



GRAND CANYON
UNIVERSITY™

Gate:Crash

Giovanni E. Martinez

CST-451 Capstone Project Proposal

Grand Canyon University

Instructor: Professor Mark Reha

Revision: 1.0

Date: 9/14/2022

ABSTRACT

The current state of the video game market is overly saturated with two major genres of games. Those two genres are the open world role-playing game, and the battle royale game. This does not mean that other styles of games cannot thrive in the current market, however due to the lack of differentiation in the modern game market, games that remove themselves from this model can garner more attention and possible success. That is the space that this project aims to fill.

The goal of this project is to introduce a new competitor to the current video game market, through the 2D objective based exploration game. The design philosophy for the game environment and layout will take inspiration from games in the genre such as Metroid, where the player is dropped in a large space that they will be tasked with navigating. The core gameplay loop of the game will consist of selecting a loadout and objectives from a central hub area and proceeding to the larger environment, or map, where the player will have to complete those objectives and return safely by extracting from the map to collect their rewards. The main map of the game will be random every-time that the player initiates a new instance. The game will also incorporate an escalating combat system that will force the player to take more precaution during their gameplay, to avoid being killed quickly and losing their progress.

History and Signoff Sheet

Change Record

Date	Author	Revision Notes
9/18/2022	Giovanni E. Martinez	1.0.0 Initial draft for review/discussion

Overall Instructor Feedback/Comments

Overall Instructor Feedback/Comments

Integrated Instructor Feedback into Project Documentation

☐ Yes ☐ No

Project Approval

☐ Professor Mark Reha

TABLE OF CONTENTS

PROJECT OVERVIEW AND PROJECT OBJECTIVES	5
PROJECT SCOPE.....	6
PROJECT SUCCESS MEASURES	7
PROJECT HIGH-LEVEL SOLUTION	8
PROJECT CONTROLS	10
PROJECT COST AND SCHEDULE	12
APPENDIX A – REFERENCES	13
APPENDIX B – COPYRIGHT COMPLIANCE	14

Project Overview and Project Objectives

State the Problem and Background

The game market is over-saturated with many games of the same popular and digestible genres. These games are not lacking in quality however due to the success of these styles of games, companies and developers have adopted them as the standard for a successful business and game model, which has indirectly led to a stagnant gaming environment. Additionally, the deprecation of the Adobe Flash format and Flash Player brought about a decline in the development and ease of access of 2D games.

Project Objectives

For this game to be considered in a playable and deployable state, these features will need to be effectively implemented:

- A menu be able to start the game and create a character.
- The ability to save characters and in game progress.
- Select a loadout and objectives in-game.
- Complete objectives and explore the map.
- Extract from map and obtain rewards.

Challenges

These are the challenges that will be faced throughout the development of the game:

- Effectively designing the player movement for the map.
- Developing the escalating enemy artificial intelligence (AI).
- Making the gameplay loop engaging and rewarding.
- Designing the look and feel of the game environment and characters.
- Allowing the user to save their character and progress.

Benefits and Opportunities

This game will offer more availability of another genre of game in the game market that strays from the standard style of game that major companies and teams have adopted. The project will be able to take advantage of the smaller target audience for people looking for engaging 2D games that involve Metroid-like exploration, to better build an established player base and hopefully grow through the attention and retention of those players.

Project Scope

1. This scope of this project will be a fully fleshed out and playable game for the PC platform. The player will be able to create a character to save their progress in the game. The game will involve a randomly generated map and objective system and the ability for the player to customize and adjust their loadouts to better suit their playstyle or the situation they plan to face. There will also be enemies driven by artificial intelligence (AI) within each map that will become increasingly more hostile and aggressive to the player the longer the player spends in a single instance of a game.

A few of the out-of-scope features for the game will be an enemy/objective-based loot pool that will add more weapons and abilities to the player's arsenal, and the ability to play the game online with other players, in order to make individual matches more engaging. This would also require scaling of the game to allow the matches to be more difficult to account for the greater number of players.

2.

