

PORTFOLIO

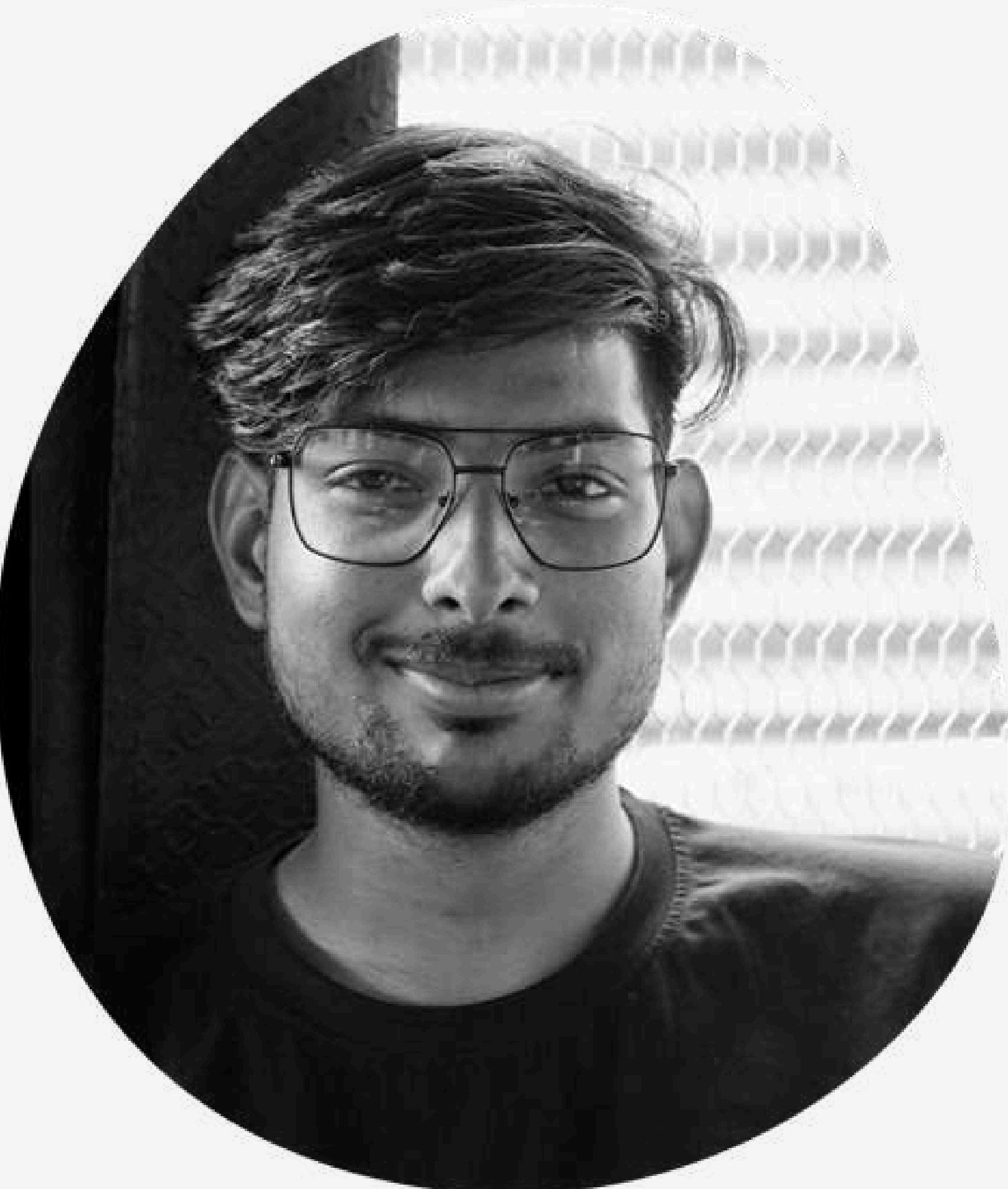
2025

Hello!

I'm Aditya Raj

I am an aspiring game designer and recent graduate with a strong foundation in Technical Design, Storytelling, and Visual Aesthetics. My passion lies in crafting immersive and engaging gaming experiences through innovative design and interactive storytelling.

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Resume

Education

Bachelor of Design | Multimedia Communication & Design
Central Institute of Technology Kokrajhar | 2020-2024

Experiences

IIT Bombay | Cube Immersive VR System Lab | 2 Months
Created a small City environment. With Crowd and Traffic Simulation AI.

Skills

Softwares	Design	Languages
Unreal Engine	Game Design	C++
Unity	Gamification	C#
Maya	XR Design	HTML5 CSS3 JS
Blender		
Adobe : Ps Ae Pt Ds		

Certification

IITM – Finland | **Certificate course on Mastering VR** | 2024
IITM | **Foundation Course on Virtual Reality and Augmented Reality** | 2022

Projects

1. **Tower Defense VR**
A Mobile VR Game

2. **Ball Shooter VR**
A Mobile VR Game

3. **Dome Oasis**
Environment

4. **Dome Town**
Environment

5. **Hyperloop**
Promo

6. **Modeling Projects**
Side Projects

Mobile VR Game

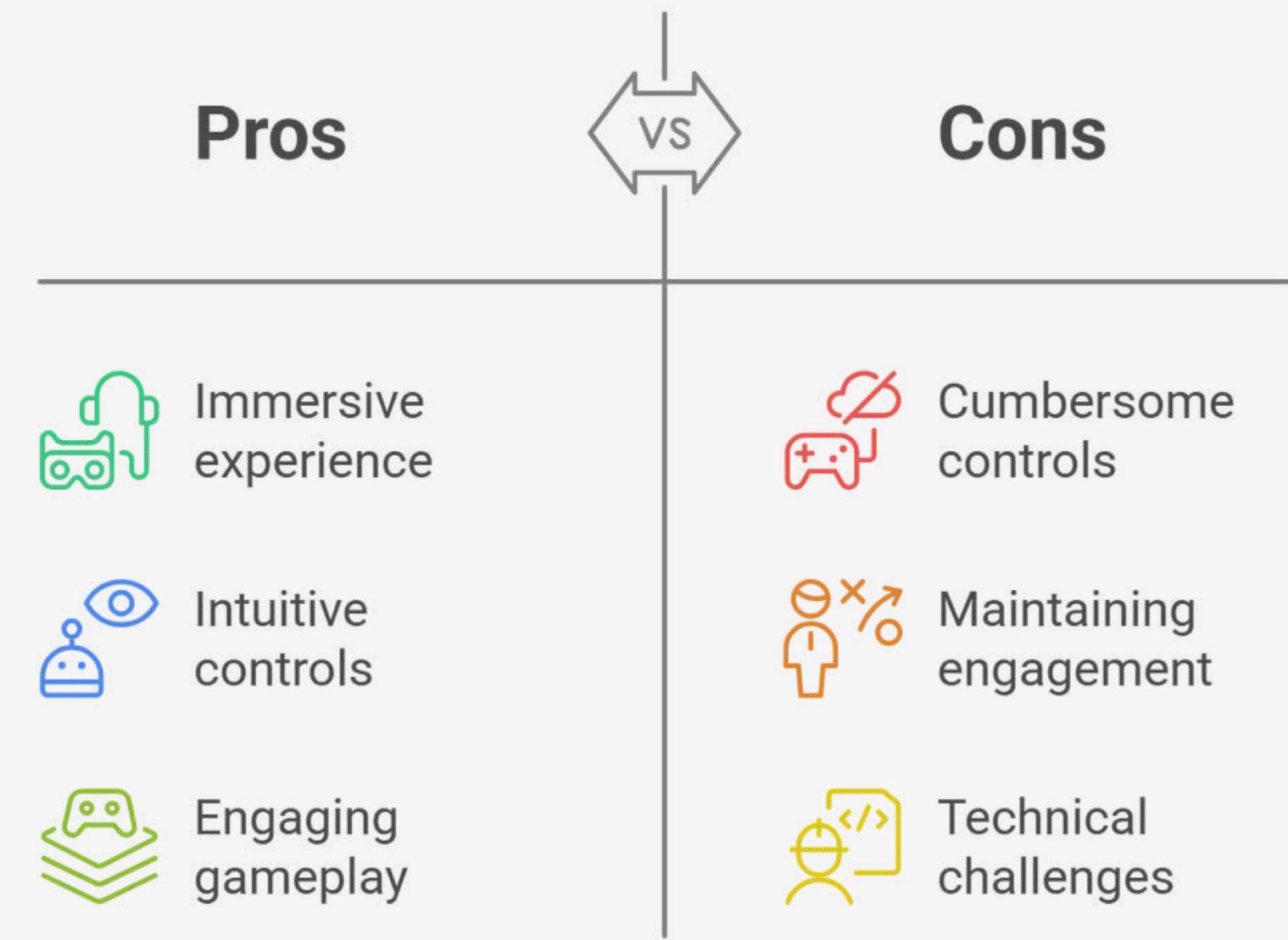
Problem Definition

VR gaming offers immersive experiences, but intuitive controls and engagement remain challenges—especially on mobile VR platforms like Google Cardboard. This project explores two games:

Tower Defense VR

& **Ball Shooter VR**

Both games tackle challenges in user interaction, gameplay engagement, and mobile VR optimization, delivering accessible and dynamic experiences.





Tower Defense VR

Prototype

A first-person Tower Defense game built for Mobile VR, where players defend a tower from waves of attacking zombies using head-tracking for aiming and automatic shooting. The game features strategic upgrades, immersive sound design, and progressively challenging waves.

Age Group: **8+**

Platform: **Mobile VR**

Genre: **FPS, Tower Defense, VR Action**

Engine: **Unity**

Duration: **6 Weeks**

Programming Language: **C#**

Development Approach: **Solo-developed**

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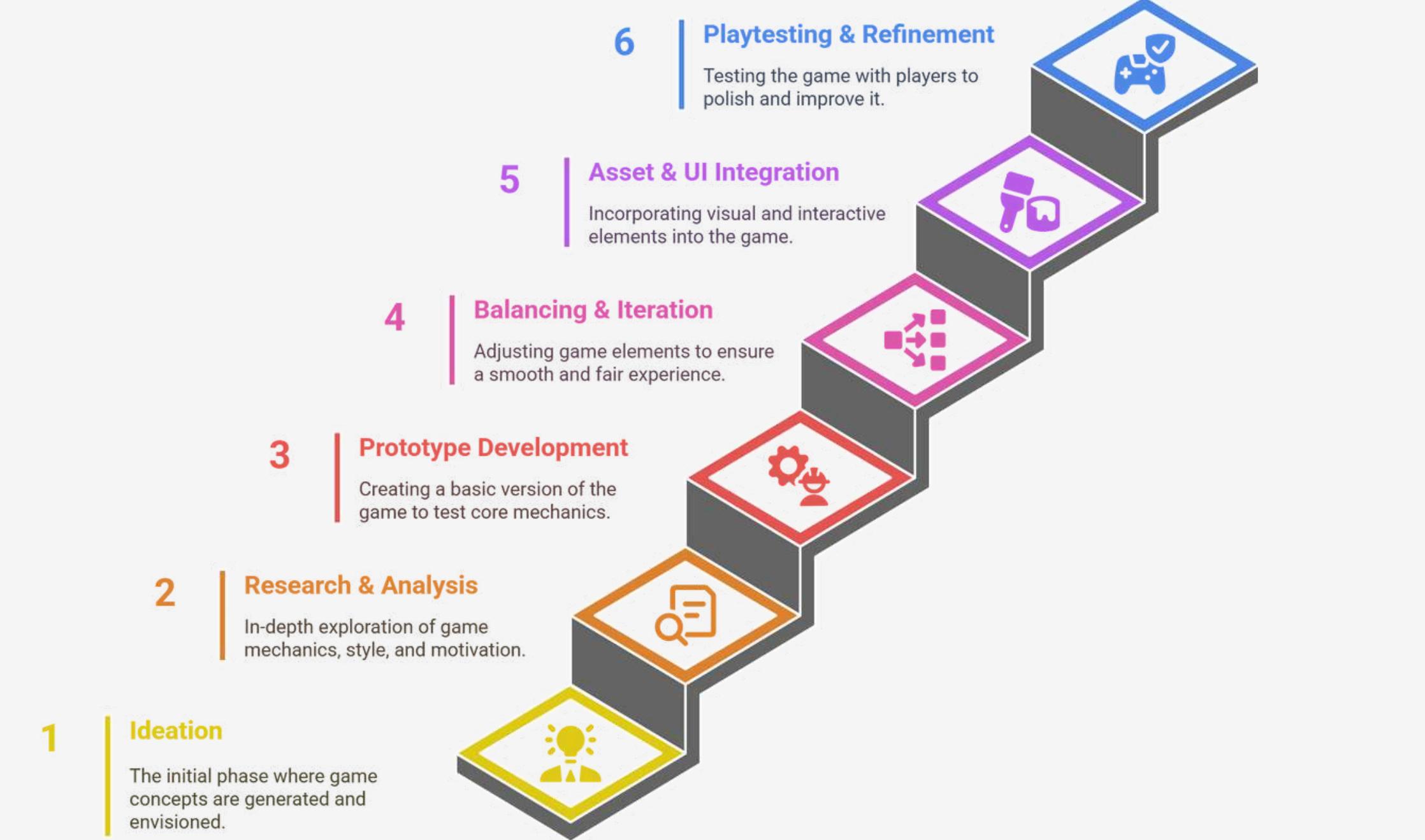
[Game Play](#)

Development Journey

The development began with ideation, where the core concept and gameplay loop were defined with a focus on mobile VR interaction. This was followed by research and analysis of similar tower defense and VR games to refine the mechanics and visual style.

A white-box prototype was created to implement the basic systems like player input, enemy behavior, shooting, and UI interactions. Through several rounds of balancing and iteration, enemy stats, wave scaling, and upgrades were fine-tuned.

Once the core was solid, 3D assets, environment lighting, audio, and UI elements like the banner display were integrated. Finally, the game was playtested to identify bugs, optimize performance, and refine the user experience for smooth and immersive gameplay.

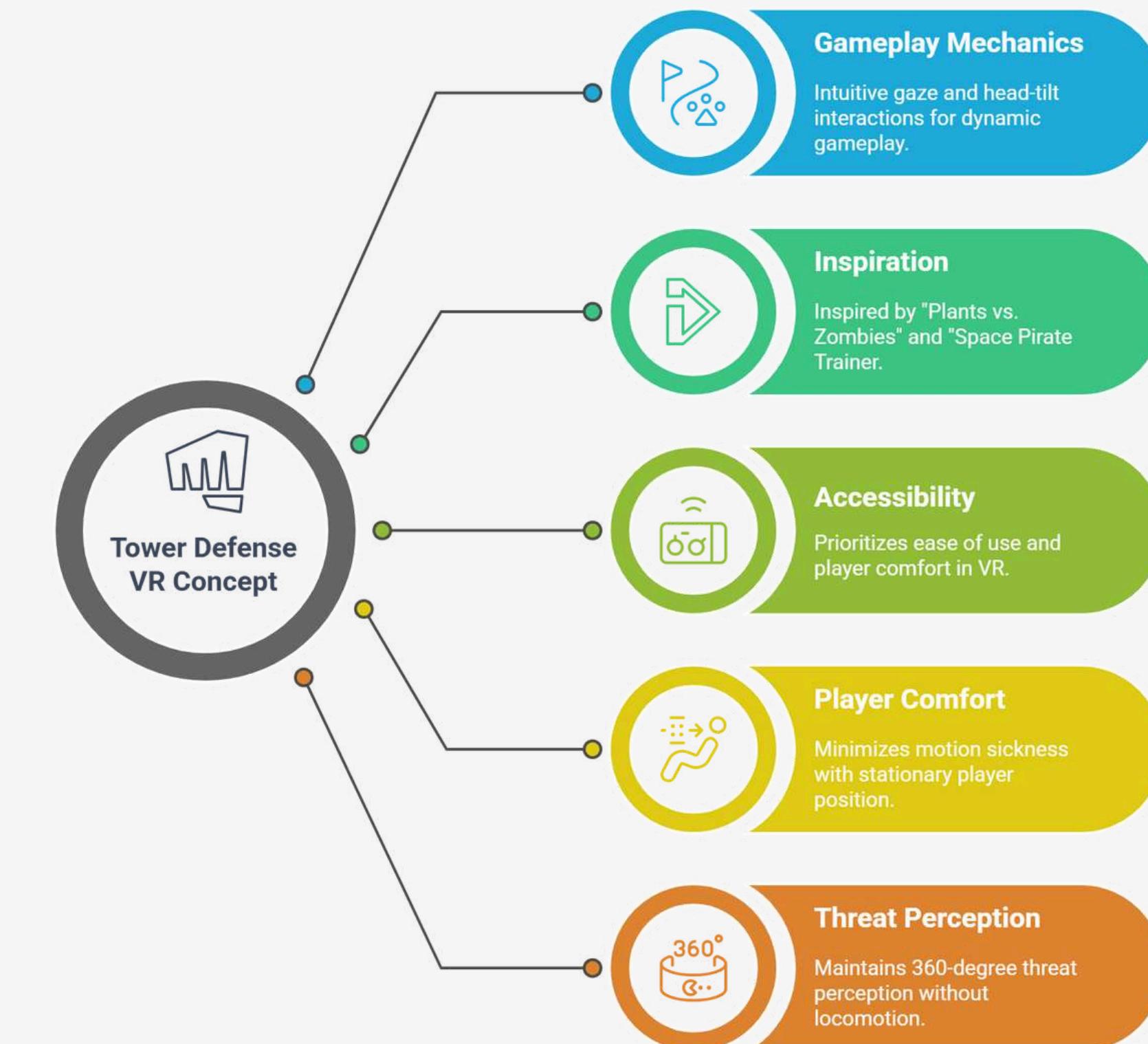


Ideation

The concept for Tower Defense VR originated from the idea of **combining classic wave-based defense gameplay with immersive mobile VR mechanics**. The goal was to create a simple yet engaging first-person experience where players defend a structure using intuitive gaze and head-tilt interactions—ideal for hardware like Google Cardboard, which lacks traditional controllers.

The game draws inspiration from titles like “**Plants vs. Zombies**” for wave-based pacing, and “**Space Pirate Trainer**” for immersive shooting mechanics. However, unlike those games, this project focuses on minimal controls and accessibility, prioritizing ease of use and player comfort in VR.

