

# **Appendix A**

## **PDD**

**Project Definition Document**

# Project Definition Document

**Degree:** BSc Computer Science with Games Technology

**Project Title:** A Souls-Like game that is built around systemic AI interaction (AI interacting with other AI systems)

**Project Brief:** *Rain world* like ecosystem meets *Dark Souls* style of levels and checkpoint system

**Name:** Aum Patel (ACZG896)

**Email:** [aum.patel@city.ac.uk](mailto:aum.patel@city.ac.uk)

**Consultant:** Edward Phillips

**Project Proposer:** Aum Patel (me)

**Proprietary interest:** There is no proprietary interest in this project other than my own.

**Word Count:** 1449 (not including cover page and ethics checklist)

# Proposal

## Problem to be solved

A game combining the level and checkpoint system of **Dark Souls**<sup>1</sup> (by *FromSoftware Inc*) with an ecosystem like **Rain World**<sup>2</sup> (by *Videocult*) where enemies act like animals in that they have their own goals and they can interact with each other.

Based on the length of this project being only a few months, I will focus in on a few gameplay systems that take inspiration from this, where the main gameplay loop revolves around trying to find ways through levels by manipulate enemy AI, by maybe luring two enemies towards each other to cause them to fight each other. Keeping it simple with a few complex systems that work well will allow this project to be a success.

In **Rain World**, there is a big variety of enemies that are living beings in an ecosystem, from small flies that cannot attack, to the top of the food chain daddy-long-legs, where the player is in the middle of the food chain. The player is a slug cat that can only use items it picks up as weapons and food. The main aspect I would like to focus on is the enemies interacting with each other in a variety of ways.

**Dark Souls** is a game is praised for its sense of challenge, a lot of this stems from the world design and checkpoint system. The checkpoints are known as bonfires where you comeback when dying and refill your healing items; this then branches out into the level and also some shortcuts, which are unlock able from one direction and after unlocking stay open, this way you get rewarded for mastering the certain section, allowing you to skip it if you wish. This also helps with the world design as in Dark Souls the world is interconnected with many paths interconnecting with each other, and with the omission of a teleportation option for most of the game, these shortcuts allow you to make your way around the world more efficient. I would also like to implement the death system where when you die, you lose your resources and have to make your way back to where you died to pick them up, this increases the stakes and challenges you further.

## Project Objectives

A game that has an ecosystem like environment where there are Prey, Predator creatures with collectible resources and these systems should interact with each other; for example a predator will hunt out its prey if they are hungry, or ignore them if not; animals lower in the food chain would go for plant resources.

## Minimum Viable Product

- One health food, one prey enemy, one predator enemy; where the latter two have minimal functional AI to detect each other/resources/player and act accordingly.
- One weapon to attack with
- A functional HUD for the Demo
- Test level for showing the different game systems

---

<sup>1</sup> Dark Souls - <https://en.bandainamcoent.eu/dark-souls/dark-souls-remastered>

<sup>2</sup> Rain World - <https://rainworldgame.com/>

## **The Main Product**

- Flesh out the AI further by having more states/goals and interact with more gameplay systems.
- A power up that can be collected to see through walls.
- A ranged weapon in addition to the melee weapon.
- Have a predator enemy that is at the top of its food chain and very aggressive, one that will attack players and prey without being hungry.
- A collectable health resource in the environment that both the player and the enemies can pickup
- Implement a system where you drop resources upon death, however you have one chance of going back to that location to pick them up, otherwise lose the progress you have made.
- A fleshed out HUD that is both functional and aesthetically pleasing
- A one level with well placed enemies that has a shortcut in the middle.
- There will be natural hiding spots in the level (like long grass) where the player and enemies lower on the food-chain can use to hide from the predator enemies.

## **Stretch Goals**

These are goals that I will not be aiming to achieve within the deadline of this project, however, if I get the main product finished earlier I shall work through these stretch goals.

- A few levels that have verticality where there is a shortcut that can be unlocked every half way into the level to reuse checkpoints. These levels should be inter-connected and the player should have the option to tackle them in any order.
- Have a boss enemy at the end of one of the levels. I would really like to have this as this would be what the player would be building themselves up to tackle, however I understand that this could be a stretch goal if I do not have the time.

# Project Beneficiaries

I benefit from this by improving my skills with Unity and general game design and 3D development. I will learn how to manage a project with a big scope and complete it to the best of my abilities in a few months.

The people that will play my game will also benefit from this as they get to experience something new and get some enjoyment out of it.

## Work Plan

Will use Open Project as my tool of project management as it provides me with all the tools I need in a very capable open source software.

