# GDD
# ASTROLYMPICS
# アストロリンピック
## GAME DESIGN DOCUMENT

OuttaThisWorld
STUDIO

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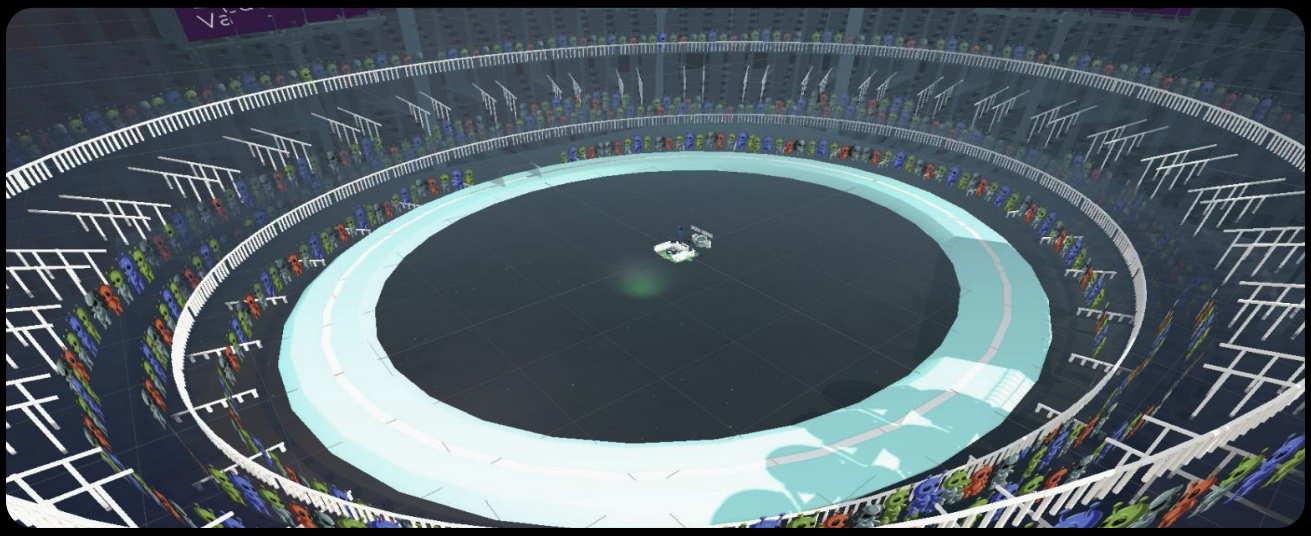
# EXECUTIVE SUMMARY

## Overview

Imagine 'YOU' are forced to participate in an intergalactic game where the player must play for their planet's survival. 'YOU' are posed with a challenge to save your planet, Mother Earth.



Astrolympics is a skill-based arcade VR game where you (the player) are chosen by "The Intergalactic Federation/Council of Interstellar Astrolympic Games... Inc" to represent Earth at the Interstellar Astrolympics games. The stakes include saving what remains of planet Earth.

Grab different objects and try to hurl them into containers to score points. Complete throwing a certain amount of balls into the container with the time ticking side by side to save the Earth, In case you lose, watch the Earth explode. Do 'YOU' have what it takes to save YOUR planet Earth? Win the Astrolympics and become Earth's ultimate defender!

## Target Platforms

The platform for Astrolympics is Oculus Meta Quest 2.

## Target Audience

Astrolympics primarily targets teenagers and young adults (13-25 years old) who are enthusiasts of sci-fi, heroic narratives, and immersive VR games. This age group is generally more receptive to challenges and having a heroic status in-game. However, the game is suitable for any above the age of 25.

The game's mechanics cater to players who enjoy casual and fun VR experiences. The narrative of saving Earth adds a heroic element that can be attractive to this audience. The game's accessibility is ensured through simple controls, making it inclusive for many players.

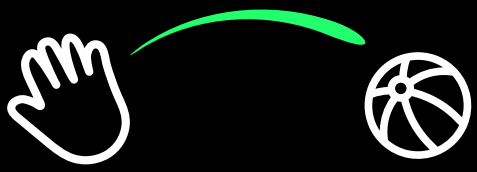
## Genre

Astrolympics categorizes its genre as a first-person skill-based arcade game with an urgency of saving the planet with skill-based aiming and timing.

## Design Pillars

**Skill-based Throwing:** The first design pillar is skill-based throwing, as it lays the most important of the game's core mechanics. The most crucial mechanic is throwing balls, which requires precision and skill-based throwing from the players. This mechanic requires accuracy and timing, making it a skill the players can enhance over time.

**Innate Throwing Instinct:** Innate Throwing Instinct taps into a human's compulsive behavior of throwing an object and hitting the target. The players feel a sense of happiness and satisfaction when they successfully make a throw into the container, which can reflect real-world feelings. Failure to perform this task leads players to keep trying until they finally get it.



**Arcade Style:** Arcade style emphasizes the time-based game and score-oriented nature. It also reflects on the core mechanic gameplay. As the player progresses, it leads to a higher level of difficulty, a typical pattern followed by arcade-style games.

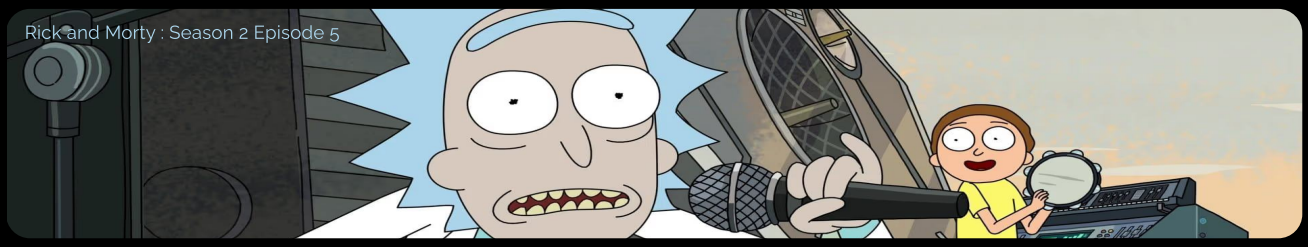
**Heroic Narrative:** Heroic Narrative provides context and motivation for the gameplay. The narrative of saving Earth from aliens gives purpose to the player's actions.

## References

The game concept inspiration for "Astrolympics" has been influenced by a combination of series, "Rick and Morty," the classic all-time favorite arcade game basketball, and the mobile game for IOS, "Paper Toss."

### Rick and Morty

A popular TV Series; in Episode 5 of Season 2, Rick and Morty were faced with a situation where they had to perform a hit song to save Earth from the giant head destruction on the planet. We infused specific actions of the episode's humor and absurdity into the game's narrative to create a sense of fun and mood in the game's overall experience. Additionally, the show's distinctive visual style and textures, which can be considered blunt and "cartoonish," were adopted to create an aesthetic look for the game, giving it a vibrant and fun look.



## Paper Toss (IOS)

The mechanics of the gameplay inspiration were taken from "Paper Toss," In his game, the player must throw a piece of paper into the waste basket. This is done by making a swiping action across the screen. The angle of the line over which the player swipes determines the direction in which the piece of paper will fly. Instead of swiping, players, while playing Astrolympics, make a throwing motion with their hands to launch objects at the containers.


## Arcade Games

Getting inspiration from arcade games, we aimed to recreate the OG game of basketball in an arcade setting. The bold and vibrant colors, with an immersive environment, help to transport the players to a retro-inspired world filled with excitement and nostalgia.

# PRODUCTION OVERVIEW

## Roles and Responsibilities

NIRSHATH
PROJECT MANAGER

### Project Management

The project manager oversees the team's contributions and ensures effective collaboration. Utilizing Trello, they schedule sprints, manage tasks, and track progress. Their role is pivotal in coordinating efforts, resolving issues, and facilitating smooth workflow, all of which are crucial for the successful completion of the VR game. Also responsible for working on the core gameplay mechanics with Technical. Also responsible for motivating and entertaining the team,

ANJALI
TECHNICAL

VASANTH
TECHNICAL

### Technical

**For this role, the individuals will operate at a technical level, taking care of coding, GitHub management, and core game mechanics. Collaborating with the project manager, they will integrate these elements to ensure the cohesive functioning of the project.**

### Design

Conceptualizing the overall vision, designing engaging gameplay mechanics, and ensuring an intuitive user experience. They collaborate closely with the development team to create the required assets. Iterate on designs based on feedback and analytics to continually improve the game's quality and player experience.