The core idea was to keep gameplay dynamic and challenging through increasing enemy count, varying zombie types, and time-limited upgrade choices after each wave. The use of a stationary player position also helped minimize motion sickness while maintaining a 360-degree threat perception, perfect for VR gameplay without locomotion.



Research & Analysis

Target Audience

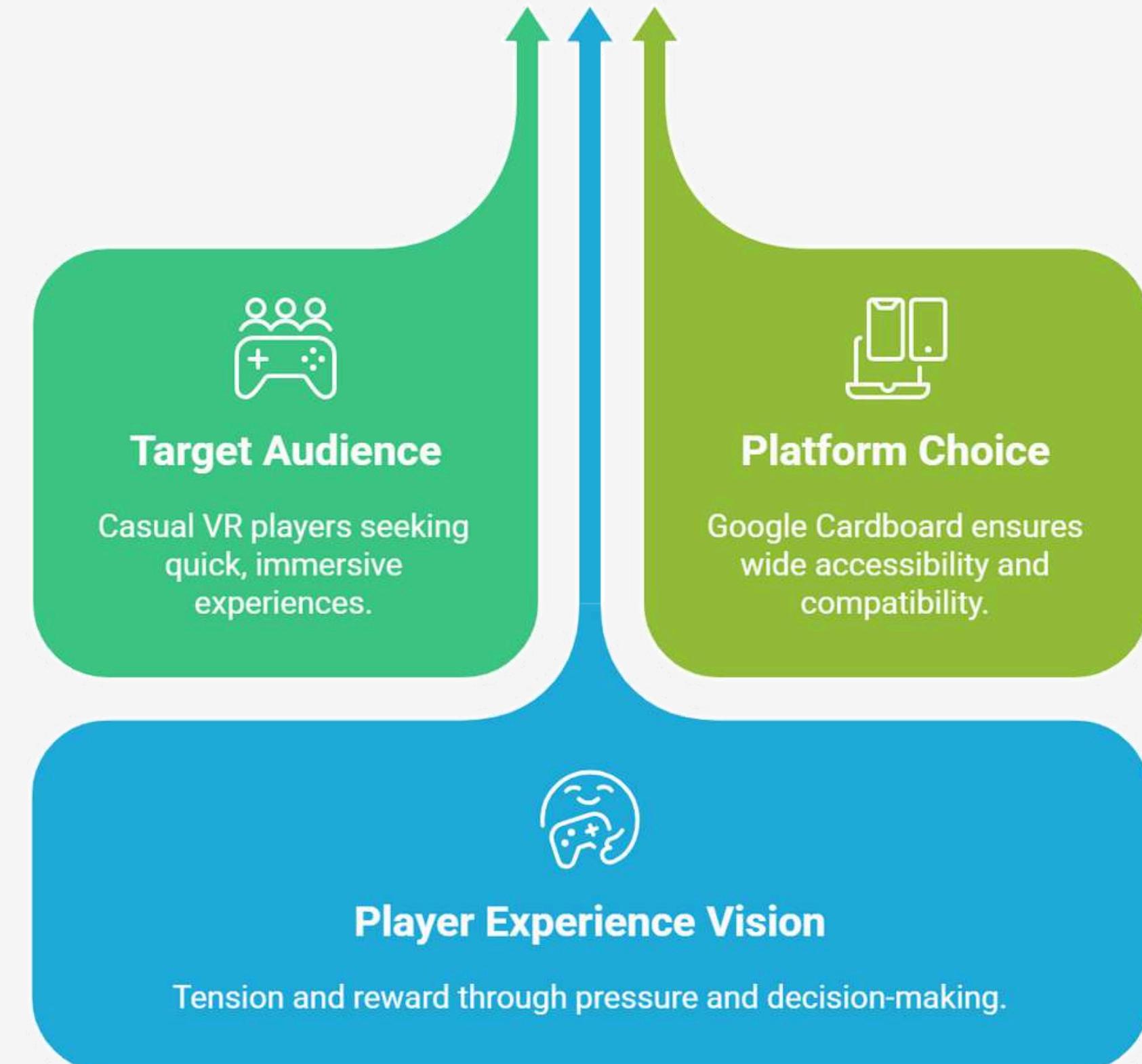
The game targets casual VR players and mobile gamers looking for quick, immersive gameplay experiences without needing external controllers.

Platform Choice

Google Cardboard was chosen for its accessibility and compatibility with a wide range of mobile devices, making the experience available to a larger audience.

Player Experience Vision

The goal was to make the player feel like a last-standing survivor, building tension through increasing pressure and rewarding focus and quick decision-making.



Mood Board



References

A wave-based VR shooter focused on fast reflexes and immersive shooting.

A light-hearted zombie shooting game with cartoon visuals and simple mechanics.

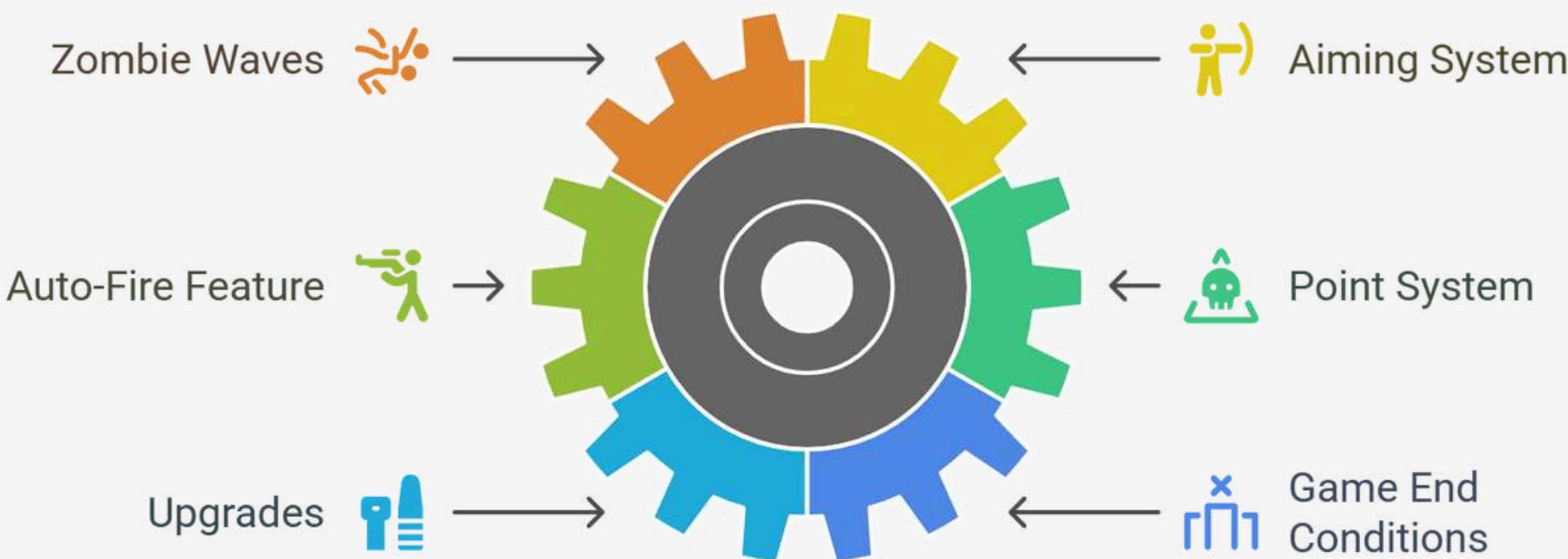
Classic wave-based tower defense game with distinct zombie types and simple strategy.

Shooter Type	Visual Style	Gameplay Mechanics
Wave-based VR shooter	Immersive graphics	Fast reflexes
Zombie shooter	Cartoon visuals	Simple mechanics
Tower defense	Classic design	Simple strategy

Core Game Loop and Mechanics

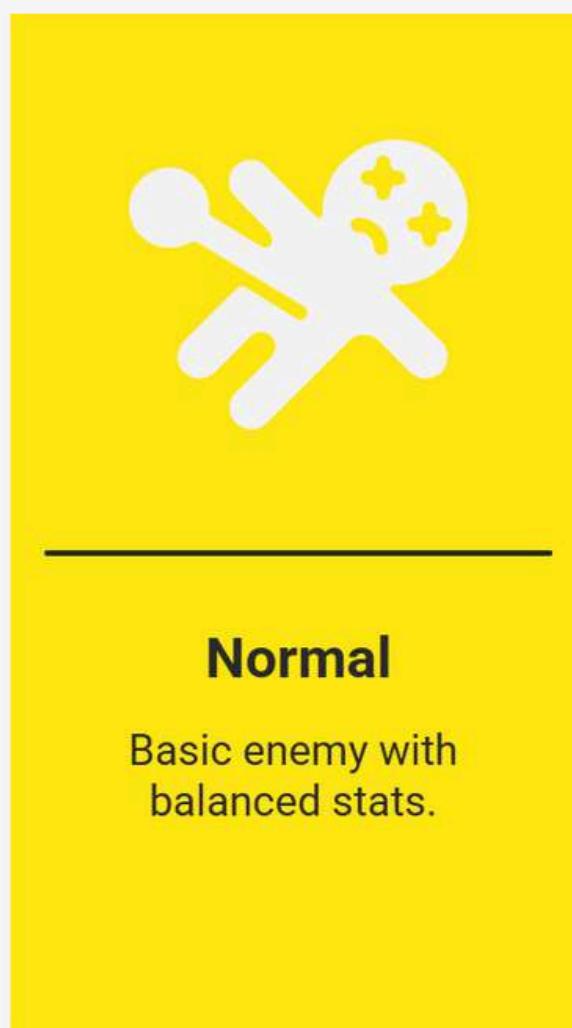
- Survive waves of zombies by killing them before they break the wall.
- Aim with head movement, and the gun auto-fires when targeting zombies.
- Earn points, upgrade weapons, and repair the wall to last longer.
- Each wave increases zombie count, making survival harder.
- The game ends when the wall is destroyed.

Defend your tower, upgrade your firepower, and survive the undead assault!



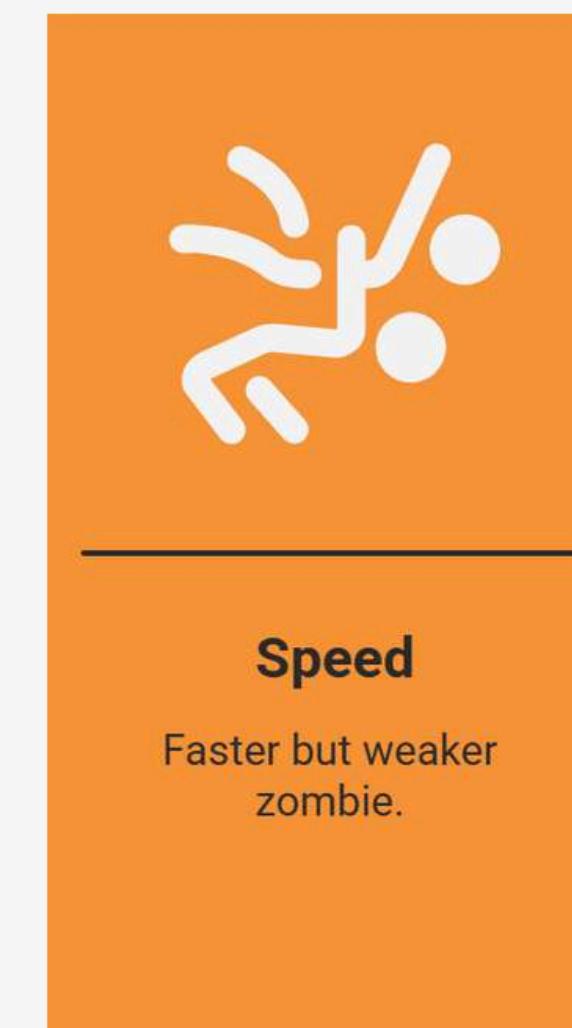
Enemy Behaviour and Types

All zombies in the game move directly toward the wall and begin attacking once they reach it. Each enemy type has a different movement speed, making target prioritization an important part of the player's strategy. Players must quickly identify and eliminate high-threat enemies like Boss and Heavy Zombies to prevent rapid wall damage and survive longer in each wave.



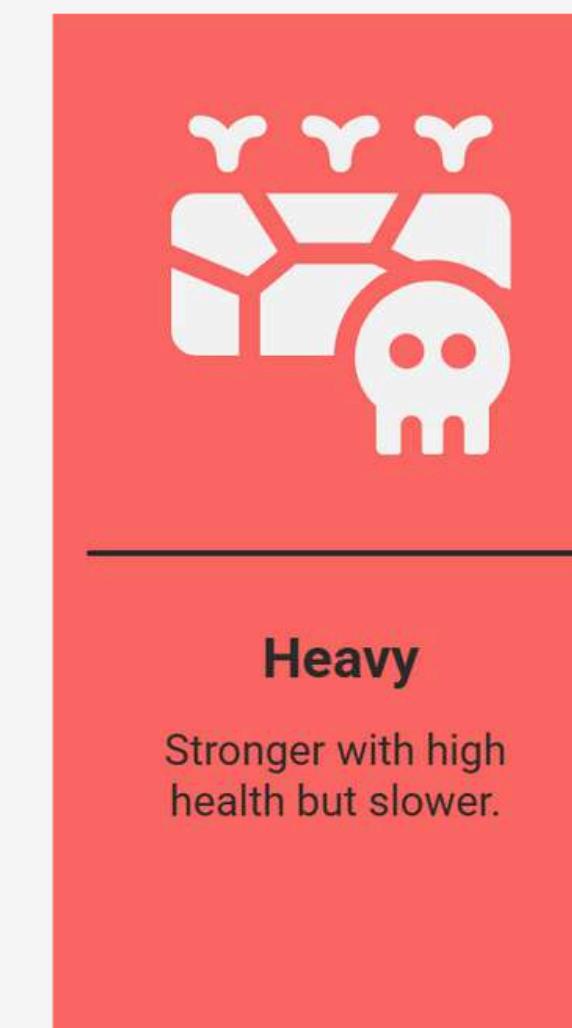
Normal

Basic enemy with balanced stats.



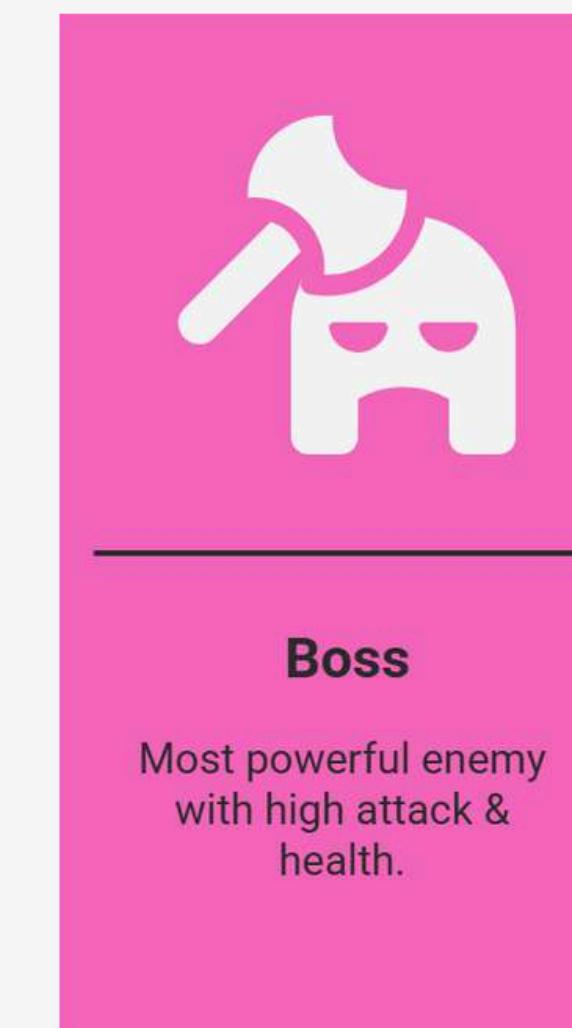
Speed

Faster but weaker zombie.



Heavy

Stronger with high health but slower.



Boss

Most powerful enemy with high attack & health.

	Attack	Health	Speed	Points
Normal	10	50	8	5
Speed	10	40	10	6
Heavy	18	70	8	8
Boss	25	100	7	10

Unity Screenshots



Game Start



Upgrade



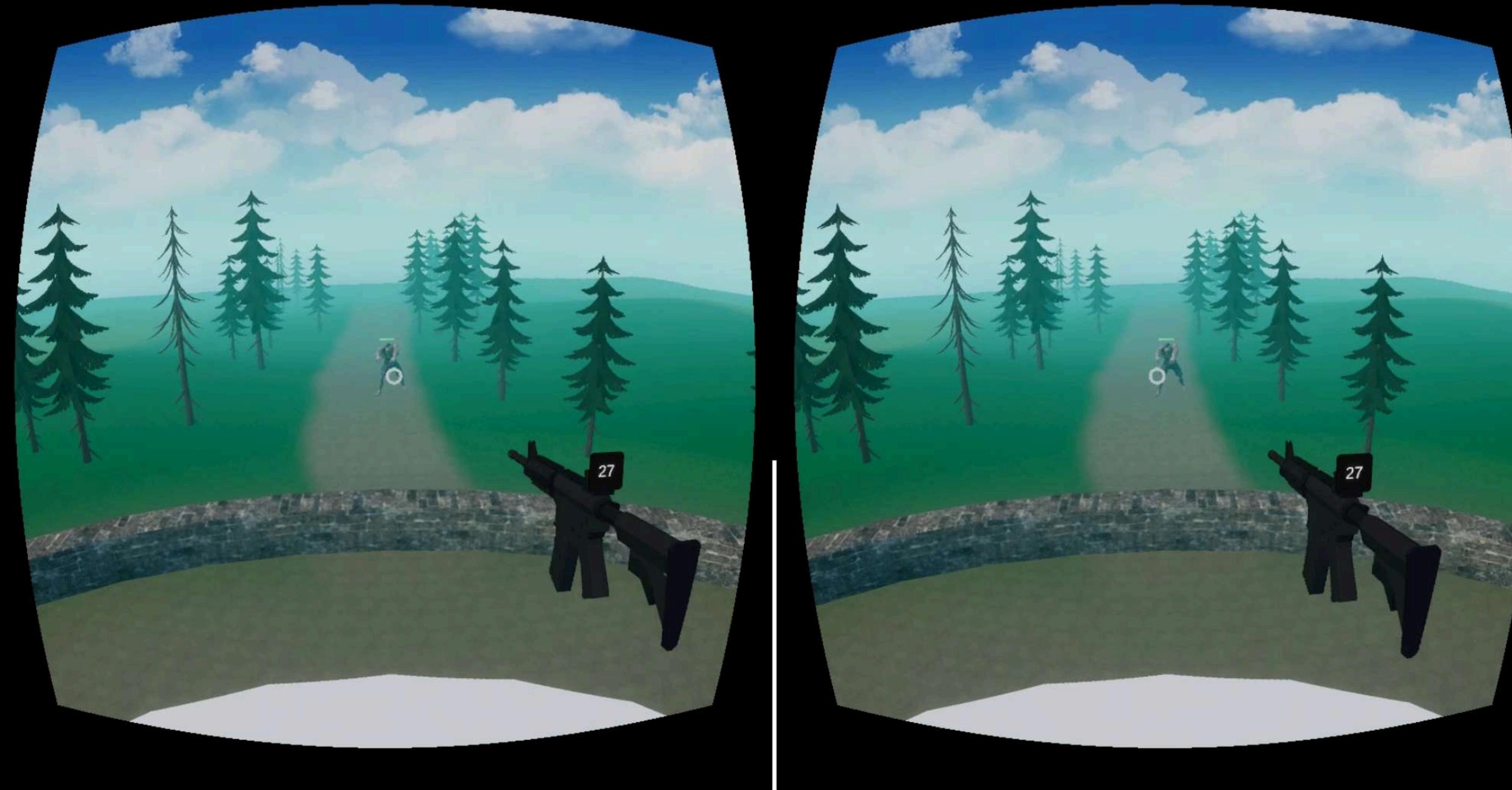
Next Wave



Game Over

X

Phone View



Outcome

The project successfully achieved its objectives, resulting in a fully functional Tower Defence game optimized for Google Cardboard. The following milestones were accomplished:

- Completion of core game mechanics, including enemy AI, shooting mechanics, and upgrade systems.
- Integration of the gaze-based interaction system, allowing for intuitive player controls.

