

Game Design Document



Team Name: 2-Bit

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Category of Experience:

Energy

Total Estimated Development Time:

13 weeks (400 hours/person)

Project Period:

18.09.2023 - 15.12.2023

Game Title:

Laser Beat VR

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Overview

Synopsis

A high-energy, manic sci-fi shooter game challenges the player to match coloured guns to targets, challenging their aiming skills. If the player shoots the wrong colour target, it will not be destroyed. The player will have two guns, and there's a final target at the end to shoot.

Target Audience

The target audience for this game will be hitting the average player who has some knowledge/experience with VR games, but aren't fully confident in them nor have they ever not played VR before. We want to cater to this audience by avoiding overwhelming them with visual overstimulation or too complex mechanics.



Our target audience will be 12+ on the pega ratings. This is because we're trying to have a catch-all wide target audience and the game is relatively non-violent as the player is shooting at an inanimate target. The rating is not lower than the 12+ we've set due to its negative health effects on young children such as eye strain.

User Experience Goals

We want to provide a fun experience to a larger audience and create an experience that has a low barrier of entry, by introducing simple and intuitive mechanics and not overwhelming the user. We also want to provide an energising VR experience, as required by the Liminal platform.

Game Design

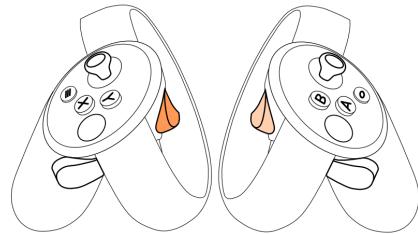
Timeline

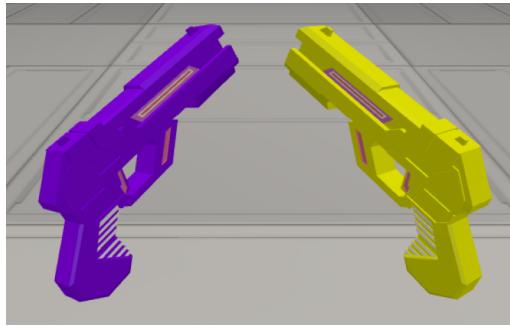
- The Player **Spawns** holding two sci-fi pistols, one in each hand, one yellow one purple
- An energetic **music track plays** in the background to energise the player
 - The track will start off with a slower tempo, which increases throughout the track's duration - providing a greater sense of energy to the listener
- Yellow and purple **targets spawn** and disappear after a set amount of time
 - The targets will spawn within a 90° angle in front of the player's standing location
 - The time to disappear for the targets will be preset, and will be reduced over time
 - The number of targets spawned in at a given time will be influenced by the music
- As they spawn the **player shoots** the Yellow and Purple targets
 - If the player shoots a target with the matching colour gun, the target is destroyed
 - If the player shoots a target with the wrong colour gun, it will not be destroyed
 - There is a low penalty for shooting targets with the wrong colour gun, to avoid causing stress to the player
 - As time goes on the player will be required to shoot targets quicker since an increasing number of targets per second appear (they disappear quicker too)
 - As time goes the music speeds up
- After 180 seconds the **final target** appears, which grows bigger until you shoot it and explodes, where the game then fades to black, marking the end of the experience.

Objects

Guns

Virtual Reality has revolutionised the gaming and simulation industry, offering users an immersive experience that goes beyond traditional forms of entertainment. One key aspect of VR that enhances immersion is the implementation of realistic feeling controls when it comes to virtual firearms. This game does not try to replicate real life guns, but does try to make the duel sci-fi pistols feel real within the context of sci-fi.