DEVIK
DESIGNER

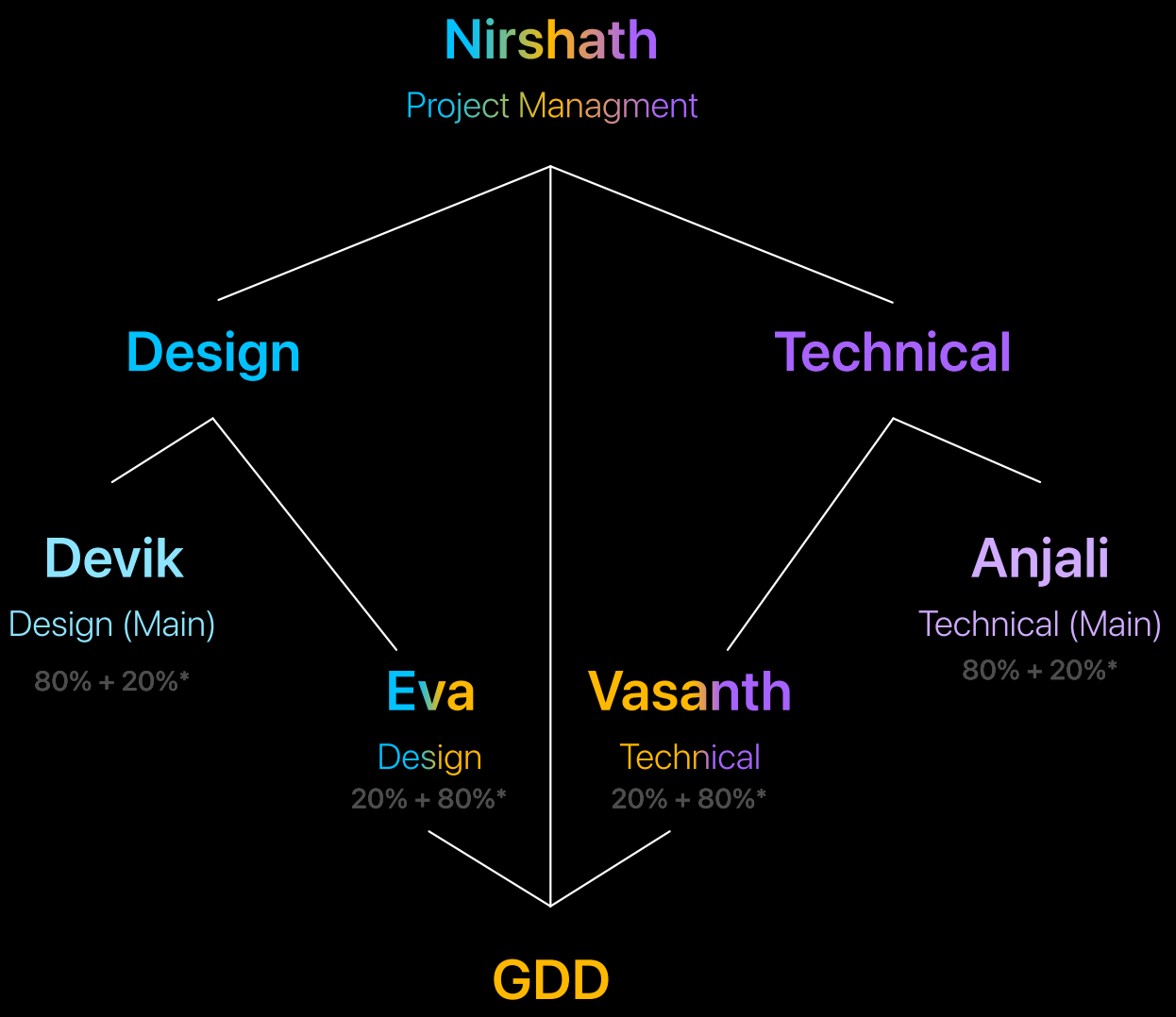
EVA
DESIGNER

# PRODUCTION OVERVIEW

## Team Structure

Our VR game development began with a clear division of roles. Anjali, Eva, and Devik assumed design responsibilities, while Vasanth tackled the technical aspects. We started with white box production, where everyone contributed to core game mechanics. However, as development progressed, we reflected on our team's structure and each members skills and abilities, and decided to restructure the team's roles and responsibilities to have a more effective and productive workflow.

The team is now divided into two units. Devik, the design lead, and Anjali, the technical lead, each will now receive support from Eva and Vasanth. While Eva and Vasanth continue contributing to design and technical aspects, their primary focus will be shifted towards creating a comprehensive Game Design Document (GDD) which serves as the roadmap for the project.




*x% + x% refers to percentage of work expected for Design/Technical + GDD

# Skills Inventory

**Nirshath Madhusanka**
- Graphic Design
- Motion Graphics
- Video Editing
- Sound Design
- Team Management
- UI/UX

**Anjali Premchand**
- Illustration
- UI/UX Design
- Video Editing
- Spark AR

**Devik Sahni**
- UI/UX Design
- Graphic Design
- Photo Editing

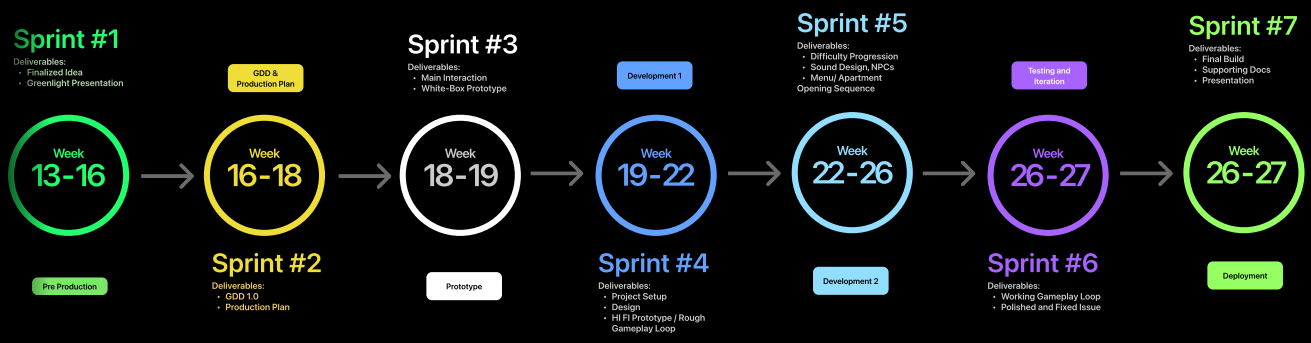
**Eva Elsa Mathews**
- UI/UX Design
- Video and Motion Graphics
- Editing - Resolve/Premiere Pro
- Adobe Aero

**Vasanth Pandi**
- Graphic Designer
- Photo editing
- Video editing

# Production Plan

The production process of Astrolympics is divided on the basis of 'Sprints'. Each sprint represents 2-3 weeks. Sprint #1 and #2 had the team working on pre-production and creating the GDD which you are reading right now!

Sprint #3 will be the beginning of the production phase of the project, which will last from week 18 - 26, and include Prototyping, Developing, Testing and Iteration and Deployment respectively. Below is a timeline for the project, with the deliverables for each sprint.




The next pages will have an expanded view of the production plan along with milestones and tasks that have been planned out.

# Production Plan (Expanded)

Prototype

Week
18-19

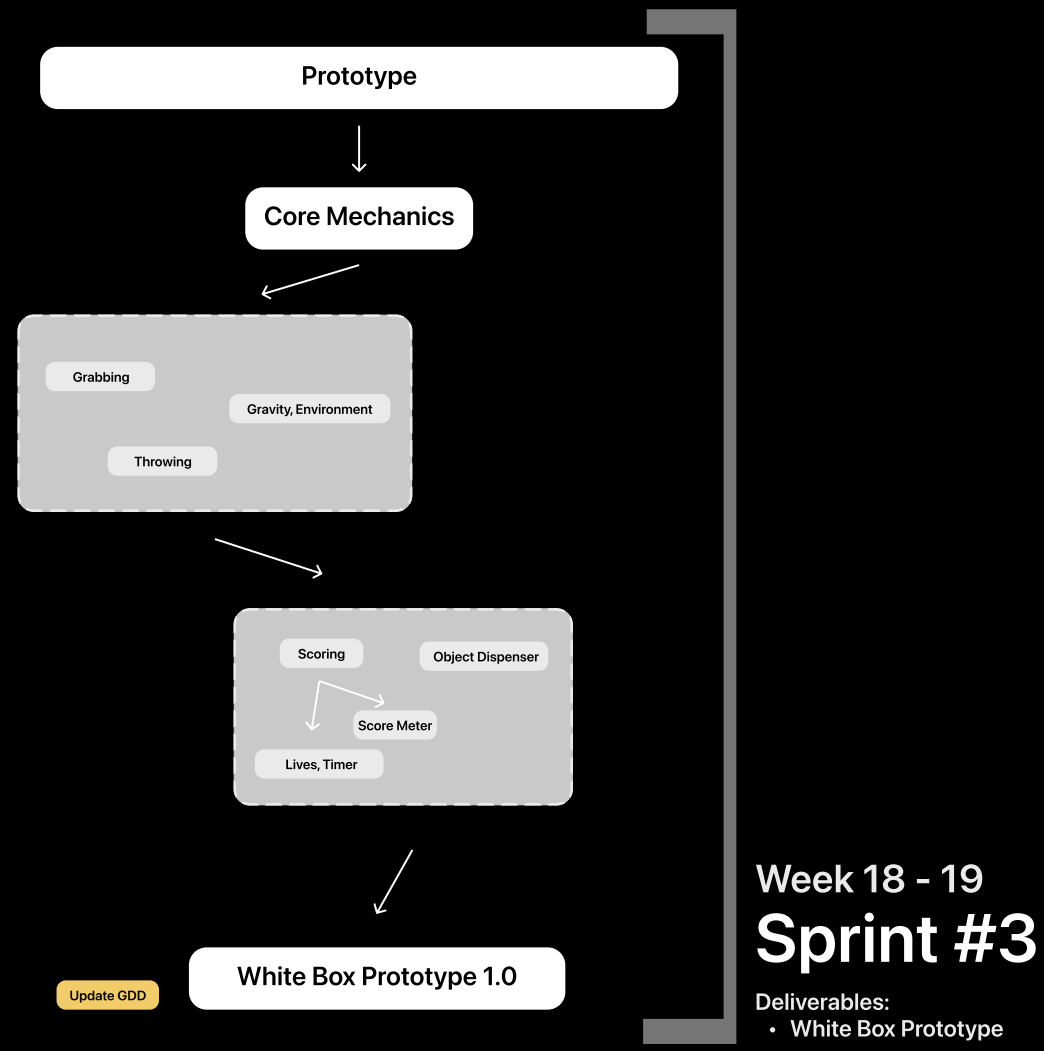
## Sprint #3

Deliverables:
- Main Interaction
- White-Box Prototype

## Prototyping

The prototyping stage will include testing and ensuring the functioning of our core features. The aim is to create the foundation of the game, without design and finish the sprint with a White-Box prototype of the game with working points and interactions.

