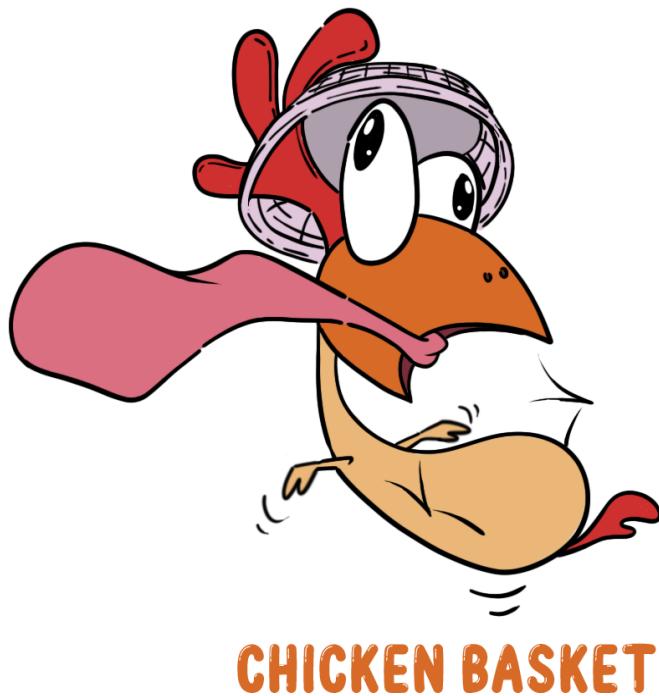


Overclocked Game Design Document

By: Chicken Basket



Work together with one another, build turrets and place them strategically to fight off the oncoming enemies

Team members:

Chloe Chan (Team Lead)
Sim Wei Yew (Game Design Lead)
Low Hsin Yi (Programming Lead)
Arsyad Jazali Bieshaar (Art Lead)
Marian Evangelista (Artist)
Tan Jing Yi (Artist)

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Version 1.0.0

4 December 2022

Table Of Contents

Chicken Baskets	5
Table Of Contents	6
Game Overview	7
I. Game Concept/ Premise	7
II. Genre	8
III. Target Audience	8
IV. Unique Selling Point	8
V. Feature Set	8
VI. Platforms	8
VII. Game Flow Summary	9
VIII. Look and Feel/Visual Style	9
IX. Project Scope (Summary)	9
Gameplay and Mechanics	9
I. Gameplay	9
II. Mechanics	9
III. Screen Flow	10
IV. Game Options	10
V. Replaying and saving	10
VI. Cheats and Easter Eggs	10
Setting, Story and Characters	10
I. Game World	10
II. Story and Narrative	10
III. Characters	10
Levels	10
I. Tutorial	10

II. Level 1	11
Interface	12
I. Visual System	12
II. Control System	12
III. Audio	12
IV. Help System	12
Artificial Intelligence	12
I. Enemy AI	12
II. Friendly characters	12
Technical	12
I. Concept Art	12
II. Style guides	12
III. Characters	12
IV. Environments	12
V. Props/ Equipment	12
VI. UI style/Design	12
VII. VFX Design	12
VIII. Cut Scenes/Storyboards	12
IX. Etc.	12
Team Profile	12
References	13
Appendix	13
I. Asset List - Art	13
II. Asset List - Sound and Music	14
III. Asset List - (In-game Text / Voice over script)	14

Game Overview

I. Game Concept/ Premise

The premise for this game would be a sci-fi space station which has suddenly been infested by an unknown alien species. The space station would be futuristic in design and the battlefield has to look ravaged by the alien species. Meanwhile the factory room producing the turrets will look less ravaged as the aliens have not invaded that space yet.

II. Genre

- Strategy
 - Tower defence
- Party game
 - Multiplayer games that can be played in short burst

III. Target Audience

- People who are interested in strategy/ co-op games
- Socializer and achiever player types

IV. Unique Selling Point

- Dual genre in a single game
- Multi-platform

V. Feature Set

Manually build turrets (Engineer)

Fight off incoming waves of aliens (Commander)

Be the fastest to clear all aliens and top the leaderboard

VI. Platforms

- 2 Vr Oculus Quest 2
- 1 Vr Oculus Quest

- Pc
 - 64-bit processor and operating system
 - OS: Windows 10
 - Processor: Core i5-7500 / Ryzen 5 1600
 - Memory: 8 GB RAM
 - Graphics: GTX 1060 / RX 580 - 6GB VRAM
- Only mouse controls
 - LMB - drag and place turrets
 - RMB - remove turrets

VII. Game Flow Summary

Engineer to move around using SFX's teleportation system, making use of the joysticks on the Oculus controller to aim where they would go. Interact with the different objects and items in the factory through the controller and Vr headset.

Commander to make use of just the mouse to place turrets built by the engineer on the grid to defend against the enemy AI, and use the UI ordering system to send different turret orders to the engineer who would see it on a big screen in the factory.

VIII. Look and Feel/Visual Style

- Atmospheric, tense and dark
- Realistic sci-fi setting

IX. Project Scope (Summary)

- 4 workstations
 - Furnace
 - Laser Cutter
 - Compressor
 - Workbench
- 3 turrets
 - Normal
 - 2 head parts
 - Lobbing
 - 3 head parts
 - Laser
 - 3 head parts

- Shared Turret parts
 - Base
 - Neck
 - 4 cores
 - Normal
 - Poison
 - Slow
 - Aoe
- 3 Enemies
 - Normal
 - Shield
 - Healing Enemy

Gameplay and Mechanics

I. Gameplay

A. Main Objective:

1. Protect the aliens from breaking down the protective barrier and breaching the space station

B. VR players (~~2 players~~)(1 player)

1. Manually construct turrets based on what the PC player instructs
2. Do it at a timely matter to ensure the PC player doesn't get overwhelmed
3. Trust the pc player as it has no view of the battlefield

C. PC player (1 player)

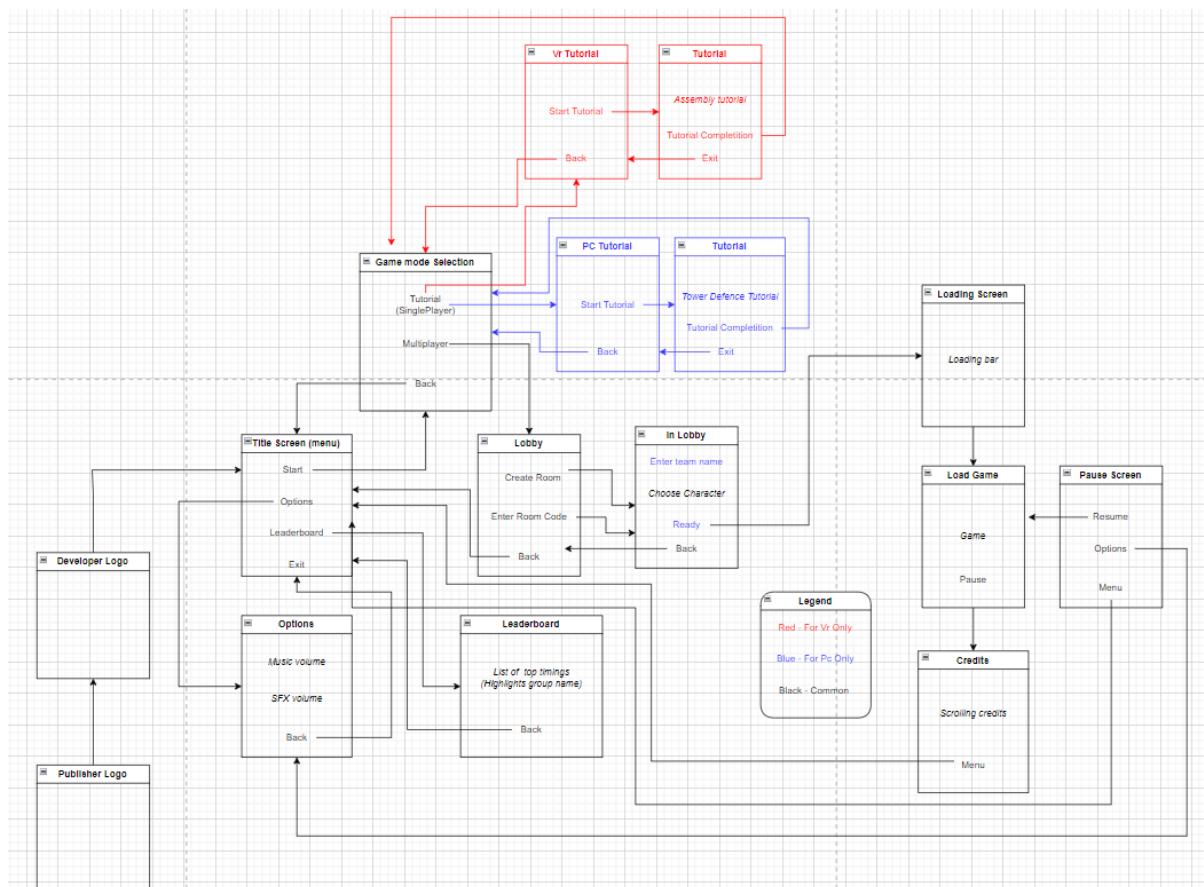
1. Communicate with the VR player on what turrets to build either via verbal communication or through the ordering system
2. Have to access the situation and decide which turrets to build
3. Defend base against enemies (tower defence) using turrets built by VR players

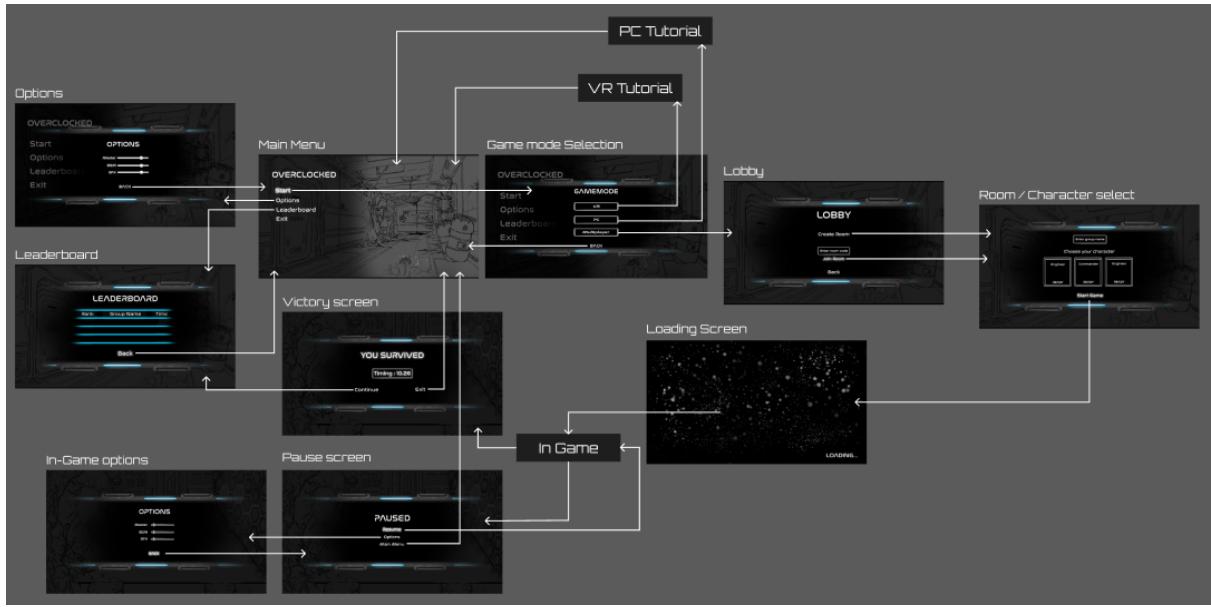
II. Mechanics

- Vr player
 - Manage stations to get turret parts/cores
 - Makes use of SFX levers,

- Buttons,
- Dials,
- Attachment points
- Combine turret parts to send to PC player
- Move around using SFX's teleportation system
- PC player
 - Defend against the oncoming wave by placing turrets made by Vr players
 - Plan what turrets are optimal for the oncoming wave
 - Send orders for Vr players to make said turrets through the ordering system

III. Screen Flow





IV. Game Options

Each turret can be attached with a different core to produce different results, which allows players experiment come up with different strategies

The different stations requires players to communicate with each other efficiently to maximise the making of turrets

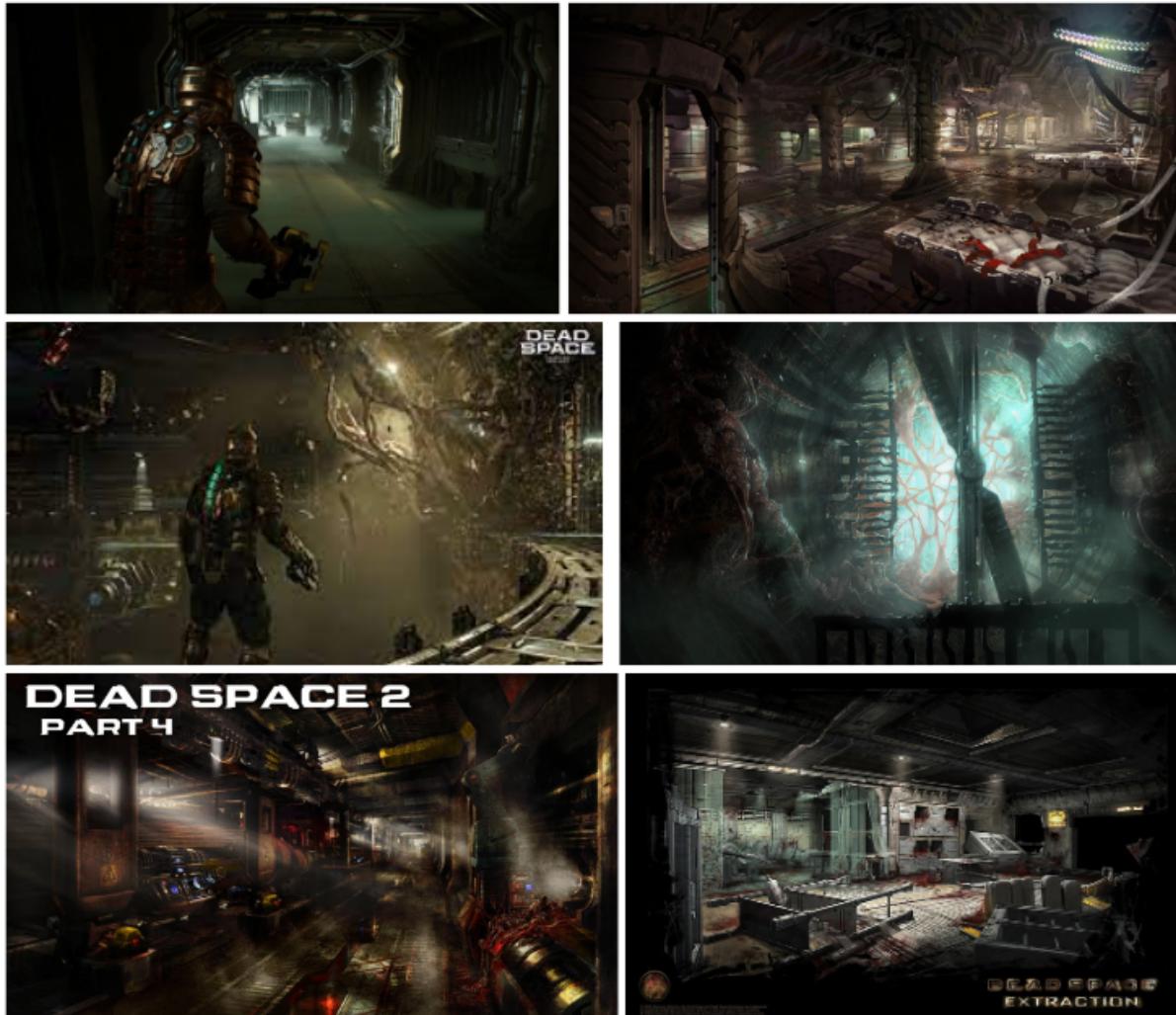
V. Replaying and saving

Leaderboard system to save the group's timing and compare it against the other groups

Setting, Story and Characters

I. Game World

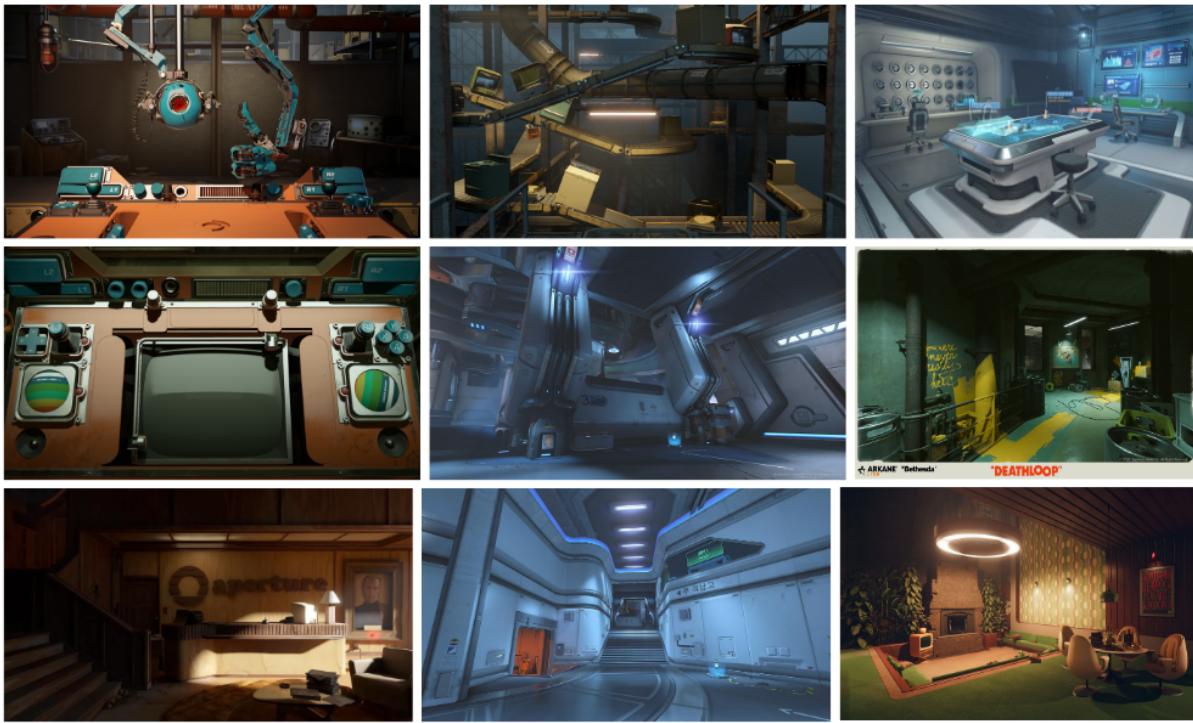
Battlefield Look & Feel References (Dead Space 2)



Wanted a dark and atmospheric vibe and mood. More tense as the station has been evacuated due to the sudden alien attack and infestation.



Workshop Look & Feel References (Aperture Desk Job & Overwatch)



Also wanted to maintain the tense, atmospheric vibe in the factory but show a clear sci-fi element through the stations and also populate it with props.



II. Story and Narrative

The plot takes place onboard a space station you and your party members work on. You are sent to investigate a distress alarm somewhere on the space station. As you approach the site, you soon realise that the station is suddenly being infested and invaded by an unknown alien species. The commander of the space station takes control of the ship, ordering the engineers to build turrets for him to deploy. Together you and your team must fend off waves of aliens as you await incoming help.

III. Characters

- 1 engineer and 1 commander

Levels

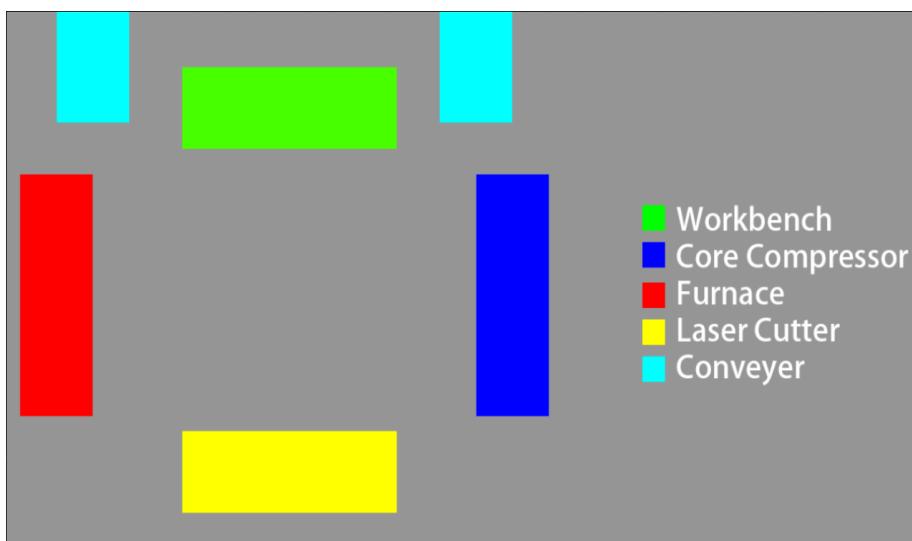
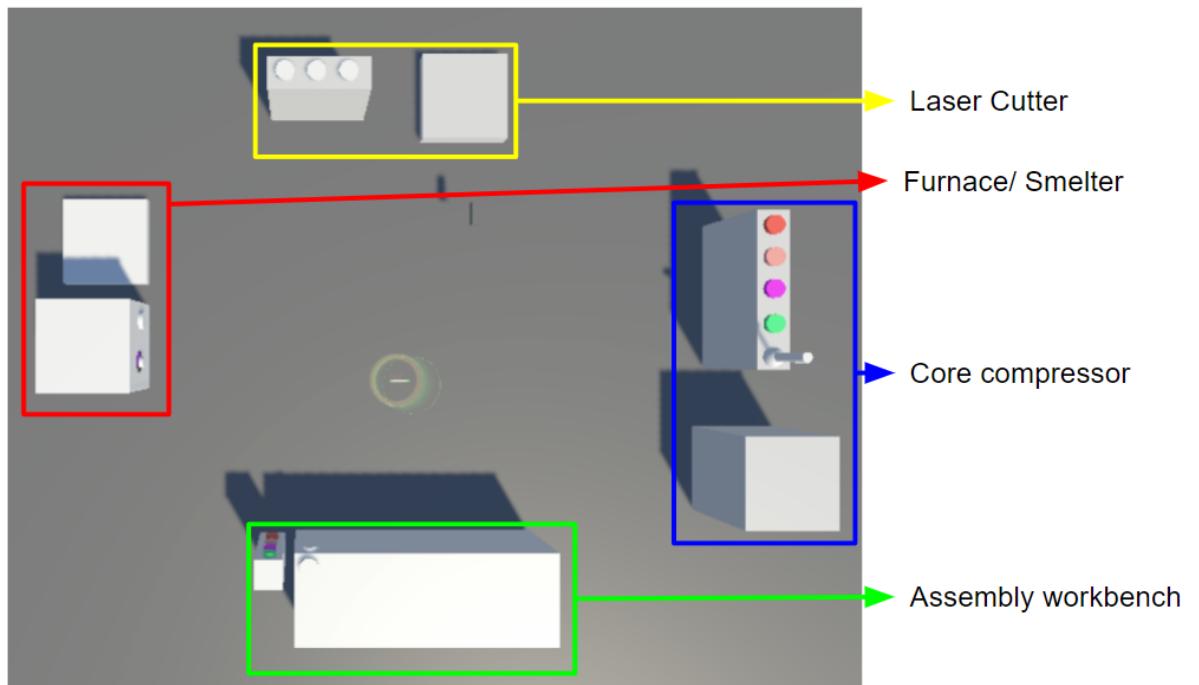
I. Tutorial (Engineer)