This project successfully demonstrates the potential of VR gaming with intuitive head-based controls. It provides an engaging endless wave survival experience while refining gaze-based interaction mechanics.

Pros	vs	Cons
 Core mechanics completed		 Gaze-based interaction challenges
 Intuitive controls		 Optimization for specific hardware
 Engaging gameplay		 Limited to VR
 VR potential		
 Endless survival mode		

Ball Shooter VR

Prototype

A fast-paced, immersive game designed for mobile VR platforms. Players shoot at balls using a gaze-based system, aiming to achieve high scores. The game continuously increases in difficulty, providing an engaging and competitive experience.

Age Group: **8+**

Platform: **Mobile VR**

Genre: **Arcade, Action, VR Action**

Engine: **Unity**

Duration: **4 Weeks**

Programming Language: **C#**

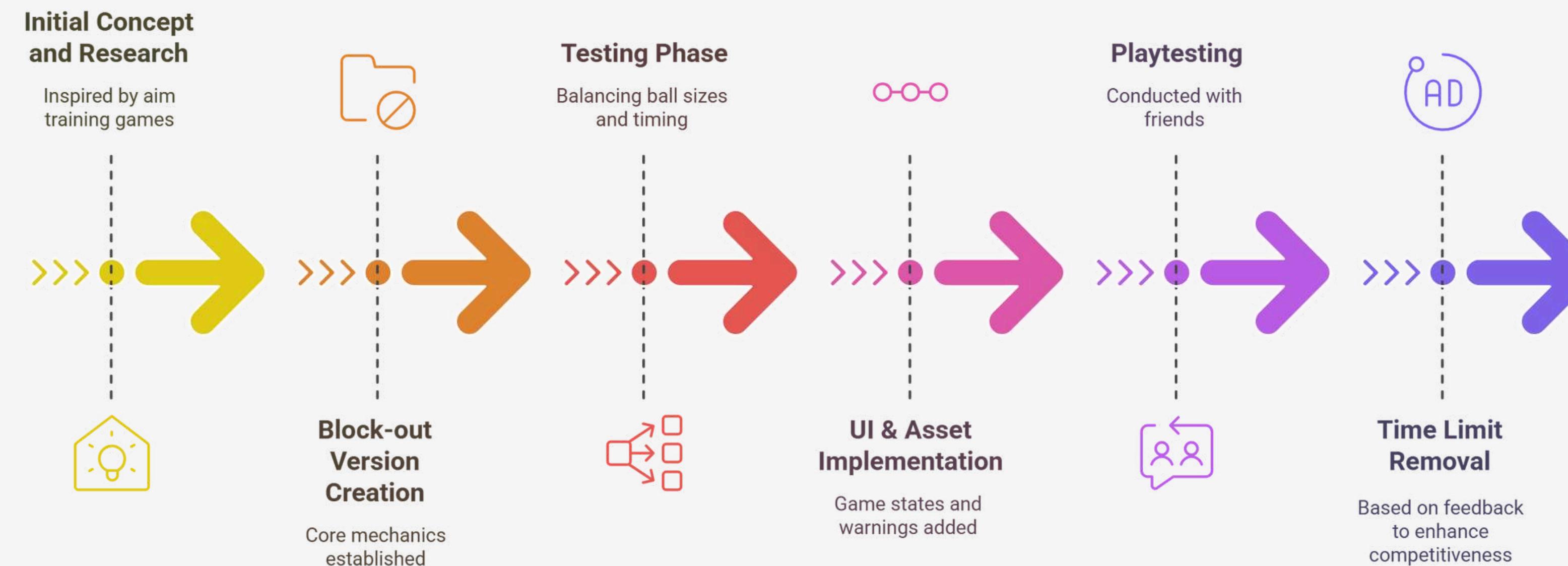
Development Approach: **Solo-developed**

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Development Process

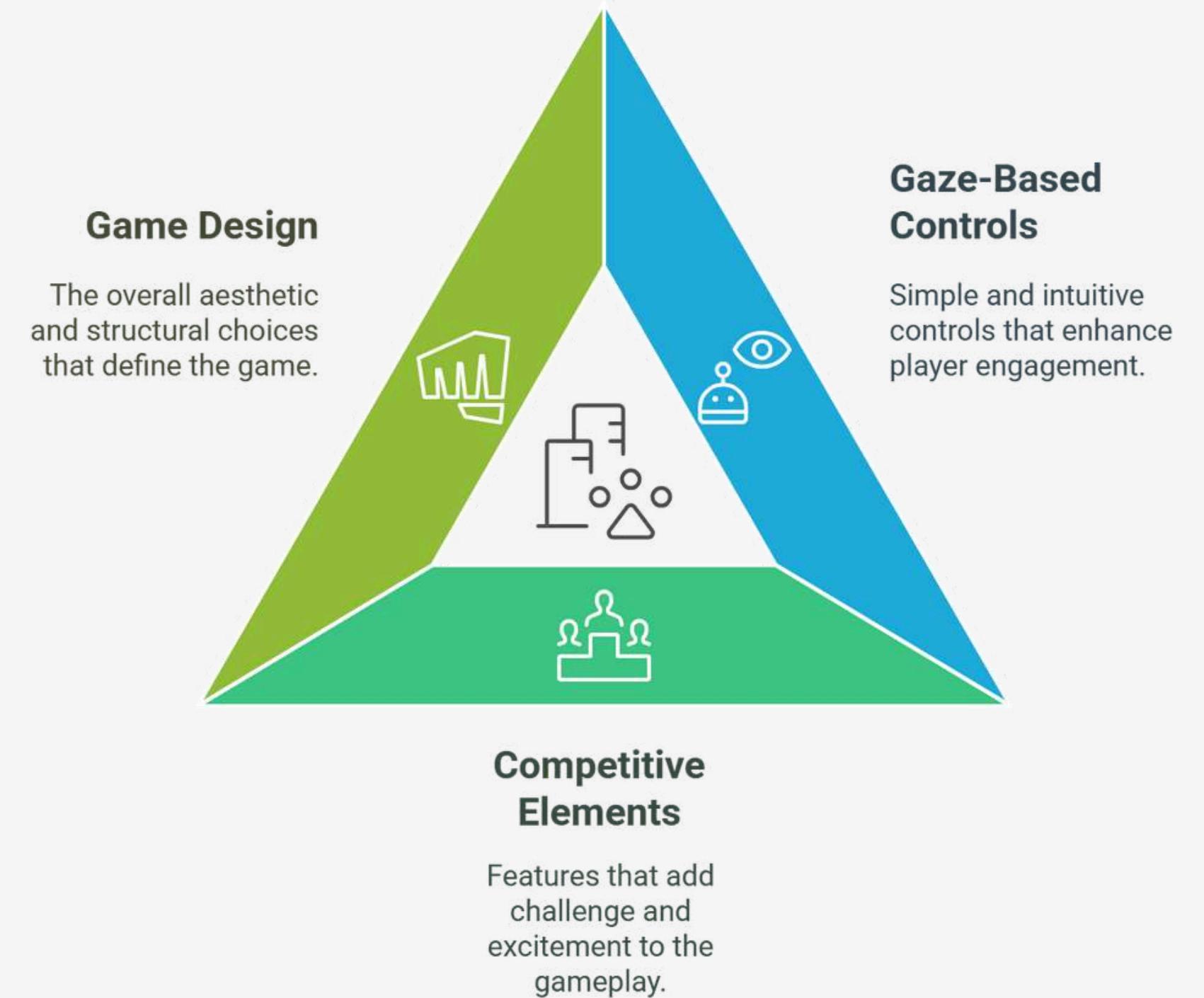
The game began with conceptual inspiration from aim training games like AIM LAB. After researching core mechanics, a block-out prototype was created with basic shooting and scoring functions. Through trial and error, ball sizes and timing were adjusted for comfort and balance. UI panels for instructions, warnings, score, and other assets were added, along with a simple room environment.



Ideation

The idea for the Mobile VR Ball Shooting Game came from the desire to create a fun, fast-paced experience using simple gaze-based controls in mobile VR. Inspired by games like AIM LAB, the concept focused on accuracy, quick reflexes, and endless score progression—but with a more casual, arcade-like twist.

Research and early brainstorming centered on making the game feel competitive yet easy to pick up. Elements like varying ball sizes, timed appearances, and instant game-over added challenge, while a clean environment and smooth pacing helped reduce VR discomfort. This vision shaped the game's core design and guided the development of its first prototype.



Mood Board



References

Involves shooting targets in VR with increasing difficulty and a score-chasing format.

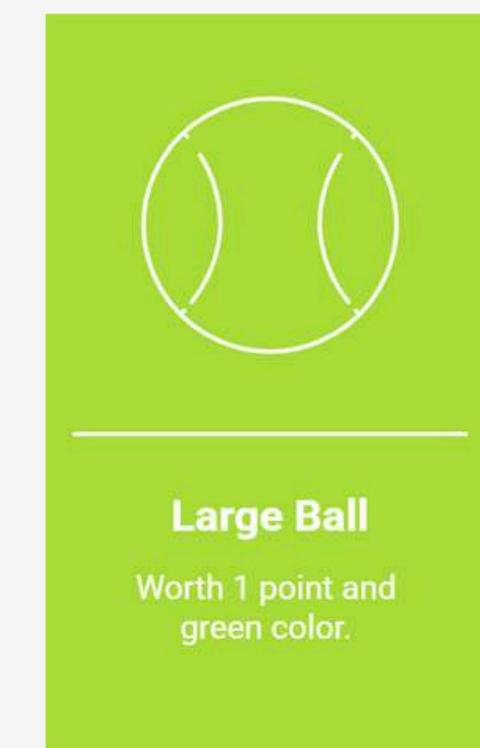
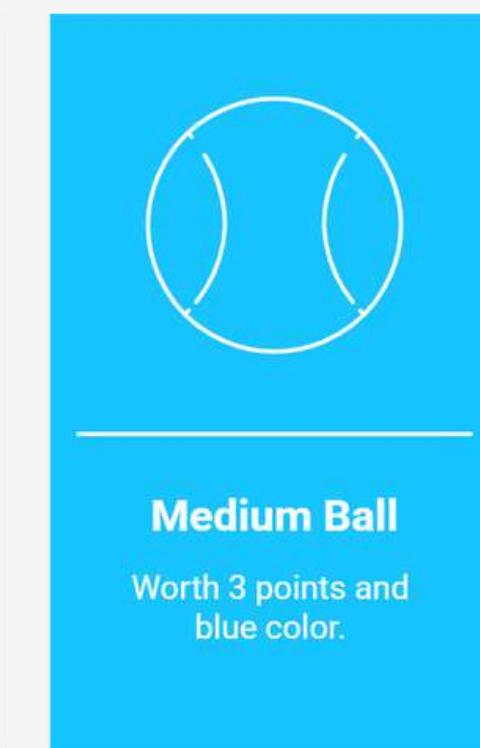
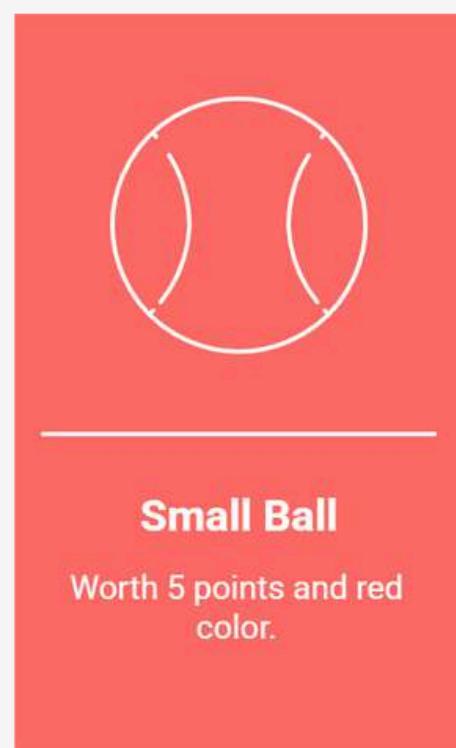
A gaze-based VR game focused on target shooting, useful for reflex and coordination training.

A ball-shooting game in VR with focus-based aiming and destructible targets, offering a meditative but competitive experience.