Tasks:



# Production Plan (Expanded)

Development 1

Week
19-22

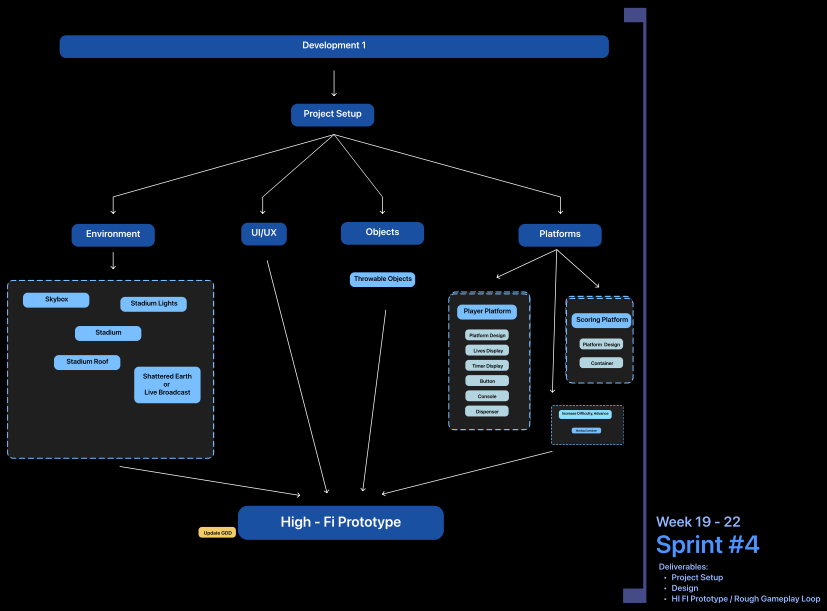
## Sprint #4

Deliverables:
- Project Setup
- Design
- HI FI Prototype / Rough Gameplay Loop

## Development 1

This is the beginning of the project's development phase, where the prototype will be given a proper environment and more visually appealing assets.

Tasks:




Development 2

Week
22-24

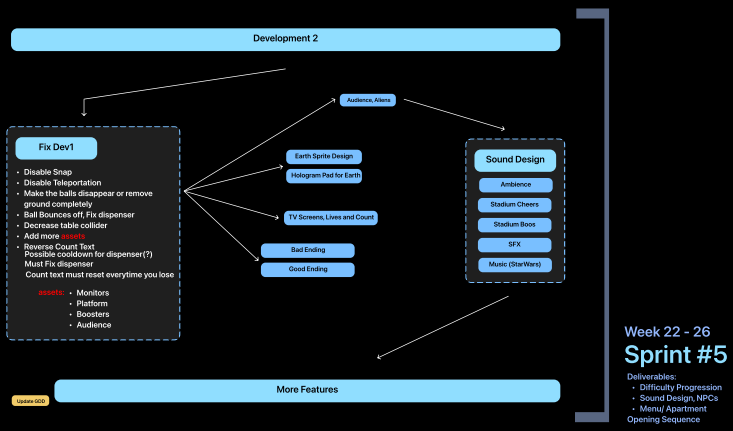
## Sprint #5

Deliverables:
- Difficulty Progression
- Sound Design, NPCs
- Menu/ Apartment Opening Sequence

## Development 2

The next phase of development involves creating more assets and features which add to the gameplay, such as NPCs, and increased difficulty levels. We will also create the menu/ opening sequence of the game.

Tasks:



# Production Plan (Expanded)

Testing and Iteration

Week
24-26

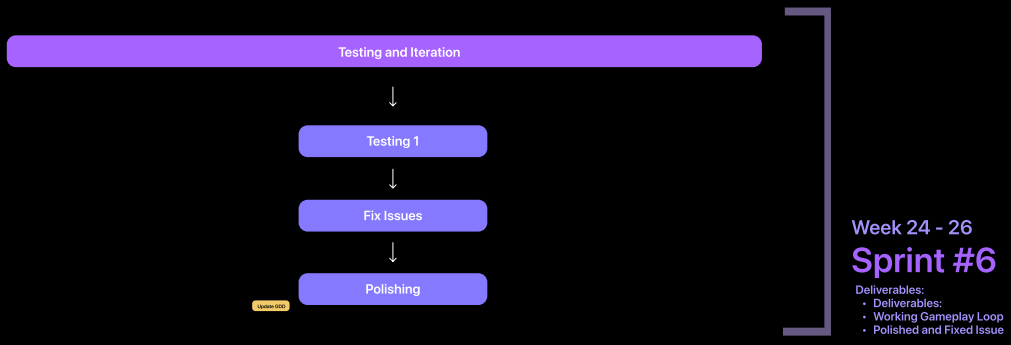
## Sprint #6

Deliverables:
- Working Gameplay Loop
- Polished and Fixed Issue

## Testing and Iteration

After the development phase, We will test in detail all of the features of the game and iterate on issues that need to be fixed. This will allow us to polish and refine the game.

Tasks:




Deployment

Week
24-26

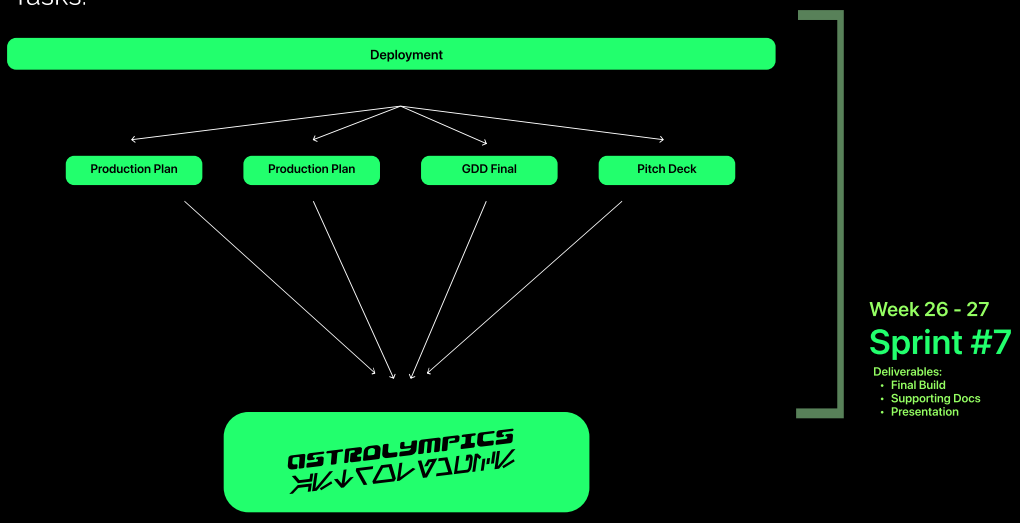
## Sprint #7

Deliverables:
- Final Build
- Supporting Docs
- Presentation

## Deployment

The final stretch of the project involves creating the final build, presentation, recording gameplay for showcase and finalizing all supporting documentation. This will conclude the project's production.

Tasks:

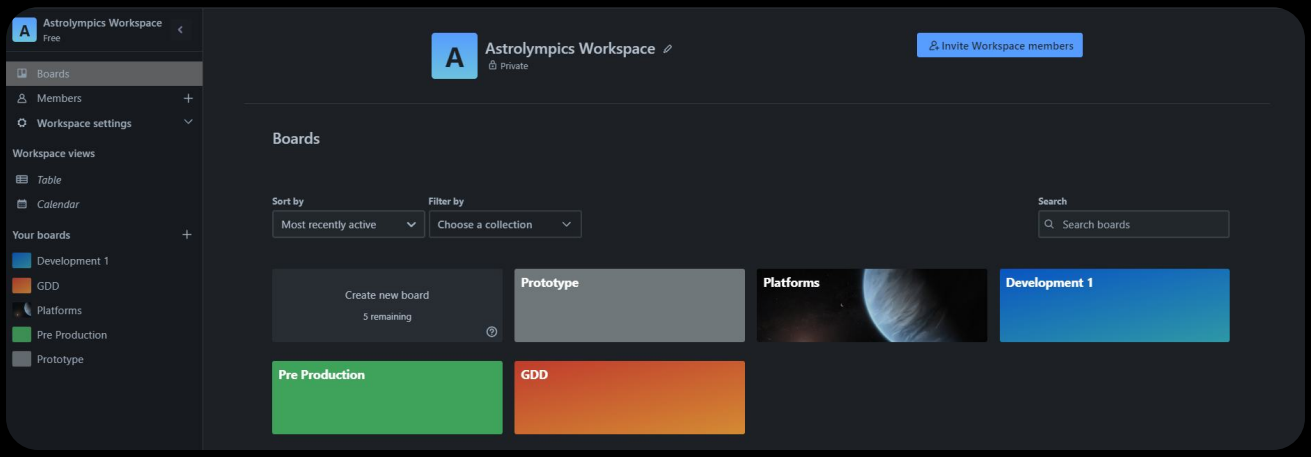


# Production Plan (Expanded)

## Trello

Trello is a collaborative tool which we will use to organize lists and tasks for different objectives for our production plan.