- Tutorial done through animations on the screen
- Teach movement by teleporting to different spots
- Showcase different interactions available
- Teach about the different stations 1 by 1
- Teach about the attachment and combining of turret parts
- End tutorial by placing completed turret in conveyer belt

II. Tutorial (Commander)

- Teach about what each of the different UI does (health indicator, wave counter, conveyer belt) by highlight each of them one by one
- Introduce ordering system
- Teach drag and drop of turrets on the playing field
- Complete tutorial by ordering more turrets and using the turrets that gets given after ordering to defeat the enemies

III. Level 1





Interface

I. Visual System

Menu screens:

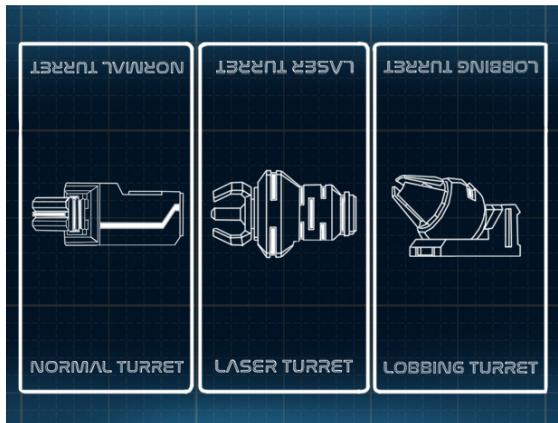
- Main menu screen
- Options screen
- Game mode selection screen
 - Vr tutorial
 - Pc tutorial
 - Multiplayer
- Lobby screen
- Loading screen
- Pause screen
- Leaderboard screen
- Victory Screen
- Defeat Screen

In game engineer:

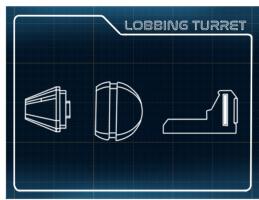
- Factory stations and environment (VR / first person view)



- Blueprint UI
 - Normal turret blueprint
 - Laser turret blueprint
 - Lobbing turret blueprint
- Laser cutter
 - Turret selection screen



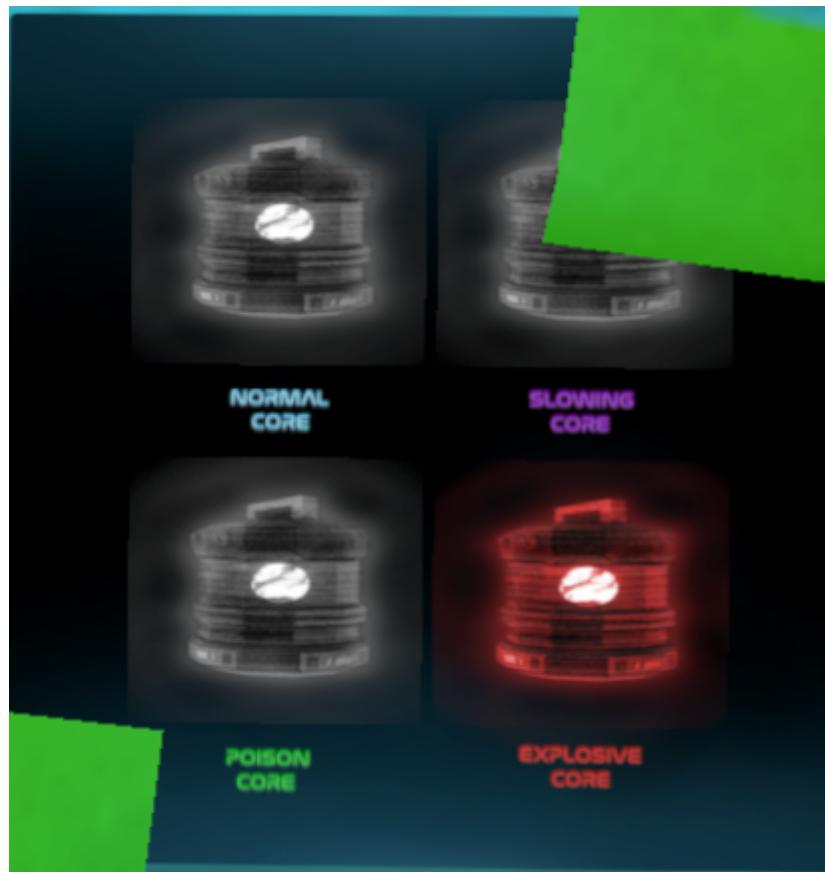
- Turret parts screen



- Core UI:
 - Core Compressor UI



- Core availability UI

**In game commander:**

- Battlefield environment and tower defence UI



- Grid Placement



- Ordering screen



II. Control System

Commander

- Mouse click and drag to place turrets
- Mouse click to press button and order

Engineer

- Controller joystick to teleport around
- Controller side button to grab and hold objects
- Controller axis movement and rotation to interact with factory interaction objects

III. Audio

Factory Audio Feedback:

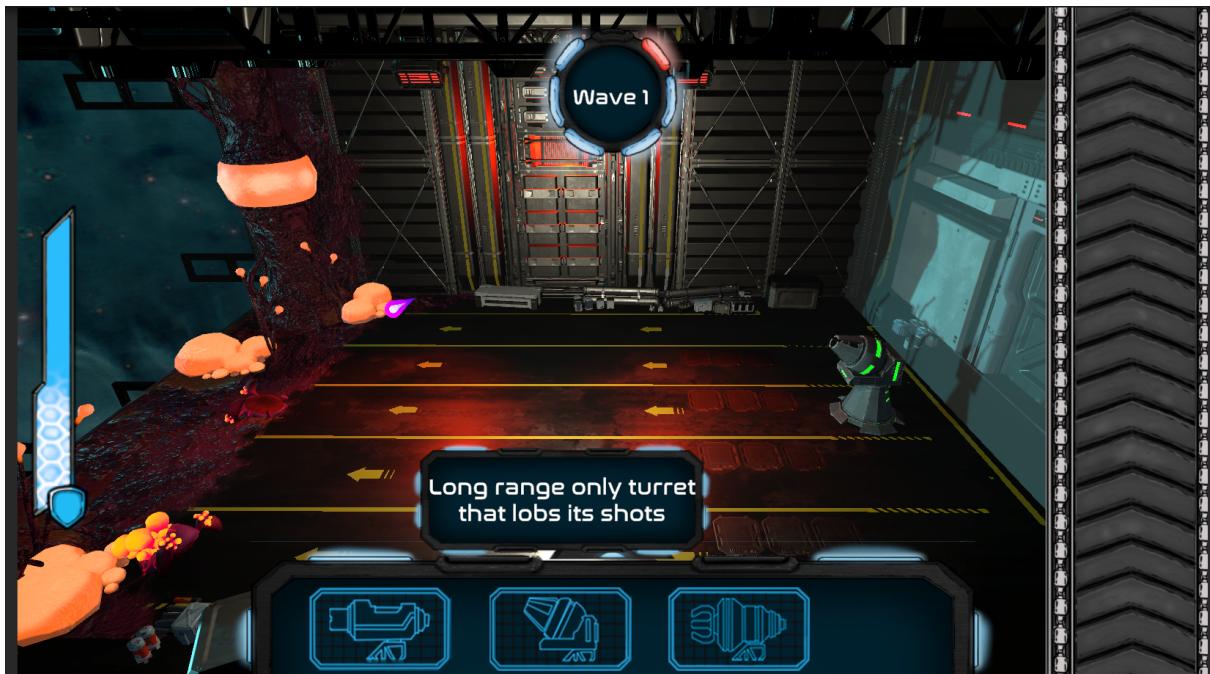
- **Furnace:**
 - Dial ticking sound: to indicate to players that the process has started
 - Shutter up sound: to indicate to players that the neck and base are done / there is a fire
 - Shutter down sound: to indicate to players that they can build another neck and base
 - Fire alarm sound: to indicate to players that there is a fire
 - Fire sound
 - Fire extinguisher
- **Core Compressor:**

- Lever sound
 - Compressor open / Compressor close sound
-
- **Laser Cutter Table:**
 - Laser gun sound
 - Metal dropping off the head sound
-
- **Workbench:**
 - Spawning of turret parts sound
 - Turrets attaching
-
- **Conveyor belt:**
 - Pass sound: indicates the turret was made correctly
 - Fail sound: indicates a part of the turret is missing
-
- **Generic Sounds:**
 - Button click sounds
 - New order arrive

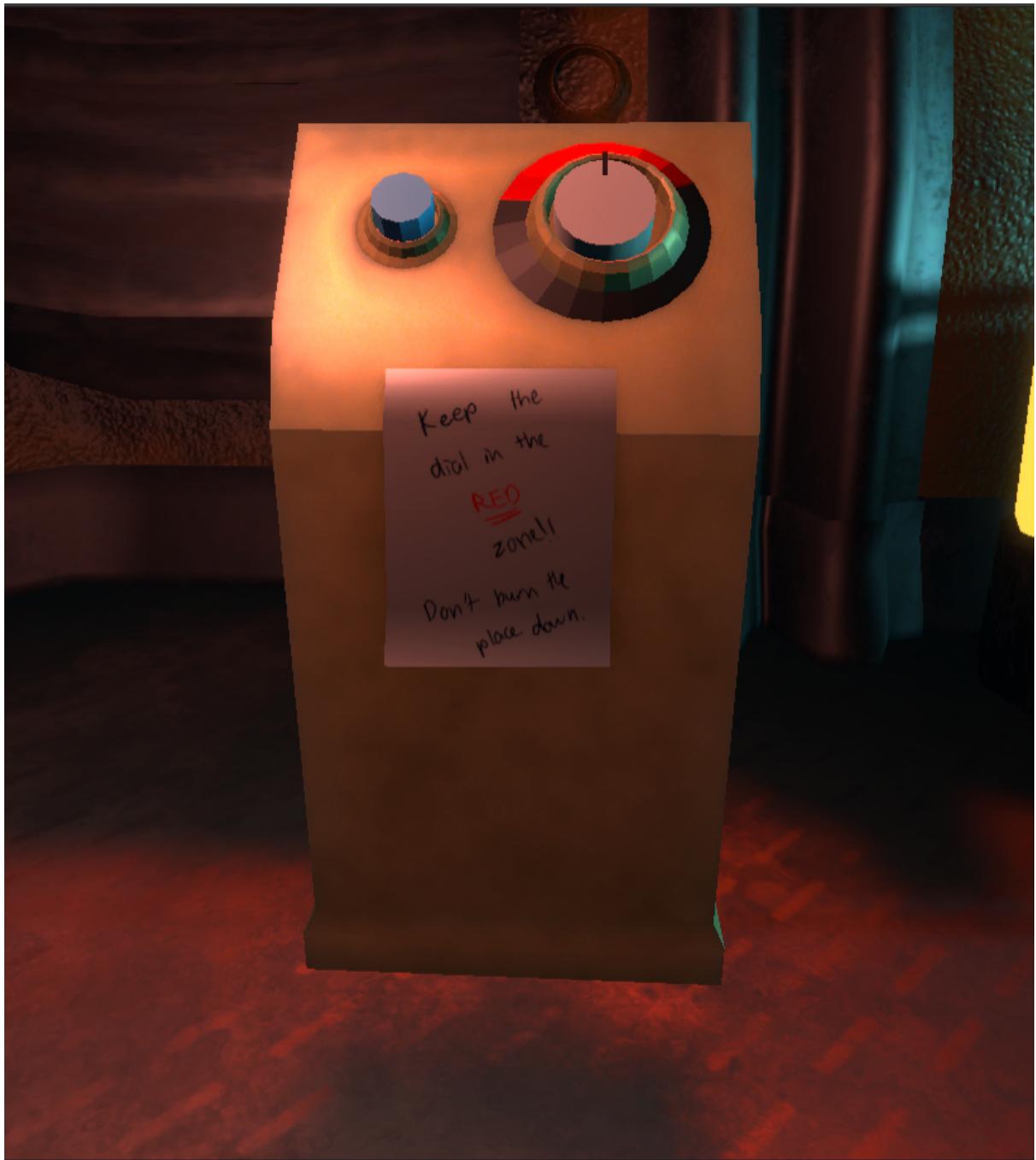
Battlefield Audio Feedback:

- **Enemies:**
 - Walking sound: occasionally plays walking sound to indicate the enemies are moving
 - Attack sound: indicates the enemies attack the turret
 - Death sound: indicates the enemies dying
-
- **Turrets:**
 - Shooting sound: indicate turrets are attacking the enemies
 - Death sound: indicate turrets has been destroyed
-
- **Wall:**
 - Hit sound: indicate wall has taken damage
-
- **Inputs:**
 - Click sound: indicates turrets have been placed on field

IV. Help System



Short descriptions about the turret when you hover over the icons in the order screen



Sticky notes placed on factory stations to hint to player on what to do

Artificial Intelligence

I. Enemy AI

- Normal Enemy

- Healing Enemy
- Shield Enemy

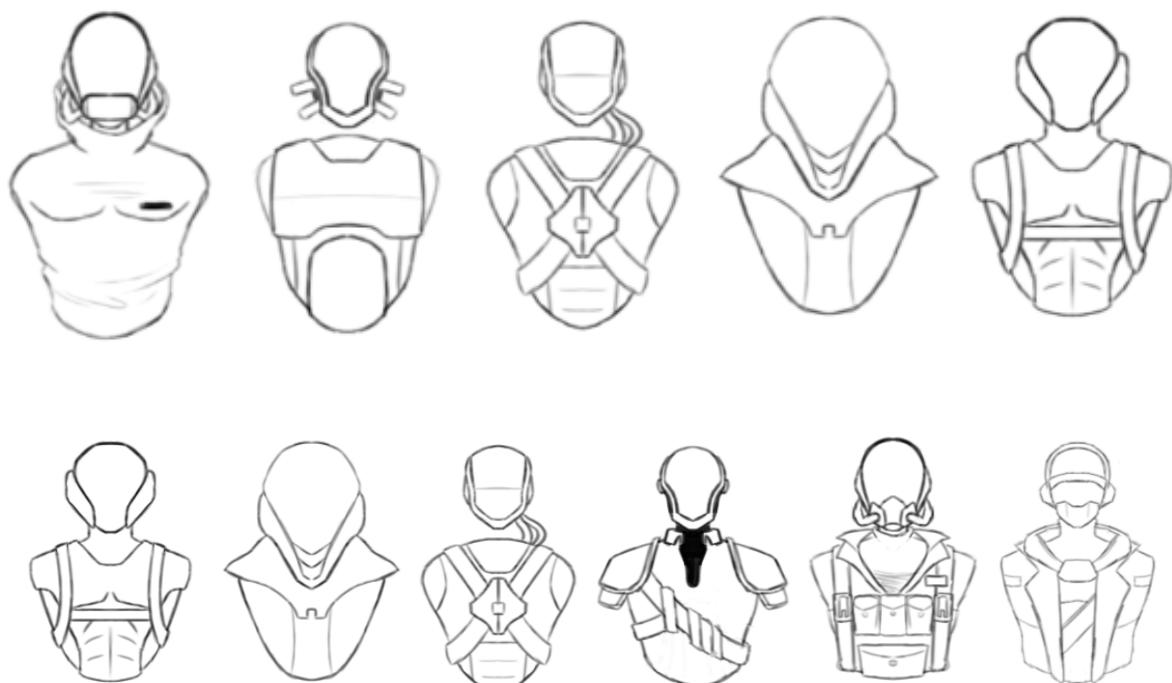
II. **Friendly characters**

- Normal Turret
- Laser Turret
- Lobbing Turret

Technical

I. **Concept Art**

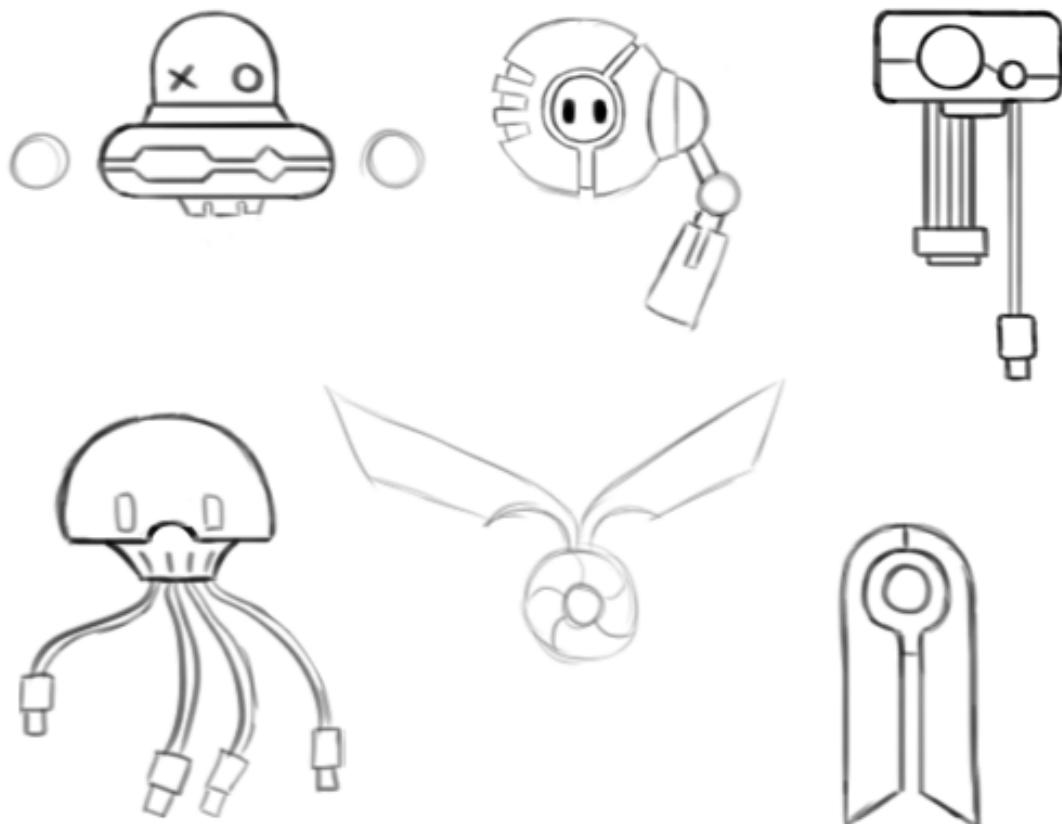
1.Engineer

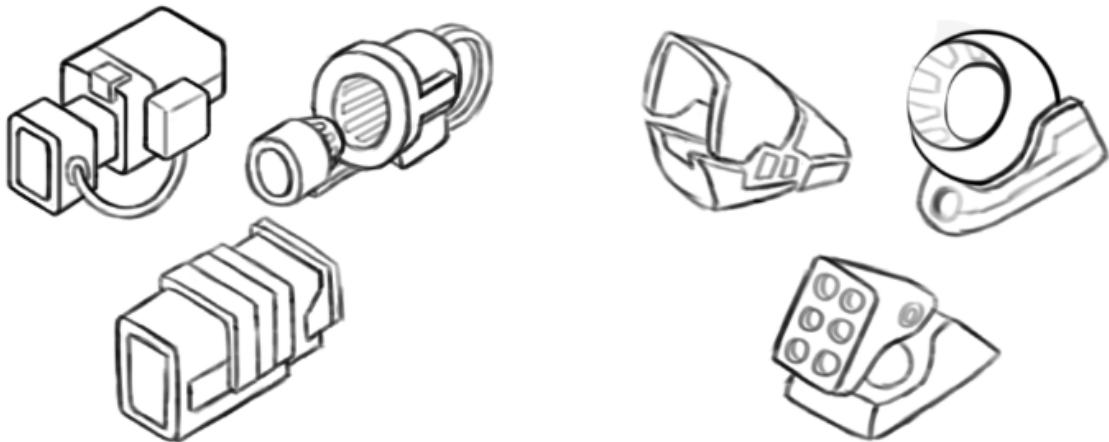


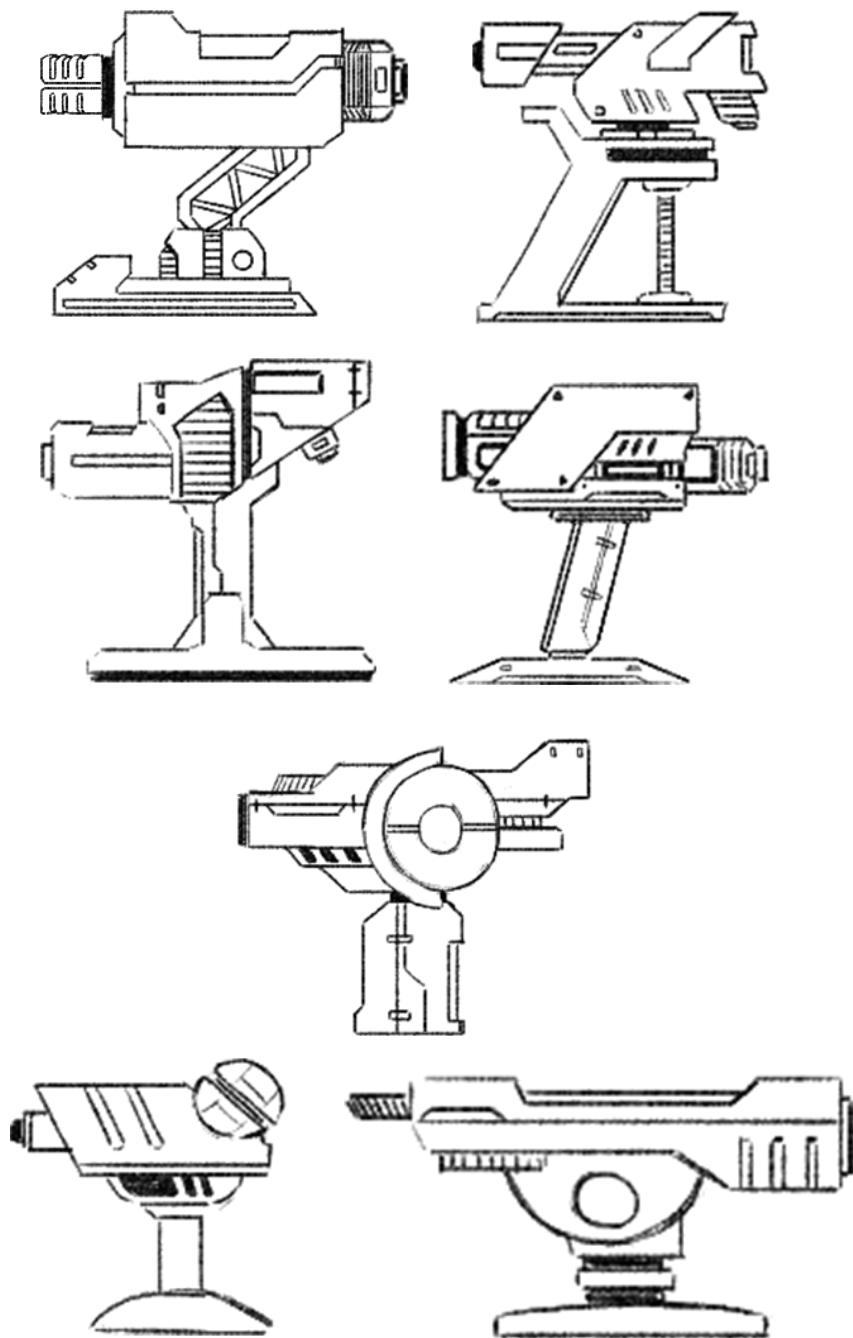


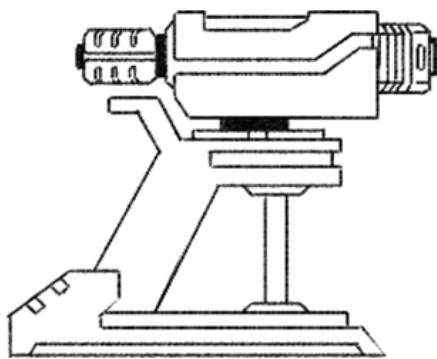
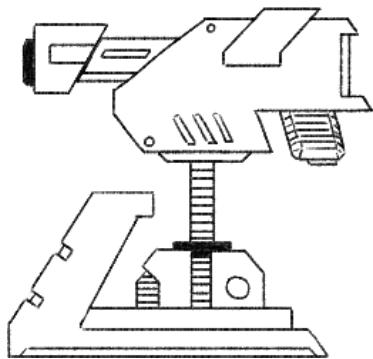
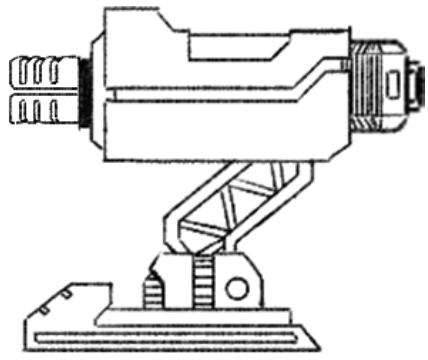
2.Turrets & Cores

