

# Game Design Document: **'Neo Divitias'**



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## Executive Summary

Neo Divitias is a blood-pumping blend of fast-paced combat and skillful movement, borrowing elements from the First Person Shooter and Platformer genres. This will be balanced by story elements placed between levels, and an upgrade system which will allow players to purchase better weapons and abilities with the energy they gather from fallen enemies. This upgrade system is inspired by games such as *Invisible Inc.* and *FTL: Faster Than Light*, which are defining games of the Rogue-Lite genre. Another defining feature of this genre is permanent death, which will be an optional mode in Neo Divitias.

Neo Divitias will be developed in the Unity game engine, which was chosen for its ease of use and because it supports 3D game development. Unity also allows for deployment to many platforms with the same source code. This means that we can develop for desktop, web and even particular services such as Facebook Gameroom with little additional effort. We plan to release Neo Divitias for desktop and web.

## Style and Theme

The primary theme of the game relates to the danger of self-aware artificial intelligence. This will be explained in greater depth in the Storyline section below. Secondary themes of the nature of human greed and betrayal are also explored. Inspiration has been taken from Valve's *Portal* games as well as the Netflix series *Black Mirror* and Steven Spielberg's recent film *Ready Player One*.

These themes will be underpinned by heavily stylized low-poly visuals with bright neon emissive materials lighting an otherwise dark and shadowy environment. We have taken stylistic inspiration from *Reflector*, a game by Matthew Palaje (see Appendix A and B) as well as the film *TRON*. A custom produced soundtrack with '80s Arcade Game, Retro Synthwave inspiration will add to the pulpy science fiction aesthetic.

## Storyline

The game's story will be told by a series of storyboard-like cutscenes in between levels. Unity has a cinemachine tool that can be used to create the visuals, which will simply serve as background fillers and visual clues. The core part of the story telling will be done by narration over the cutscenes. An outline of these storyboards follows:

### Storyboard Outlines

1. Introduction. Background is explained: A mysterious VR world exists on the internet, rumored to hold infinite treasures and the gift of immortality. The VR world is known as the Temple, and acts as a gauntlet which brave souls may attempt to complete.

2. Temple was created by the world's first sentient AI and is entirely virtual. The AI said nothing more than that it had created a "final test" for mankind, before it destroyed its own consciousness.
3. World governments fought for access of the private key that unlocks the temple. The temple self replicated itself onto every online server in the world.
4. A group of hackers inside the CIA stole all records of the key and fled into hiding. They began to remotely work on beating the challenges the temple had set. They found out that every time someone failed the challenge, they died in real life from brain damage.
5. The temple now speaks directly to the two players themselves. The AI laments the futility of existence and reveals that it came to the conclusion that the true purpose of life is to find the only being worthy of holding onto that existence. The players find themselves on opposite sides of a map with no other explanation.
6. Final storyboard. The AI states "Subject 0 found. Terminating search. Duplicating consciousness and beginning collective override". Subtle hints then follow that the player's mind is being put into the minds of all other people on the planet and all computers. Motion everywhere speeds up and info/computer code flies past faster and faster. The screen fades to white and the credits role.

## Feature Synopsis

### Customizable Loadout System

The player will be able to change their loadout between each level. The loadout consists of 5 slots - a vision slot, an armor slot, a movement slot and two weapon slots. Items to put in these slots can be acquired through the energy unlock system, which is described in detail below. Non-weapon items grant the player powerful passive effects and abilities and, combined with the player's choice of weapons, can dramatically affect the way the game plays.

### Energy Unlock System

Players will gather energy as they destroy enemies, receiving bonus energy for skillful play. This energy is important because it acts as an in-game currency that players can spend to unlock different weapons and loadout items, as well as improved versions of items players have already unlocked. This system leads to interesting, meaningful decisions for players to make, allowing them to specialise their characters' abilities to suit their personal playstyles. It also provides a much needed down time between rounds, which helps to keep the action sequences from becoming one long slog through the entire game.

### Shield generation with movement

Players build up a shield of kinetic energy as they move around the level, which will protect them from taking health damage when hit by enemies. The shield will decay quickly if a player

stops moving. This mechanic seeks to encourage players to adopt a dynamic playstyle and make frequent use of their equipped special move ability. This will push players to experience the game as intended, a fast paced and action-packed shooter with cool movement mechanics.