Work Breakdown Structure									
ID	Task	Dependencies	Status	Effort Hours	Cost	Start Date	Planned Completion	Actual Completion	Resource
1	Complete project proposal	Project Idea	Complete	5	\$-.-	9/21/2022	9/25/2022	9/25/2022	Word
2	Complete Requirements	1	Not started	6	\$-.-	10/3/2022	10/16/2022	n/a	Word
3	Complete Final Architecture Plan	2	Not started	8	\$-.-	11/14/2022	11/20/2022	n/a	Word/Draw.io
4	Create game assets		In progress	80+	\$0.00	9/23/2022	12/7/2022	n/a	Aseprite
5	Develop the world and story of the game		In progress	60	\$-.-	9/25/2022	12/3/2022	n/a	Word
6	Create Gameplay	6.1 - 6.8	Not started	180+	\$-.-	12/5/2022	Week 15 2023	n/a	Unity/Visual Studio
6.1	Player movement and combat		Not started	22	\$-.-	n/a	n/a	n/a	Unity/Visual Studio
6.2	Enemy behavior and abilities		Not started	22	\$-.-	n/a	n/a	n/a	Unity/Visual Studio
6.3	Randomly generating map		Not started	22	\$-.-	n/a	n/a	n/a	Unity/Visual Studio
6.4	Player weapons and abilities		Not started	22	\$-.-	n/a	n/a	n/a	Unity/Visual Studio
6.5	Objective and loadout selection		Not started	22	\$-.-	n/a	n/a	n/a	Unity/Visual Studio
6.6	Character creation/customization		Not started	22	\$-.-	n/a	n/a	n/a	Unity/Visual Studio
6.7	Character/progress saving		Not started	22	\$-.-	n/a	n/a	n/a	Unity/Visual Studio
6.8	Tutorial level		Not started	22	\$-.-	n/a	n/a	n/a	Unity/Visual Studio

Project Success Measures

1. Project success will be measured by the amount of the features available in the game that were defined in the list of planned features during the documentation and planning process. These features must also be implemented in a manner that enhances the overall gameplay and makes the game more engaging. The project will be considered complete when it is deployed onto a distribution platform.
- 2.

Project Completion Criteria	
1 – Player features implemented.	
2 – Enemy interactions and AI implemented.	
3 – Random environment generation implemented.	
4 – Play through from completion from start to finish.	
5 – Deployment and first installs.	

- 3.

Assumptions and Constraints					
ID	Description	Comments	Type	Status	Date Entered
1	Unity will support the design of the gameplay.	Whether or not the design and concept of the game will be supported by the Unity game engine has been researched and considered.	Assumption	In progress	9/23/2022
2	The game will be engaging and encourage replayability.	The core gameplay loop will be the main draw of the game, and will be difficult to gauge it's engagement.	Assumption	In progress	9/23/2022
3	Lack of assets.	All of the in game assets will need to be developed in house and/or outsourced.	Constraint	In progress	9/23/2022
4	The game will succeed in the current video game market environment.	The state of the game market is constantly shifting, and it's possible that the game will no longer fulfill it's intended purpose at launch.	Assumption	In progress	9/23/2022
5	Cost of outsourced assets.	Assets that are not developed in house will need to be sourced at a cost.	Constraint	In progress	9/23/2022
6	The AI will be capable of escalating in behavior.	The escalate-over-time model of the enemy AI is still to be prototyped and tested.	Assumption	In progress	9/23/2022