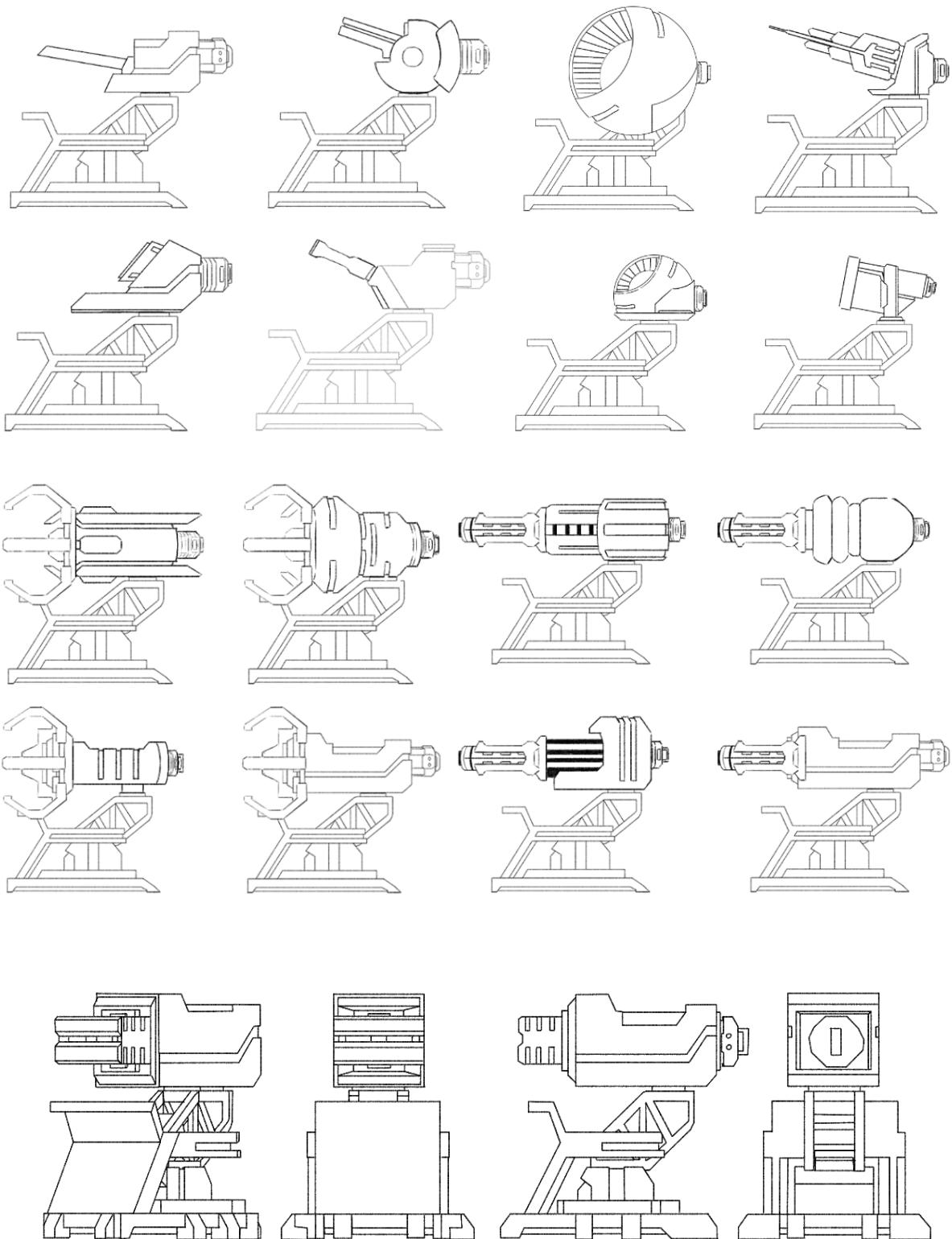
Turrets

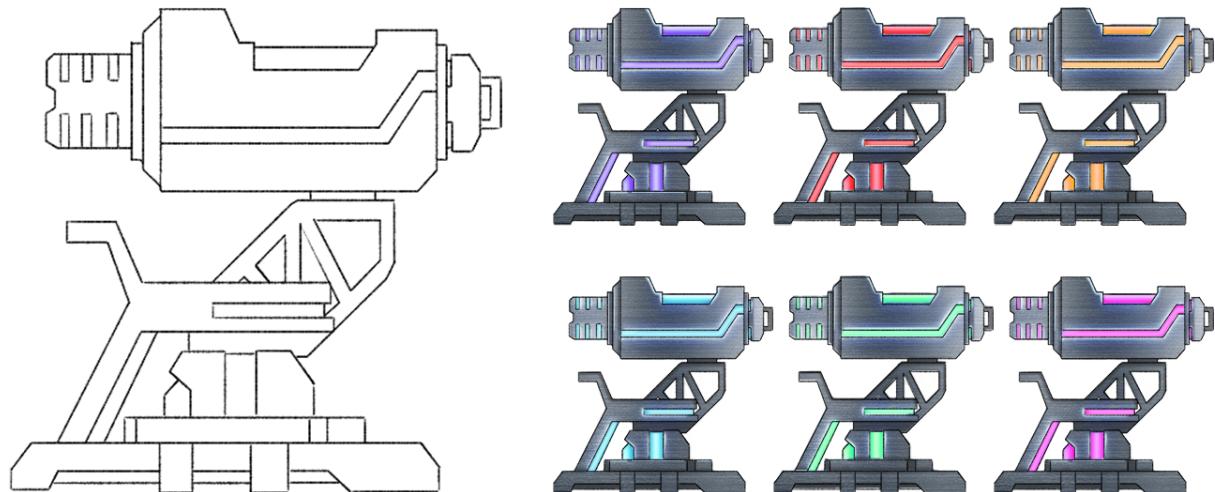
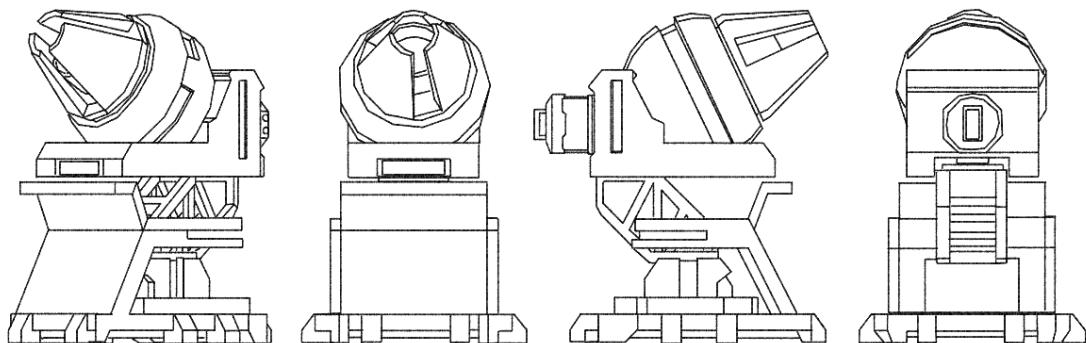
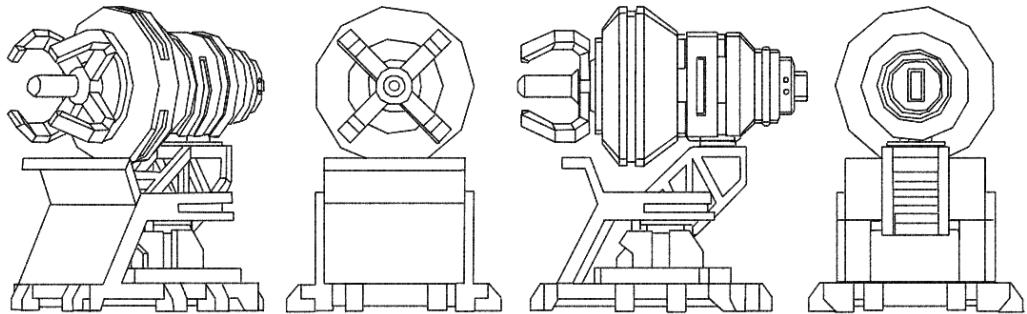


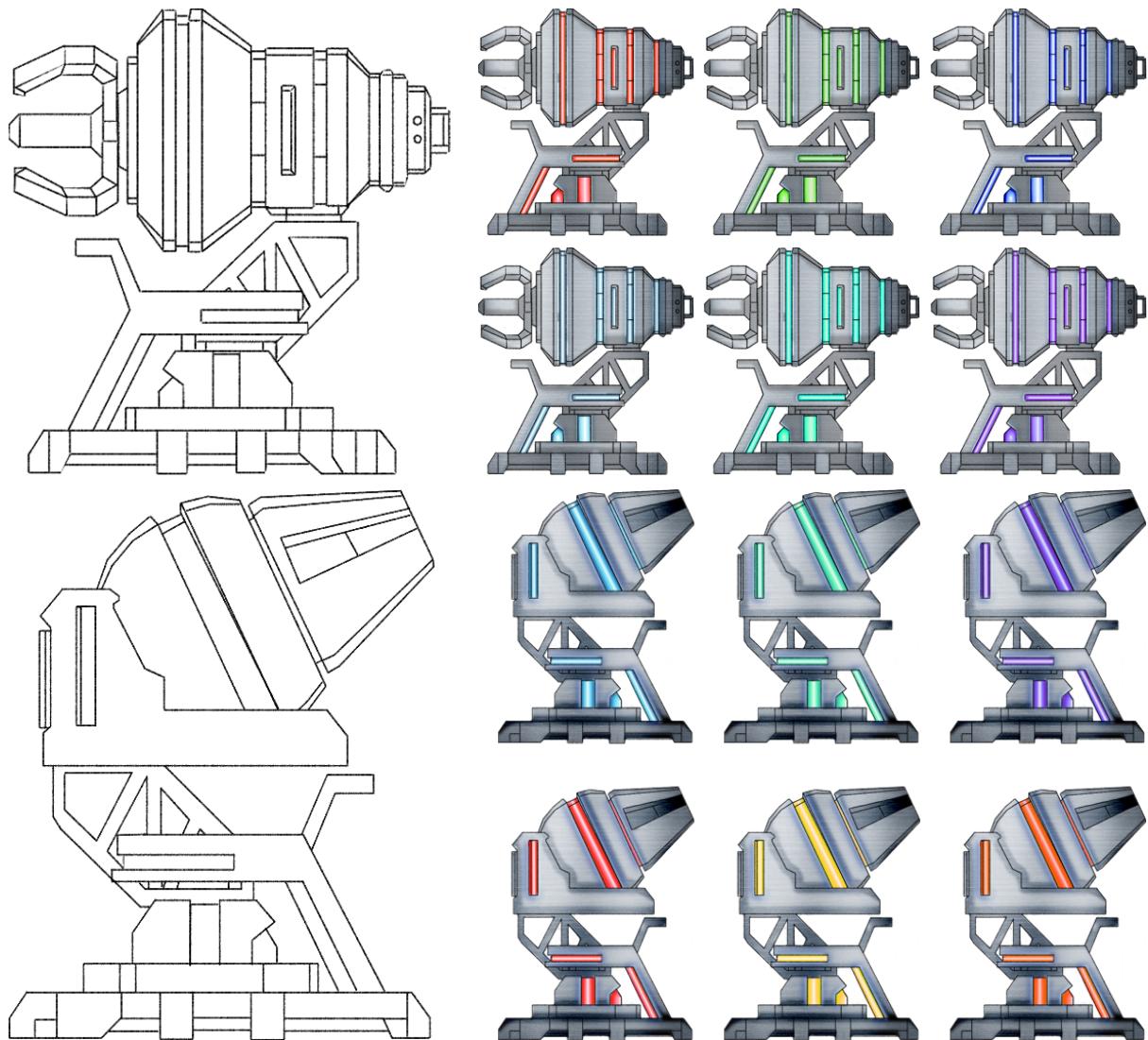




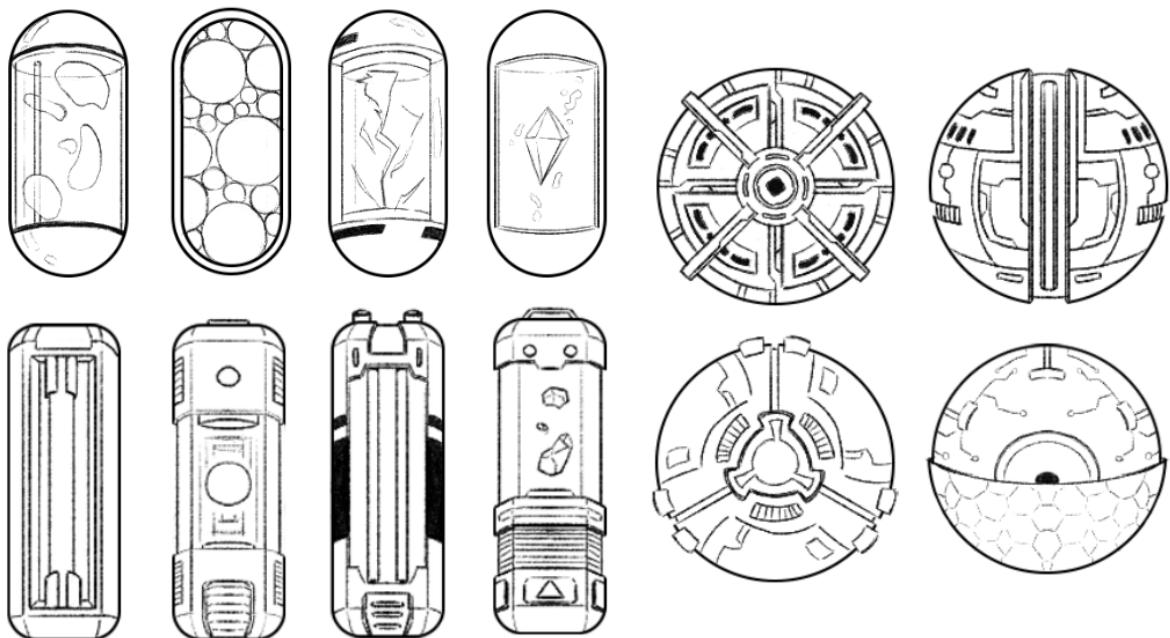


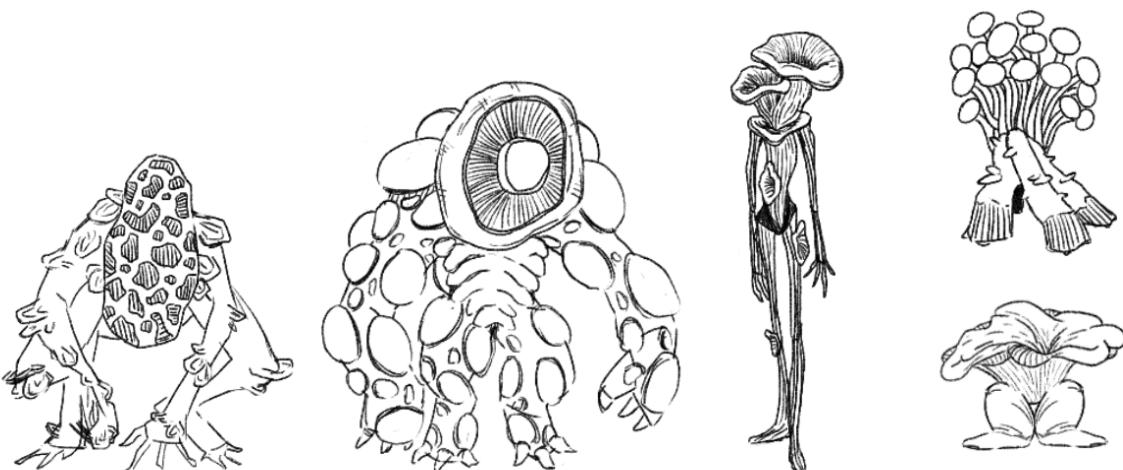
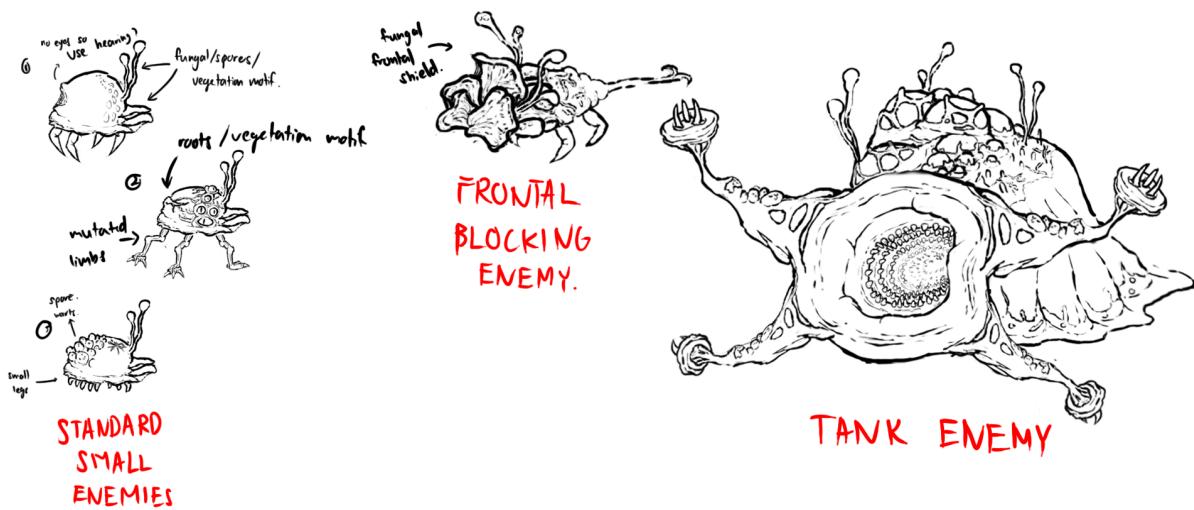




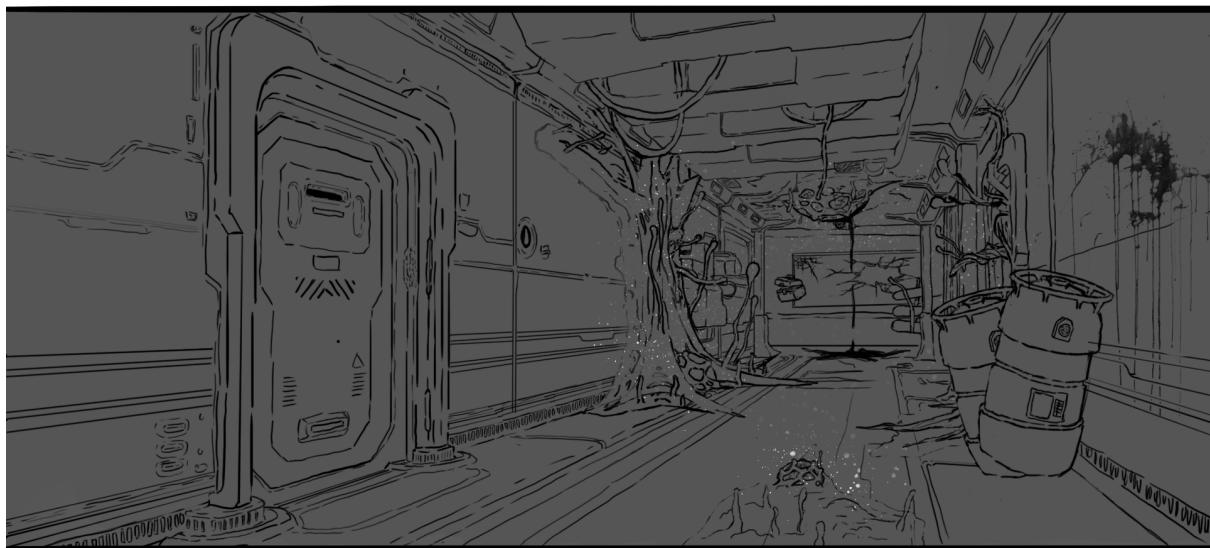
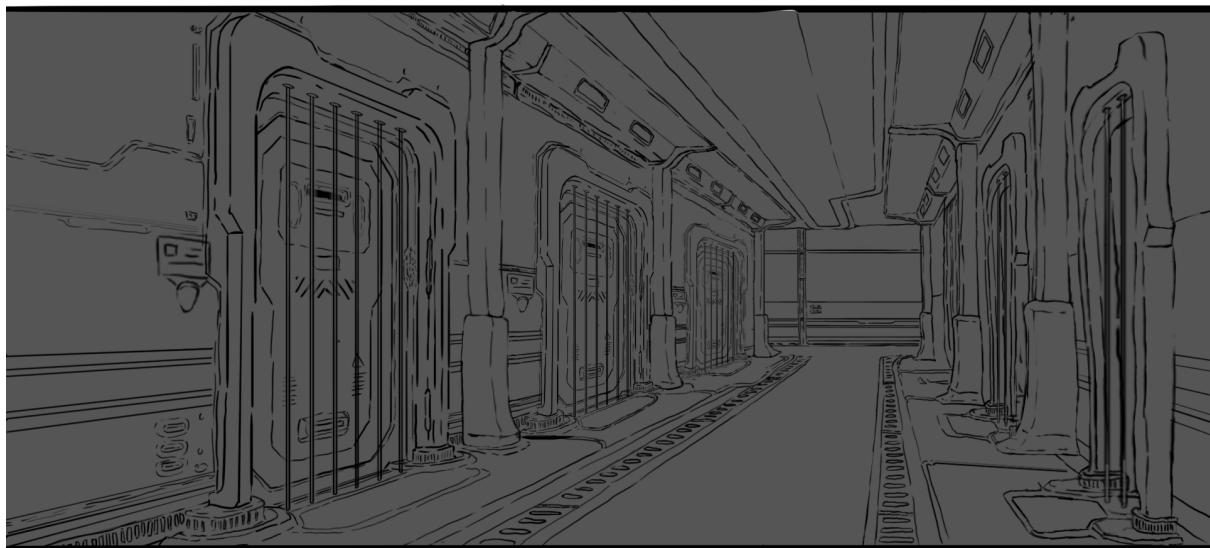


