players have to give them the best possible advantages will be under review and to understand how players are approaching the game. For example, if the damage dealt by the engine is too high, and can prevent players from competing, there could be scaling on the damage dealt and will be adjusted accordingly to maintain fairness while still keeping the integrity of the game. With this in mind, data and feedback will also adjust the difficulty of the maps, if there are inconsistencies within the difficulties, like if on the hardest difficulty, players always land on the safest area, we could make the safer areas less rewarding, while increasing the reward for landing on the more difficult terrain

8b Assumptions

An assumption will be made that players can play with each other regardless of the platform they play on. This will encourage the multiplayer aspect of the game, while not burdening the consumer to have to restrict themselves to one platform to play with others. With this in consideration, the server hosting the multiplayer connections will need to allow for clients to connect on all platforms.