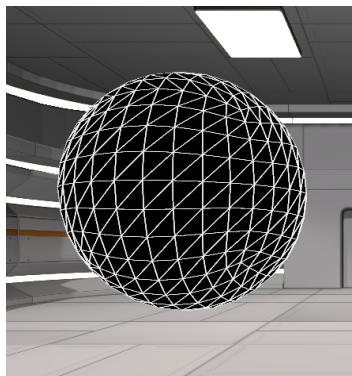
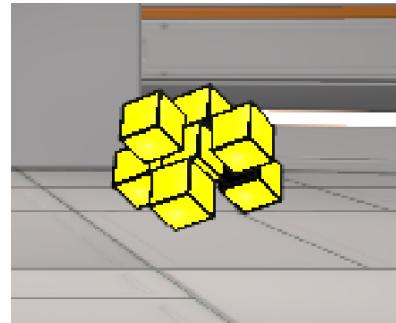


This game incorporates haptic feedback, which is where, to enhance the sense of realism, VR gun controls incorporate vibrations that simulate the recoil and impact when a player fires the virtual pistols. This tactile feedback adds another layer to the immersive experience, making users feel more connected to the virtual world. When the gun is shot, it projects out a sci-fi laser, which is used for destroying targets.

The guns look unrealistic because we wanted to appeal to a younger audience, and make the game look more sci-fi.

Targets

The targets will spawn, and look like a collection of cubes, and they'll spin and rotate whilst navigating around the VR environment within a given area, trying not to be shot by the player. They, in batches, spawn in time with the beat drops of the music which makes them feel as a part of the environment. When hit they'll explode into lots of little cubes which fall down and disappear.



The final target will not be clustered cubes, but a spherical ball which appears after the music ends, and will grow over a period of time, and when shot it'll explode into visually pleasing particle effects.

This target is used to wrap up the whole experience, to visually communicate to the player that the energy experience has come to an end. After the target explodes the game fades to black, and returns to the Liminal platform's menu.

Colour

Theory

This game is trying to elicit an energised mood. This means colours that induce feelings of cheerfulness and excitement are used in this game. The colours that have been found by the Liminal team to be the most cheerful and exciting include “soft pinks, warm yellows and oranges”:



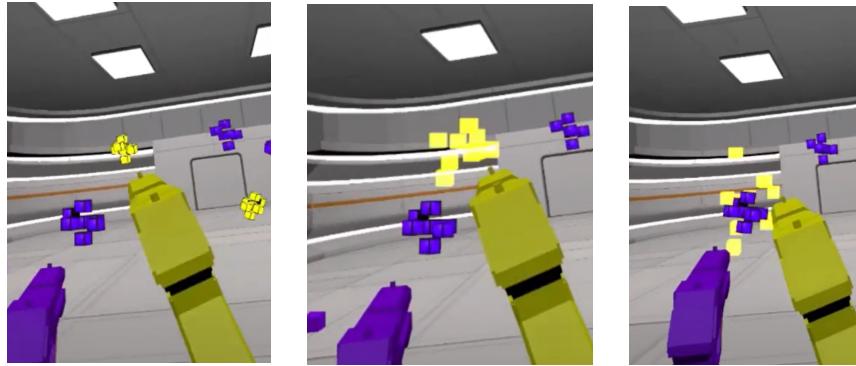
Colour As A Mechanic

As a consequence we used purple and yellow, one for each gun, and worked the colours into the mechanics to provide the player with an extra level of complexity. One gun is yellow and the other purple, and you hold both at the same time. The targets also spawn either yellow or purple, and can only be destroyed if they’re hit by the matching colour gun.

Particles

Target Particles

The targets explode into lots of small gravity affected cubes, as demonstrated by the illustration below:



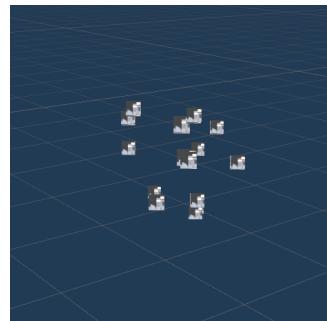
Final Particles

After the final target is shot, but before the fade to black, this is the explosion:



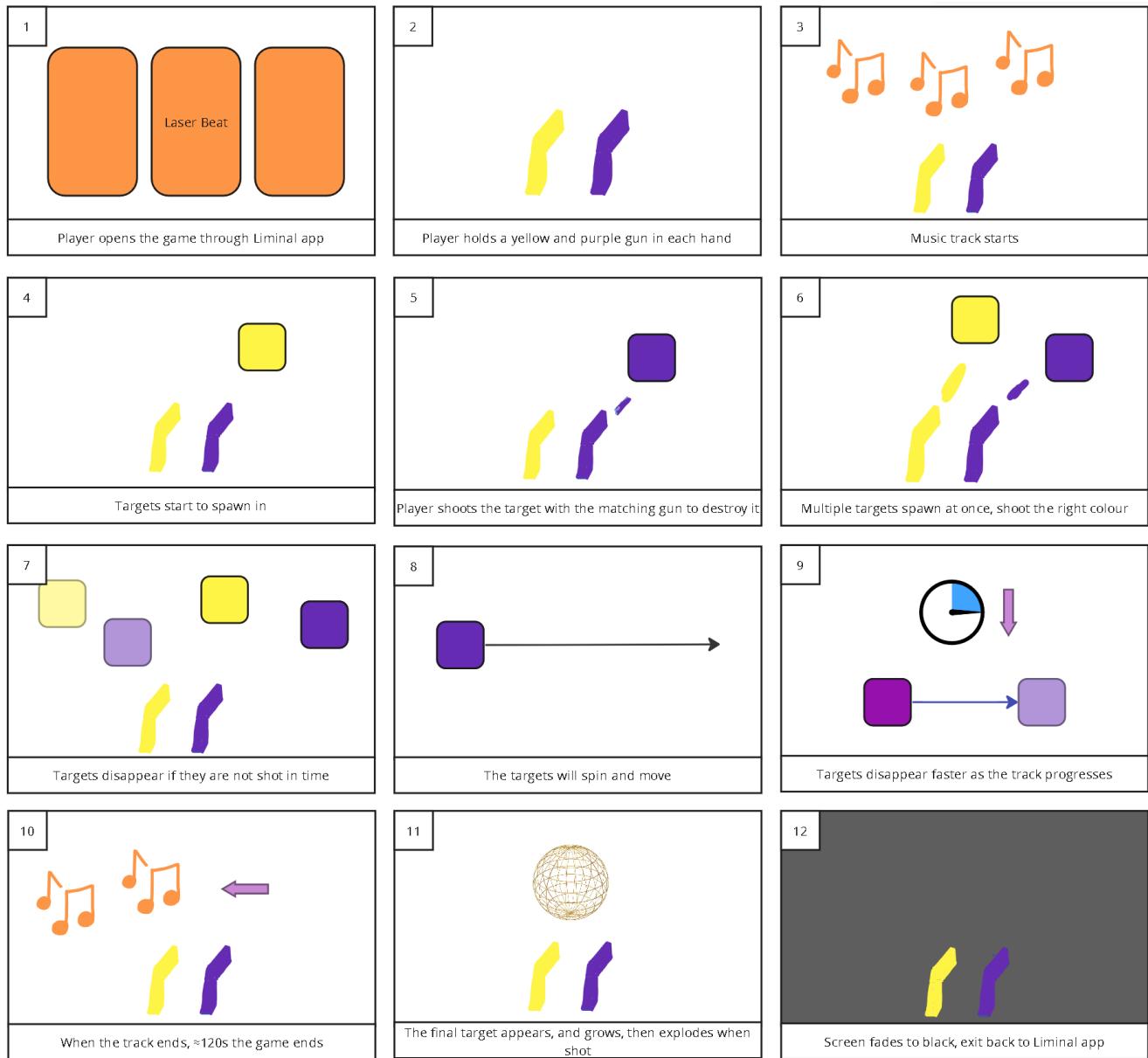
Target Despawn Particles

After a target has not been shot after a while, it will despawn, and shoot out despawn particles:



Level Design

Storyboard



Lighting & Environment

One of the primary motivations for the creation of VR was to help players escape their reality and be transported into a new world, which cannot be achieved without considering a well-thought-out environment.