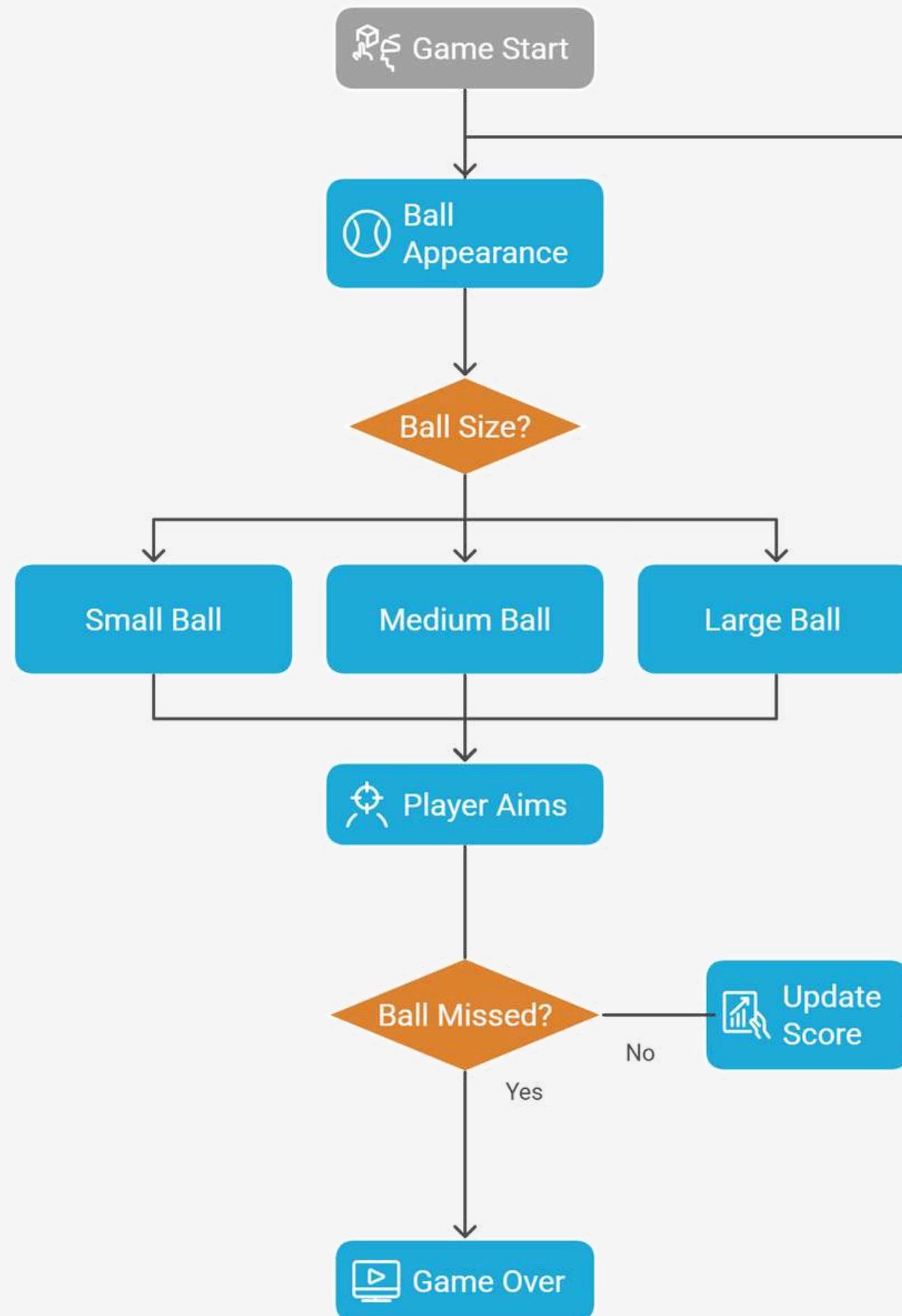


Game Rule & Mechanics

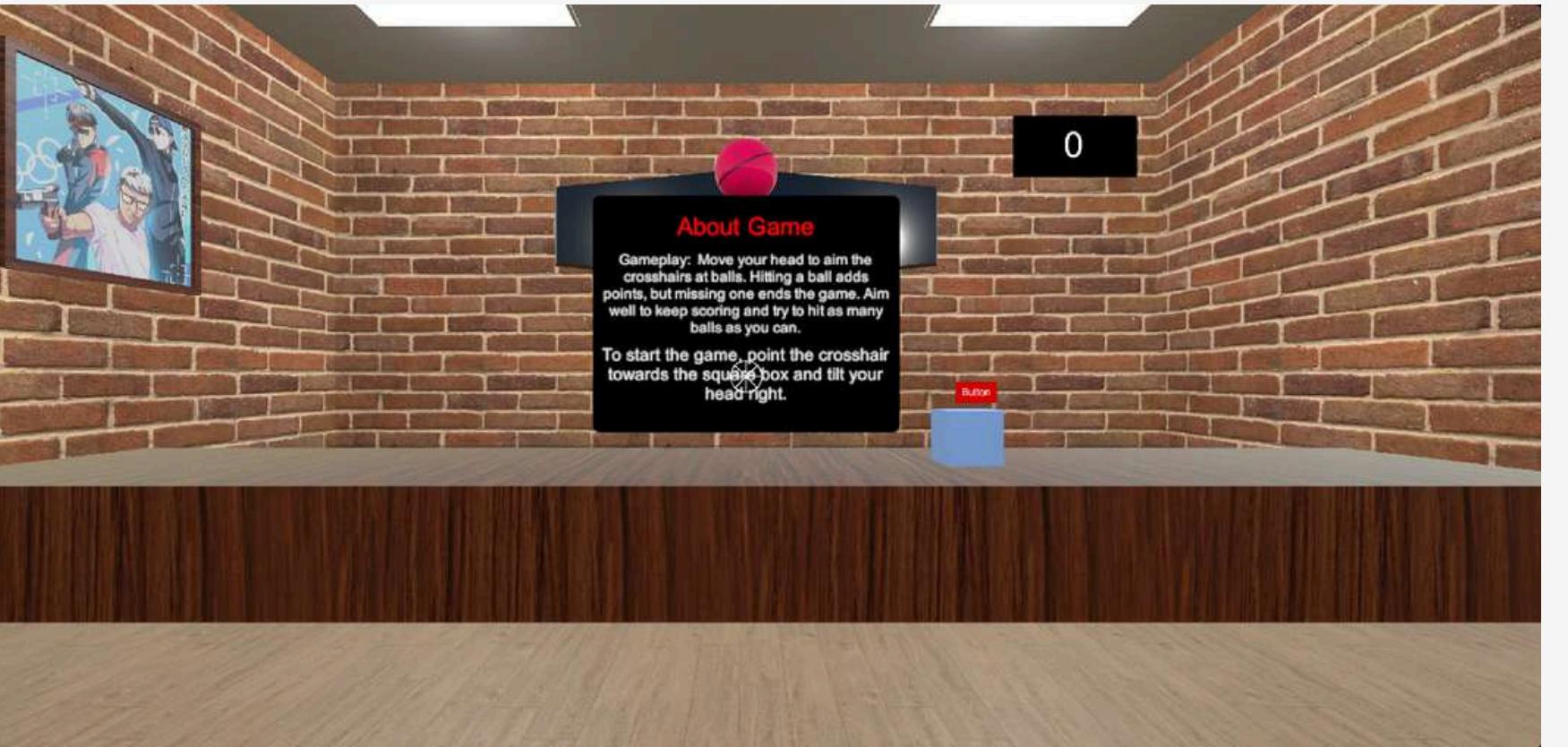
- There are three types of balls:



- Balls of different sizes appear randomly in front of the player.
- Balls remain on-screen for 2.5 seconds before disappearing.
- Players aim at targets using head movement (gaze system).
- The score is displayed on the top right of the in-game wall.
- If a player misses a ball, the game ends.



Unity Screenshots



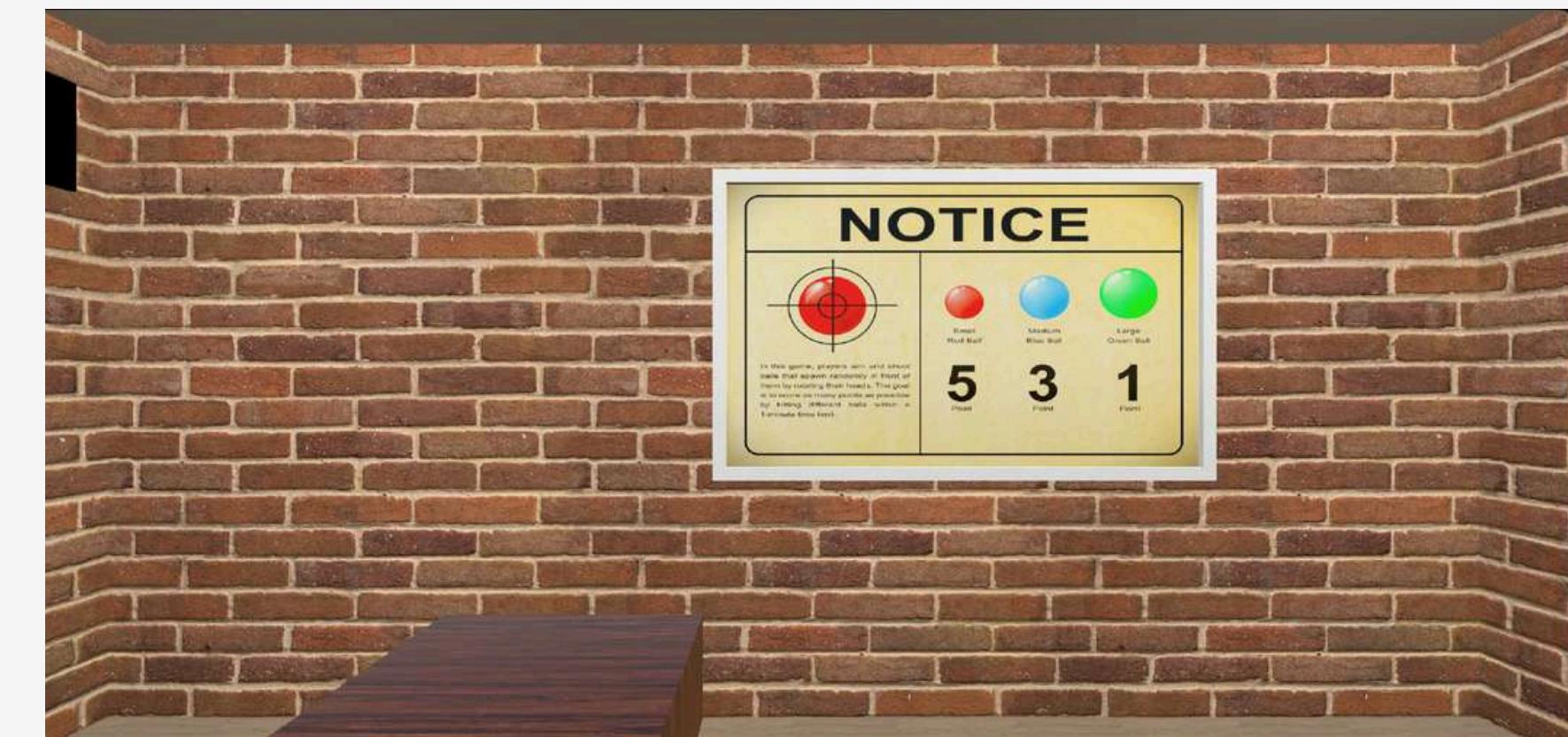
Guide



Game Start

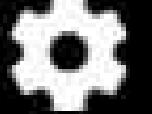


Game Over



Game Info

Phone View



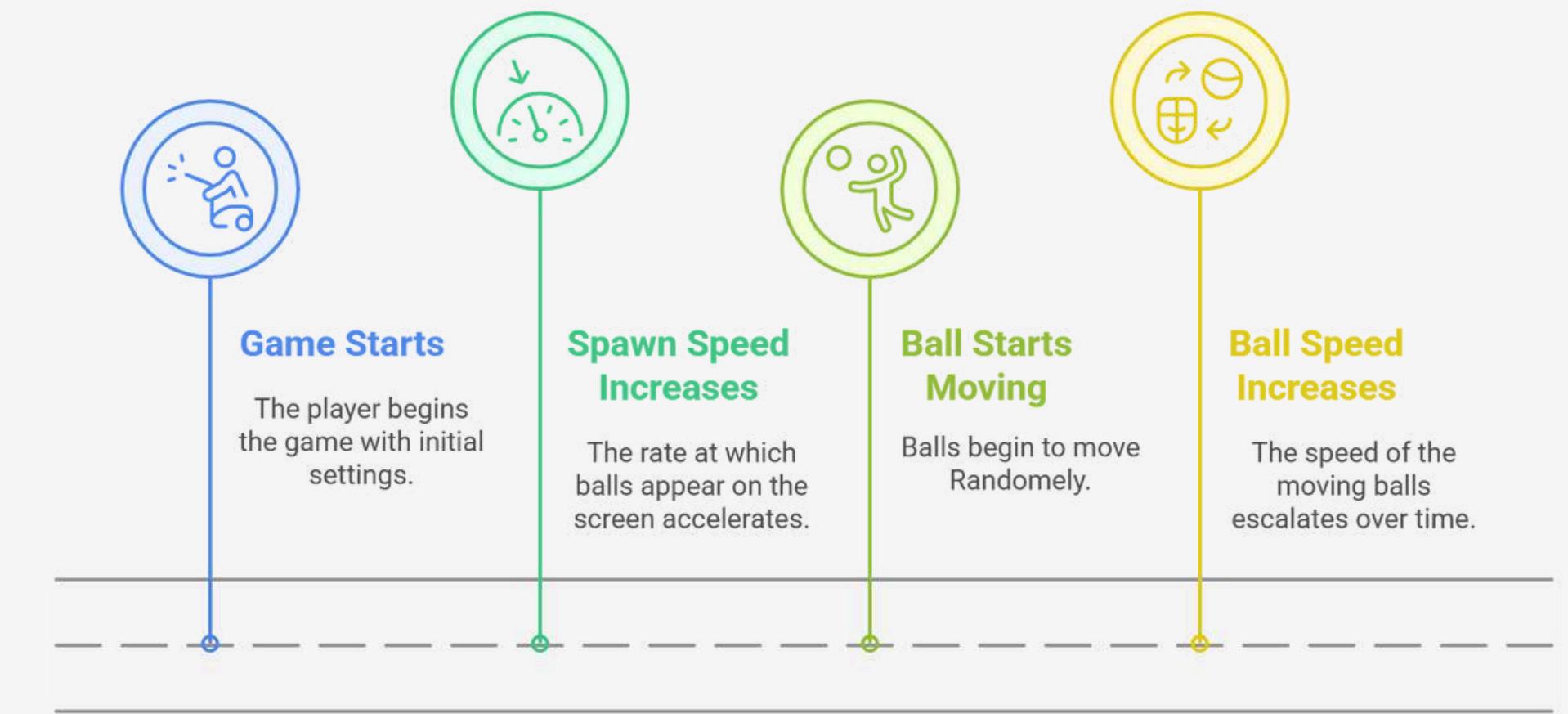
Feedback & Future Consideration

Feedback

During playtesting led to improvements—such as removing the 2-minute time limit to enhance replayability

Difficulty Progression

- As the game progresses, spawn speed increases.
- Ball will start movement and speed increases over time.



Feature

- Potential addition of an online global leaderboard.
- Featuring Different Environments.

Outcome

The Ball Shooter VR Game is an engaging and competitive experience that challenges players to achieve high scores while adapting to increasing difficulty. With a simple yet effective gaze-based shooting mechanic, dynamic difficulty progression, and immersive visuals and sound, the game offers an enjoyable and repayable experience.

Future updates, including an online leaderboard and varied environments, will enhance the game's depth and competitiveness. This project showcases the potential of mobile VR for fast-paced interactive gaming and highlights the importance of iterative development and player feedback in game design.



Dome Oasis

Environment

A concept environment design project that imagines life on Virelia, a Mars-like planet where extreme dust storms make the surface uninhabitable. The project focuses on visualizing this harsh world, the mobile architecture, and the constant struggle between survival and nature.

Engine: **Unreal Engine**

Duration: **8 Weeks (2024)**

Development Approach: **Solo-developed**

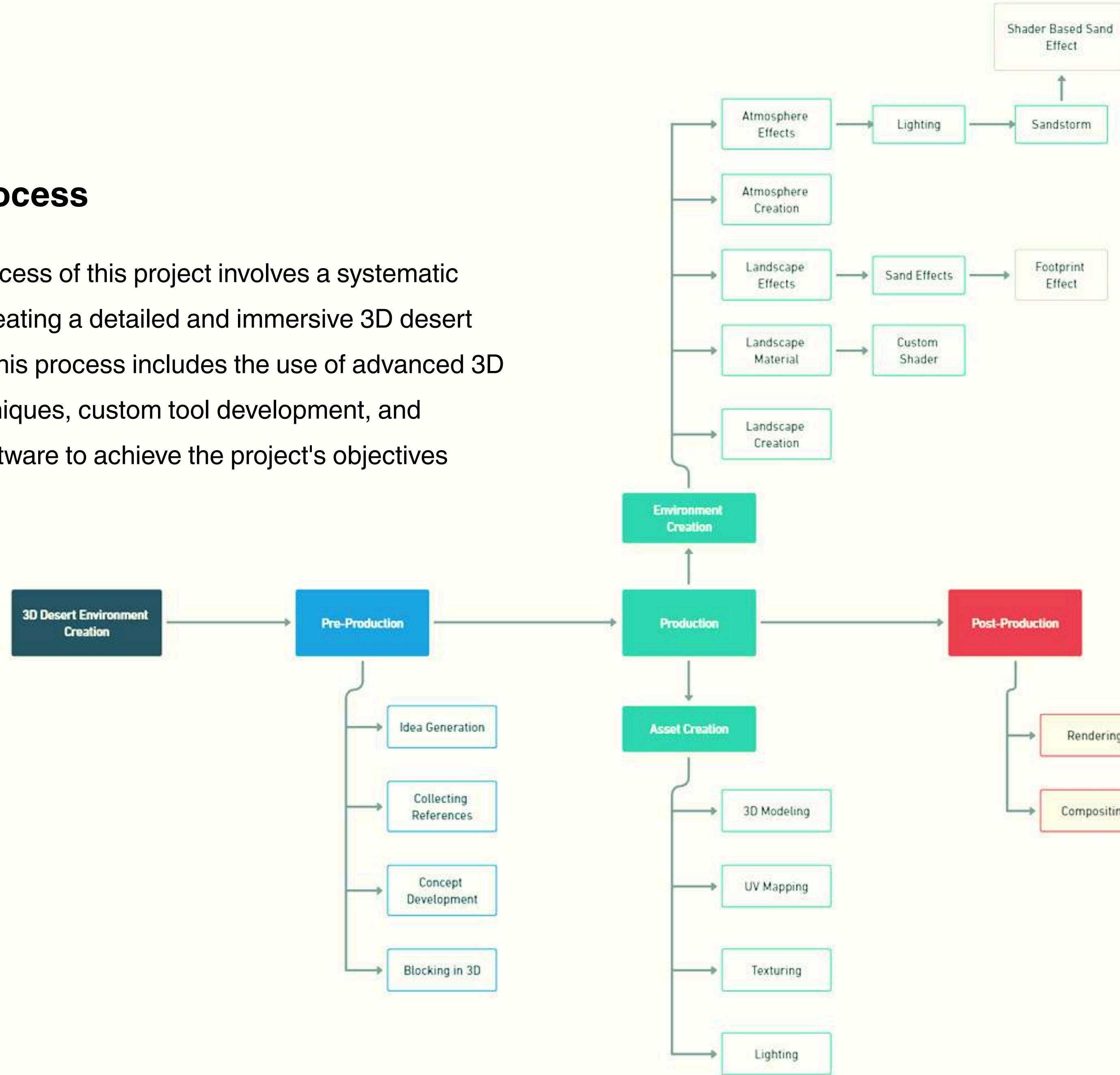
Software Used: **Blender, Substance Painter, Ember Gen**