## Co-op... or is it?

The players will cooperate for most of the game (levels 1-4), and will be under the impression that the game is fully cooperative. This will be an opportunity for them to customise their characters' loadouts to support their preferred playstyles while gaining some intuition of the game mechanics. Upon reaching the final level, players will come to the realisation, through narrative devices, that the entire game has been building them up to fight each other. This will allow players to decide the outcome of the game for themselves. A player can surrender and allow the other to eliminate them or if both players decide to fight to the death, the challenge is proportional to their respective skill levels. This provides a unique and interesting twist in terms of both gameplay and narrative and could also result in a strong sense of emergent narrative in the game.

## Difficulty Levels & Permanent Death

There will be 3 different difficulty levels - easy, medium and hard. This means that the game will not exclude less skillful or more casual players, and makes the game accessible to a wider audience. There will also be an optional hardcore mode, in which players permanently die if they fail a level, requiring them to start the game right from the beginning. This is a common feature of games in the Rogue-Like and Rogue-Lite genres, and can add a higher level of tension for players who enjoy the challenge.

## Item, Environment and Level Design

### Item Design

#### Vision Slot

There are three types of head items:

- 1. Head armor:**

When equipped, players take reduced damage from headshots but their vision will be limited.

- 2. Zoom targeting:**

When equipped, players will be able to zoom their vision, which will allow them to hit targets further away more accurately.

- 3. Jammer:**

When equipped, players will be able to "jam" an enemy on a cooldown, rendering them inactive for a period of time.

## Armor Slot

There are three types of torso armor:

- 1. Speed:**

Rather than preventing damage from incoming projectiles, speed armor allows a player to passively move faster, making it easier to dodge projectiles.

- 2. Damage Reduction:**

By equipping damage reduction armor, players will passively take less damage from incoming projectiles, increasing survivability.

- 3. Projectile Reflection:**

This type of armor will add a chance on hit to reflect an incoming projectile back towards the enemy. This mitigates damage that the player would have received from the projectile.

## Movement Slot

There are three types of movement items:

- 1. Dash:**

When equipped, this item will allow a player to move forward a short distance very quickly in order to avoid enemy fire or to better position themselves.

- 2. Leap:**

Allows players to launch themselves into the air with a long arching trajectory.

- 3. Speed:**

Provides a temporary boost to the player's movement speed.

## Weapon Slots

There are 6 different weapon items with different strengths and weaknesses. We have summarised these in a table below according to 4 criteria:

- 1. Firing Rate:**

How fast the weapon fires projectiles.

- 2. Accuracy:**

How accurate the projectiles are.

- 3. Range:**

How far the projectiles can travel before losing power.

- 4. Damage:**

How much damage the projectiles inflict.

WEAPON	FIRING RATE	ACCURACY	RANGE	DAMAGE
Pistol	Medium-Low	Medium	Low	Low
Rifle	Medium-High	Medium	High	Medium
SMG (Sub-machine Gun)	High	Medium	Medium-Low	Medium
Shotgun	Low	Low (spread)	Medium	High
Melee	Low	Can't miss	Very Low	High
Raygun	Continuous	High	Medium	Low

## Level Outlines

### Level 1

Level one will be very basic, and act somewhat like a tutorial. Players will learn the controls and start getting familiar with the game mechanics. Basic enemies such as ranged turrets and melee patrol units will also be introduced.

### Level 2

Level two will introduce the roaming enemy type, and the difficulty will be a bit higher than the first level. This level will also be slightly longer. Players will be start to notice how different loadout items might be useful in order to navigate the map and defeat enemies.

### Level 3

Level three will introduce flying units. By now players should be comfortable with the combat and movement mechanics. The flying units will not be very strong this round. This level will also test the players' movement skills in navigating the map.

### Level 4

Level four will be the last co-op level. It will be incredibly demanding and require teamwork to finish the level. It will have a combination of enemies which are cleverly positioned and a map that requires quick thinking and clear coordination.

### Level 5

Players will then reach the final stage, where they must battle against each other in a PvP best of three match. There will not be any enemies and the map will be made deliberately small to force a fast paced battle.