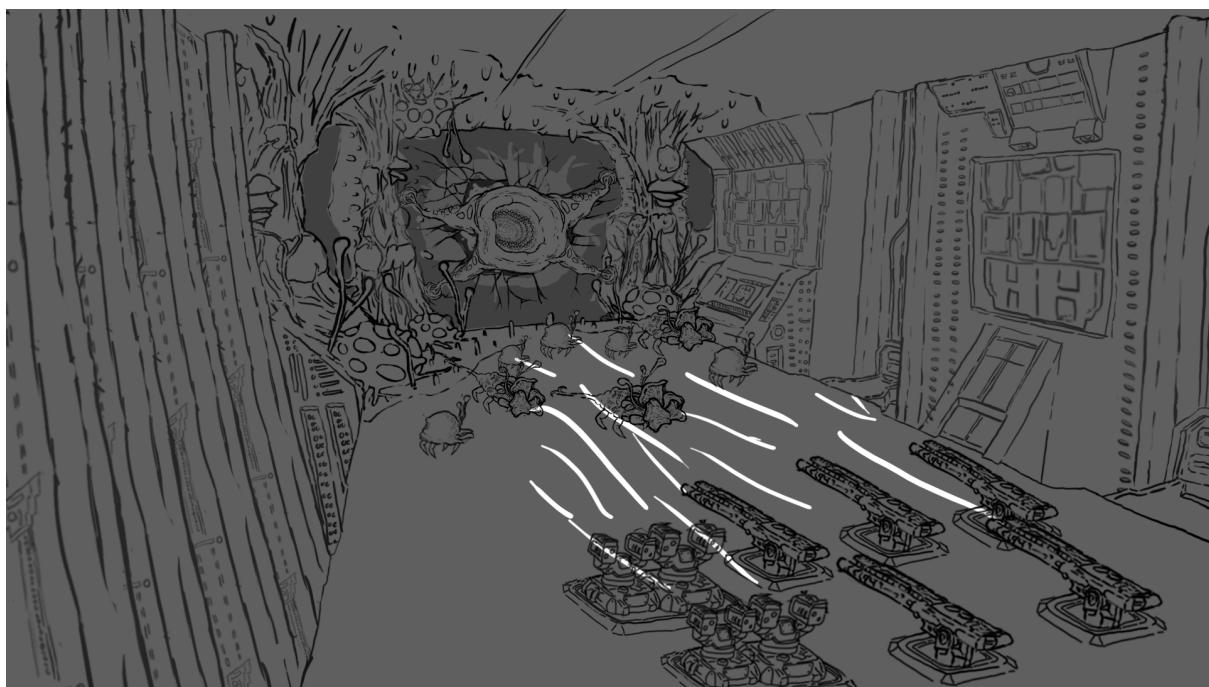
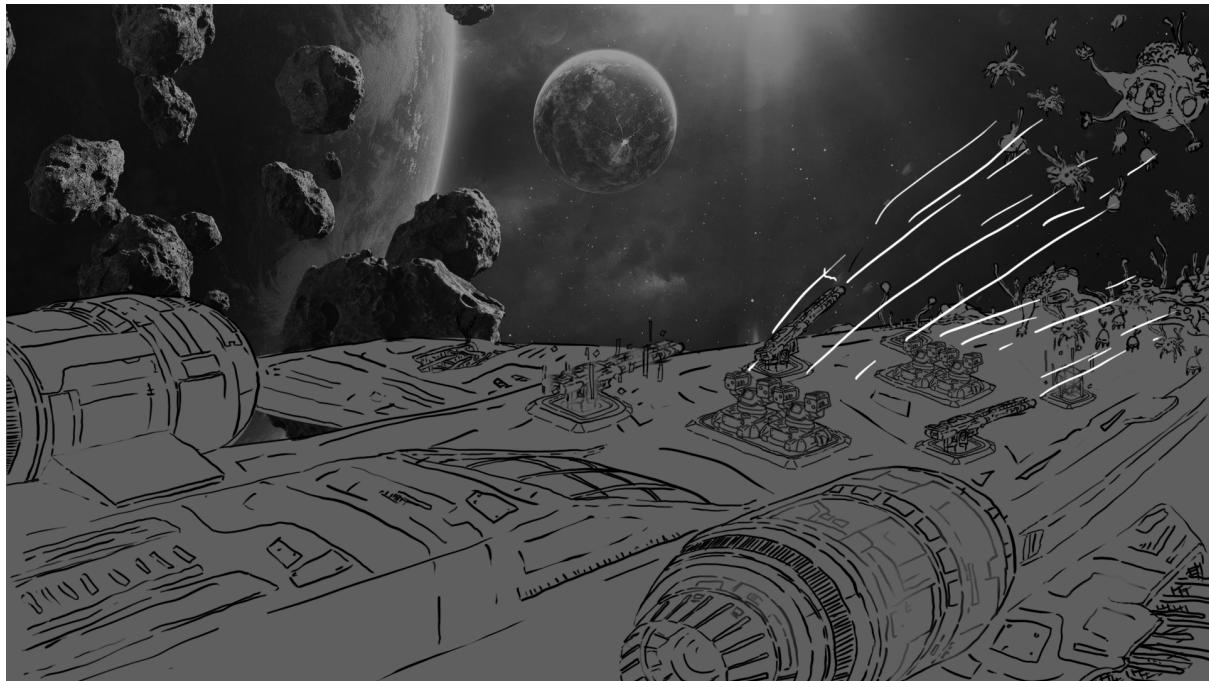
Cores

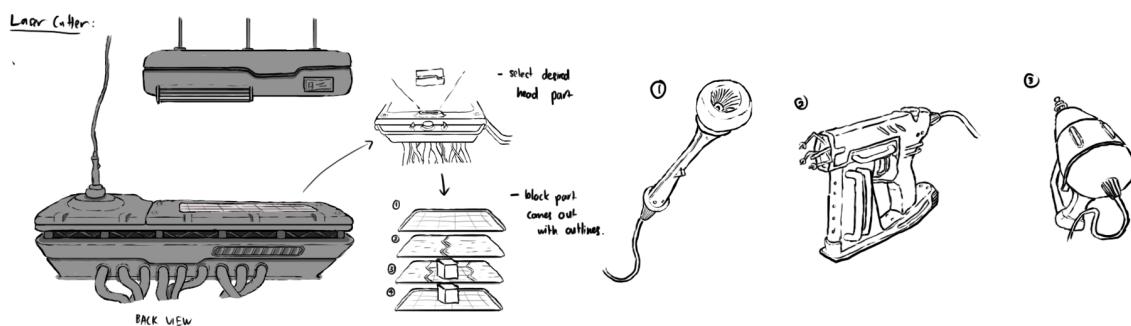
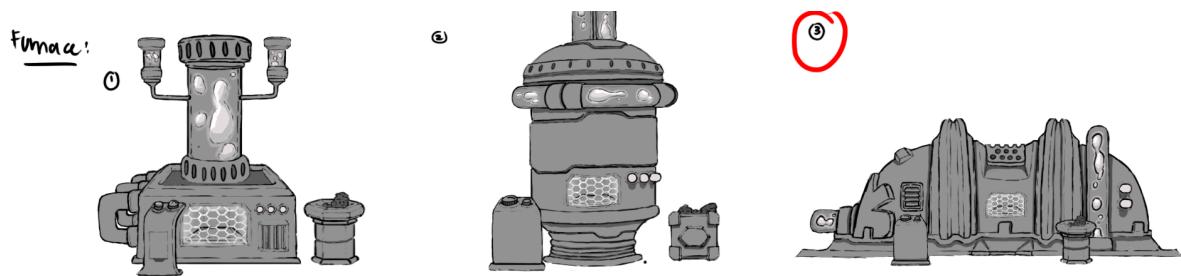
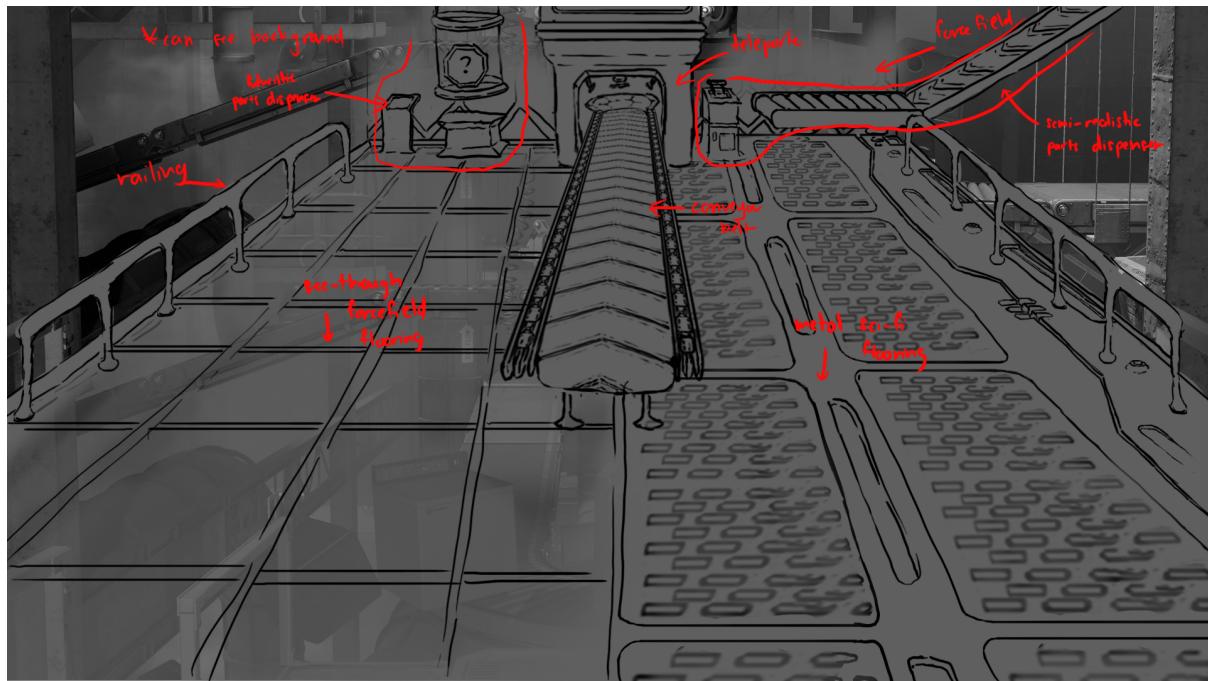
3. Enemies





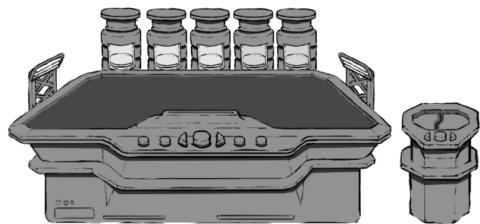




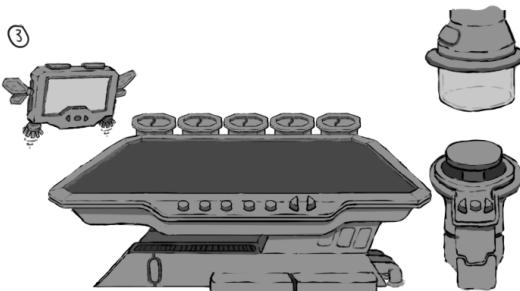


Workbench:

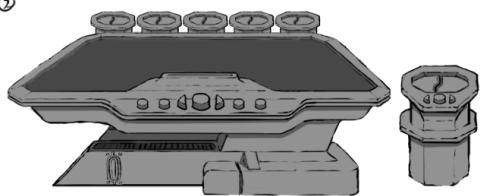
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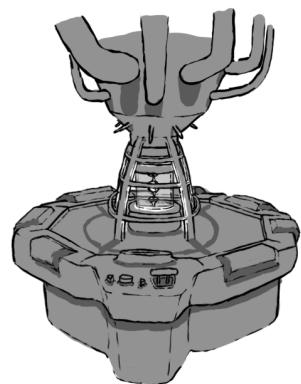
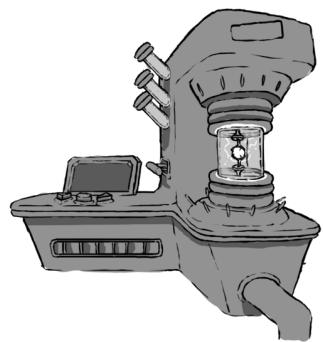
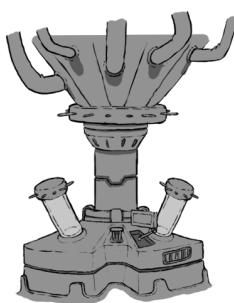


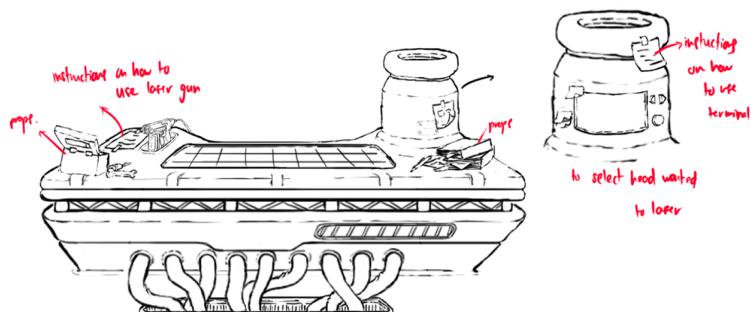
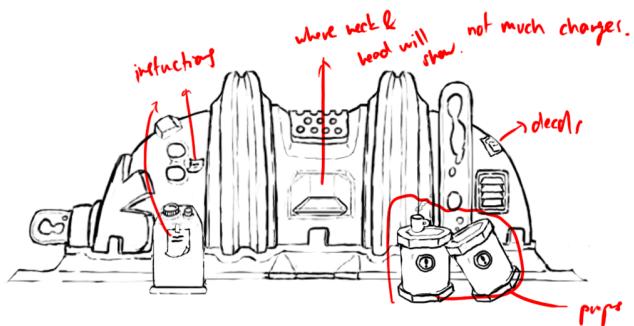
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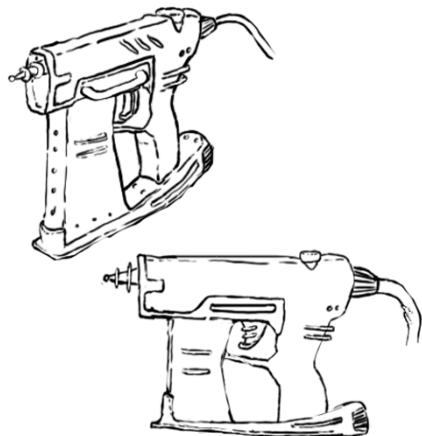
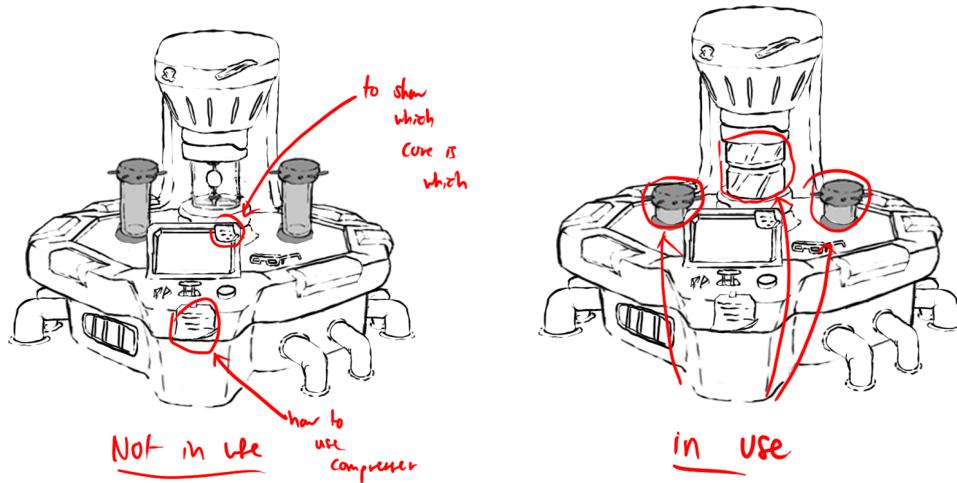


Compressor:

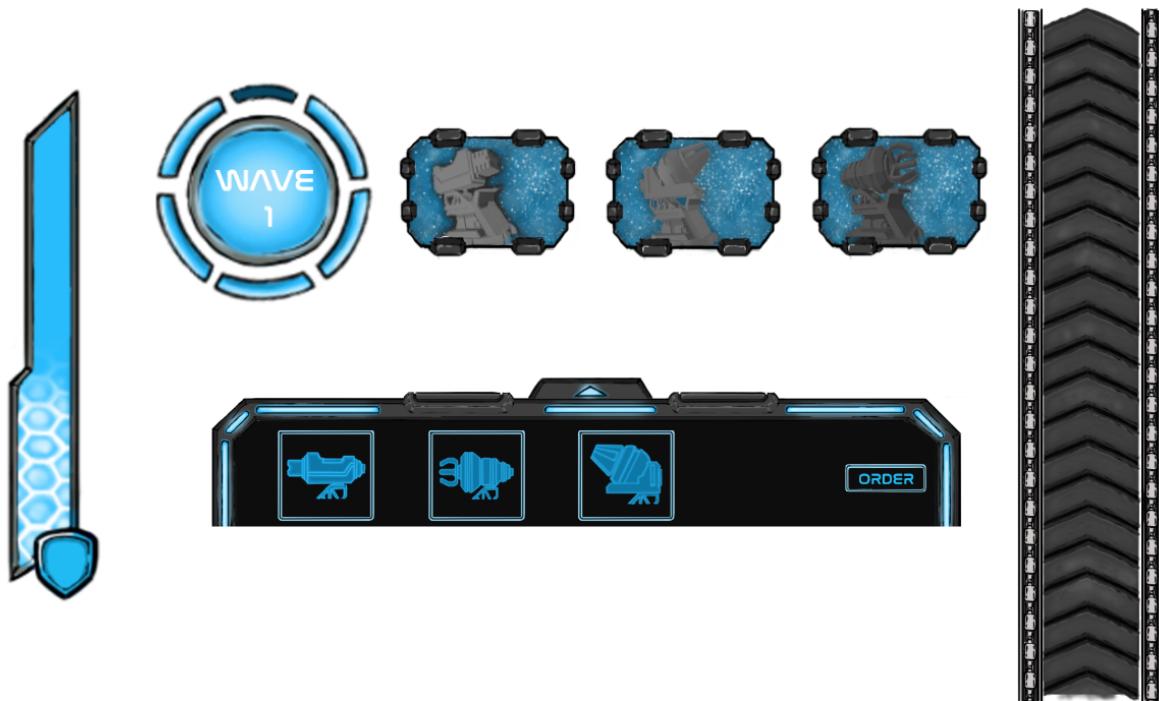
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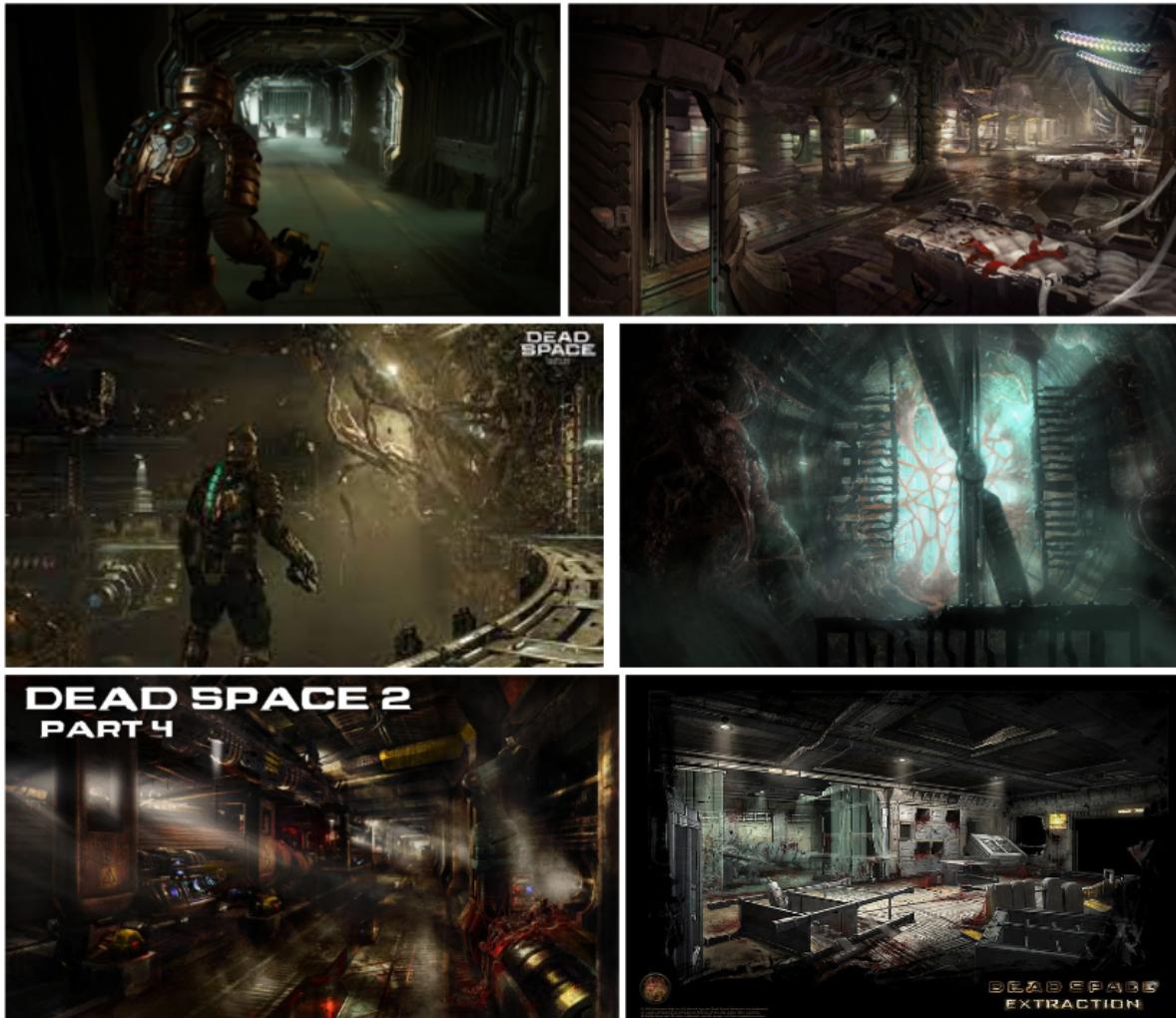