Teaser

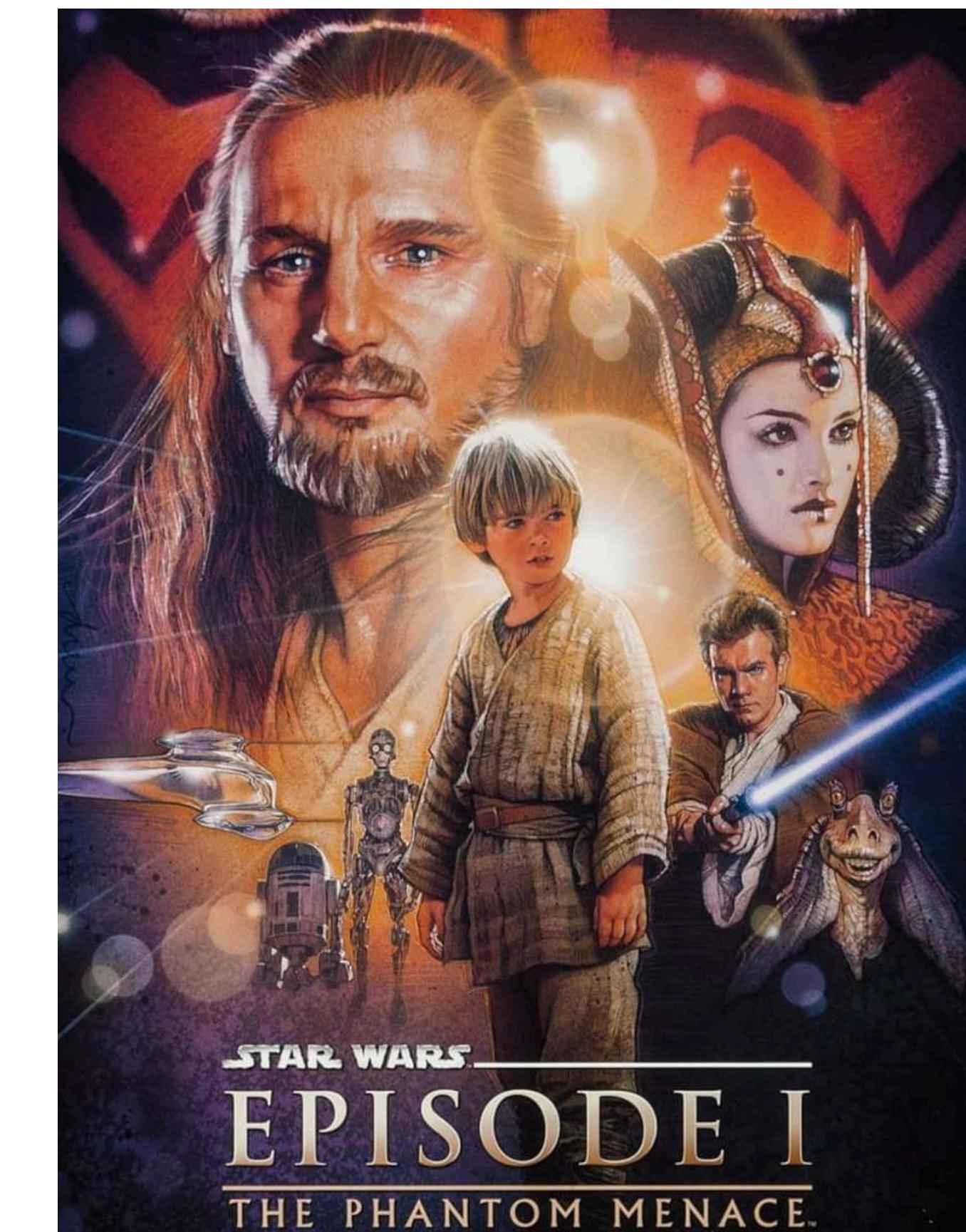
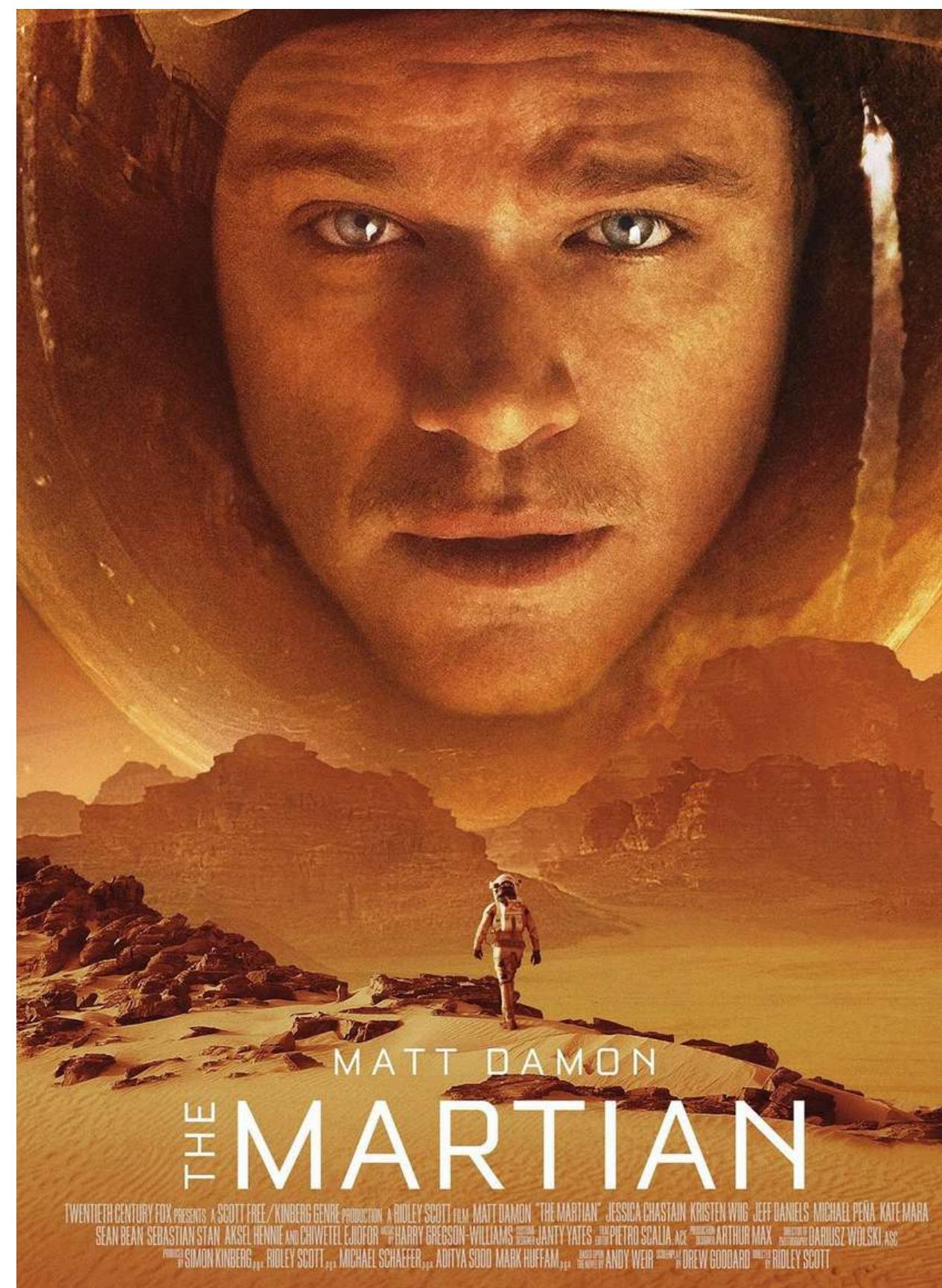


Design Process

The design process of this project involves a systematic approach to creating a detailed and immersive 3D desert environment. This process includes the use of advanced 3D modeling techniques, custom tool development, and specialized software to achieve the project's objectives.



Background Study



Story

Virelia, a Mars-like planet plagued by relentless dust storms and an uninhabitable atmosphere. After Earth's decline, humanity turned to the stars, and Virelia became one of the last hopes for survival. But the planet proved far more hostile than expected.

Massive windstorms, charged with static energy, sweep across the surface, tearing through terrain and disrupting all electronic systems. Traditional colonies failed quickly, overwhelmed by the violent weather and failing tech. In response, survivors developed Flying Domes—gigantic, self-contained habitats capable of lifting off and relocating to avoid incoming storms, a Mobile Habitation Capsule (MHC).

These MHCs are both sanctuary and ship, housing the remnants of civilization in a nomadic existence across a shifting, dangerous landscape. People live in constant motion, guided by storm forecasts and ever-dwindling resources, adapting to a world where the ground beneath them is never safe for long.

Virelia — "The living dust", a name given by early settlers in reference to the planet's violently shifting storms and the illusion of movement across its barren landscapes.

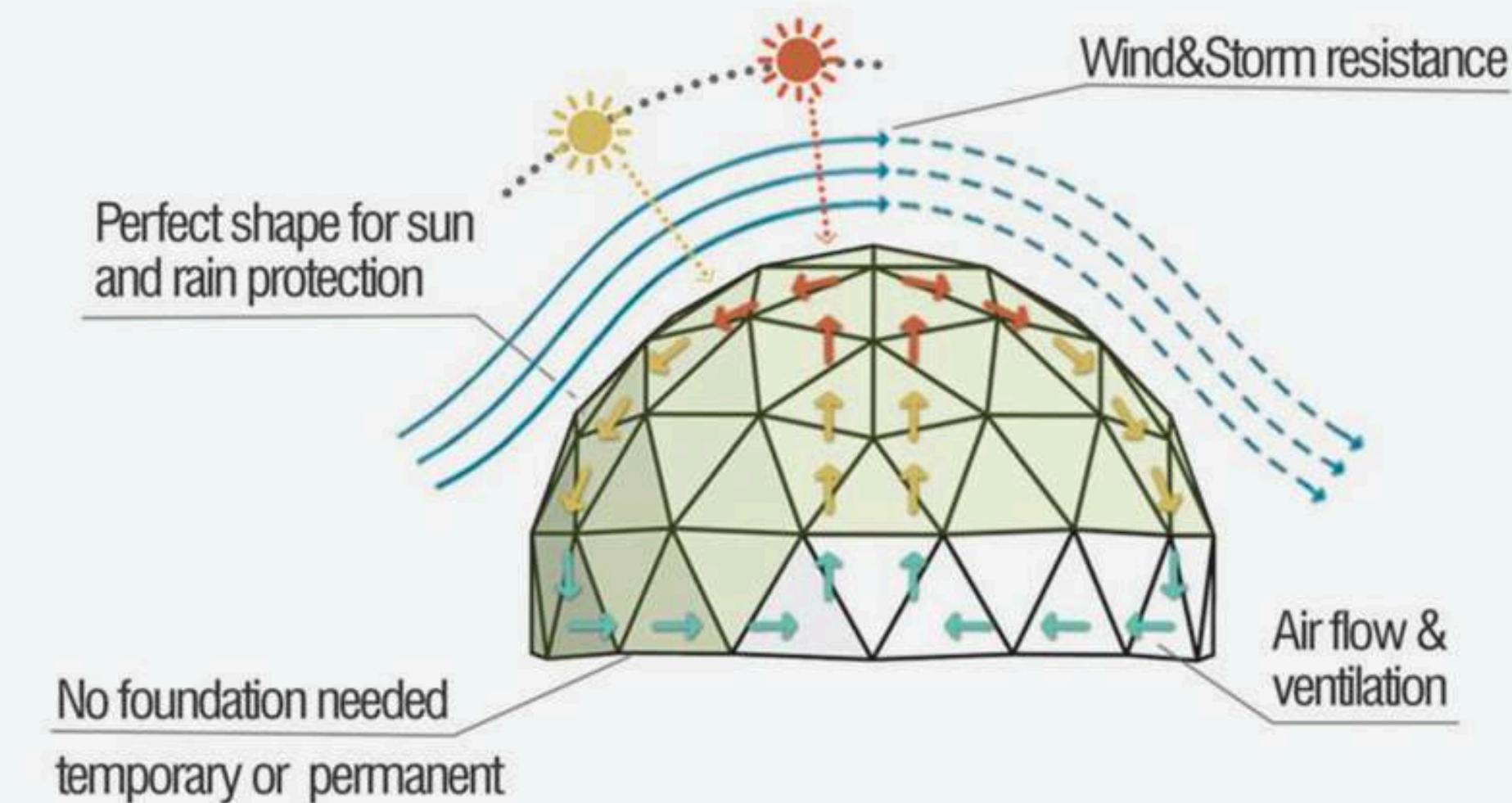
Mood Board

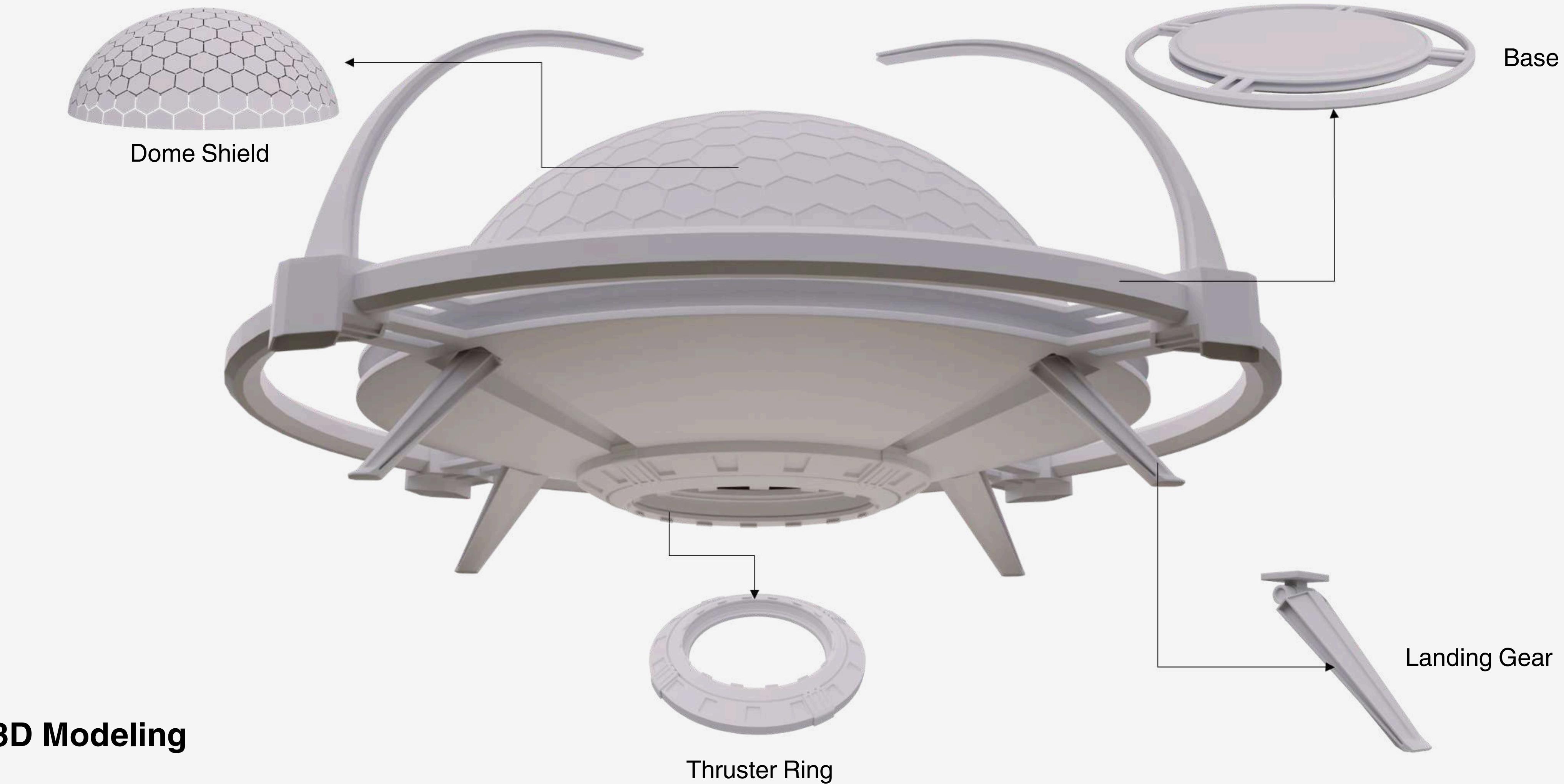


Why Geodesic Dome ?

Geodesic domes, known for their strength and lightweight structure, are an ideal choice for creating futuristic and sustainable habitats.

Research into geodesic dome structures by Buckminster Fuller, who popularized the concept, highlights their efficiency in terms of materials and structural integrity. The geodesic design distributes stress evenly, making it suitable for both grounded and aerial applications.





3D Modeling

Mobile Habitation Capsule



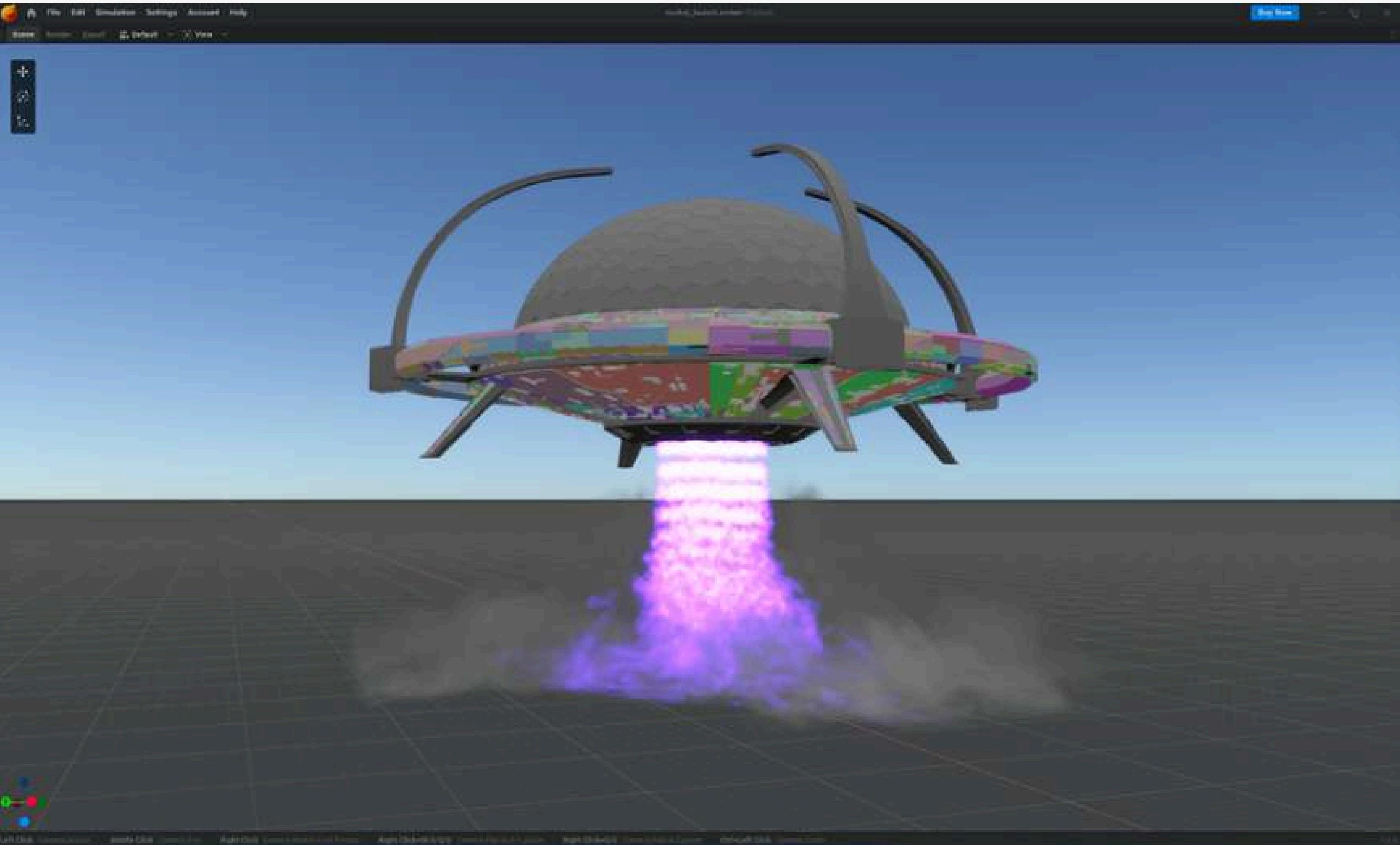
FX Creation

Engine Thruster Ignition

Engine thruster fire effects were generated using Embergen. After that, the VDB file was exported so that the effect could be integrated into Unreal.