Project High-Level Solution

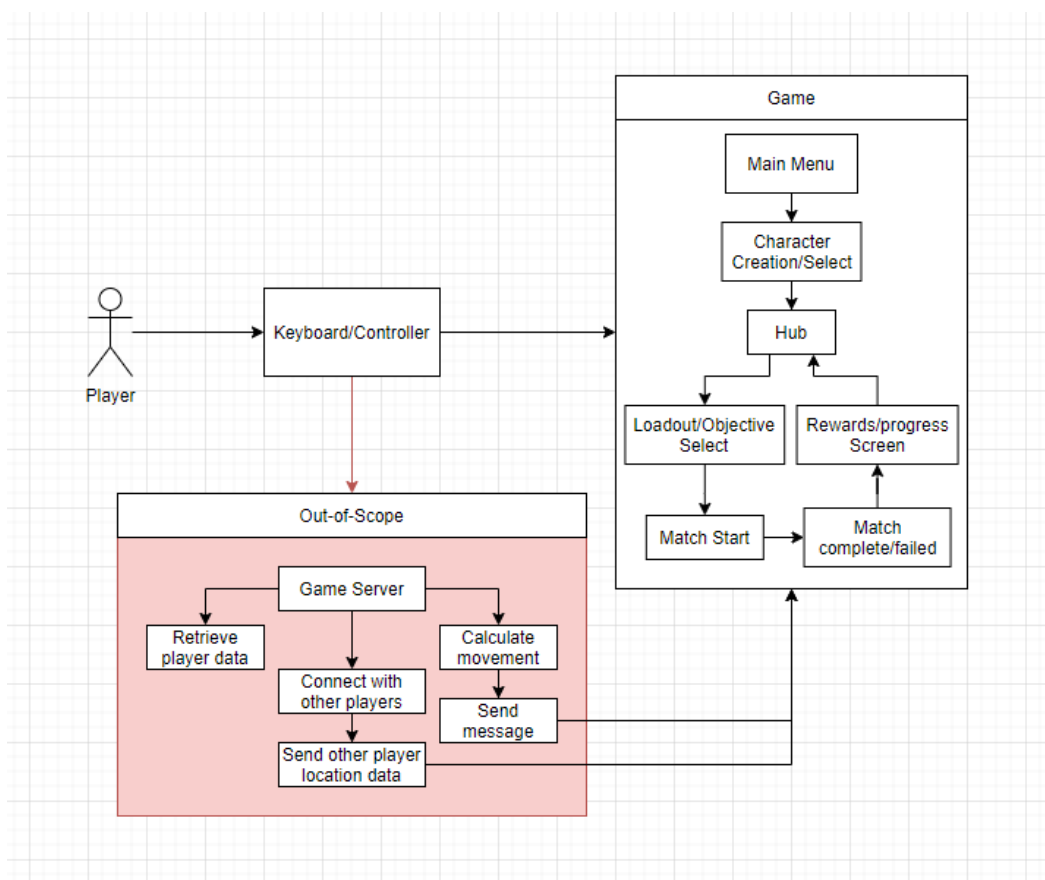
Introduction

The challenge of this project will be to introduce an interesting new game in the 2D indie-game market.

The game will seek to compete with the other games in the genre and capture an audience. As stated before, the current state of the video game market is saturated by many games within the same genre of “Battle Royale” and “Open World,” and while there have been many games that make use of this genre in original ways, it still leaves more variety to be desired. The success of this project will depend heavily on the engagement of its players and whether it will be able to capture and maintain a dedicated audience.

The game and its mechanics are being developed with the assumption that it will be entertaining and engaging enough to build such an audience.

Solution



This game will make use of a 2D exploration game formula and introduce unique systems that allow it to stand as an original concept for a game within the genre of 2D style games. The concept of the game is simple, the player is an explorer commissioned by a government entity to explore and catalogue the new environments that lie beyond strange portals that have begun to appear around the world. While exploring the player will encounter enemies and creatures that are hostile, and the player will need to defend themselves. The player will need to make use of their weapons and tools to eliminate the enemies and complete their objectives, so that they may successfully extract from their hostile environment. Doing so successfully will allow the player to earn rewards to upgrade and develop their character. Alongside the gameplay will be a story About the strange portals leading to these environments and where they came from. It's up to the player to discover the truth behind the portals and stop whatever entity is attempting to reach our realm. The game will make use of systems that are inherently unpredictable such as the randomly generated maps and objective locations, and the endlessly spawning enemies, as well as player-controlled features such as the ability for the player to create their own loadout and choose their objectives, and the ability to navigate the map in whatever fashion they choose. This combination of systems will hopefully allow for the player to remain engaged with the gameplay and story due to its replay-able format, while giving the player the sense of progression and completion as it allows the player to make use of the rewards and experience from each match to develop and customize their character.