It allows us to create cards and boards that focus on specific tasks and areas of the project, and also allows us to dictate who does what, set deadlines and mark cards with labels that indicate potential problems or challenges that require attention.




## Team Meetings, and Work Timings

The size of our team presents the opportunity for all the team members to collaborate and work together in many instances throughout the course of the project's production. After discussion and planning, it is decided that the team members will meet three times a week. This includes every **Tuesdays (in-person, during class timings), Wednesdays (in-person) and Fridays (in-person).**


These meetings/work sessions are meant for tracking progress and ensuring that enough time is dedictaed to project tasks. The in-person meetings provide the opportunity for team members to collaborate and work together, and solve issues in-order to progress in the project smoothly.

# Design

## Design Pillars (EXPANDED)

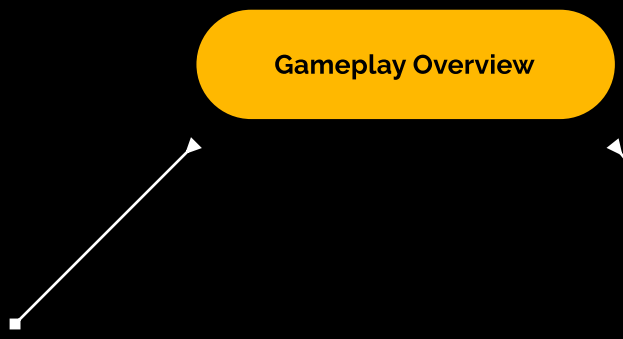
**Arcade style:** Astrolympics is an intergalactic game in an arcade-style environment. Quick rounds, instant rewards, and high scores keep the player motivated to try again. Every throw matters, keeping your adrenaline at its peak and focused. Think of a vibrant and adventurous stadium filled with cheerful audiences and Astroballs being tossed into the containers. The combination of audio and visual design make the arcade atmosphere feel real. While it might seem easy to pick up an Astroball, the mechanics for throwing may take practice and skill.

**Hero Narrative:** It's no more about sitting and chilling on the couch- you are picked to be the Savior of Earth. The player is posed with a purpose and responsibility. Every throw weakens the alien's threat, reminding the player that the fate of Earth is in their hands. You begin as a normal average person, but with each right throw, you prove everyone your skills precision.

**Skill based-throwing mechanism:** Each object throwing functioning is different, requiring quick thinking and skill precision. Every round poses new challenges, testing your aim and timing. The game should keep the player's on their toes, rewarding them with a grand title.

## Gameplay Overview

The VR's gameplay relies on precise throwing mechanics. It strategically uses motion controllers to aim various objects at specific targets within the specified time limit to successfully complete the Astroball count. The player interacts with the gameplay by grabbing and throwing mechanics, using the VR controllers. The VR control options would help them to pick up and launch it into the container.




### The Main Objective

The primary objective is to score points by successfully throwing Astroballs in the container and completing Astroball count before the timer runs out. By successfully completing each round, the player saves a part of Earth being destroyed.

### Progression System

Player's don't have any progression in the game while leveling through the different rounds of the gameplay, However, the game definitely features difficulty and progression to save/lose the earth. Each level, means tricker tricks but every good throw buys your planet more time, and what a better feeling than that.

# Level Design

Astrolympics consists of two separate levels:

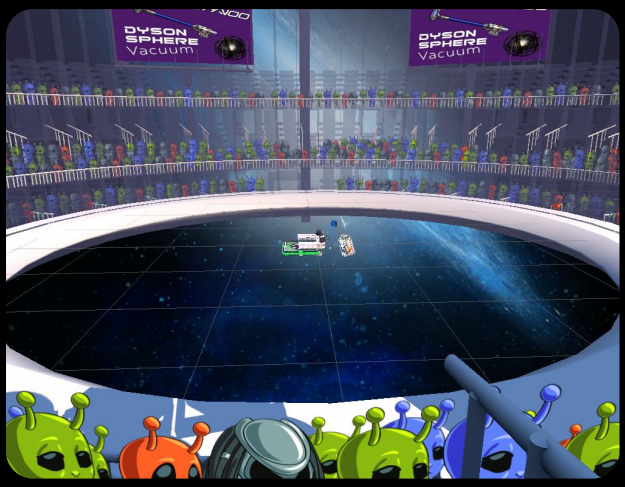
## Menu Scene

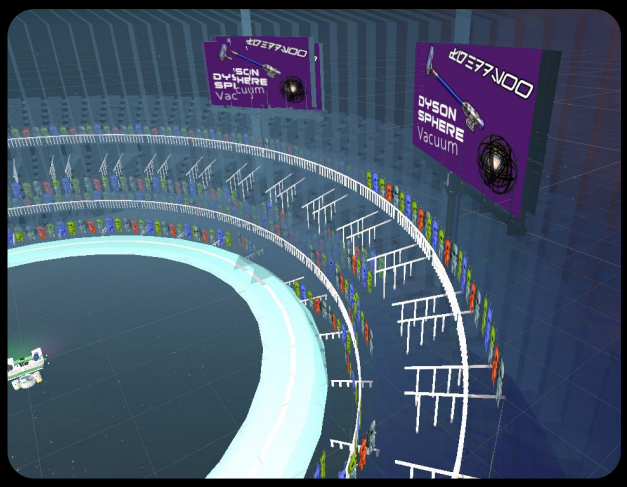
The Menu scene is a black, empty space consisting of the title, Astrolympics. Along with the title, there are buttons that user can click to navigate through the game. The buttons include Start, About and Quit.


## Stadium (Main Play Area)

This level places the player into the real action. It's an alien vs human arcade showdown. You are given 2 rounds, each getting tougher as you progress through them, testing your timing and skills on aiming the objects into the container. The fate of the planet Earth lies in your hands. Every missed throw destroys a part of the planet and you have 4 lives. Think fast and aim at the right trajectory and you become the ultimate throwing champion and a savior for your Earth.

It's a battle for survival, all it takes is one wrong throw!



# Core Gameplay Mechanics

Astrolympics is a VR arcade game centered around throwing balls into containers for points. Players use intuitive hand movements to pick up balls and throw them with realistic physics

Two crucial fundamental mechanisms to drive gameplay are player movement, and throwing and grabbing mechanisms.

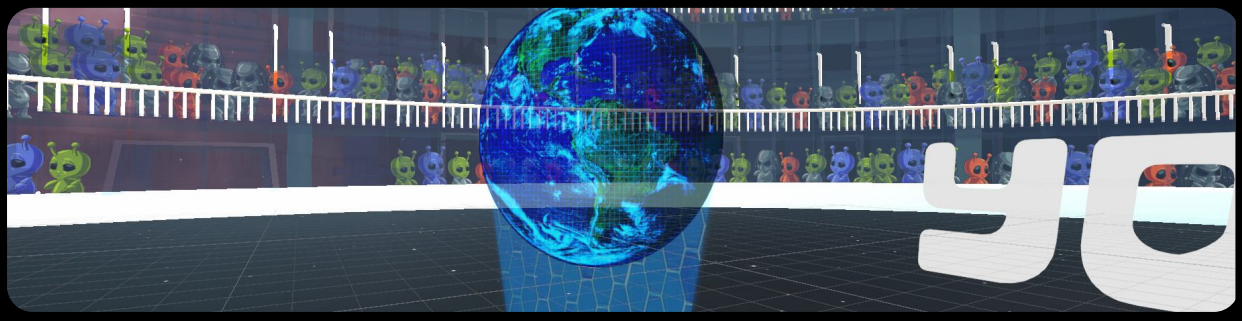
## Player's Movement

- **Limited Movement:** Helps to maintain focus on the core throwing gameplay while preventing disorientation. Adds an element of spatial awareness and risk rewards decision making.

## Throwing Mechanism

- **Intuitive VR Interaction:** Players reach out, grab objects, aim and throw these objects using realistic arm movements. No complex button combination or unfamiliar controls would be prototyped.
- **Satisfying Feedback:** On losing, the player witnesses the Earth's destructive impact, creating an emotional connection to your actions. Simultaneously, on winning, the player witnesses the Earth being saved.