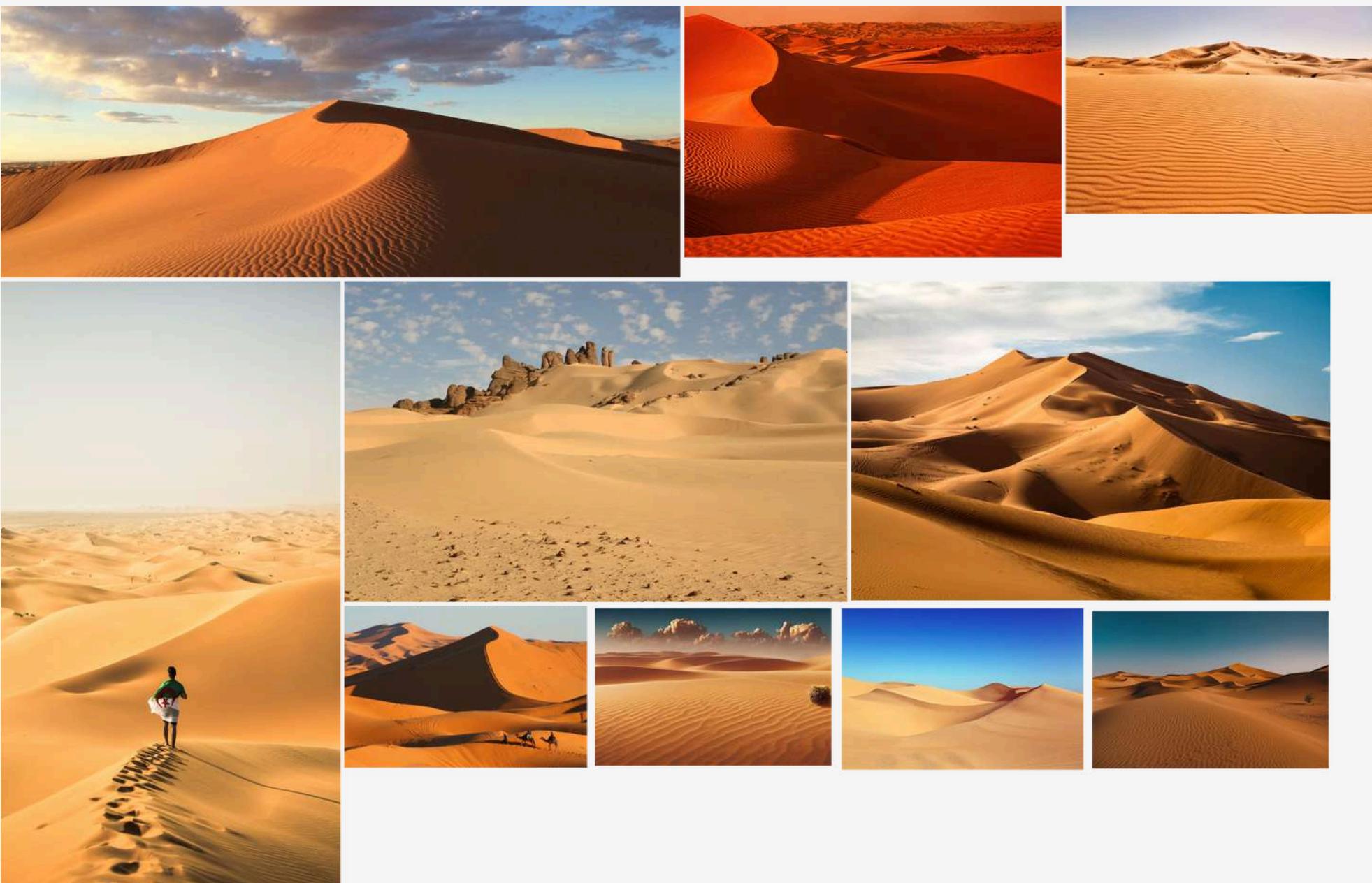
Software Used: **EmberGen**

A real-time volumetric fluid simulator that can instantly simulate, render, and export.



Mood Board

Environment



Desert Dunes



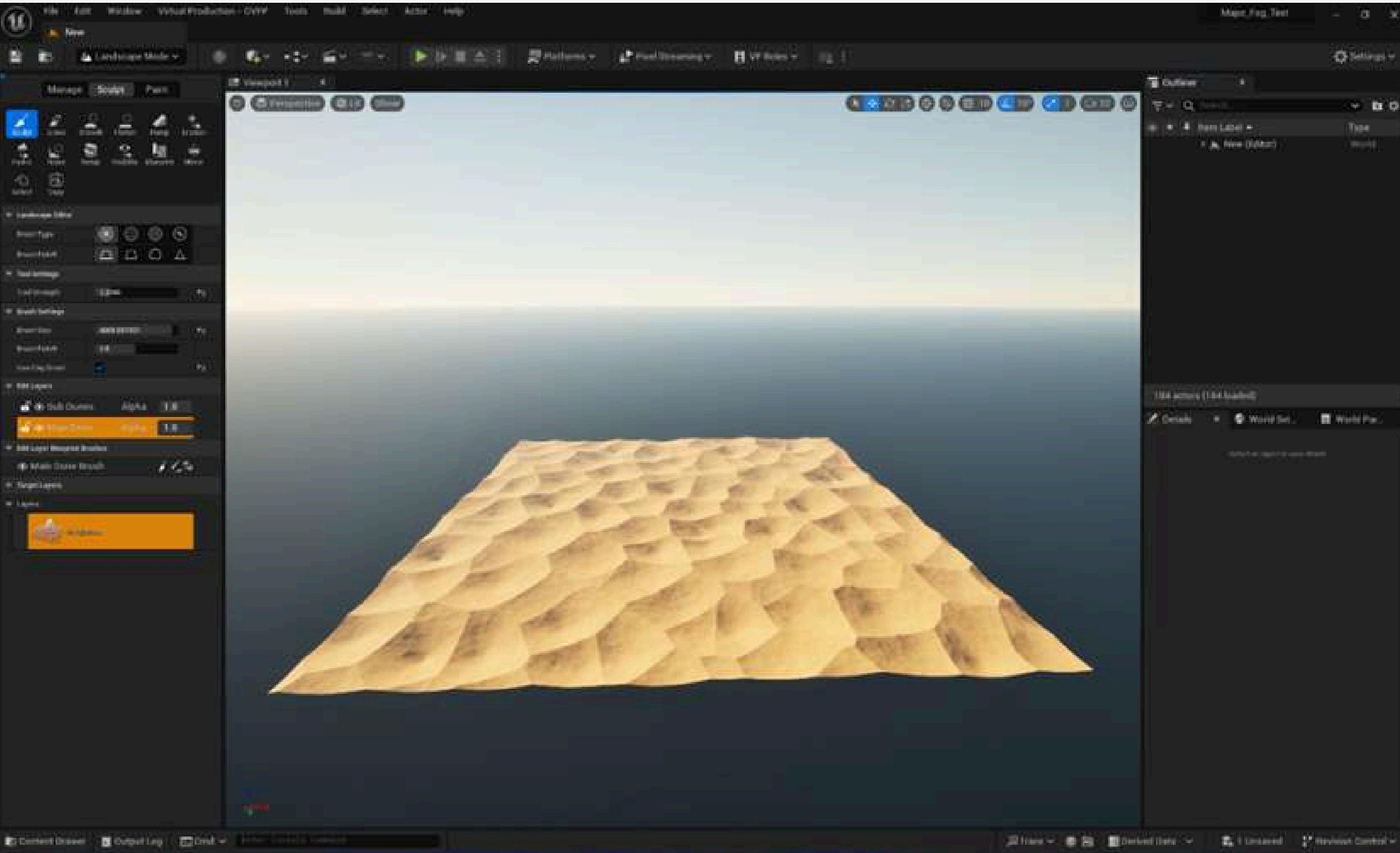
Atmosphere

Landscape Creation

This terrain was created using Blueprint Brush feature of Unreal and a custom Brush Material. Two layers are used to create this sand dune effect:

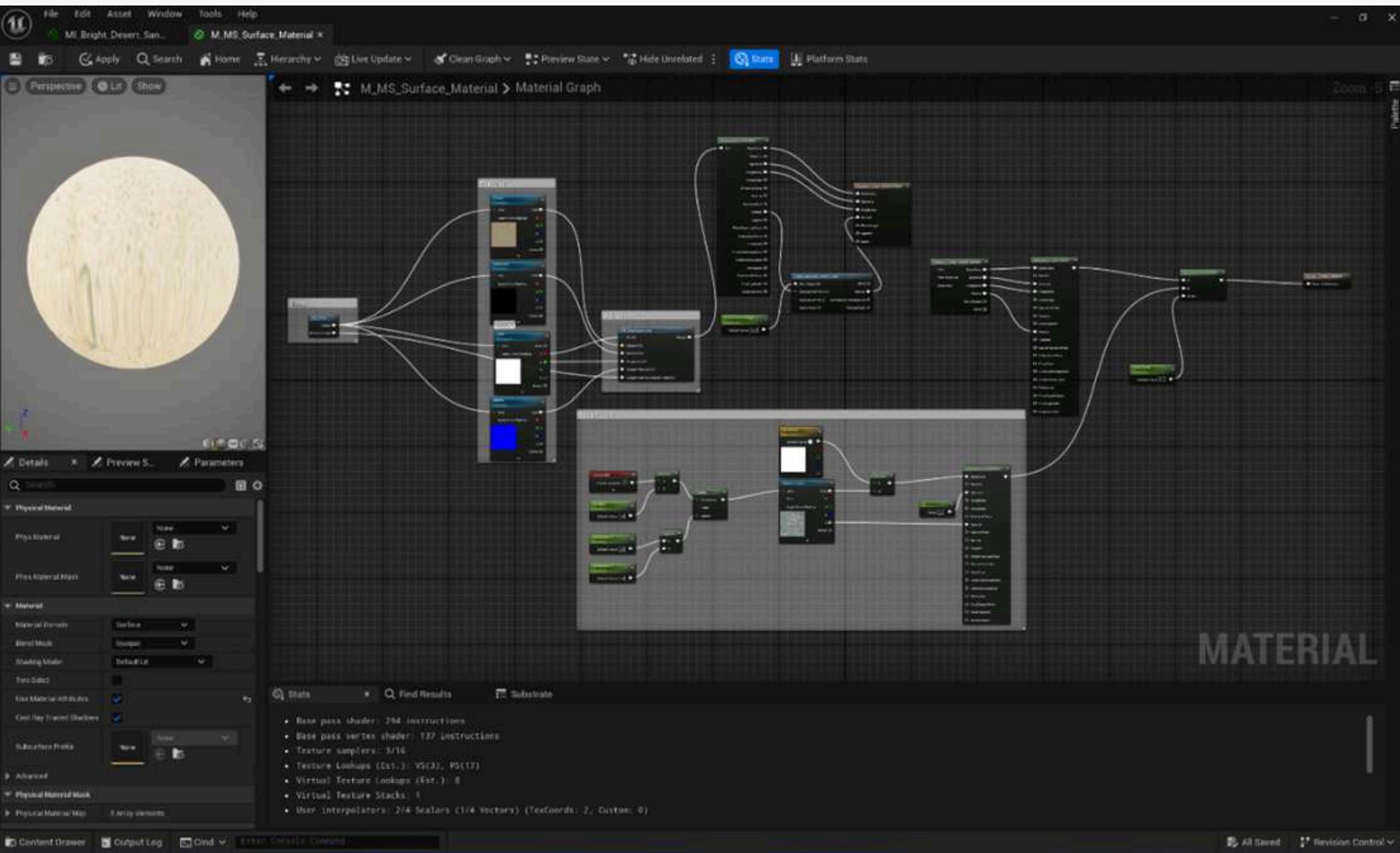
- The Main Dune Brush Layer.
- The Sub Dune Brush Layer.

To produce a more realistic feel.



Material Shader

The material was specially created to meet the project's specifications. A normal map is utilized to produce a sand wave effect with a seamless sand texture. To further enhance the realistic appearance of the sand.







Landscape



Lighting and Atmosphere



Fog and Volumetric Cloud

Character Integration

To add interactivity to the environment a playable character has been implemented in the scene that can be moved in the scene.

Foot Print

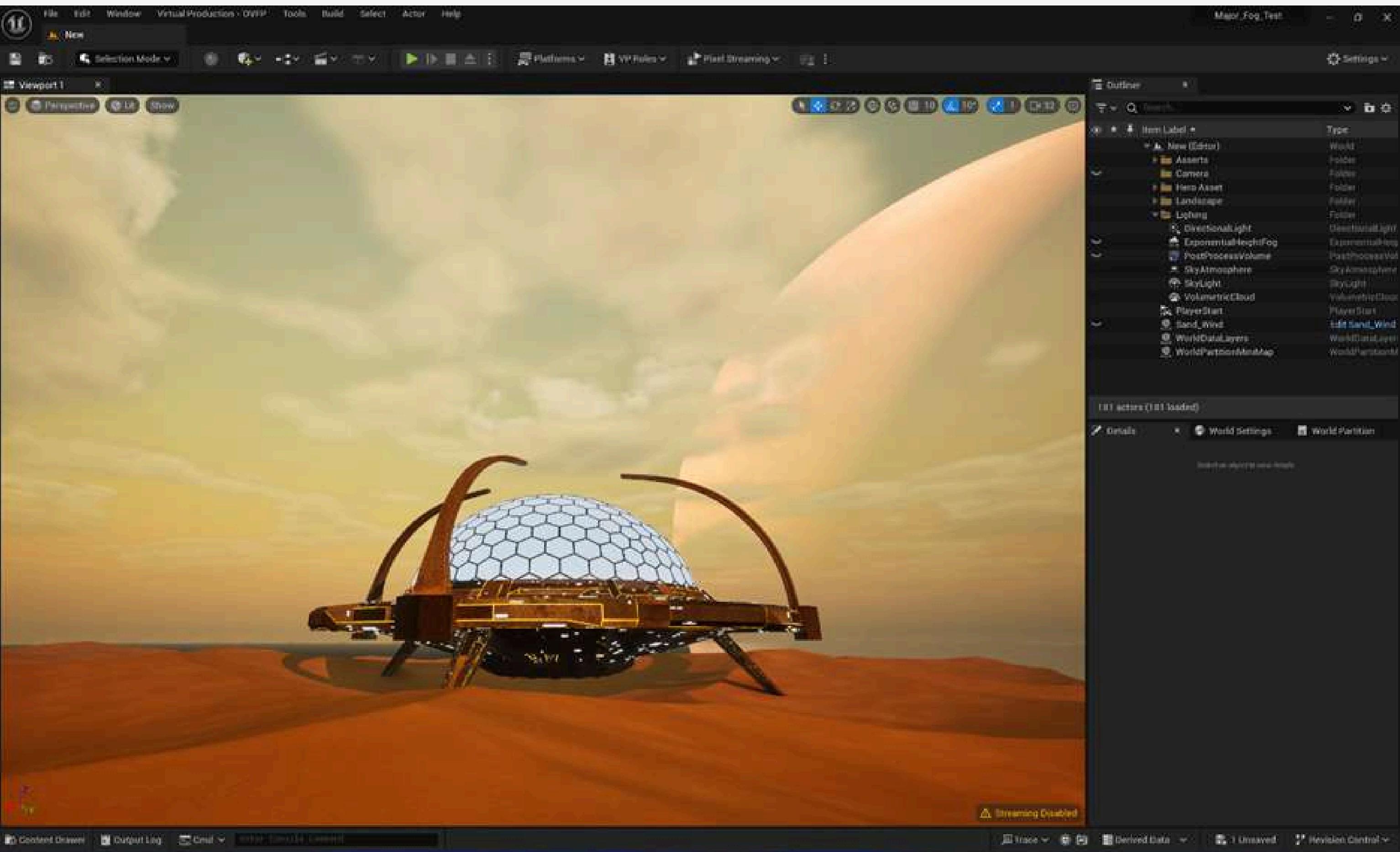
To give the landscape an interactive feeling, a footprint effect was incorporated while the character was moving. This was accomplished by using OpenLand Deformation Manager to add the footstep shape to the normal map of material.



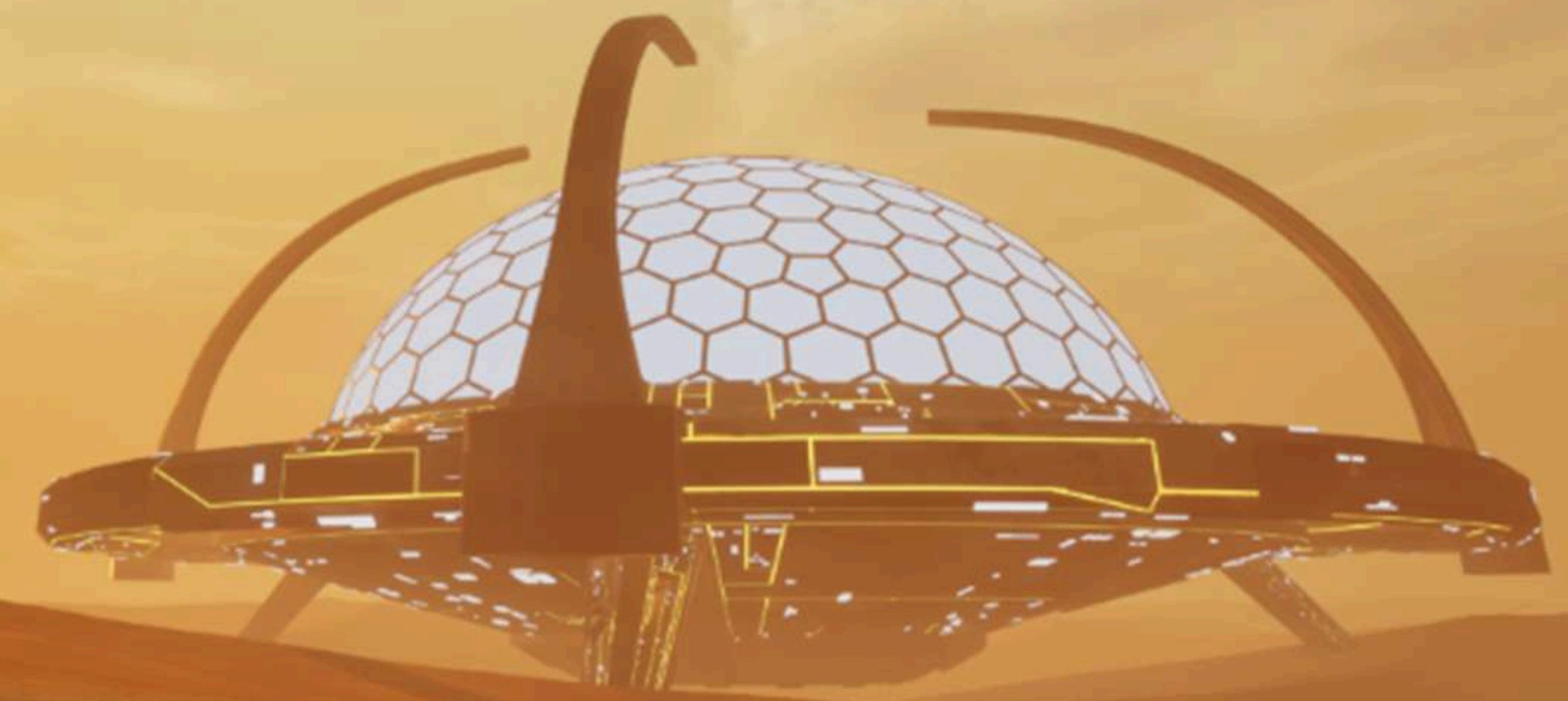
Asset Integration

All the 3D models, Textures and Effects were exported. And was later on Imported into the Unreal scene using appropriate settings.