In this project, we sought to illustrate an outer space theme, which in turn ties into the modern minimalism of today — an aesthetic popular with our target audience. Including emphasising the sterile and clean look of minimalism, we chose a grey background to allow the saturated colours of pistols and targets to stand out, forcing the players' eye to focus on the critical objects at play.

We made sure to place a strong emphasis on lighting due to the significant benefits it brings to the overall gameplay experience. By ensuring the game is well-lit, we have enhanced visibility, allowing players to easily navigate and interact with the environment while reducing eye strain. Good lighting also adds to the atmosphere and mood of the game, creating a more engaging and enjoyable experience for players.



The environment's assets were explicitly chosen and implemented with optimisation in mind. Single-sided rendered assets were applied to reduce the computational load, using fewer triangles to render. This decision not only improved efficiency by rendering only the front face of objects, but it also resulted in smoother gameplay and a more enjoyable gaming experience.

Sound & Music

Sound FX

This game currently has three sounds:

- Normal Target Destroy
- Laser Gun Shot (This matches up with the feeling of vibration of the controller, both together trying to simulate the recoil of the gun)

Royalty Free Sound effects:

- Final Target Destroy - "BLASTER 2", by PixaBay -
<https://pixabay.com/sound-effects/search/blaster/>

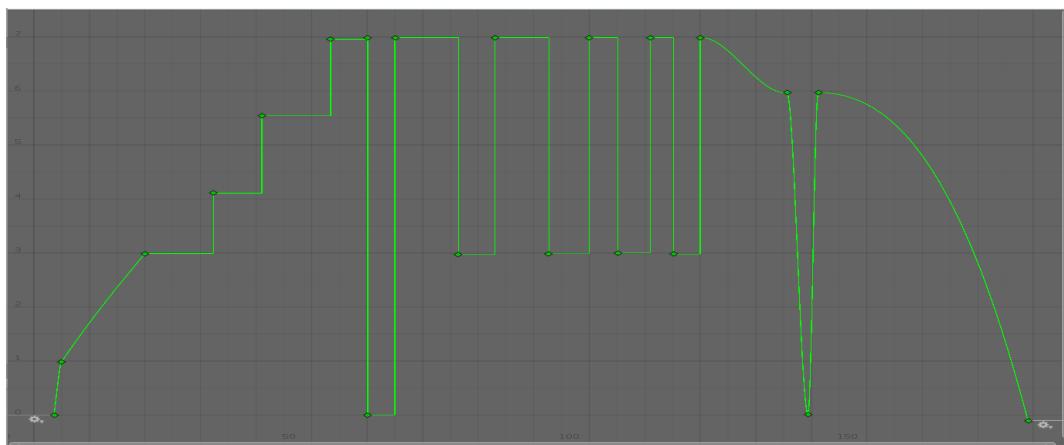
This game uses spatial audio to create a more immersive environment. According to the psychological research from LiminalVR, if the player's senses don't match up, then it could cause motion sickness. So if the player sees a target explode and they don't hear it from there it could ruin the experience both in terms of immersion and sickness]