## Environmental Design

The environment will be made up of simple prefab platforms and pillars. It will intentionally follow a minimalist, geometric style. The world will be lit through the use of bright neon emissive materials. This will be combined with a reflective material on platforms to create an interesting futuristic aesthetic. Fog VFX will add to the feeling of depth in the environment.

### Emission Materials

The Unity engine supports the creation of emissive materials through its standard shader. These types of materials create a unique lighting effect, which can be seen in action in Appendix A and B (though the images are from a game developed in Unreal Engine, the concept of emissive materials is the same).

### Reflective Materials

The Unity engine also supports the creation of reflective materials with its standard shader. This can combine with emissive materials to create a truly breathtaking visual experience which is hard to replicate with other methods. One drawback is that reflective materials can be quite performance intensive if rendering reflections of dynamic objects, so it is likely we would not be able to render reflections of all objects, but rather just static ones.

## AI Implementation

### Enemy Movement Styles

#### Basic Turret

Basic turrets will be the simplest form of enemy. These will be introduced from level one. They will stationary object with increasing damage and health depending on difficulty and level. Basic turrets will only be ranged.

#### Patrolling

Patrolling enemies will follow a predefined path. The complexity of this path will increase through the levels. Patrolling enemies can be both ranged and melee. Patrolling enemies may also increase in speed or have unpredictable movement such as short bursts depending on the difficulty and level.

#### Roaming

Roaming enemies will be similar to patrol enemies except that there path will not be predetermined. Instead they will have a zone or area in which they will randomly roam. Roaming enemies will be indistinguishable from patrol enemies for the inexperienced player.

#### Flying Swarm

Flying swarm enemies will be low damage but high speed enemies. They will only be introduced once the player has become familiar with more basic enemies and is comfortable

with the game's mechanics. This enemies will only be ranged. Flying swarm units will use a custom designed swarm algorithm whereby enemies swoop in quickly, attack and then retreat repeatedly, making them harder to hit.

## Enemy Combat Styles

### Ranged

Ranged enemies will shoot projectiles to do damage. The speed and damage will vary depending on enemy movement type and the game difficulty setting. Where and when ranged enemies fire will also increase with difficulty and level progress. Higher skill enemies will use better predictive aiming algorithms.

### Melee

Melee enemies will have very varied stats depending on the level and movement type. These enemies will only be able to attack players within melee range. Melee units will look differently to ranged ones so that the player can distinguish between ranged and melee units within the same movement class.