- Mobile Habitation Capsule
- Background Planet
- Sand Storm



Final Renders





Landed



Ignition



Take Off

Dome Town

Environment

Dome Town is an interior environment design project that visualizes life inside a massive, self-sustaining flying dome on the harsh planet Virelia. Built to protect its inhabitants from the violent dust storms and unlivable conditions outside. Dome Town serves as a futuristic haven where humanity has recreated a miniature urban world under a protective glass shell.

Engine: **Unreal Engine**

Duration: **6 Weeks (2023)**

Development Approach: **Solo-developed**

Software Used: **Blender, Maya, Substance Painter,**



Design Process

Pre-Production

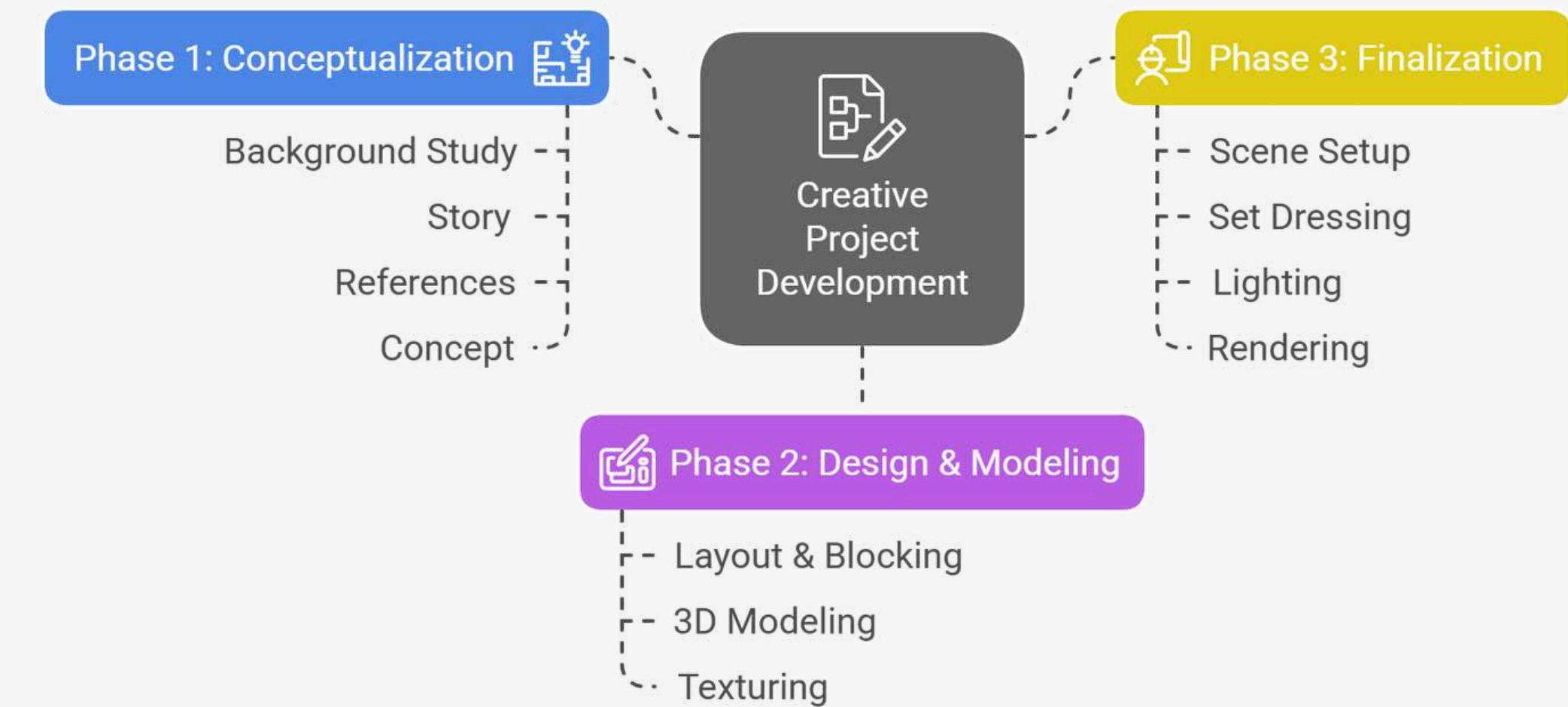
The process began with a background study to understand the theme, followed by developing a basic story. References were collected to shape the visual direction, and a core concept was defined to guide the design.

Production

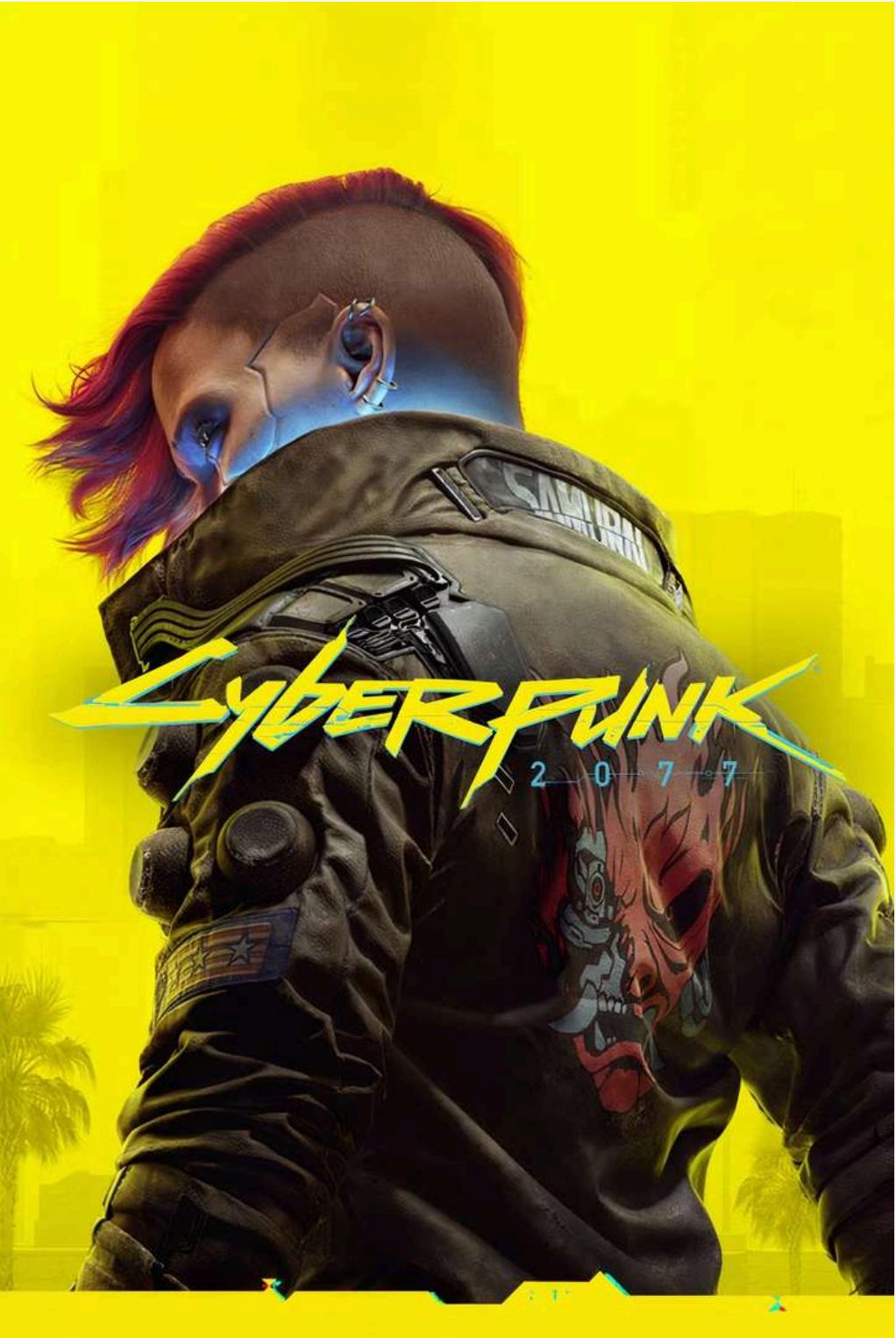
This phase involved layout and blocking to plan the scene, 3D modeling of key assets, and texturing to add detail and style.

Post-Production

The final stage included setting up the scene, adding set dressing for visual depth, applying lighting to create mood, and rendering the final output.



Background Study



Cyber Punk - Night City



Star Citizen - ArcCorp

A SiFi cyberpunk style Planet.

Story

After Earth was lost, survivors settled on a new planet called Virelia. But the planet was dangerous—filled with violent dust storms that damaged electronics and made the air unsafe to breathe. To survive, humans created giant flying domes that could move across the skies, staying ahead of the storms.

Citadel 4 is one of these flying domes. Inside, it feels like a small town, complete with metal buildings, glowing lights, roads, parks, and shops. The design mixes sci-fi and cyberpunk styles, giving the place a futuristic yet lived-in look. A strong, clear dome covers everything, keeping the harsh outside world away.

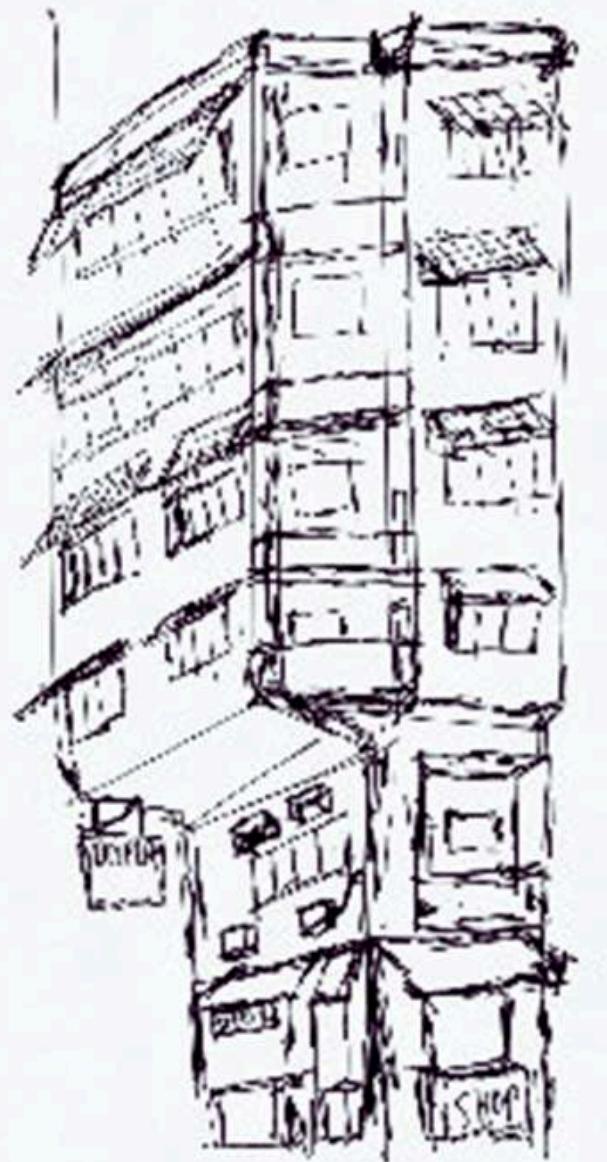
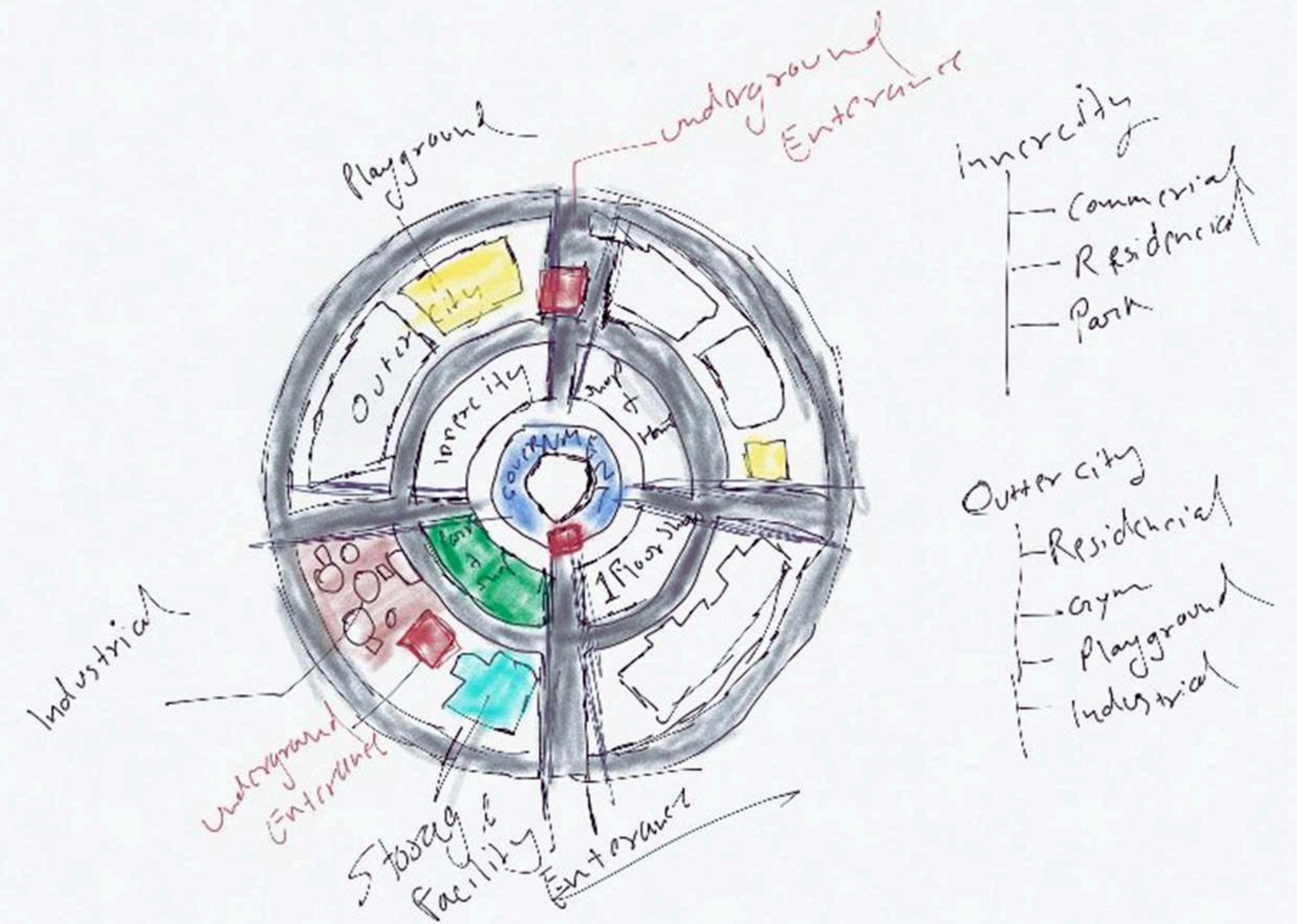
Here, people live, work, and try to build a better future. Citadel 4 is not just a place to survive—it's a new home floating above a dangerous world.