Project Controls

1.

Risk Management				
Event Risk	Risk Probability	Risk Impact	Risk Mitigation	Contingency Plan
	(high, medium, low)			
Design of character and environment will not be compelling or pleasing.	High	This will cause the game to look visually unimpressive and lack the aesthetic engagement required to allow the player to want to partake in the world of the game.	Many drafts and versions of the designs of each character, enemy, and environment of the game will be made to reach the visual feel that the game is going for.	The closer the game looks to the intended design, the more the better the game will look.
Inexperience with the Unity development environment.	Medium	A lack of experience and exposure to the different features and systems available in Unity may lead to the project falling flat or lacking depth.	Research will be done about the Unity development environment, and the different features and libraries that are available to take advantage of.	In-depth research will be done about the systems relating to the feature of the game that is being developed, to ensure that each feature has depth and is fully fleshed-out.
The concept for the game	Medium	It's possible that the concept for the game that is being developed will not be entertaining or engaging for the player.	The game will be play tested by a group and feedback from those tests will be used to adjust the gameplay, when possible, to be more engaging.	The game will be playable from start to finish and allow the player to decide whether to continue playing or not.
Unfeasible or impractical features	Low	The features of the game may not be practical or may be implemented in a sloppy or incomplete manner, which may lead to the game becoming clunky or difficult/frustrating to play.	Play testing and prototyping of each feature will be done to ensure that each feature is interesting and entertaining.	The more features are added and solidified, the more the chances are that the game will become entertaining.

Issues Log								
ID	Description	Project Impact	Action Plan/Resolution	Owner	Importance	Date Entered	Date to Review	Date Resolved
1	No assets for game	Without assets for the characters, enemies, and environments, the game will have no life or characteristics.	Assets will be designed in house and sourced by commission.	Giovanni (Project Lead)	Top priority	9/25/2022	n/a	n/a
2	No music or sound design	Similarly to the assets, music and sounds are a very important aspect of giving the game life and character.	Music will be produced in house or commissioned.	Giovanni (Project Lead)	Top priority	9/25/2022	n/a	n/a
3	No experience developing the specific systems of the game	Without the systems defined in the feature list, it will not be possible to make the game as presented.	These features and systems will be researched and tested before and during development.	Giovanni (Project Lead)	Top priority	9/25/2022	n/a	n/a

2.

Change Control Log									
ID	Change Description	Priority	Originator	Date Entered	Date Assigned	Evaluator	Status	Date of Decision	Included in Rev. #
1	Adjustments in the gameplay or features of the game.	1	Giovanni	9/25/2022	9/25/2022	Giovanni	Not started	n/a	1.0.0
2	Scaling the game to include multiplayer and server based features.	Out of Scope	Giovanni	9/25/2022	9/25/2022	Giovanni	Not started	n/a	1.0.0

3.

Roles and Responsibilities			
Name	Team	Project Role	Responsibility
Giovanni	Development, Design, Story, Marketing, Planning, Testing	Lead	<ul style="list-style-type: none"> - Developing the game and all of its features. - Leading the visual and audio design of the game. - Developing the world and story of the game. - Marketing the game through social media and outreach. - Testing the game throughout the different stages of development.

Project Cost and Schedule

1. The project will not require any cost calculations in the current and foreseeable stages of development.

2.

Week 1-2	Player movement and combat
Week 3-4	Enemy behavior and abilities
Week 5-6	Randomly generating map
Week 7-8	Player weapons and abilities
Week 9-10	Objective and loadout selection
Week 11-12	Character creation/customization
Week 13-14	Character/progress saving
Week 15	Tutorial level

Appendix A – References

List all references using APA style

Appendix B – Copyright Compliance

For each external technical tool or code used, provide a reference to its copyright policy, clearly showing your right to use it. For each external technical tool or code used, detail how you used it, how you adapted it, how you modified it (if permitted), and why did you use it as opposed to write your own. Only a small portion of your project may rely on external code. When code libraries/packages are used, explain why this was necessary/required/recommended. Seek instructor approval for using external resources prior to beginning to work on the project.