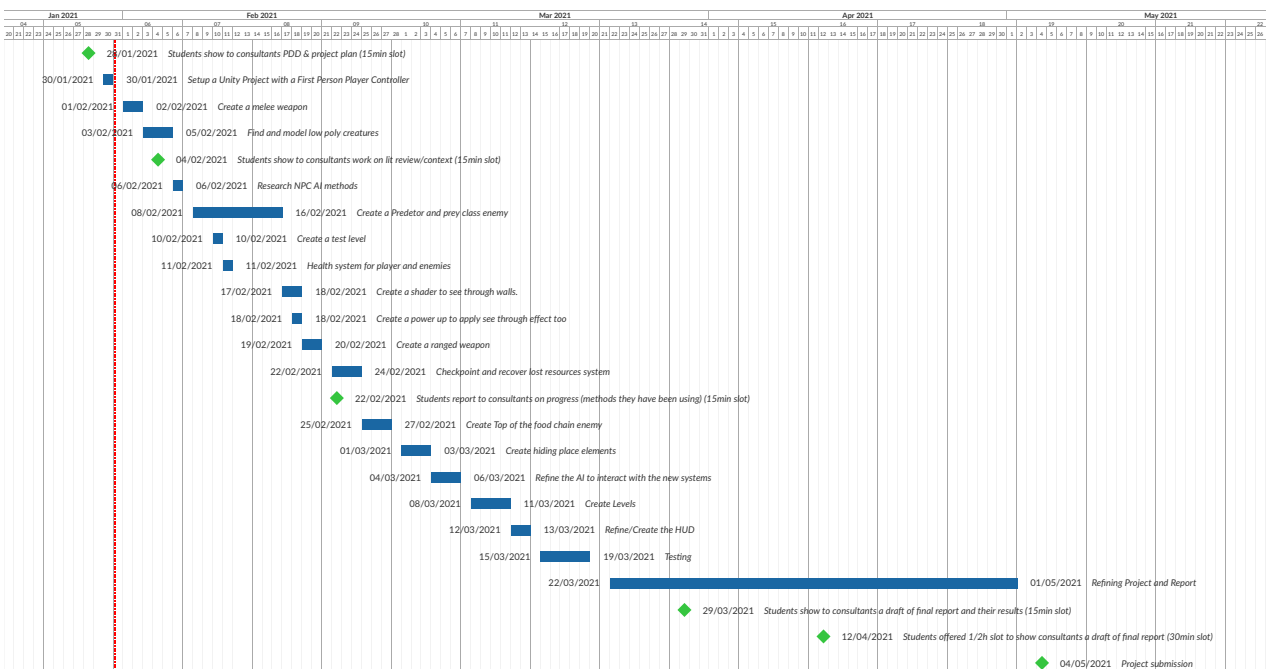
I have planned my time out so that I get a functional main product ready for testing by the later half of March. I have done this as I know I have a tendency to underestimate certain difficulties that will come my way and would like plenty of time to work to fix them, so by the project deadline I shall have a refined project.

Given this I will dedicate most of my weekdays to this project, I only require Thursdays and weekends to work on the Computer Graphics IN3005. I will work lightly on Saturdays and a break on Sundays from the team project.

The Gantt Chart is of course subject to change and addition of different tasks; the *Refining Project and Report* section will be expanded upon closer to the time as I shall have a better idea of what more needs doing to the project.

## Gantt Chart

Gantt Chart



# Project Risks

I am sure there will be more risks than the ones I have listed below that I will have to be aware of when I am doing this project.

Risk	Likelihood (1-5)	Impact if risk not mitigated (1-5)	Total Risk Score	Mitigation
Using Unity. This is a minor issue for me as I have dabbled in it before, however it is still a new engine for me for the scope of this project	1	5	5	There is an abundance of Unity Tutorials and well written documentation and solutions to problems in many forums. This will be good as I will be able to find a solution to most problems I have with relative ease, and if I am very stuck with something novel relating to the engine, I can make a forum post and due to the great size of the community, there will be people to assist.
Creating the AI System at a reasonable time	3	5	15	I will have to look at other implementations of a similar AI system to find solutions to this. I have already done some research and found the source code for FEAR ( a game that uses Goal Oriented Action Planning) which I will have a thorough look at to find a way of making a similar system at a smaller scope. If this does not mitigate the problem, I will have to use a more traditional AI system, which is simpler to implement, for which there are plenty of resources out there.
Modeling Enemies. Inability to model/ animate enemies	4	2	8	If I am not able to model/animate simple enemies or do not have the time to, I have two options: <ul style="list-style-type: none"> <li>- Use free to use models found online without modification to save time.</li> <li>- Use simple objects (i.e. a cuboid) to represent Enemies and colour them based on their states.</li> </ul> As the aesthetics of the game are at a lower priority than the systems, I will be dedicating less time to this.
Level Design. Not having enough time to create the levels I would like to create.	2	4	8	If I do not have time to dedicate to making levels, I will have to create a one or a few disjointed very simple level/s, that show off all of the different game systems. I would like to avoid this as having proper levels will be a better experience for the player.

# Ethics Checklist

See additional document.