Intuitive VR Interaction



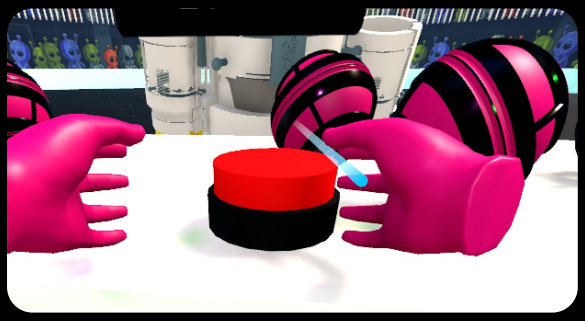
Lives

## Grabbing Mechanism

- **Object Interaction:** Astroballs appear within the players reach, allowing them to instinctively grab them.
- **Dispensing:** Astroballs will appear from the item dispenser that is present on the table they are standing in.

## Dispensing Mechanism

- **Button:** When the button is pressed, it dispenses one ball at a time.



Object Interaction

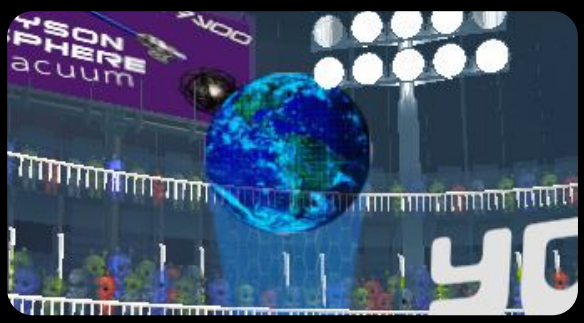

Dispensing


Button

## Timer and Lives:

- **Timer:** A timer is displayed on the player's platform, indicating the remaining time for players to complete the Astroball count. In Round 1, the player has 15 seconds and in Round 2, 30 seconds. It creates time pressure, which adds to the tension and urgency to the gameplay, motivating players to act quickly and make decisive decisions.
- **Lives:** Players have to complete the game before facing the consequences of a part of Earth's quadrants being destroyed. The Earth's four quadrants act as "lives" for the player. To avoid losing a life, player needs to successfully complete throwing five Astroballs into the container within the given time limit.
- Lives and timers are an integral part the game's pacing and difficulty progression, encouraging players to balance their accuracy and speed in their action while maintaining a sense of excitement and actions.


Timer

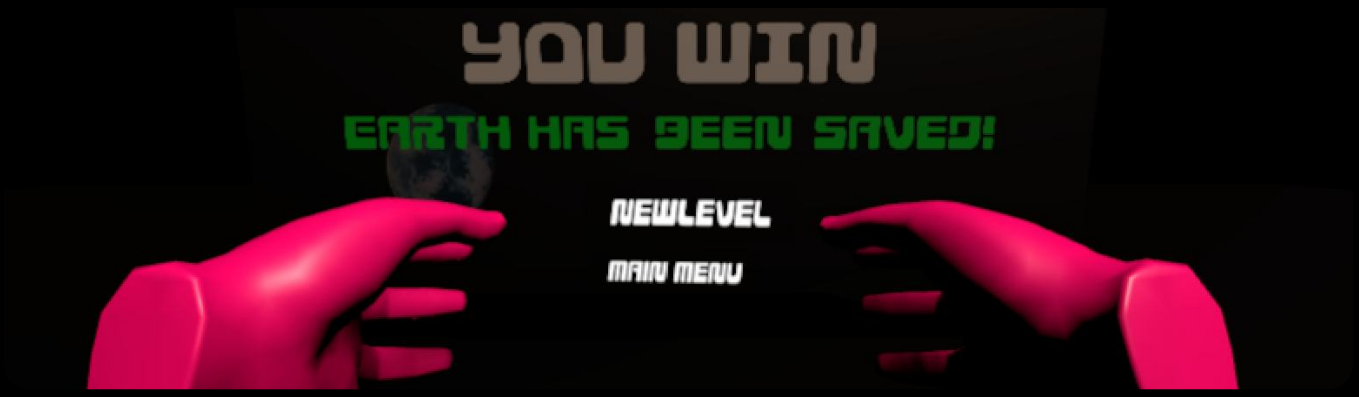


Lives

# Timer and Lives

## Winning Screen

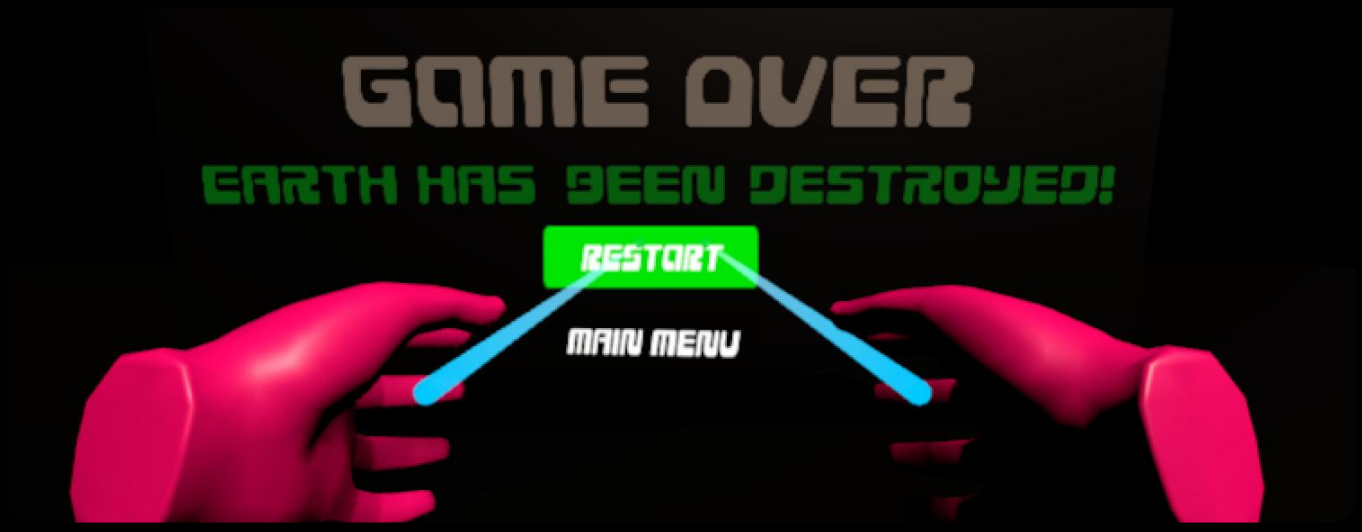
In the winning sequence, a video from Star Wars is played of the Earth being saved with a text "**You Win. Earth has been saved.**" This provides a sense of accomplishment and ties back to the game's objective of saving Earth. This combination of visual and textual elements creates a memorable and fulfilling moment for the player, enhancing their overall satisfaction and motivation to continue playing the game.




On winning

## Losing Screen

In case the player loses, they have the option to go back to the main menu or restart Round 1. In the losing sequence, a video from Star Wars is played of the Earth being destroyed with a text "**You Lose. Earth has been destroyed.**" This provides a sense of failure and makes the player restart the round till he/she wins.




On losing

# LEVEL DESIGN (EXPANDED)

## Concept and Theme

The concept of "Galactic Showdown" centers around the player's participation in an intergalactic arcade game where they must battle against alien invaders to save Earth. The theme encapsulates a blend of retro arcade nostalgia, and sci-fi spectacle.

The environment draws inspiration from classic arcade games, sci-fi pop culture, and retro futurism. The aesthetic blends futuristic elements with a touch of nostalgia, creating a visually captivating and immersive experience for players. The design pays homage to iconic space-themed imagery while adding its own unique twist to the mix evoking a sense of excitement and wonder.

## Layout and Structure

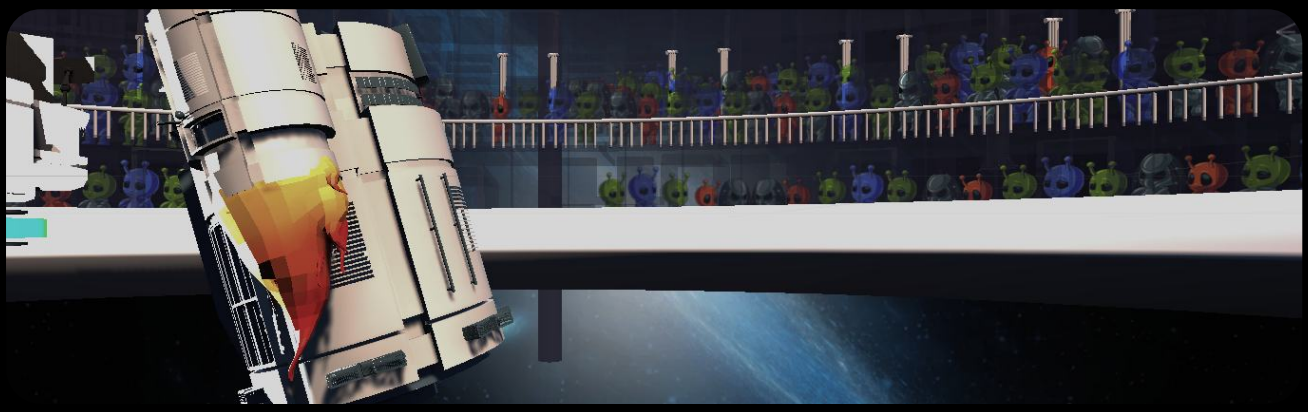
The game contains a circular stadium that consists of two different platforms; one holding the container and the other, player platform. Players can freely navigate around the platform using motion controllers in VR. The level's structure guides player to throw objects into a container placed within a 1 meter distance.