UI

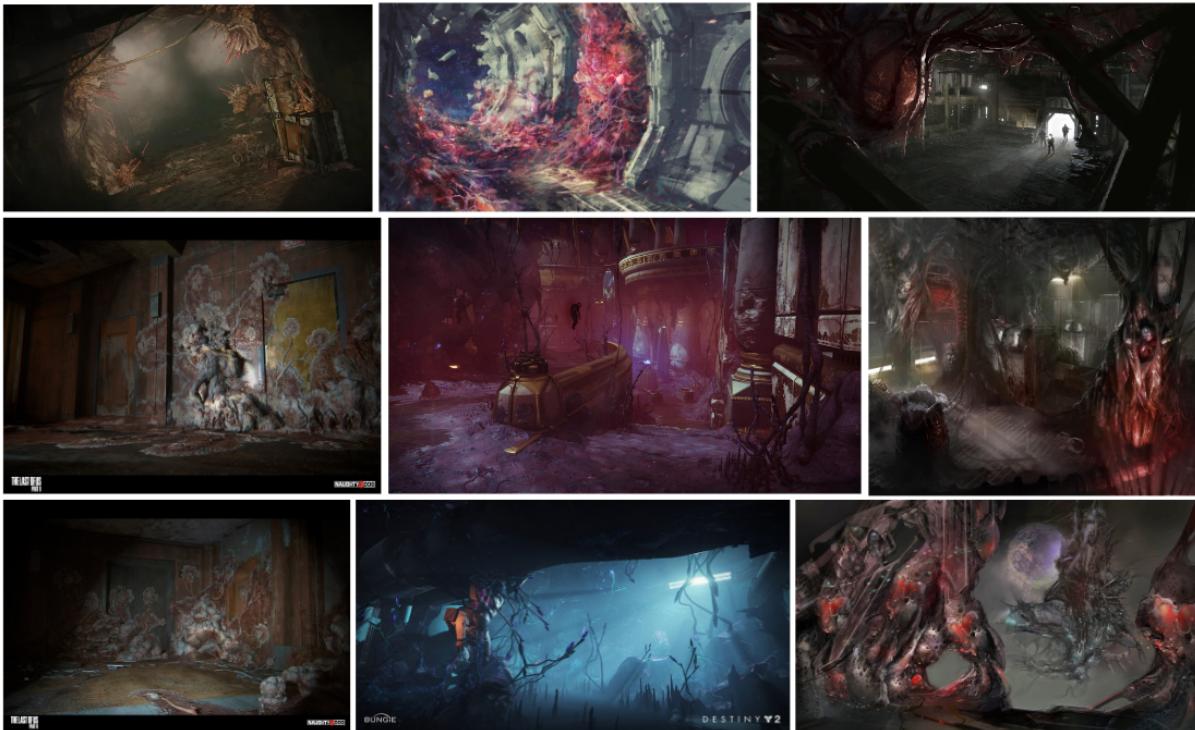


II. Style guides

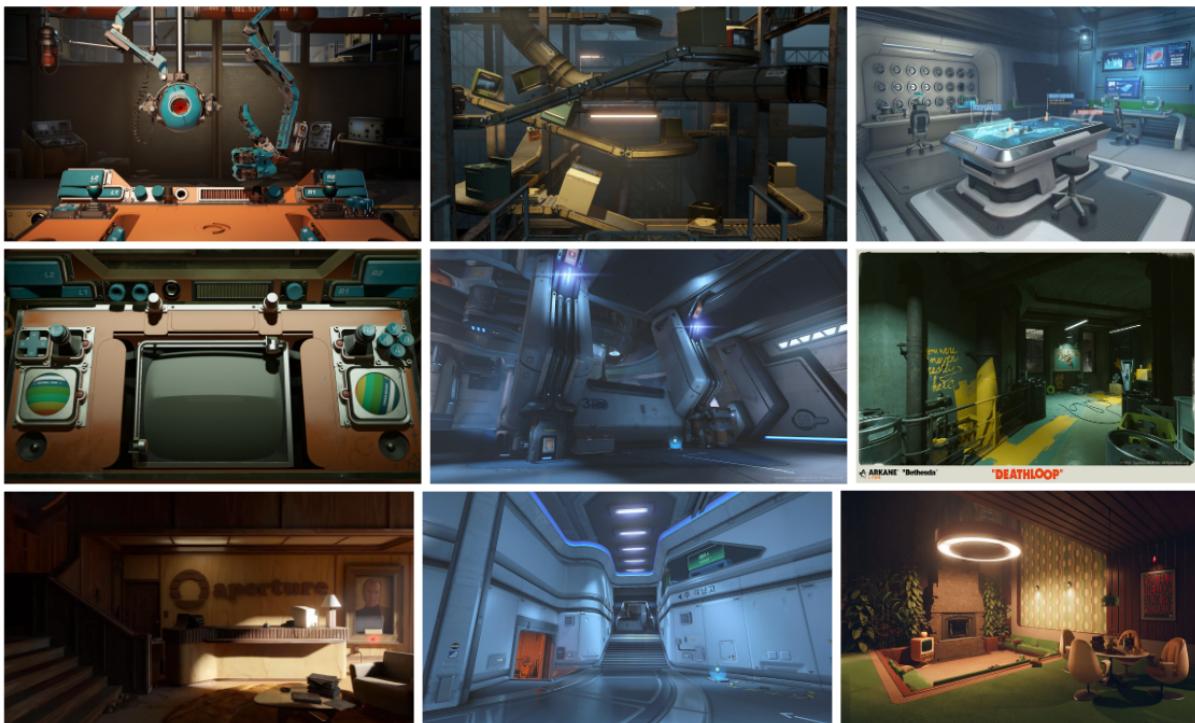
1. Overall game atmosphere reference: Dead Space 2