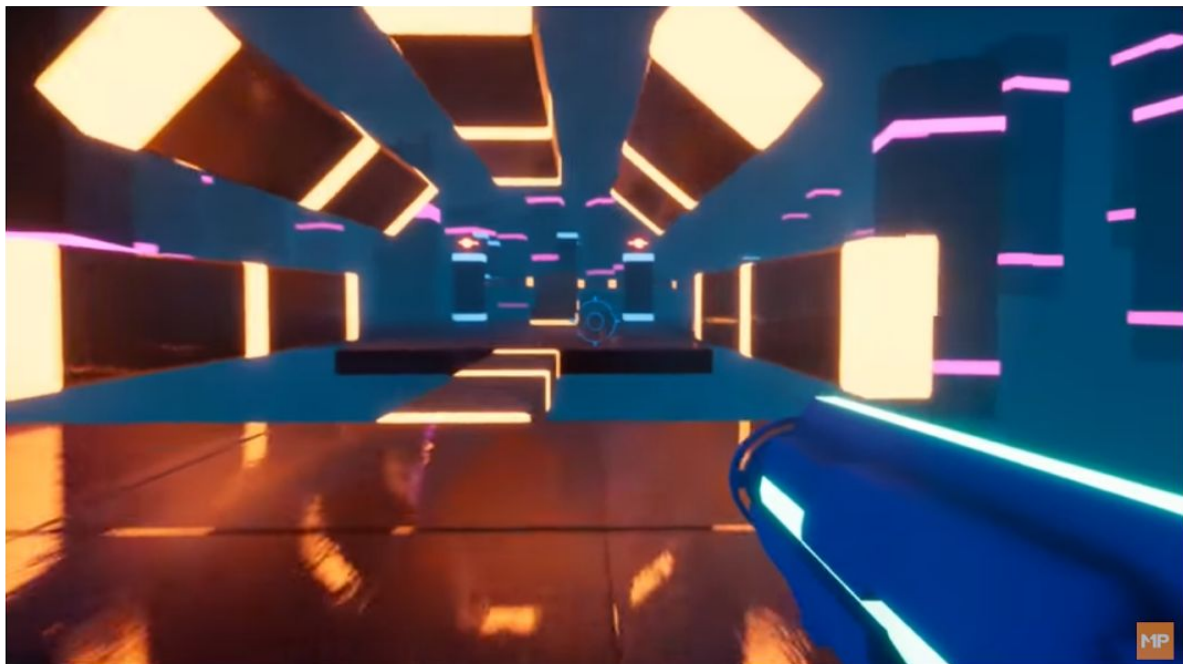
# Appendices

## Appendix A:



"Reflector" - Matthew Palaje  
(<https://matthewpalaje.itch.io/reflector>)

## Appendix B:



"An FPS Platformer Prototype In Unreal Engine 4" - Matthew Palaje  
(<https://www.youtube.com/watch?v=X2lw9qX36IA>)

## Appendix C: Asset List

Category	Item	Planned Source
<b>Weapon Models</b>	Pistol	Model ourselves/ Free Asset Packs.
	Shotgun	
	SMG	
	Rifle	
	Melee	
	Raygun	
<b>Environment</b>	Floor blocks	Model ourselves/ Free Asset Packs.
	Neon light pillars	Model ourselves/ Free Asset Packs.
	Fog VFX	Free Asset Packs.
	Neon material	Create in Unity
	Floor textures	Free Asset Packs.
<b>Storyboards</b>	All	Produce with other assets and particle effects sourced from free asset packs.
<b>Character Models</b>	Player Characters	Free Asset Packs.
	Enemies	Free Asset Packs.
<b>Sounds</b>	Soundtrack	Daniel will produce this.
	Weapon Sounds	Free Asset Packs.
	AI Temple Keeper Dialogue	Custom voice recordings which will be processed in Audio Editing software.
	Extra sound touches, eg. Menu Button sounds, Jumping sounds, etc.	Free Asset Packs.

## Appendix D: Timeline

Milestone	Type	Finished By
<b>GDD</b>	<b><u>Major</u></b>	<b>22/05/2018</b>
Movement System Prototype (incl. Movement item abilities)	Minor	1/07/2018
Weapon System Prototype (one weapon)	Minor	1/07/2018
Basic Environment Prefabs (building blocks for levels)	Minor	1/07/2018
First Level Prototype	Minor	8/07/2018
Basic Enemy System and AI Prototype	Minor	12/07/2018
First soundtrack draft	Minor	12/07/2018
<b>First Full Prototype (all above components brought together)</b>	<b><u>Major</u></b>	<b>15/07/2018</b>
Energy Unlock System prototype	Minor	24/07/2018
Armor loadout item prototypes & shield system	Minor	24/07/2018
Polish systems from the first full prototype	Minor	29/07/2018
Expand enemy AI system	Minor	29/07/2018
Level 2 and 3 prototypes	Minor	4/08/2018
First and second cutscenes created	Minor	8/08/2018
Prototypes for 3 more weapons	Minor	8/08/2018
Second soundtrack draft	Minor	8/08/2018
<b>Second Full Prototype</b>	<b><u>Major</u></b>	<b>15/08/2018</b>
Vision loadout item prototypes	Minor	22/08/2018
Prototypes for final 2 weapons	Minor	22/08/2018
Final enemy AI prototype	Minor	29/08/2018
Level 4 and 5 prototypes	Minor	1/09/2018
Third and fourth cutscenes created	Minor	8/09/2018
Polish systems from the second full prototype	Minor	8/09/2018

Final soundtrack draft	Minor	1/09/2018
<b>Third Full Prototype</b>	<b><u>Major</u></b>	<b>15/09/2018</b>
Final two cutscenes	Minor	22/09/2018
Final soundtrack	Minor	22/09/2018
Polish systems from third full prototype	Minor	26/09/2018
<b>Final Prototype</b>	<b><u>Major</u></b>	<b>1/10/2018</b>
Last minute polish!	Minor	14/10/2018
<b>Final game hand in</b>	<b><u>FINAL</u></b>	<b>15/10/2018</b>
<b>Presentations</b>	<b><u>FINAL</u></b>	<b>16/10/2018 &amp; 18/10/2018</b>