The player stands on a platform with a table placed in front of them. The main dispensing button is placed in the center of the table. Additionally, on the side, there are monitors displaying timer and lives.

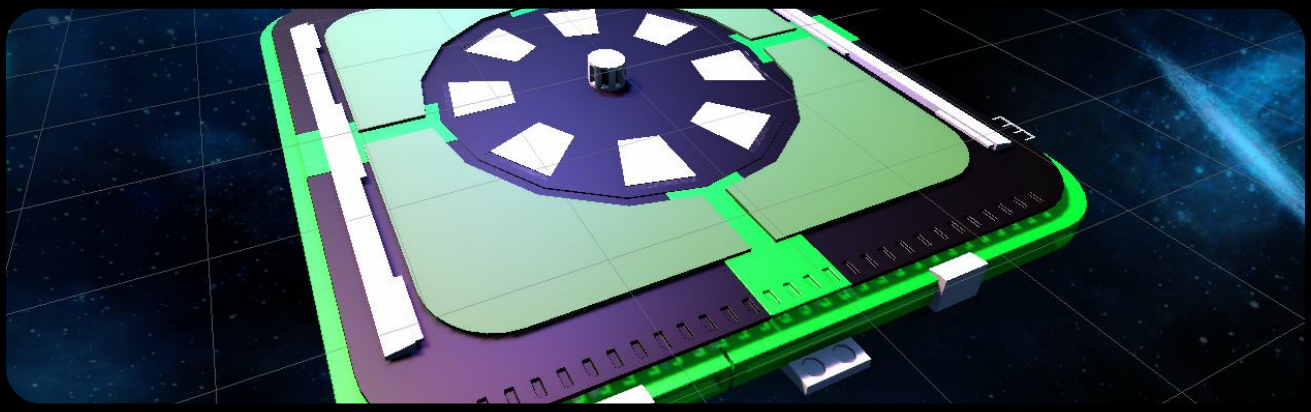
## Environmental Design

Skybox


Stadium



Container Platform



Player Platform

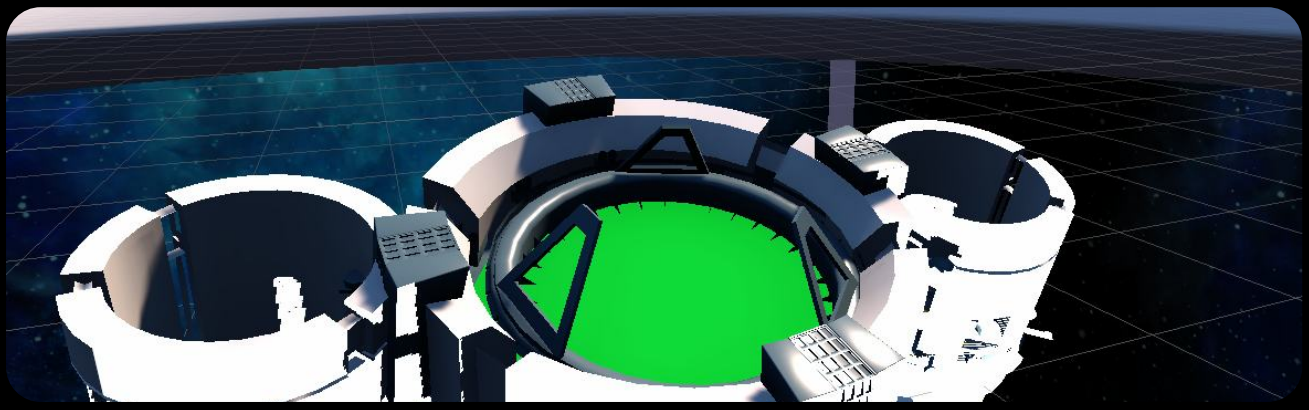
# Interaction and Accessibility

| Interactable Objects | Interactive UI Elements |
|---|---|
| **1. Object**<br>Object has a grabbable interaction that allow the player to grab the object and throw.<br>  <br>**2. Dispensing Button**<br>The button dispenses objects, as and when the player presses it.<br>  | **1. Main Menu**<br>The main menu button allows users to access start button and about the game button.<br>  <br>**2. About**<br>About Button is a clickable button part of the Main Menu.<br>  <br>**3. Try Again**<br>Try again Button appears on screen when the player loses a life allowing them to continue playing the game.<br>  <br>**4. Restart**<br>Try Again/Restart Button appears when the player loses the game. On pressing the button, the game restarts<br>  |

# Challenge and Difficulty Progression

The game consists of two rounds, each progressively increasing in challenge and difficulty to provide players with a satisfying gameplay experience.

**Round 1:**
Round 1 presents an easy challenge where the player needs to the Astroball into a stationary container. The player has 15 seconds to complete Astroball count of 5. This serves as a gentle introduction to the mechanics and controls of the game, allowing players to familiarize themselves with the gameplay mechanics and build confidence.



**Round 2:**
In Round 2, the difficulty level ramps up as the container begins to move front and back, requiring more precise timing and aim from the player. The player has 30 seconds to complete the Astroball count of 5. This increase in challenge adds a layer of complexity to the gameplay, testing the player's accuracy and adaptability while keeping them engaged and motivated to overcome the new obstacles. The gradual progression from easy to more challenging tasks provide a sense of accomplishment and satisfaction as they advance through each round.

# ART STYLE

## Art Overview

The art style will incorporate a cartoonish approach with bold outlines, and less detailed textures. The vibrant color palettes adds fun to the arcade-style gameplay. The cartoonish style makes the game feel vibrant, similar to a animated adventure, appealing to a wider audience, especially young players. The art style complements the game's narrative, setting, and tone by visually communicating the high stakes of the Astrolympics games and the urgency of the player's mission.

In terms of VR environment, the chosen style is a vibrant cartoonish aesthetic, featuring smooth colors that stand in stark contrast to the grim and grungy. The environments are designed to be as immersive and engaging as its gameplay. The landscape is a blend of a futuristic alien world and a traditional olympic arena, creating a unique setting for the interstellar games. The architectural elements are inspired by both advanced alien technology and Earth's iconic Olympic structures, providing a familiar yet otherworldly feel.

This blend of futuristic realism and stylized aesthetics creates a unique and captivating visual experience that immerses players in the thrilling world of Astrolympics, compelling them to step up and become Earth's savior.



# Characters

## The Player

"The Player," has basic hand model. The player can be of any gender and of ages above 13.

## Aliens

The aliens are the audience adding a dynamic element to the environment. They are animated to move, making the game feel interactive and responsive. These aliens serve multiple purposes:

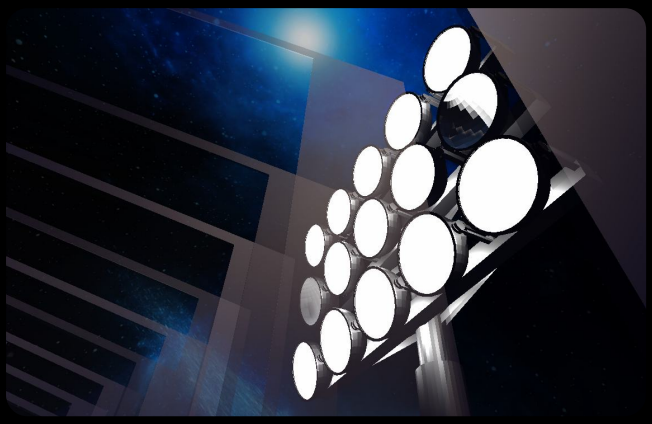
⟶ They provide visual interest and variety to the scene, they represent a diverse galactic community, and offer subtle cues or reactions to the player's actions, adding to the gameplay experience.

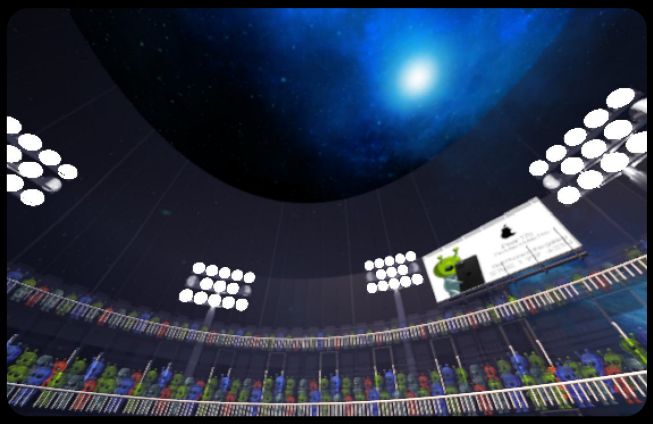
⟶ Their constant movement can convey emotions such as excitement, curiosity, or even concern.

⟶ The aliens help to foster a sense of connection and immersion within the game's universe.