Mood Board

-  Reference for Buildings
-  Texturing
-  Lighting
-  Asset Setup
-  Environment Scaling



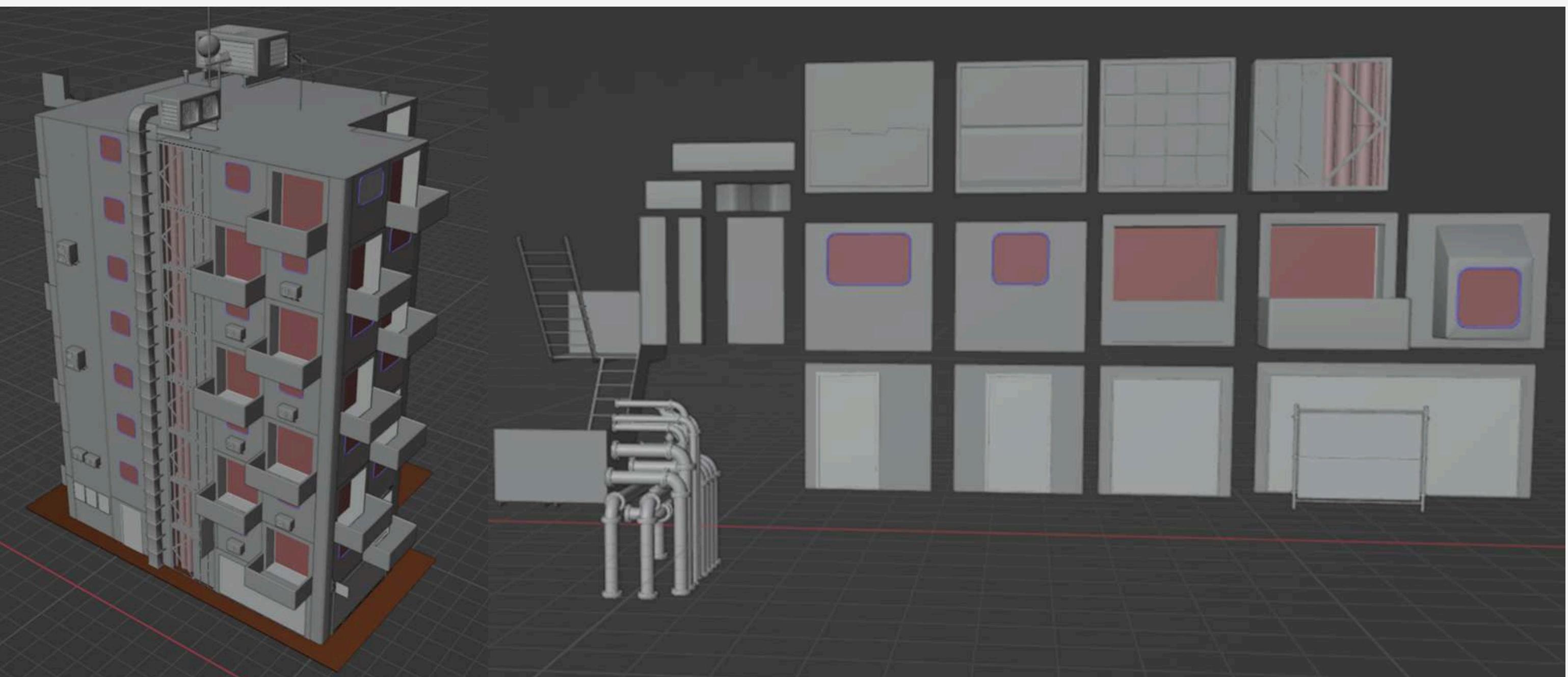
Concept



3D Modeling

Modular Kit

Modular assets are building blocks for some game environments. They have strict parameters so that they can fit together, allowing for variety. For example, developers might use modular kits to fill large maps or recreate real-world locations in open world games.



Texturing



Scene Setup









Hyperloop

Promo

Created a dynamic short video showcasing the futuristic design and high-speed concept of Hyperloop. The video emphasizes its sleek aesthetics and cutting-edge transportation technology, delivering a visually engaging glimpse into the future of travel.

Team Size: 2

Duration: **2 Weeks (2022)**

Software Used: **Blender, Maya, Adobe: Pt, Pr,**

Video

Contribution

I participated in both Pre-Production and Production, proposing the initial concept and defining the visual style. I designed and modeled the Hyperloop, ensuring a futuristic and polished appearance. After creating the 3D model, I handled texturing to enhance realism and detail. Additionally, I worked on scene setup, and fine-tuned the lighting to emphasize form and materials.

My friend was responsible for composing the shots, camera work using the assets I created, and Postproduction.



My Role

Focus on design and modeling



Friend's Role

Focus on composition and postproduction

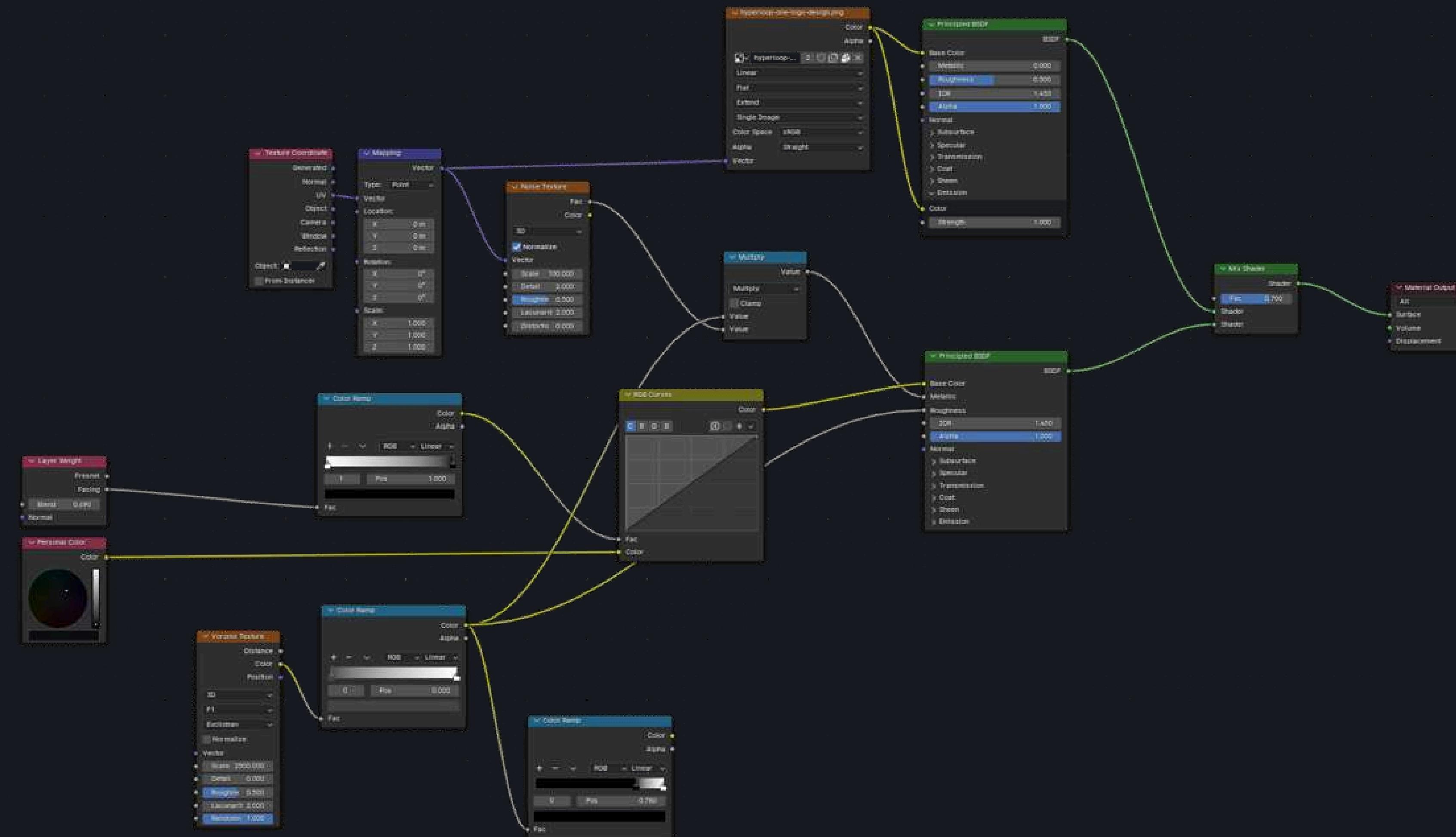
3D Modeling



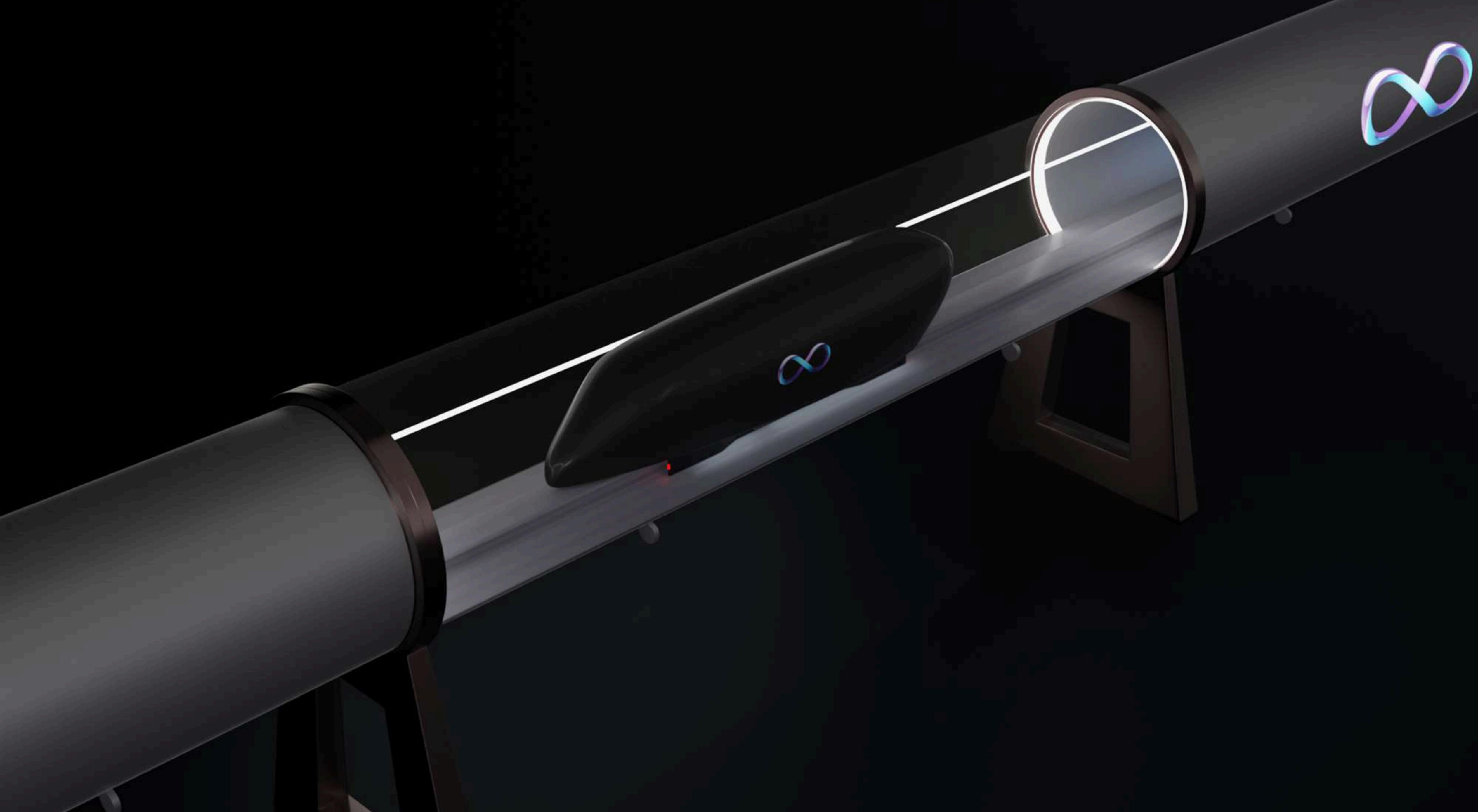


Texturing

Pod Shader Graph





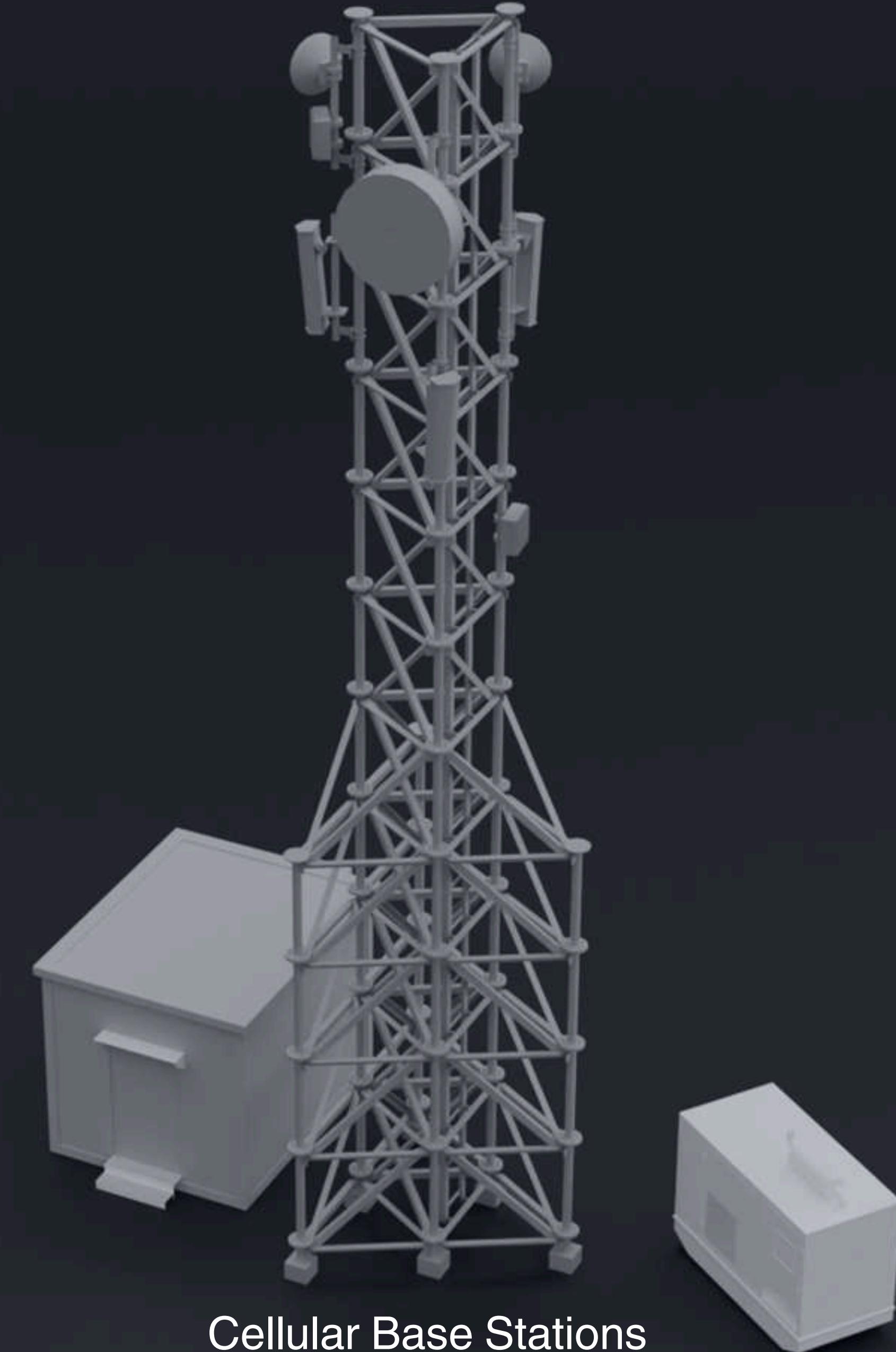




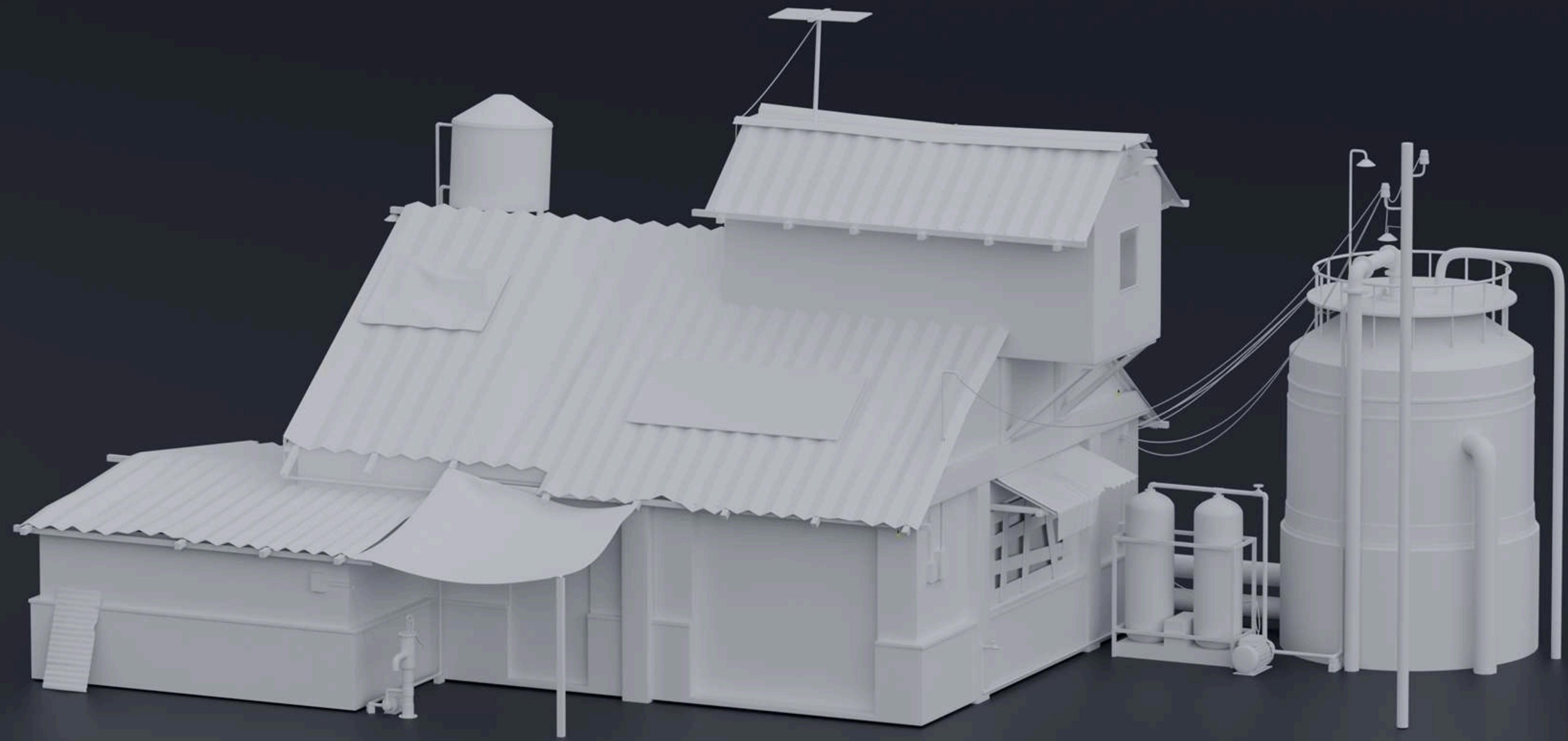
Modeling Projects

These are some of my Personal Side Projects

1. Old Bio Gas Plant
2. Research Pod
3. Old Terminal



Cellular Base Stations







Thank You

Ph.	+91 6202-890026
Mail	adi.twentythree@gmail.com
Website	Coming Soon
LinkedIn	www.linkedin.com/in/3d-aditya