Music soundtrack

Mr Shushmth - Find Myself

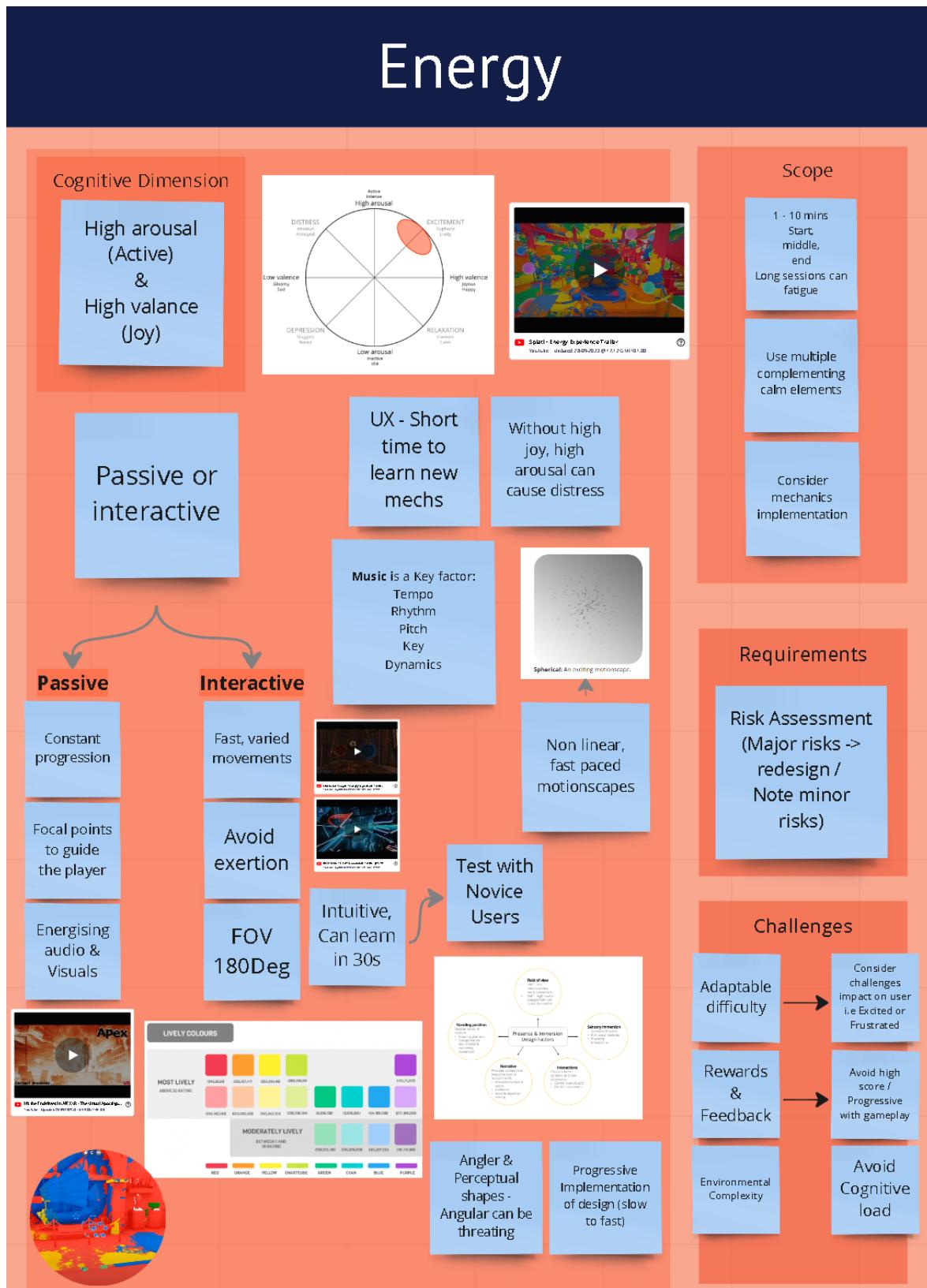
- 96 -> 103 BPM
- Energetic

The music implemented in the game provides natural highs and lows of the energy experience, and it's imperative that the gameplay follows the music's highs and lows. This is where the spawn curve comes into play.