## Lighting

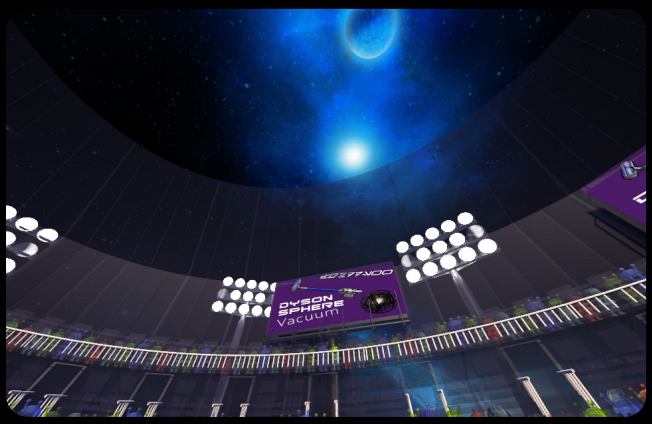
Astrolympics employs a global lighting system and stadium lights to ensure even illumination throughout the Stadium/ Play arena. The light design not only facilitates gameplay but also enhances the aesthetic appeal, emotional engagement, and narrative impact of the VR experience. In Astrolympics, the lights are placed inside and outside of the stadium.

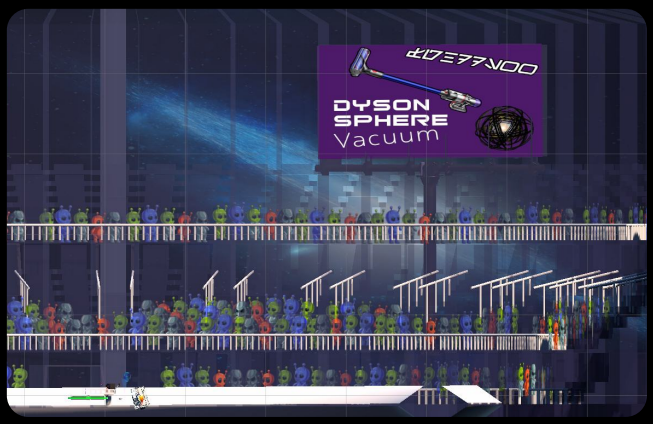




# Environment

Astrolympics environments are designed to be immersive and engaging, reflecting the high-stakes, arcade-style gameplay. The game takes place in a vast stadium filled with alien spectators, creating a unique setting for the Astrolympics games. The player stands on a floating platform in the center of the stadium, elevated above the ground. The landscapes are a blend of futuristic alien worlds and traditional Olympic arenas. The architectural elements are inspired by both advanced alien technology and Earth's iconic Olympic structures, providing a familiar yet otherworldly feel.




The thematic elements revolve around the urgency of the mission and the grandeur of the Astrolympics games. The color schemes are vibrant and contrasting, reflecting the high-stakes, arcade-style gameplay. Textures are add depth and realism to the environments. The landscapes and interiors are designed to encourage precise throws and strategic aiming. The environment also supports the narrative elements by visually representing the alien abduction and the challenge of saving Earth.

In a VR setting, the spatial design is crucial. The game takes place on a floating platform in the center of the stadium, elevated above the ground. This platform serves as the player's base of operations, where they can move around around. A key feature of this platform is the button that the player can press to dispense an Astroball, which they then use to play the game. The environment is designed to be navigable and interactive, allowing players to move around the platform and interact with objects naturally. The scale and perspective are carefully calibrated to ensure player comfort and immersion. The design of these assets, along with the landscapes, interiors, and architectural elements, creates a unique and captivating visual experience that immerses players in the thrilling world of Astrolympics.


Billboards


Billboards

# CHARACTERS AND STORYLINE

## Setting

Astrolympics is a VR game transitioning to an other-worldly setting when the player is abducted by aliens from "The Intergalactic Federation/Council of Interstellar Astrolympic Games… Inc".

The player finds themselves in a platform floating in a stadium situated in outer space, with a hologram of Earth. The presence of Earth serves as a constant reminder of the high stakes involved.

The act of throwing a ball into a container becomes not just a game, but a desperate attempt to save Earth. The different gravity of the stadium also affects the trajectory of the thrown objects, adding an extra layer of challenge to the game.

The absurdity of the situation - playing a basketball-like arcade game to prevent destruction at the hands of alien invaders- also injects a sense of humor into the narrative. This balance between tension and humor makes the game more engaging and enjoyable for players.

The player can look around to see the vastness of space, the fragmented Earth, and the alien audience in the stadium. This immersive environment can heighten the player's sense of presence and engagement in the game.

The setting is significant in the context of the game's overall theme and story. It underscores the game's core premise - that an ordinary person can become a hero in extraordinary circumstances. It also highlights the game's blend of familiar and unfamiliar elements, from the recognizable act of throwing a ball to the surreal experience of playing a game in space to save Earth. This juxtaposition can make the game more intriguing and memorable for players.

## Players

The Player

'The Player' is the main protagonist of the game, They are an average person chosen (totally not abducted) by the Intergalactic Federation/ Council of Astrolympic Games to represent Earth at the astrolympics.

## Background

'The Player's gender, age and ethnicity is ambiguous (to make the player - you) relate more to them. The player is introduced as an ordinary person. They are chosen to become the savior of planet Earth.

# SOUND DESIGN

## Overview of Sound in VR

The sound design is made to complement the VR environment, with spatial audio providing a realistic and immersive soundscape. The challenge lies in creating a sound design that is both immersive and comfortable for the player, avoiding sensory overload while still providing essential auditory cues.

## Ambient Sounds

To immerse players in the stadium atmosphere, the game plays a white noise ambience upon starting the game . This constant, low hum is further enhanced by the subtle sounds of alien chatter, creating a believable and captivating environment.

## Sound Effects (SFX)

Astrolympics uses a variety of sound effects to reinforce the feel of a arcade style environment in the game world and player actions. The sound of the player grabbing objects, the sound of items being dispensed, the dramatic sounds accompanying successful throws all contribute to the game's immersive soundscape. Spatial audio techniques are used to help players locate sounds within the VR environment, adding another layer of realism and immersion.

| | Asset | Description |
|---|---|---|
| 1 | Jet booster | Sound of the jet booster working |
| 2 | Goal Sound | When the player scores a point a sound plays |
| 3 | Ball dispensing sound | When the red button is pressed a sound plays |

## Music

Music in Astrolympics serves to enhance the game's setting and narrative. The music style is purely arcade-themed, reflecting the game's unique setting. The music changes dynamically in response to gameplay events. Our game features a distinct musical experience, starting with an upbeat "Koto - Time (Dance Mix)" in the main menu to set a fun and adventurous tone.  The crawl parody then introduces the iconic Star Wars theme, hinting at the epic space adventure to come. Music is a key element in our design; it enhances the scenes, boosts player engagement, and emphasizes the overall playful and exciting theme of the game.

| | Asset | Description |
|---|---|---|
| 1 | Koto - Time (Dance Mix) | This track is used in the main menu |
| 2 | STAR WARS THEME - shitty flute version | This music is a parody of star wars and it was used in the intro opening crawl video |

# ASSET LIST

| | Asset | Description | Link |
|---|---|---|---|
| 1 | Platform | Container will be placed on this platform | https://sketchfab.com/3d-models/sci-fi-platform-71224a1e94d04e01beb3262bc4ba1701 |
| 2 | Container | For the player to throw the items into | https://sketchfab.com/3d-models/sci-fi-cylinder-64f54d61c6ba48dgbfb2cd9fe88a0030 |
| 3 | Astroball | Items contain different alien related objects that the player uses to throw into the basketball hoop | https://sketchfab.com/3d-models/sb-512-smart-grenades-3db9ca9fb8704e12a4fe4380f5f73365 |
| 4 | Jet Booster | 2 powerful jet boosters placed under the platform | https://sketchfab.com/3d-models/scifi-rocket-booster-69008ga57e82478f8e738acc3c6efe82 |
| 5 | Lives | A hologram of the Earth, As a sprite | - |
| 6 | Button | A button that dispenses ball when pressed | https://youtu.be/lPPa9y_czlE?si=ltbzV7TAeh3Xd75V |
| 7 | Table | A white table containing the button, lives and timer | https://sketchfab.com/3d-models/operation-desk-8e33466527104e728d70483586507c82 |
| 8 | Stadium | A huge stadium with seats. This is the environment where the game will take place in | https://sketchfab.com/3d-models/round-stadium-cricket-football-stage-33a57f4a8a4c4bddb2f3cf204cea0f95 |
| 9 | Lights | White bright lights all around the stadium | https://sketchfab.com/3d-models/stadium-light-425625d154084a29a194dd2b0bb52fd5 |
| 10 | Aliens | Alien with large bulging eyes, a rounded head, vibrant green skin, skinny limbs and with arms and antennae | https://craftpix.net/freebies/2d-game-alien-character-free-sprite/?num=1&count=26&sq=aliens&pos=7 |
| 11 | Astroball Count | A black monitor displaying the amount of Astroball counts left and the time left | https://sketchfab.com/3d-models/tv-b40ab68eab2c49938cae5163bb1fd998 |
| 12 | Sky box<br>Timer | Sky box creates an illusion of a sky when the player looks up | https://assetstore.unity.com/packages/2d/textures-materials/classic-space-skybox-11596 |
| 13 | You Lose/Win | Cartoonish metalic texture with exaggerated sratches and dents | https://www.youtube.com/watch?v=qs1xNRXROfA |