2. Enemy Design Reference: Last of Us & Destiny



3. Style Reference for environment and turrets



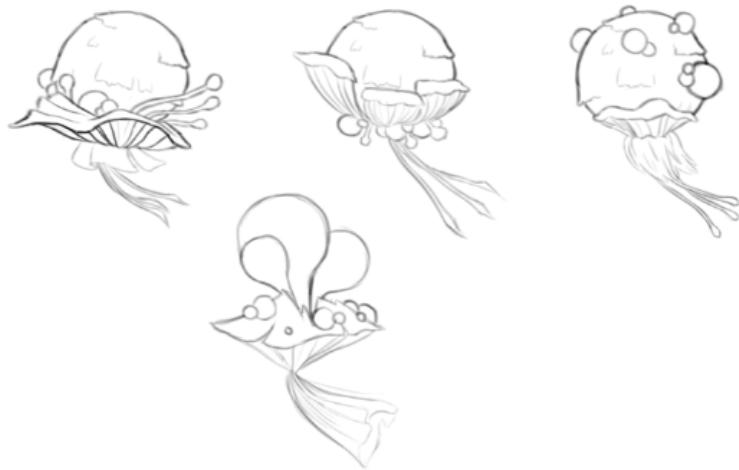
III. Characters

1. Enemies

Normal Enemy



Healing Enemy



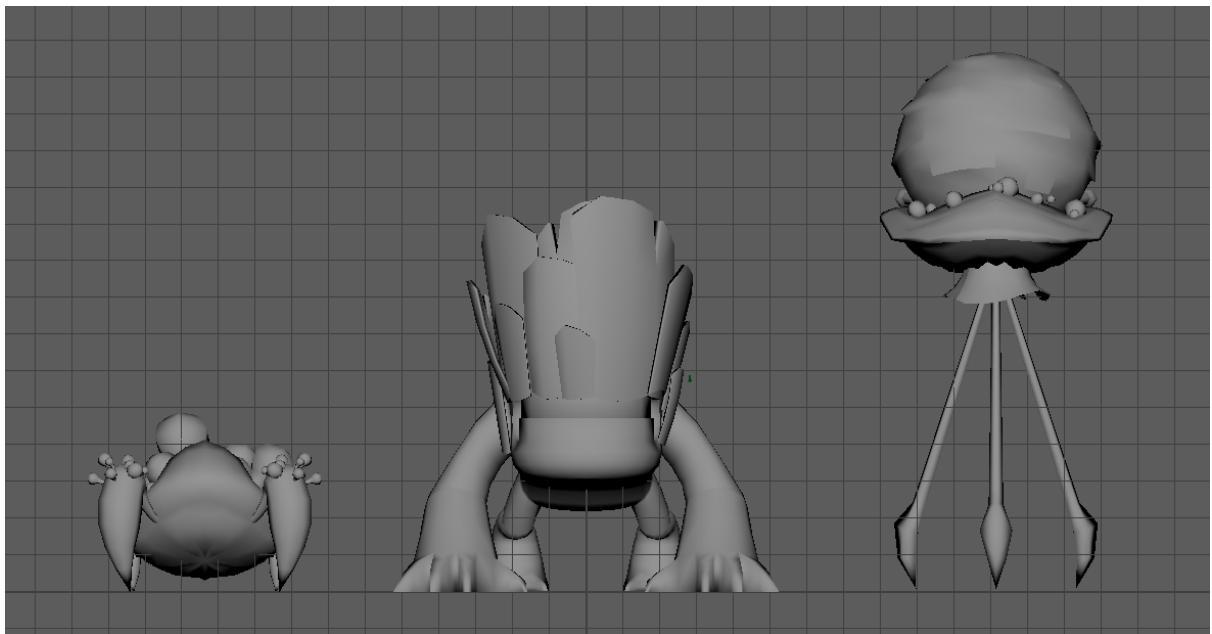
Shield Enemy



Colour Exploration

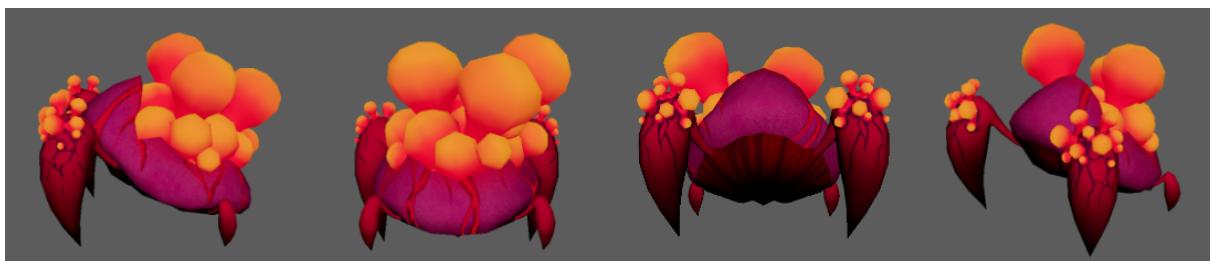


3D Models

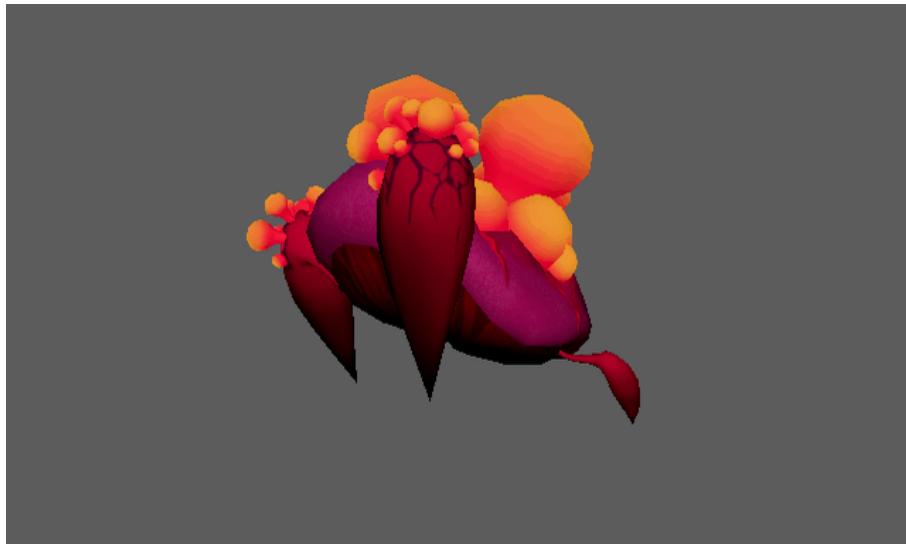


Texture

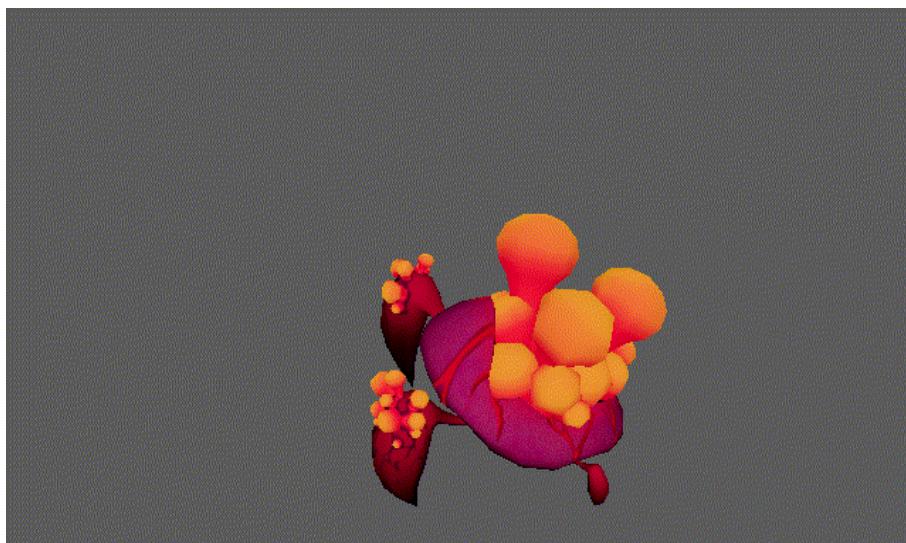
Normal Enemy



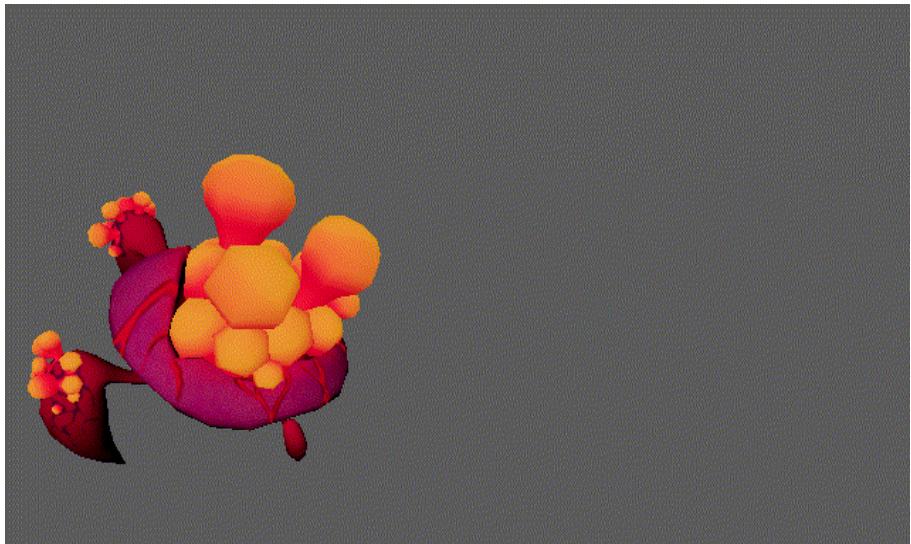
Walking Animation



Attack Animation



Death Animation



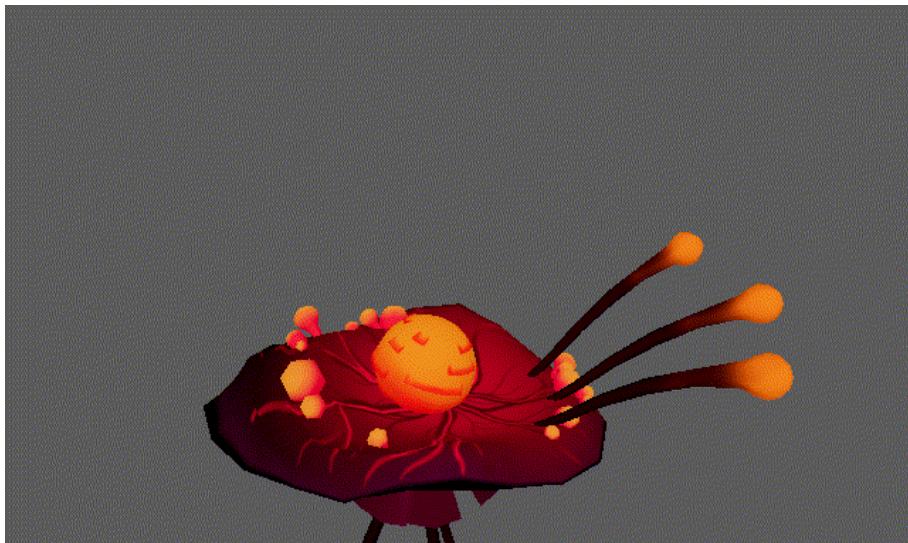
Healing Enemy



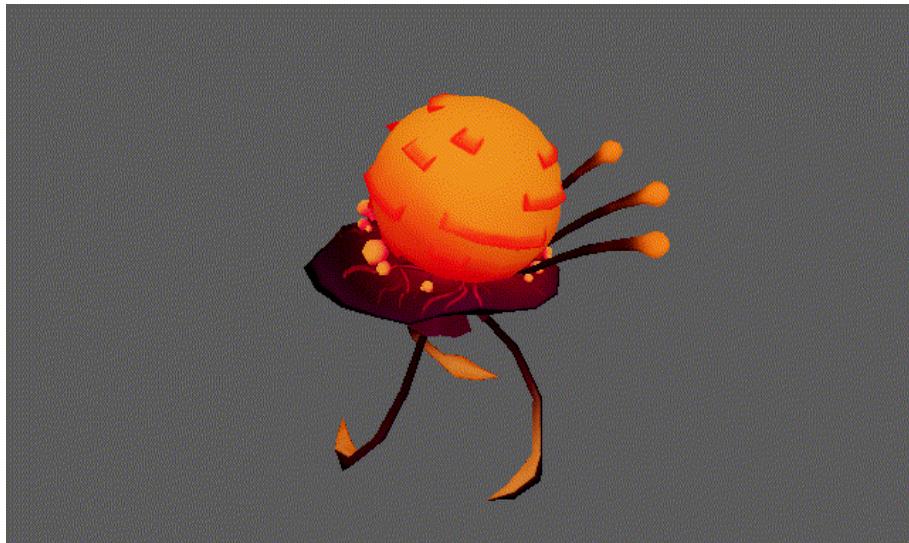
Walking Animation



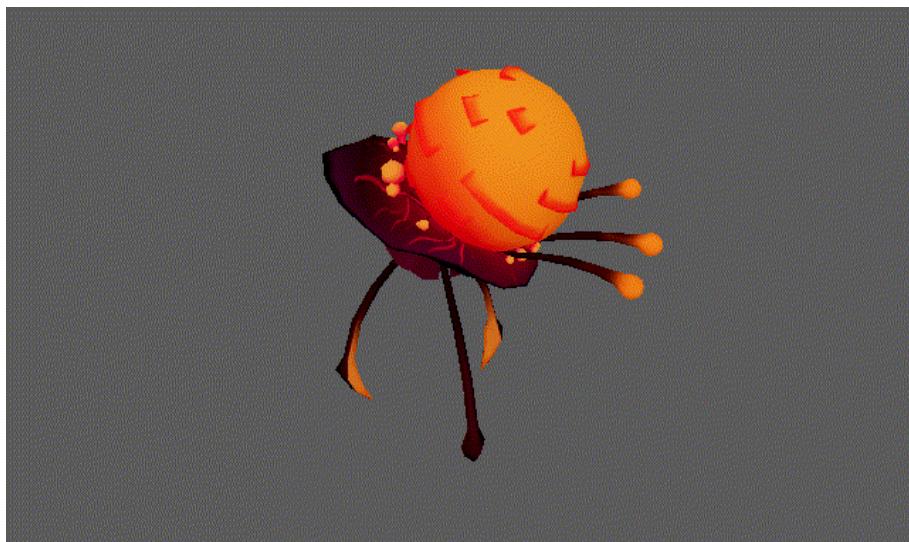
Healing Animation



Attack Animation



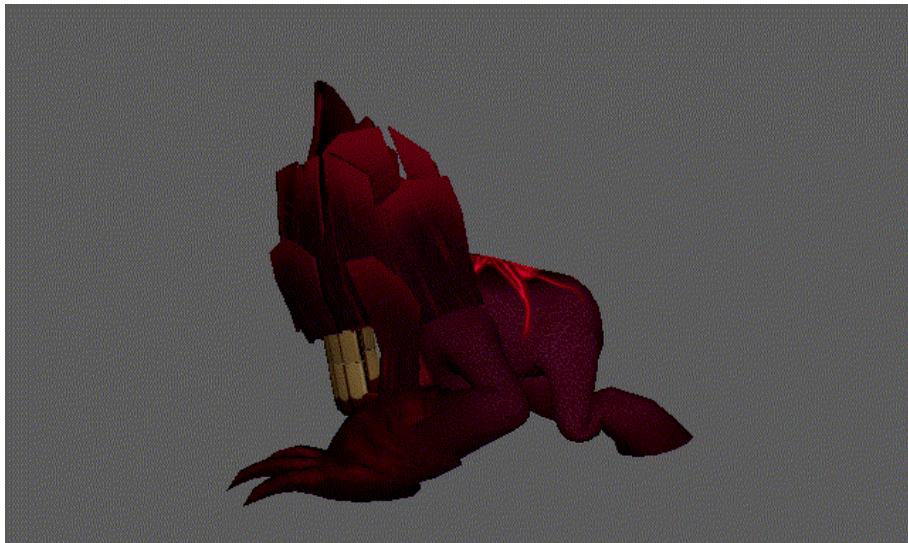
Death Animation



Shield Enemy



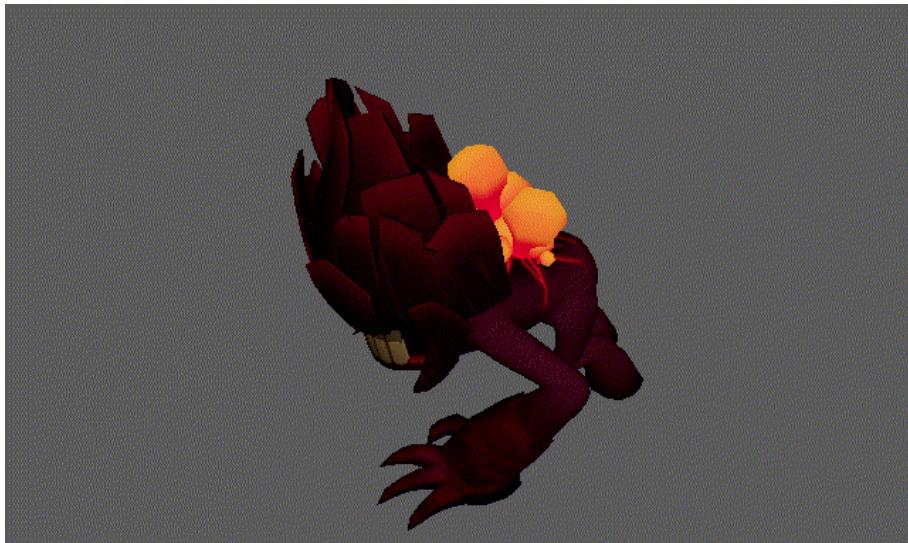
Walking Animation



Attack Animation

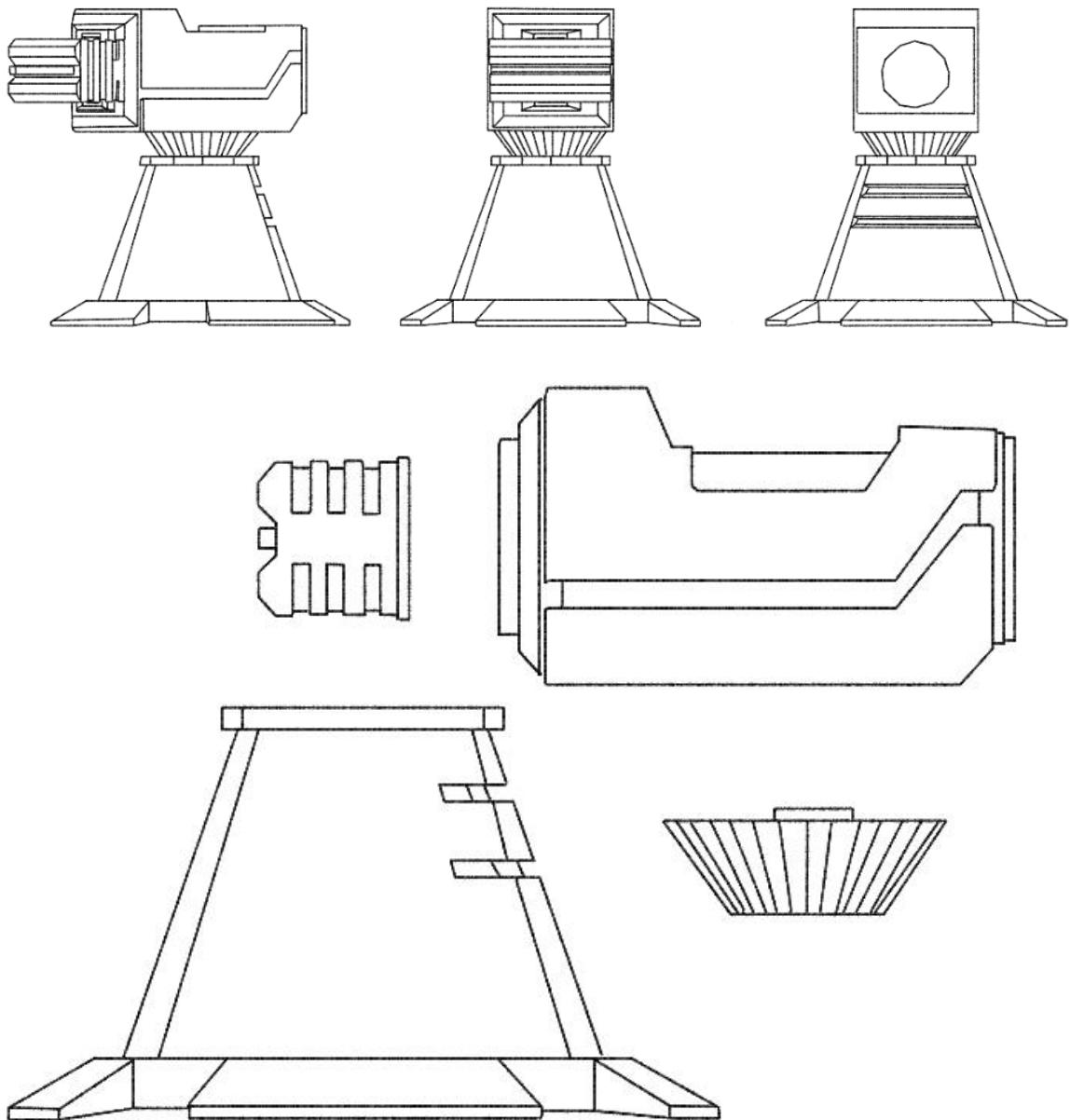


Death Animation

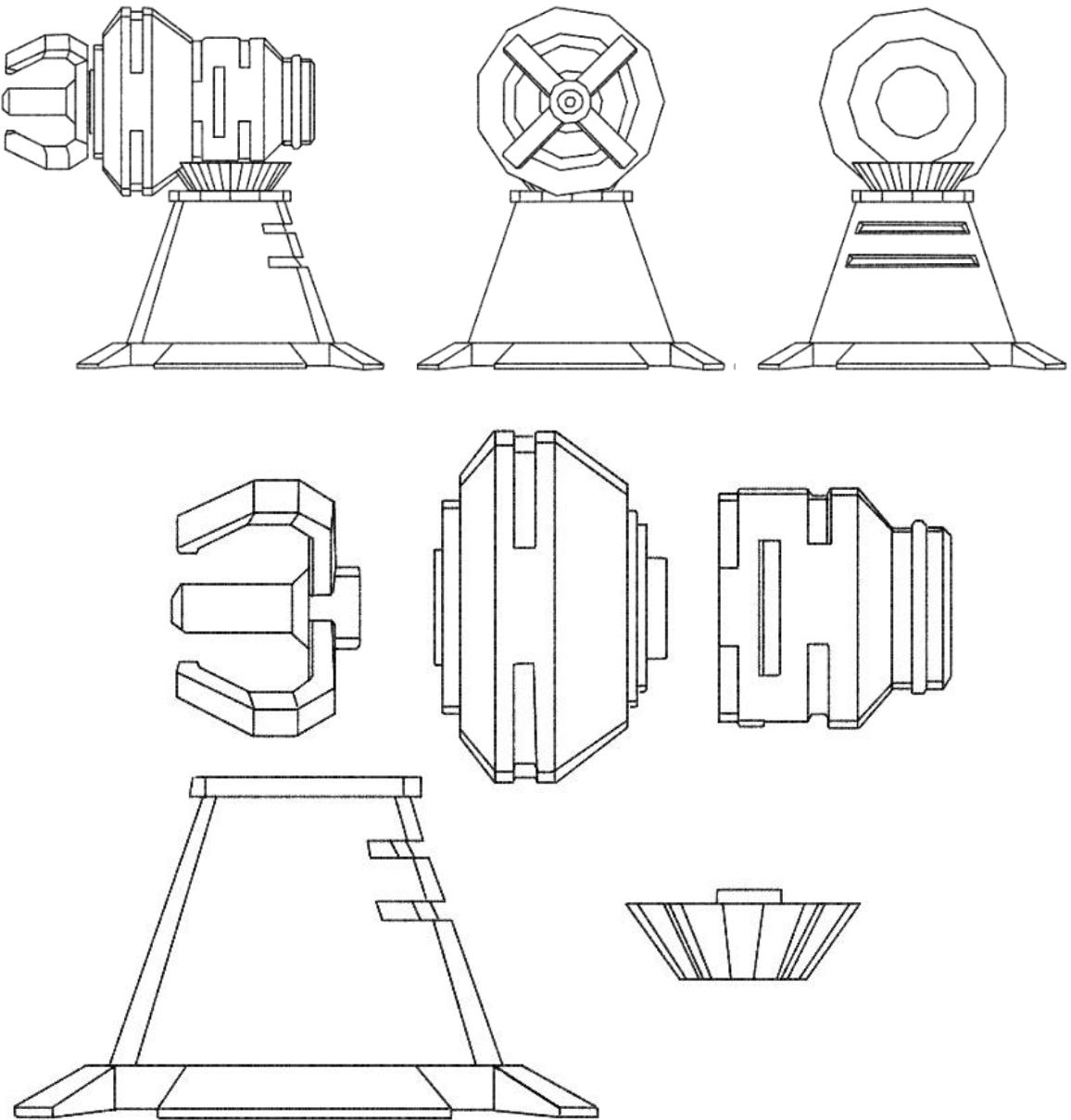


2. Turrets

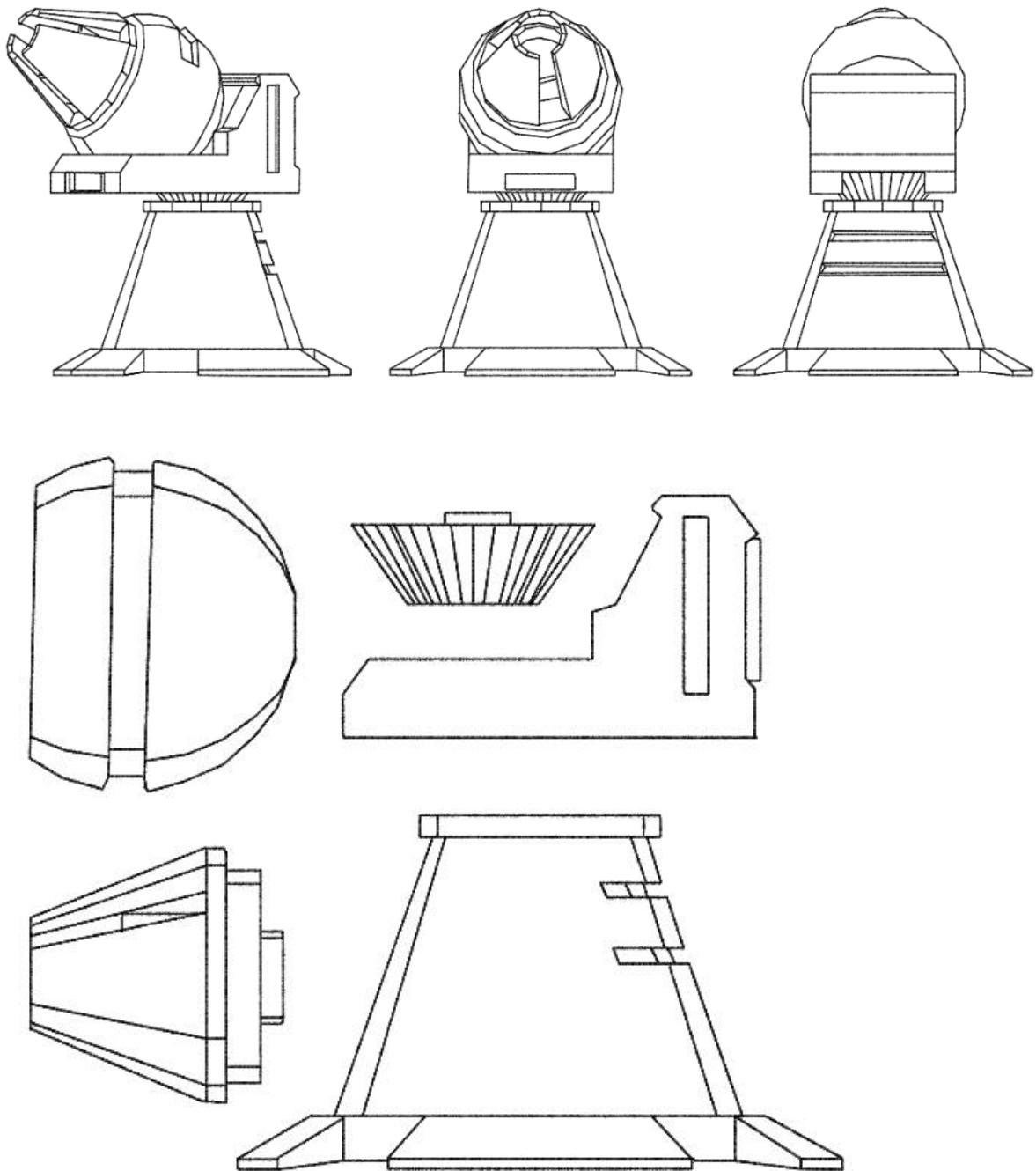
Normal Turret



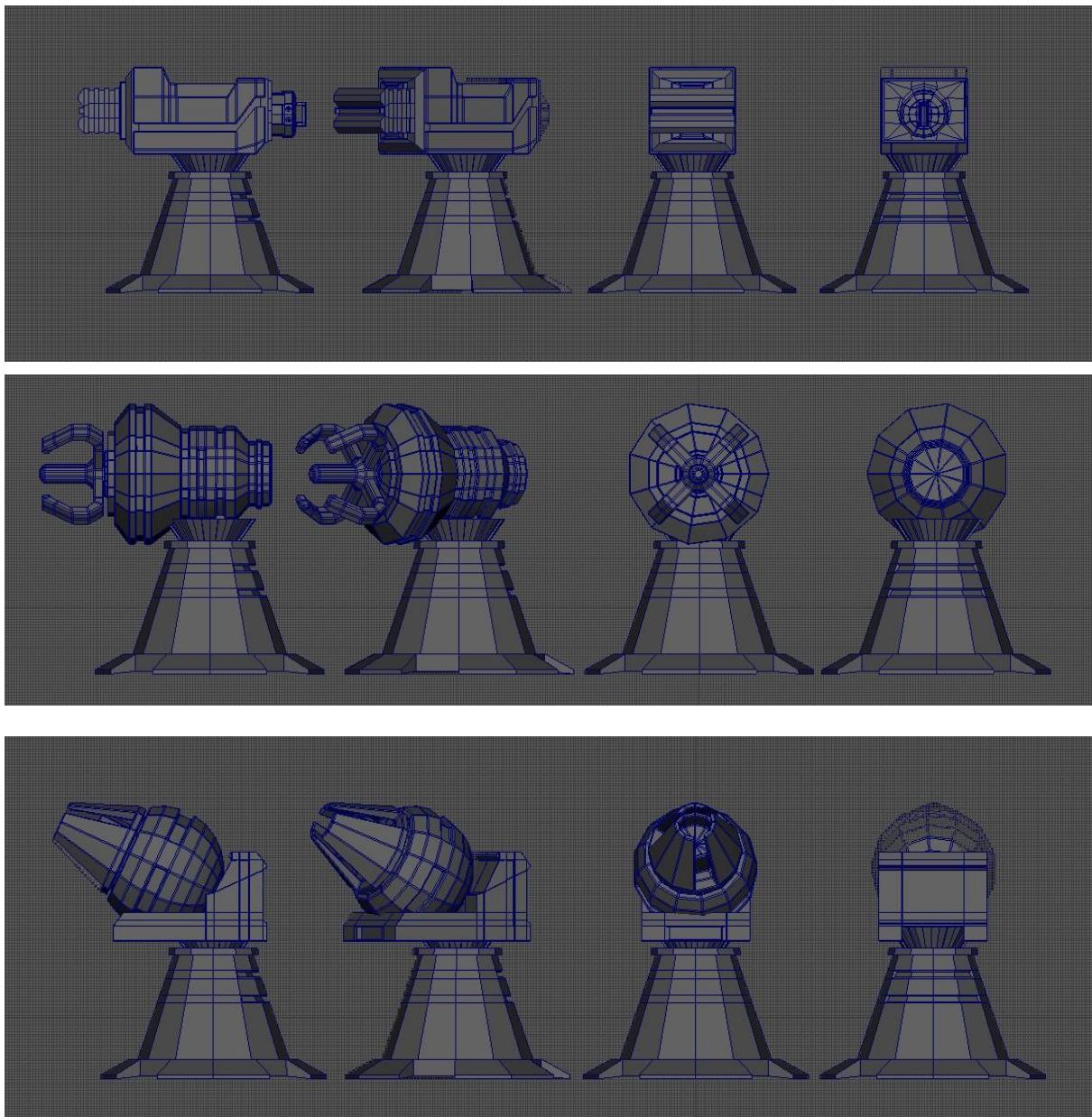
Laser Turret



Lob Turet

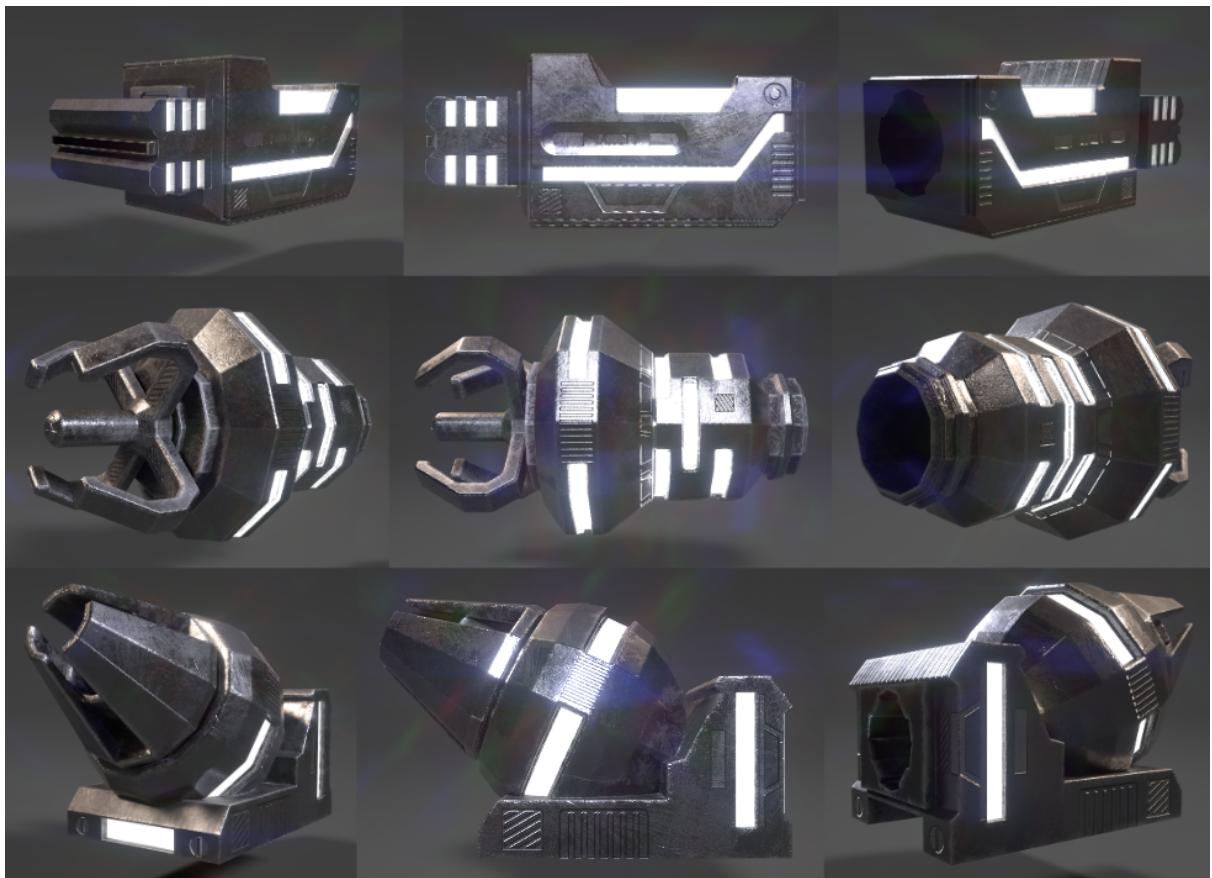


3D Models



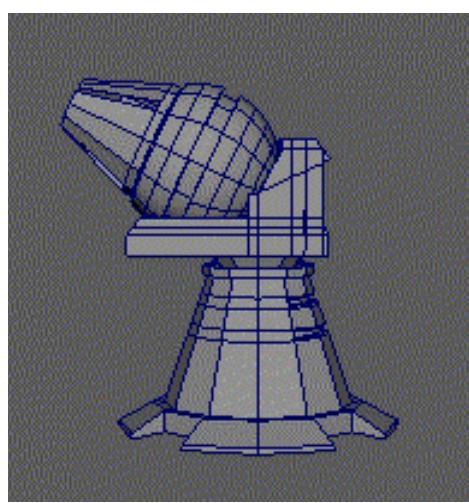
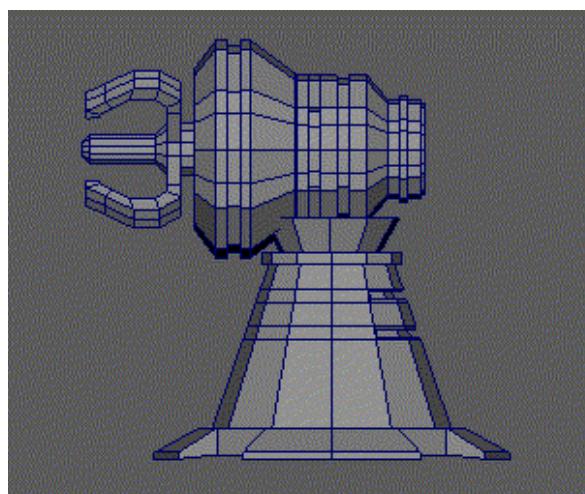
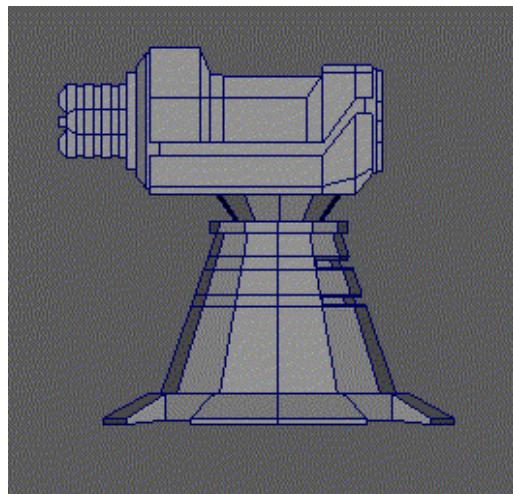
Texture



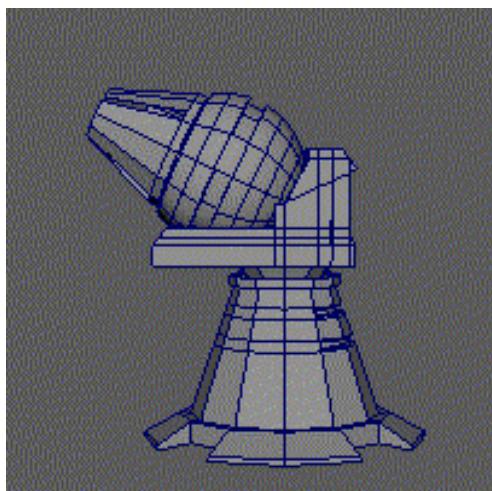
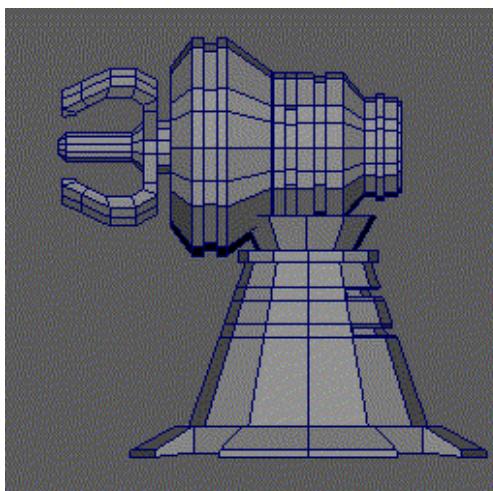
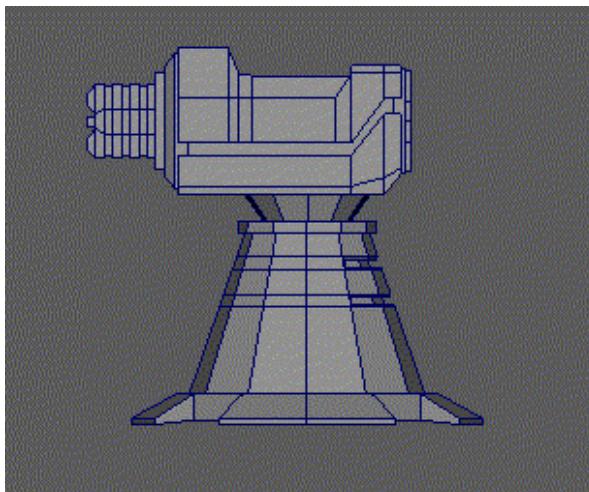