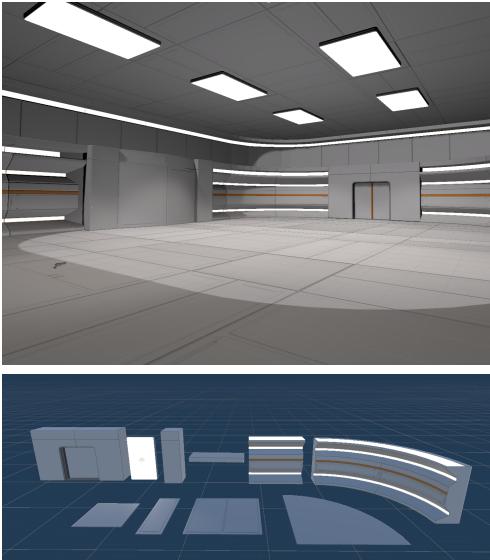


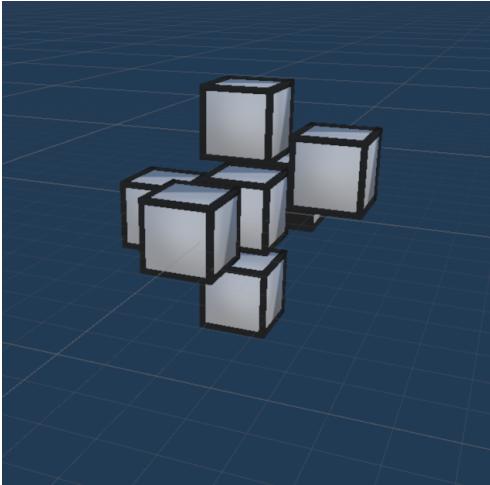
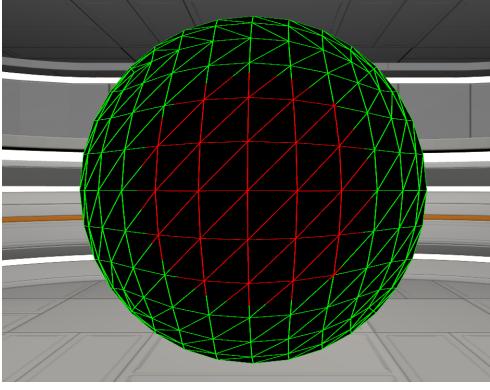
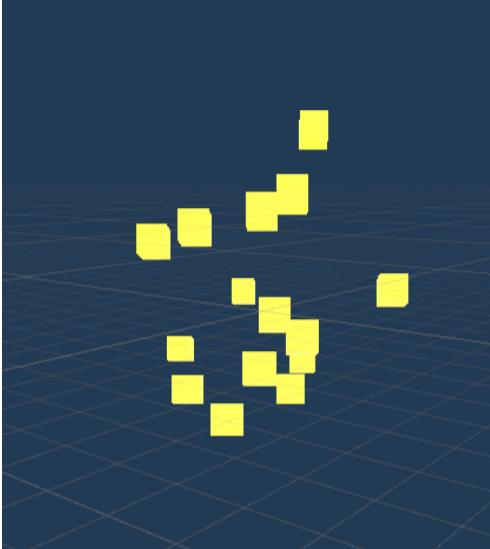
The spawn curve allows for a curated spawning experience to be created, where the object pooling will spawn less when the music's at lows, and spawn more when the music is at highs.

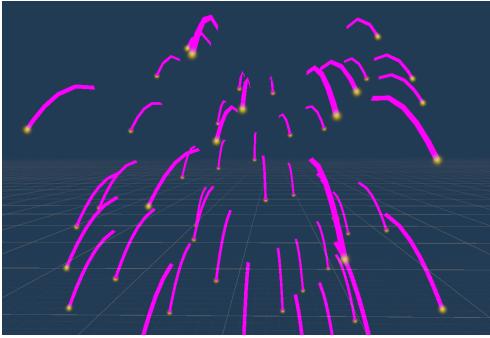
Energy Game Theory



Asset List

Guns	https://assetstore.unity.com/packages/3d/props/guns/sci-fi-handgun-225160	
The Room / Environment	https://assetstore.unity.com/packages/3d/environments/3d-scifi-kit-starter-kit-92152	

Target	Made by Mike in Blender	
Final Target	Made by Robin in Unity	
Target Explosion Particles	Made by Robin in Unity	

Final Explosion Particles	Made by Mike in Unity	
Despawn Explosion Particles	Made by Robin in Unity	