# Textures and Materials

# Audio Assets

| | Audio Asset | Format | Link |
|---|---|---|---|
| 1 | White Noise | mp3 | https://www.youtube.com/watch?v=LtyoQUxnggg |
| 2 | Jet Boosters | mp3 | https://pixabay.com/sound-effects/search/jet-engine/ |
| 3 | Ball Dispensing | mp3 | https://uppbeat.io/sfx/arcade-game-jump-1/7963/23804 |
| 4 | Scoring a point | mp3 | https://www.youtube.com/watch?v=8usQCG6WHzE |
| 5 | Cheering | mp3 | https://www.youtube.com/watch?v=imqJgjCj9Cw |

# UI Elements

| | UI elements | Action | Style | Animation |
|---|---|---|---|---|
| 1 | Menu | Navigates the user | Green Button with White Text (Deacon Blues) | Simple Hover |
| 2 | Lives | Shows the number of lives left for the player | Hologram of the Earth | Simple Hover |
| 3 | Dialogue Box | Instructs the player on how to play the game | A black screen with White Text | On Tap |
| 4 | Count Text | Displays the number of Astroballs left | Count Text in a Monitor | Simple Hover |
| 5 | Timer Text | Displays the amount of time left | Timer Text in a Monitor | Simple Hover |

# Animations

| | Asset | Animation | Technical |
|---|---|---|---|
| 1 | Player | Walking | Within the surface area of the platform floating. |
| 2 | Player | Pressing | Pressing the button. |
| 3 | Player | Grabbing | Grabbing of Astroball from the table. |
| 4 | Player | Throwing | Throwing the ball into the container. |
| 5 | Earth | Explosion | Explosion of the Earth's quadrant immediately after losing a point. |
| 6 | Alien | Cheering | Constant movement of the aliens around the stadium. |

# TECHNICAL

## Platform

"Astrolympics," was designed specifically for the Oculus Quest 2.  Fortunately, the Oculus Quest 2 platform didn't impose significant design limitations, allowing us to focus on the core gameplay experience. This project emphasized the interdisciplinary nature of game development, highlighting the value of technical skills and effective communication for achieving our creative vision.

## Engine

We were instructed to use the Unity engine for this project, providing a foundational learning experience with an industry-standard tool. Unity's native VR integration streamlines development for our target platform, the Oculus Quest 2. Unity's large community provides valuable support through tutorials, forums, and documentation.  The component-based architecture promotes flexibility and iteration, especially beneficial within a learning environment.

## Conventions

To maintain consistency and efficiency, we establish clear coding and asset creation conventions. This includes a structured file organization system within Unity (e.g., folders for Scripts, Scenes, Prefabs, etc.), along with subfolders for specific asset types. We'll follow C# style guidelines, utilizing descriptive naming conventions, consistent indentation, and clear commenting. For assets, we'll use standard file formats, optimize for performance (texture sizes, polygon count), and configure import settings within Unity. A shared reference document will outline these conventions for easy team access. Adherence to these guidelines will enhance project maintainability, facilitate seamless collaboration, and reduce development friction.

## Naming Conventions

Clear naming conventions were vital for project organization and collaborative efficiency. We used descriptive names that clearly reflected the content of files, assets, variables, and functions. We avoided abbreviations unless extremely common and prioritized clarity over excessive brevity. Most importantly, we ensured that the chosen conventions were applied consistently across our entire project.

# TECHNICAL

## Version Control

We utilized GitHub as our version control system, which was essential for efficient collaboration and tracking changes throughout our development process. Our workflow involved a branch management strategy with a 'main' branch for stable code and feature branches used for new development. We emphasized frequent commits with descriptive messages before merging into higher-level branches. With open communication and tool assistance used for more complex scenarios. GitHub's integration into our workflow included regular updates, pull requests for code review, and optional use of its issue tracking features.

## Technical Risk Analysis

Throughout the development process, we encountered potential technical issues. Performance difficulties might affect the VR experience, therefore we thoroughly optimised our game and tested it on the Oculus Quest 2. We ensured that the game operated with various hardware configurations to avoid compatibility issues. Complex features were divided into smaller portions to facilitate development. By identifying and planning for these risks early on, we were able to keep the project on track.

## User Testing

Various testing methodologies were employed to ensure the game's quality and performance. Unit testing involved testing individual components such as buttons to ensure they functioned correctly. Integrated testing examined how all components worked together seamlessly. Performance testing assessed the software's performance in terms of lag, speed, and overall efficiency. These testing processes helped identify and address any issues, ensuring a smooth and enjoyable gaming experience for players.

# TECHNICAL

## Scripts

game manager
goal .cs

```csharp
using System.Collections;
using System.Collections.Generic;
using UnityEngine;
using UnityEngine.InputSystem;
using UnityEngine.UI;
using TMPro;
using UnityEngine.SceneManagement;

public class goal1 : MonoBehaviour
{
    private Rigidbody rb;
    private int count;
    public TextMeshProUGUI countText;
    public GameObject winTextObject;
    public TextMeshProUGUI timerText;
    public float Timer = 60f;
    private float timeLeft;
    public bool isGameOver = false;
    public Image livesImage;
    public int livesLeft;
    public Sprite[] livesSprites;
    public Button startButton;
    private bool gameStarted = false;
    public Button tryAgainButton;
    private TryAgainButton tryAgainButtonScript;
    public GameObject loseText;
    public Button restartButton;
    public Button newLevelButton;
    public MainMenu mainMenuButton;
    public AudioSource scoringPointSound;
    public AudioSource cheeringSound;
    public string youLoseSceneName1;
    public string youWinSceneName1;

    private void Awake()
    {
        timeLeft = Timer;
        startButton.onClick.AddListener(StartGame);
        tryAgainButtonScript = tryAgainButton.GetComponent<TryAgainButton>();
    }

    void Start()
    {
        rb = GetComponent<Rigidbody>();
        count = 5;
        SetCountText();
        winTextObject.SetActive(false);
        loseText.SetActive(false);
```

# TECHNICAL

## Scripts

game manager
goal .cs

```
        livesLeft = 4;
    }

    void Update()
    {
        if (gameStarted && !isGameOver)
        {
            timeLeft -= Time.deltaTime;
            timerText.text = timeLeft.ToString("F0");

            if (timeLeft <= 0 && count > 0)
            {
                LoseLife();
            }
        }
    }

    void OnTriggerEnter(Collider other)
    {
        if (other.gameObject.CompareTag("PickUp") && timeLeft > 0)
        {
            other.gameObject.SetActive(false);

            if (count > 0)
            {
                count--;
                SetCountText();
            }

            if (scoringPointSound != null)
            {
                scoringPointSound.Play();
            }
            if (cheeringSound != null)
            {
                cheeringSound.Play();
            }
        }
    }

    void SetCountText()
    {
        countText.text = "Count: " + count.ToString();

        if (count <= 0)
        {
            gameStarted = false;

            if (!string.IsNullOrEmpty(youWinSceneName1))
```

# TECHNICAL

## Scripts

game manager
goal .cs

```
            {
                SceneManager.LoadScene(youWinSceneName1);
            }
            else
            {
                Debug.LogError("Win scene name is not set!");
            }
        }
    }

    void LoseLife()
    {
        livesLeft--;

        int spriteIndex = livesSprites.Length - livesLeft - 1;
        livesImage.sprite = livesSprites[spriteIndex];

        if (livesLeft >= 1 && spriteIndex >= 0 && spriteIndex <
livesSpr{tes.Length)
            gameStarted = false;
            tryAgainButtonScript.ShowButton();
            timeLeft = Timer;
            timerText.text = timeLeft.ToString("F0");
        }
        else
        {
            GameOver();
        }
    }

    void GameOver()
    {
        isGameOver = true;
        timerText.text = "Game Over";

        if (!string.IsNullOrEmpty(youLoseSceneName1))
        {
            SceneManager.LoadScene(youLoseSceneName1);
        }
        else
        {
            Debug.LogError("YouLose scene name is not set!");
        }
    }

    void StartGame()
    {
        if (!gameStarted)
        {
```

# TECHNICAL

## Scripts

game manager
goal .cs

```
            gameStarted = true;
            startButton.gameObject.SetActive(false);
        }
    }

    public void RestartRound()
    {
        count = 5;
        SetCountText();
        timeLeft = Timer;
        timerText.text = timeLeft.ToString("F0");
        gameStarted = true;
        winTextObject.SetActive(false);
        newLevelButton.gameObject.SetActive(false);
    }
}
```o(f, seed, [])
}
```

## Build Folder

| Name | Date modified | Type | Size |
|---|---|---|---|
| Astrolympics_BurstDebugInformation_D... | 4/23/2024 6:34 PM | File folder | |
| Astrolympics_Data | 4/23/2024 6:35 PM | File folder | |
| MonoBleedingEdge | 4/23/2024 6:35 PM | File folder | |
| Astrolympics.exe | 4/23/2024 6:35 PM | Application | 639 KB |
| UnityCrashHandler64.exe | 4/23/2024 6:35 PM | Application | 1,098 KB |
| UnityPlayer.dll | 4/23/2024 6:35 PM | Application exten... | 28,580 KB |
```

# GDD
# ASTROLYMPICS
# ᔑᓵᒣᒪᐱᑭᔑ

END OF DOCUMENT.

OuttaThisWorld
STUDIO