Turret Animations

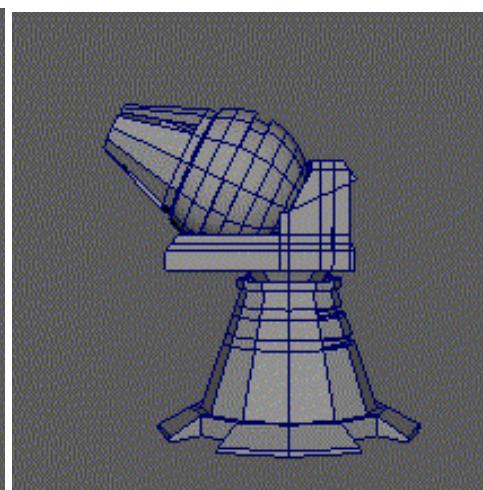
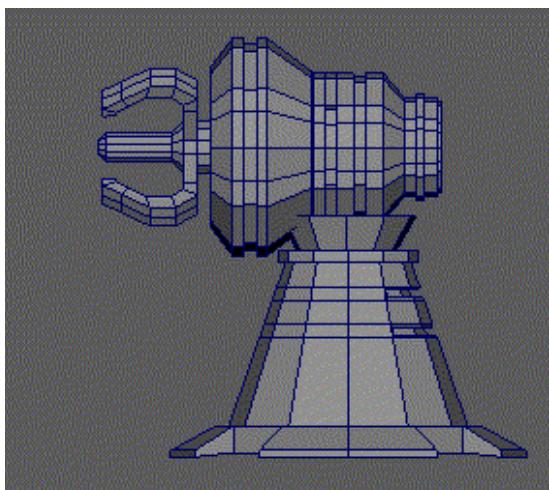
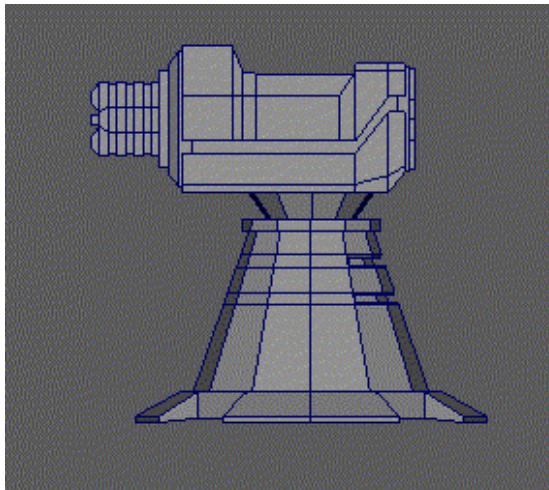
- Shooting



- Getting Hit

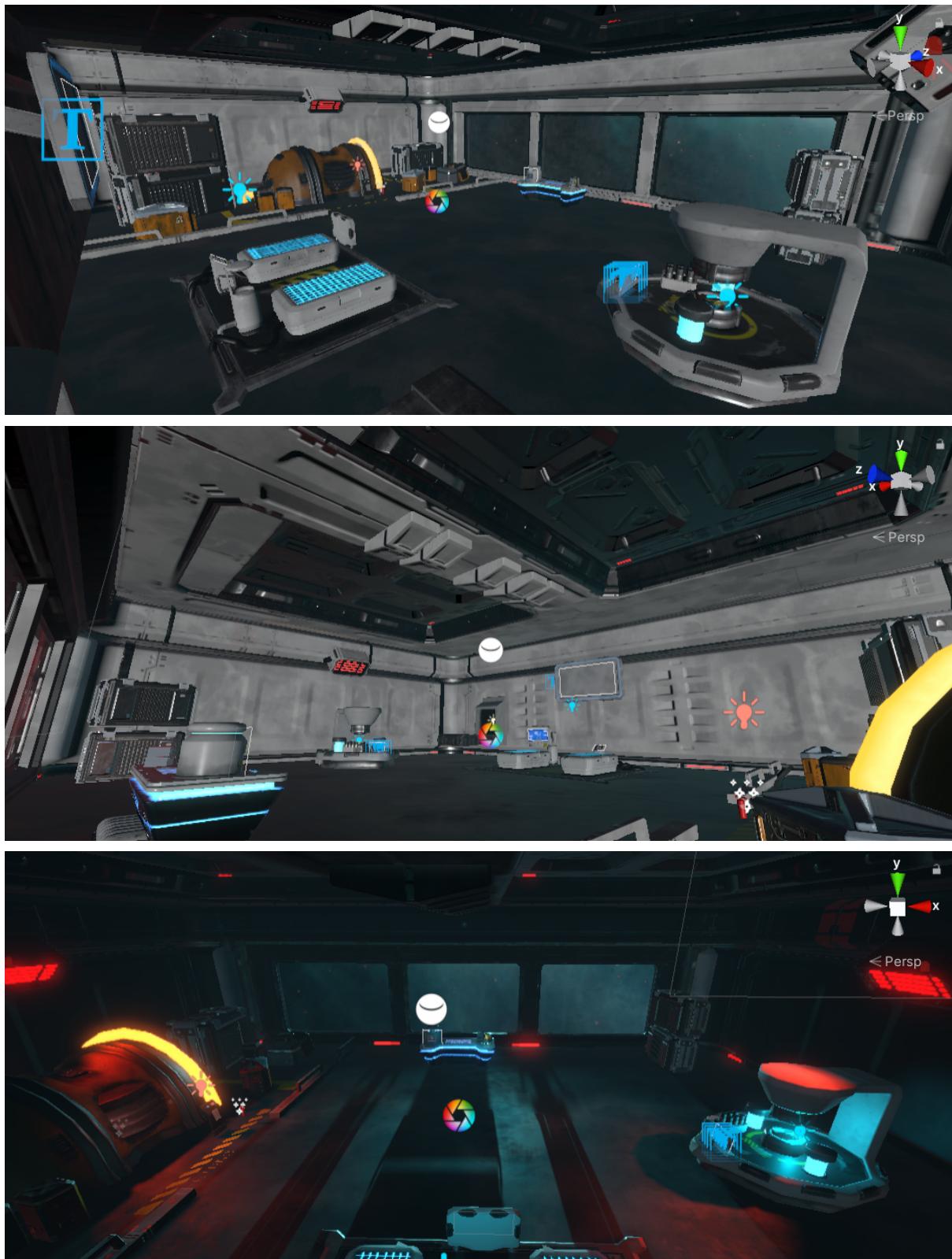


- Turret Death



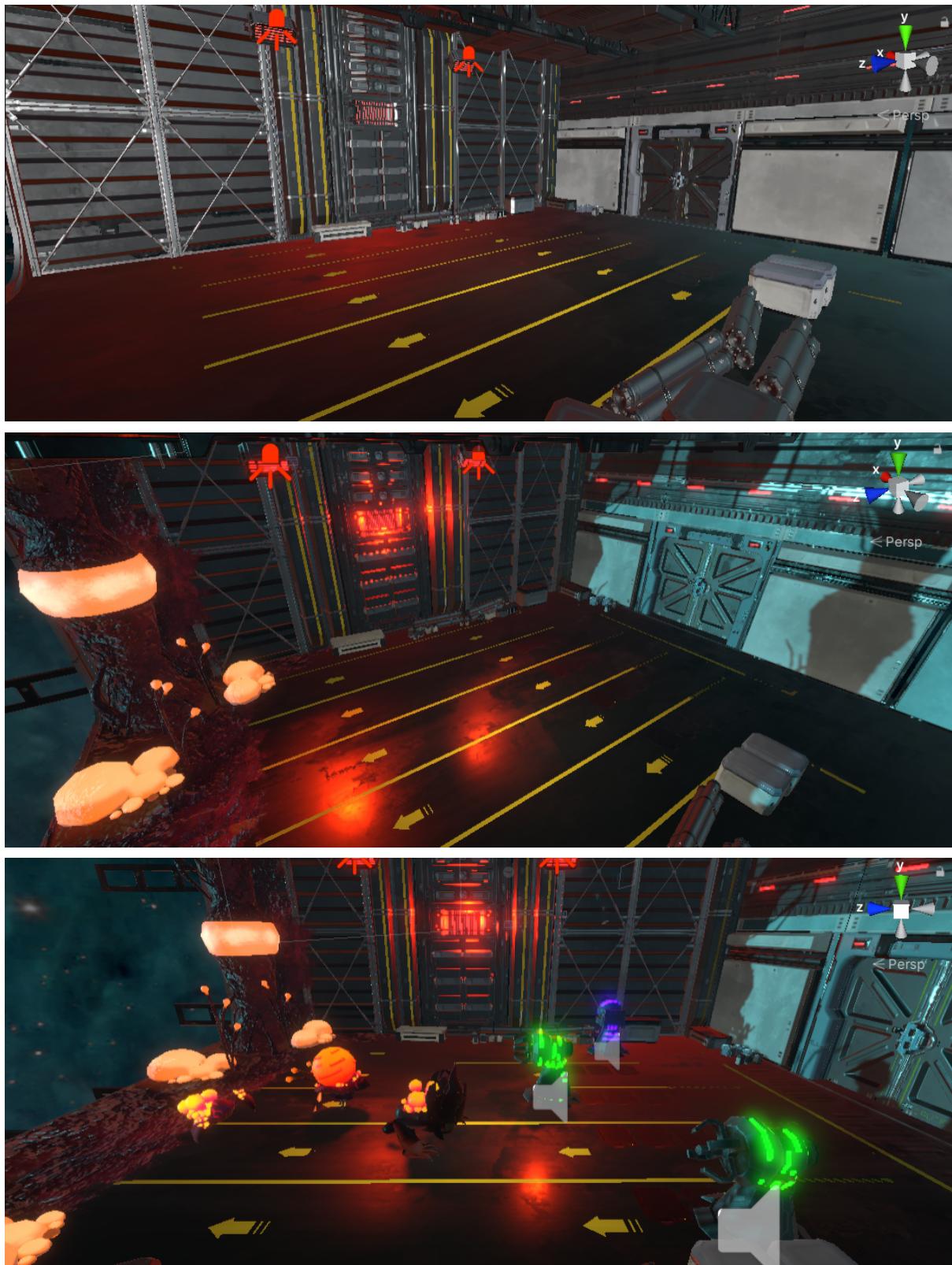
IV. Environments

Workshop



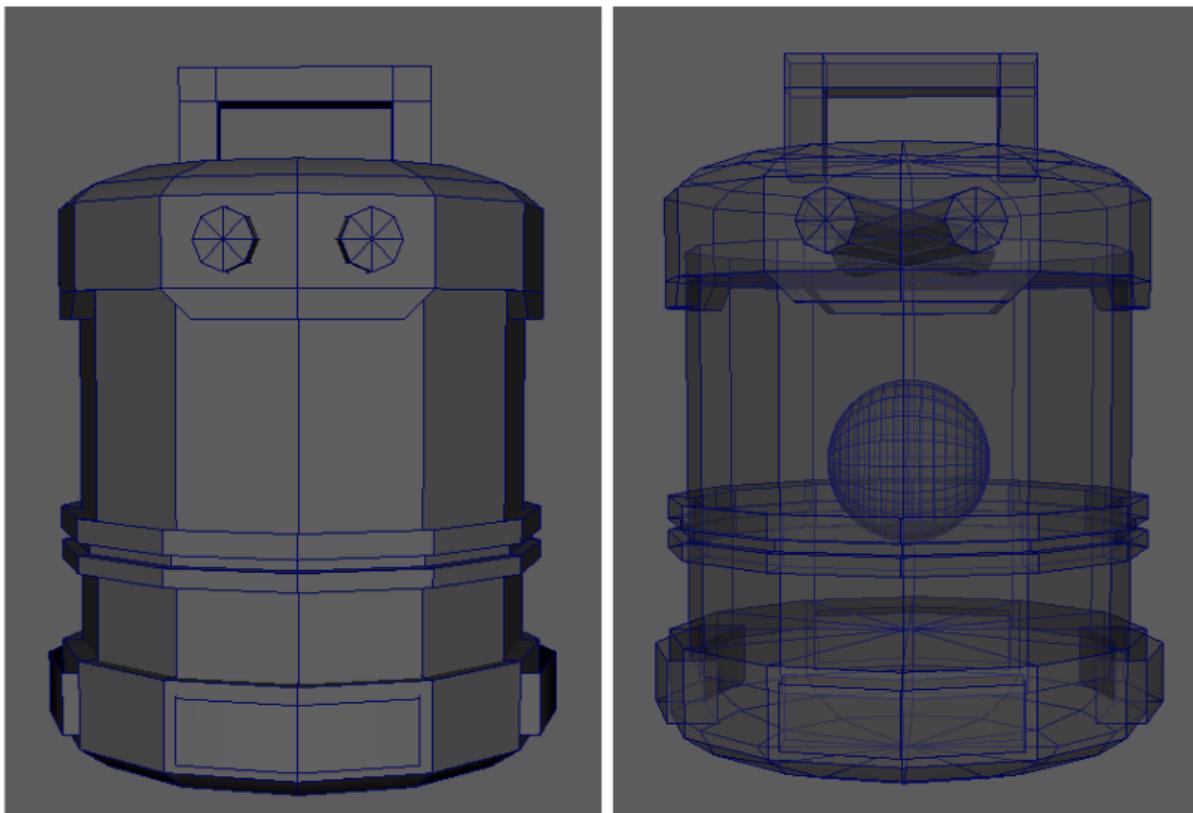
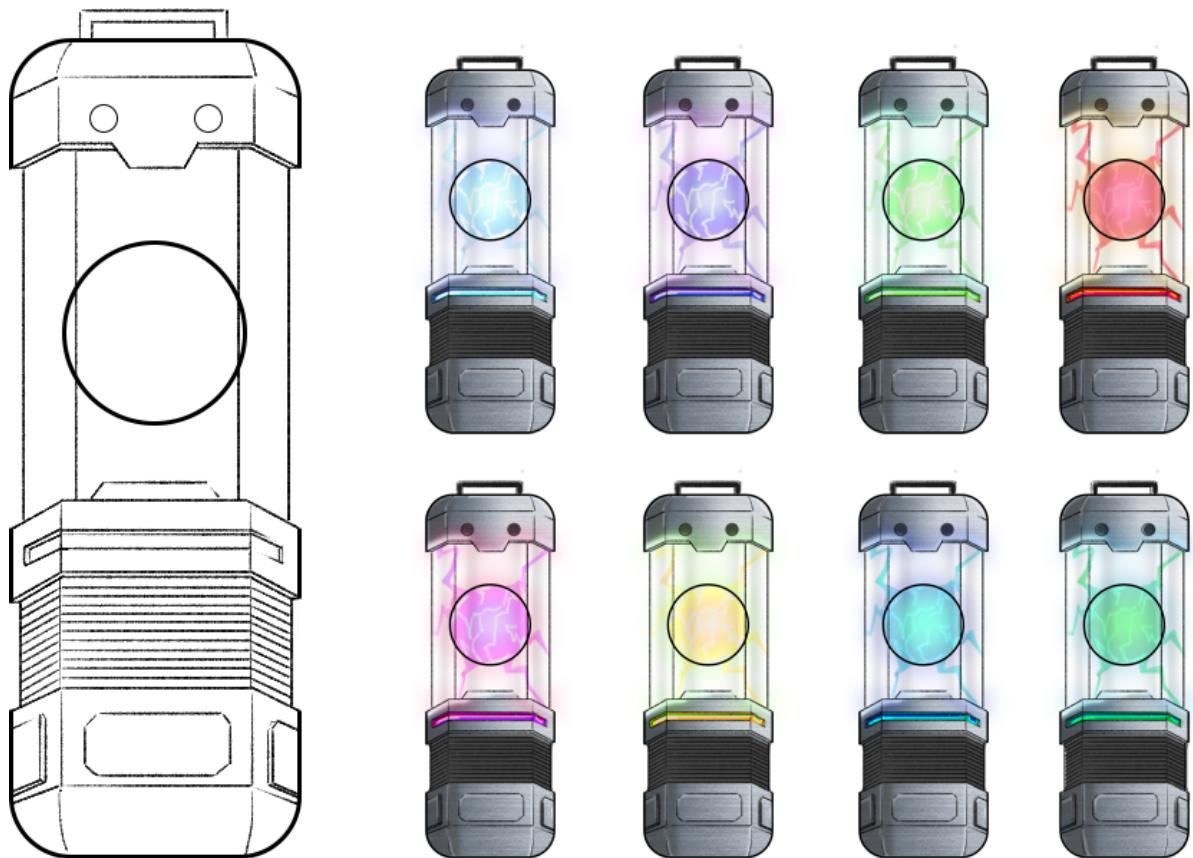


Battlefield



V. **Props/ Equipment**

1. Core & Canister

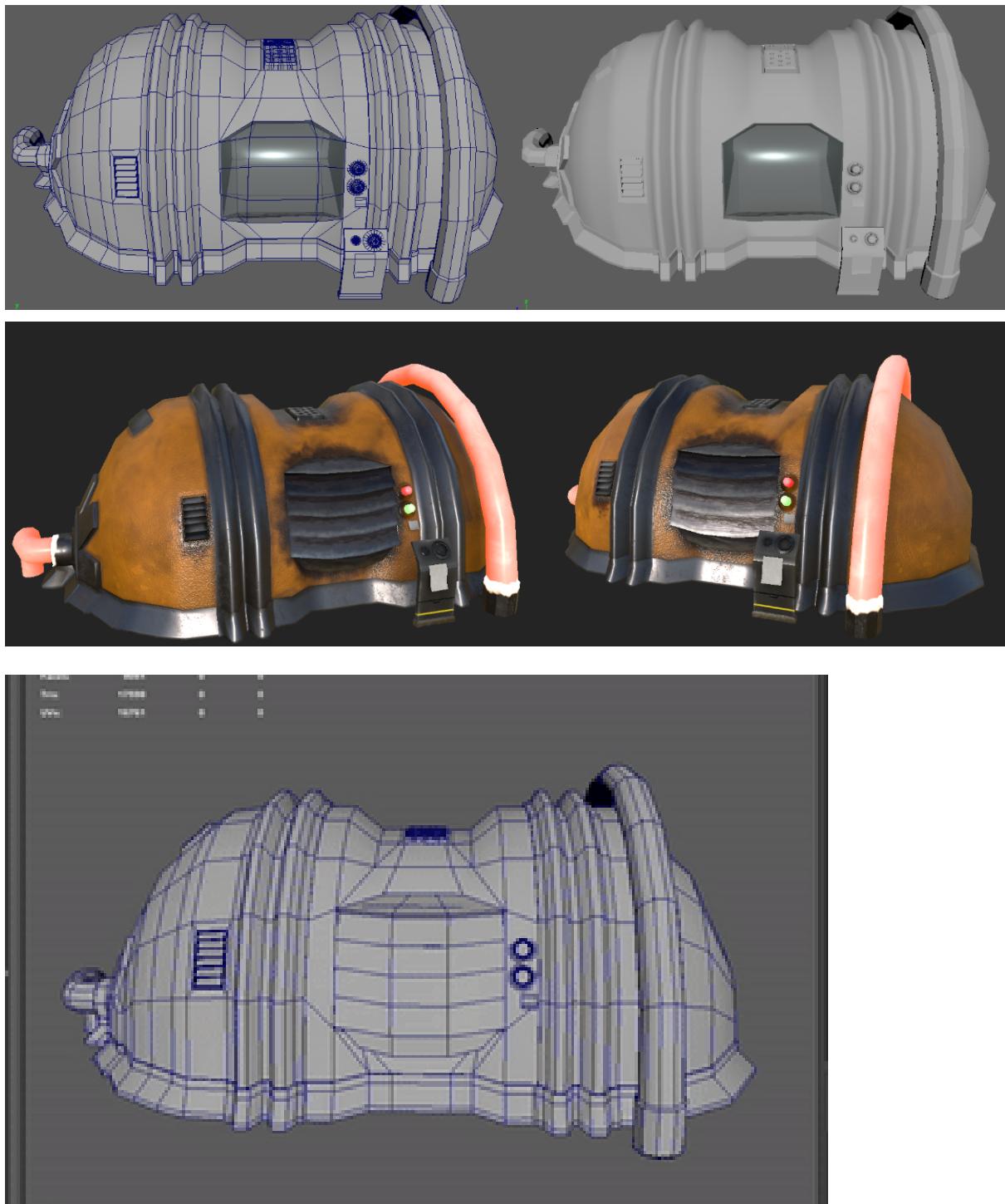




2.Cut-Boxes

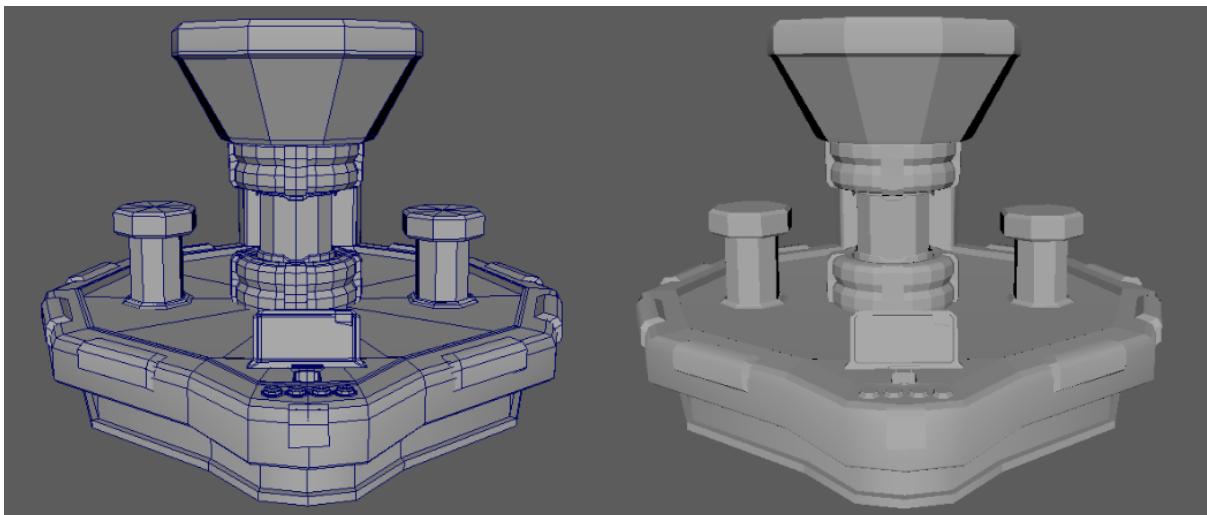


3.Furnace



Furnace Shutter animation

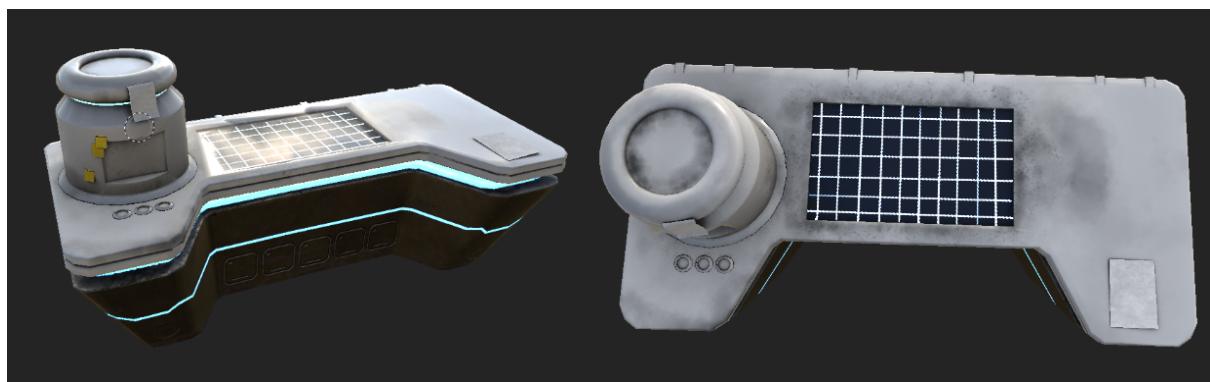
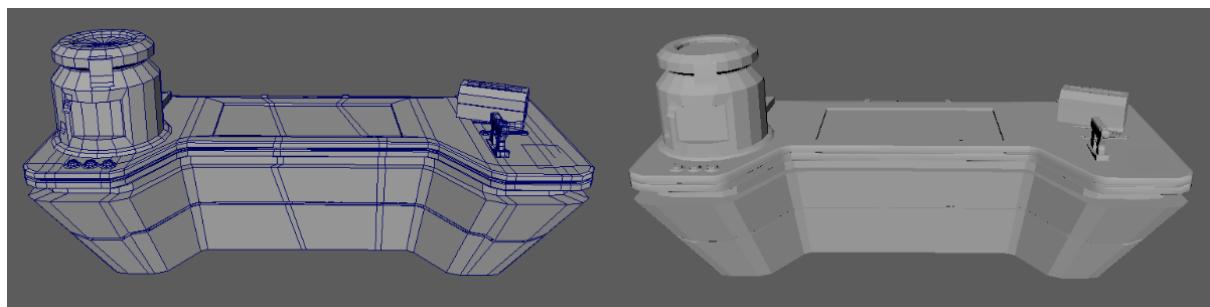
4.Core Compressor



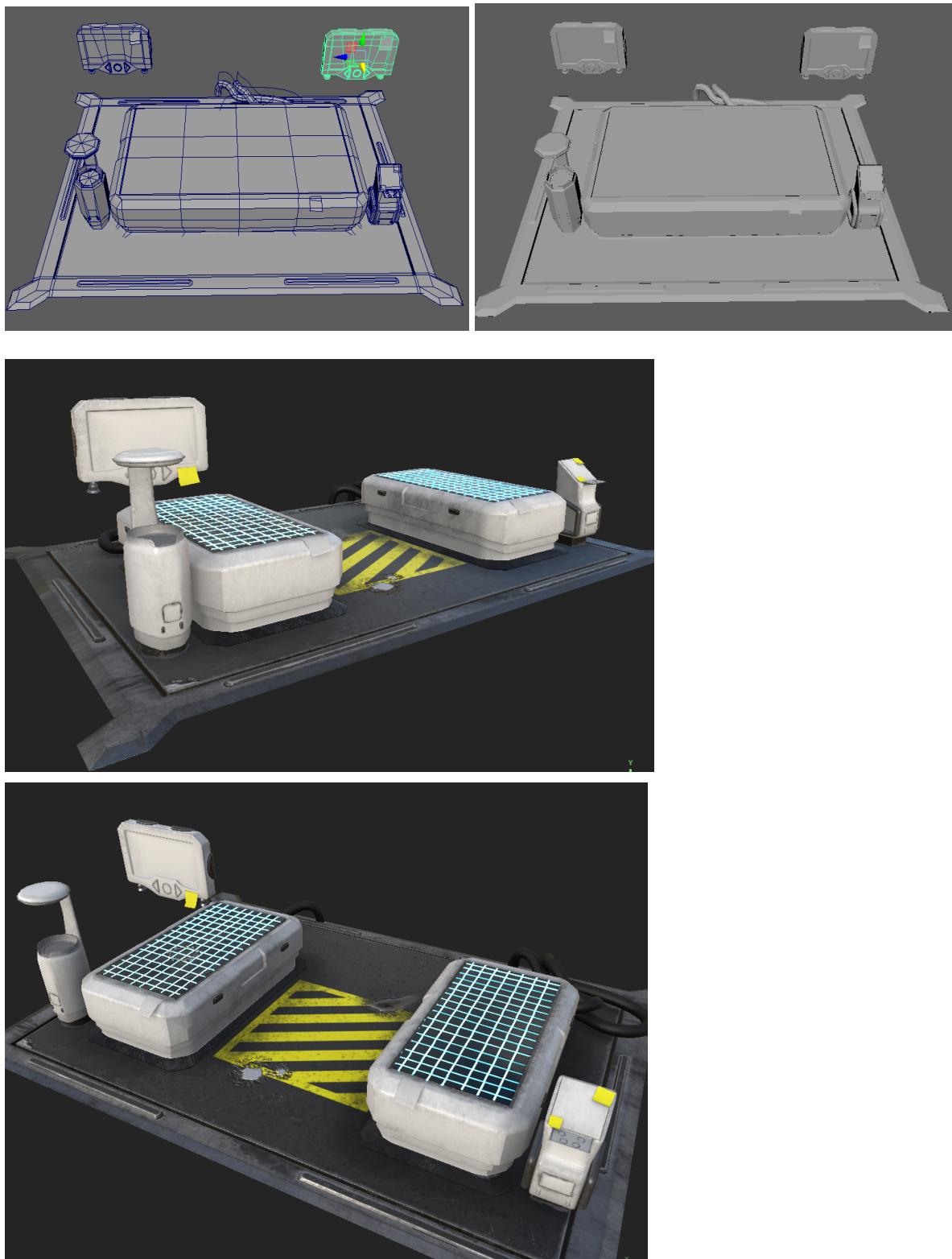


Core Compressor making core animation

5.Laser Cutting Station



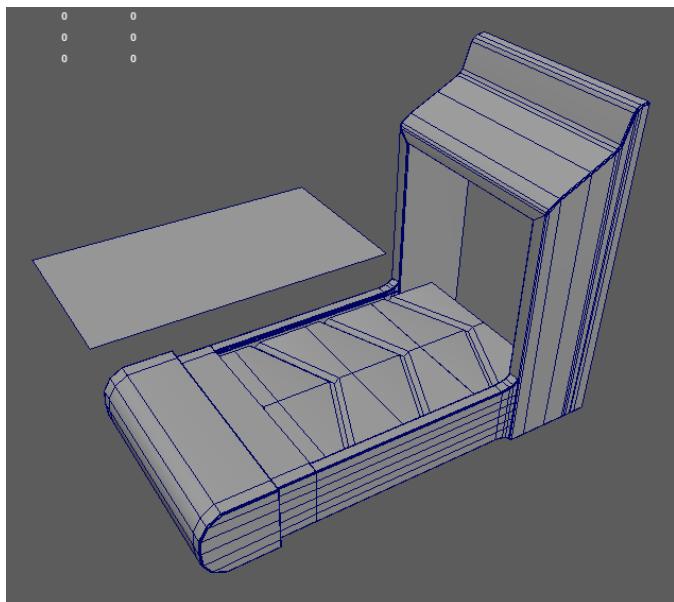
6. Workbench



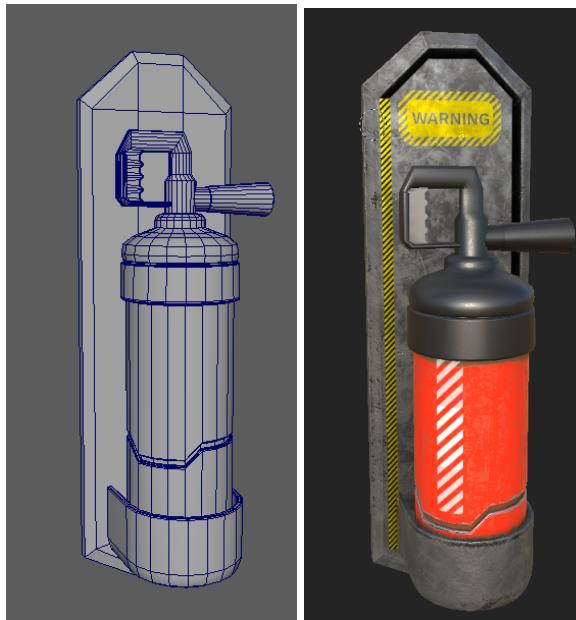
7. Laser Gun



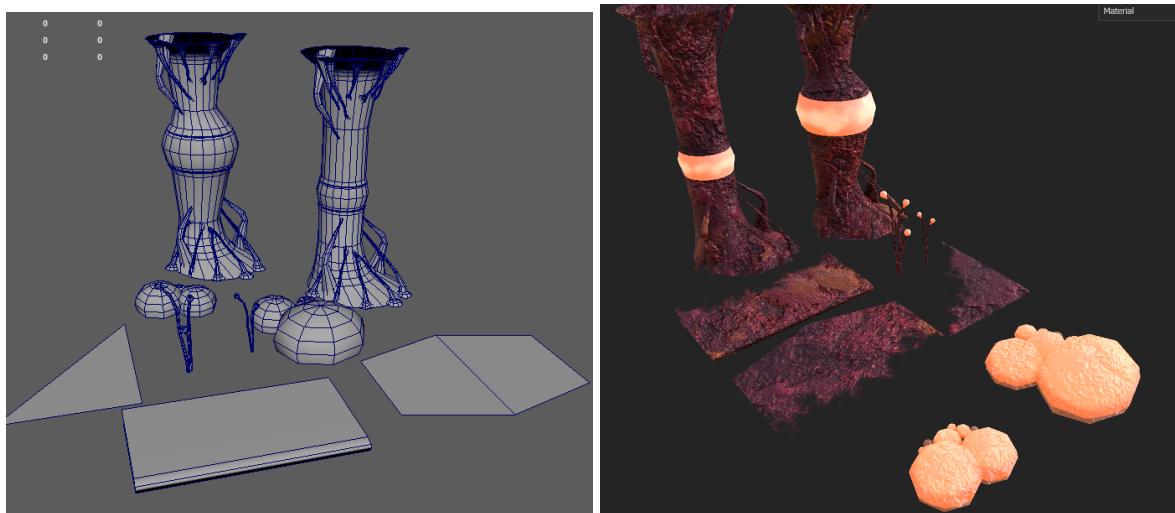
8. Conveyor belt



9. Fire extinguisher



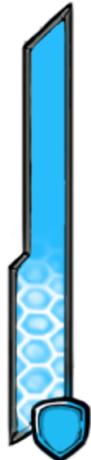
10. Alien Infestation



VI. UI style/Design

1. In-game UI:

- Health Bar



- Wave counter



- Ordering Screen



- Turret Cards

2. Menu screens:

- Main menu



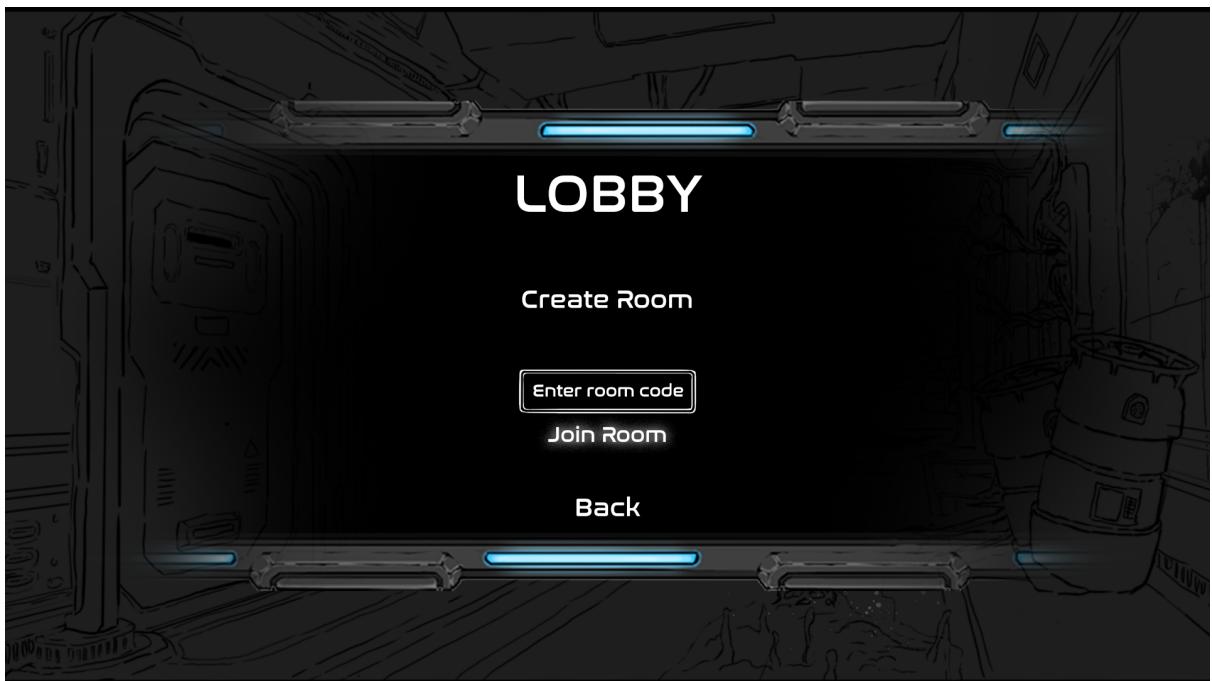
- Options screen



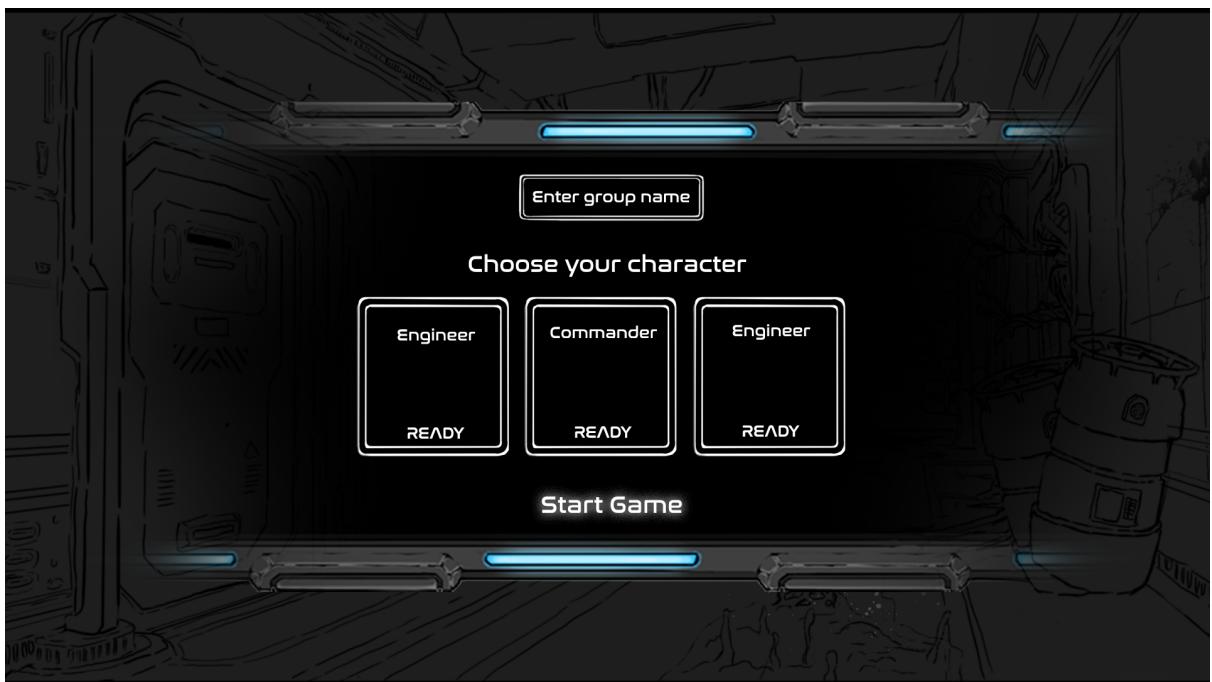
- Leaderboard



- Lobby screen



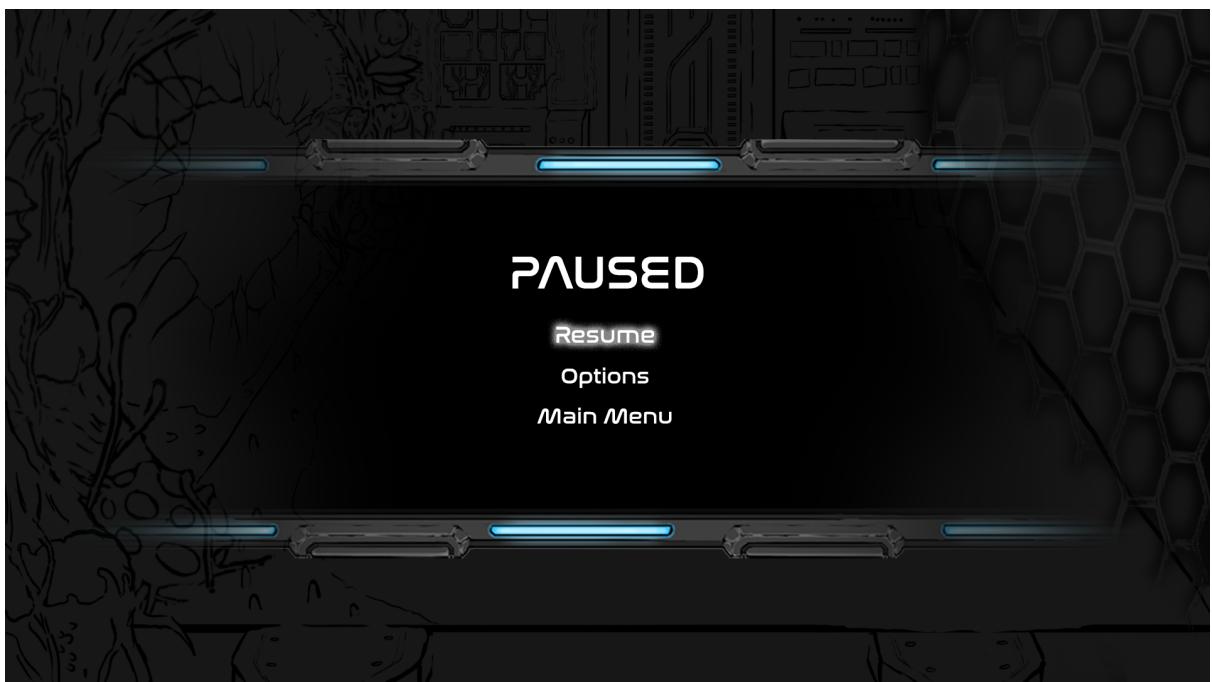
- Character Select



- Loading screen



- Pause screen



- Victory screen



- Defeat screen

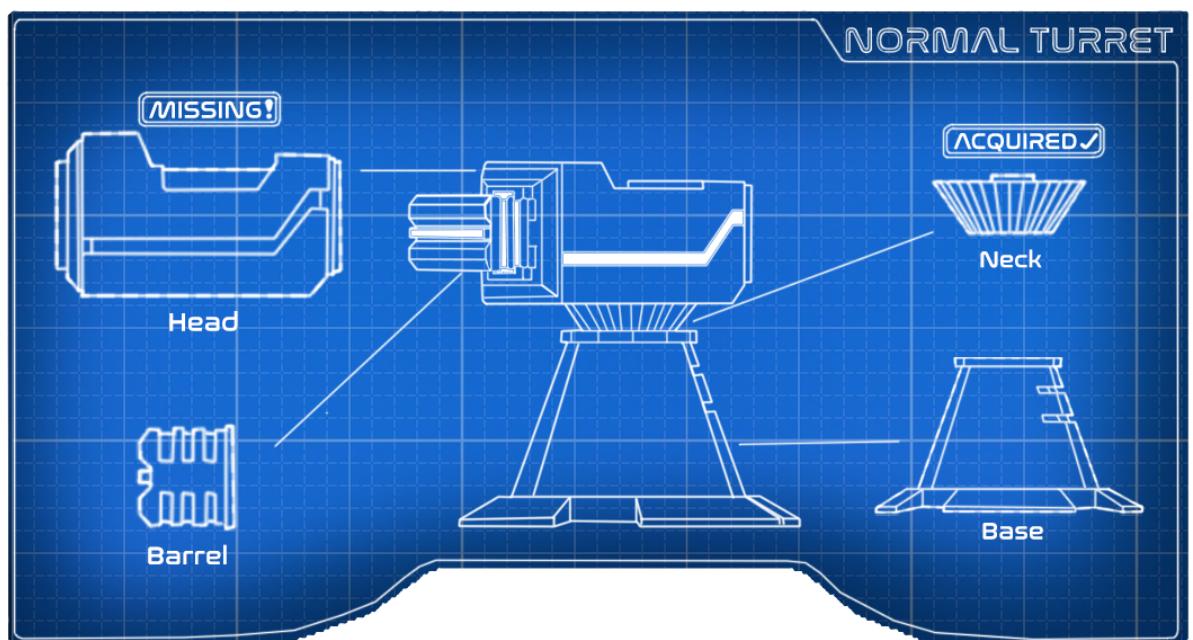


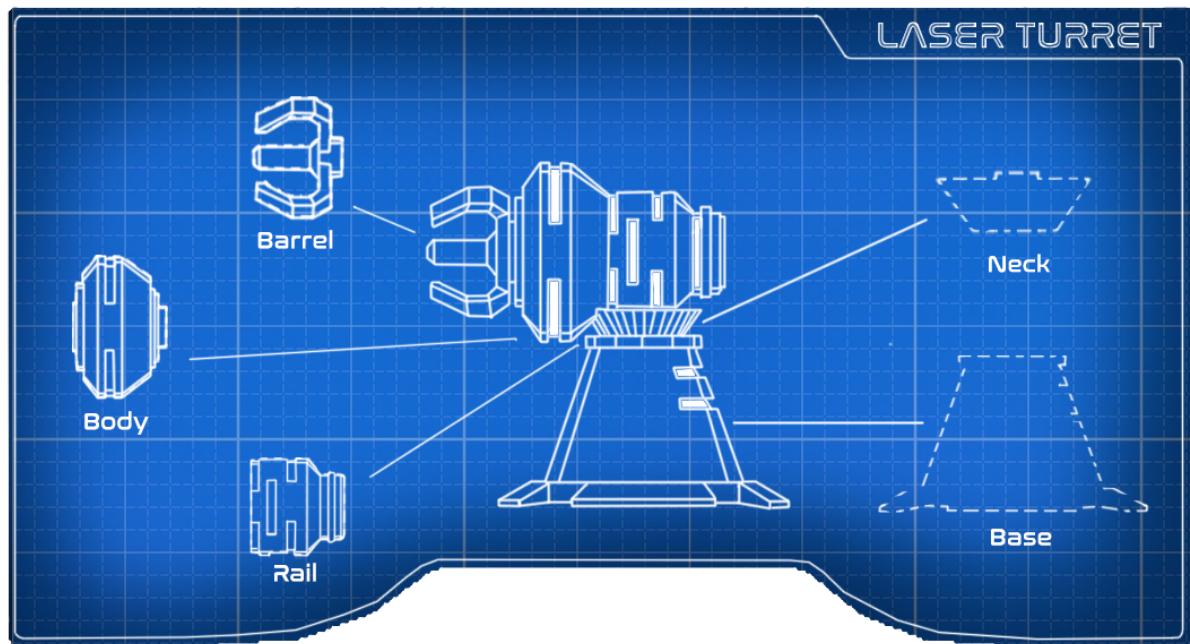
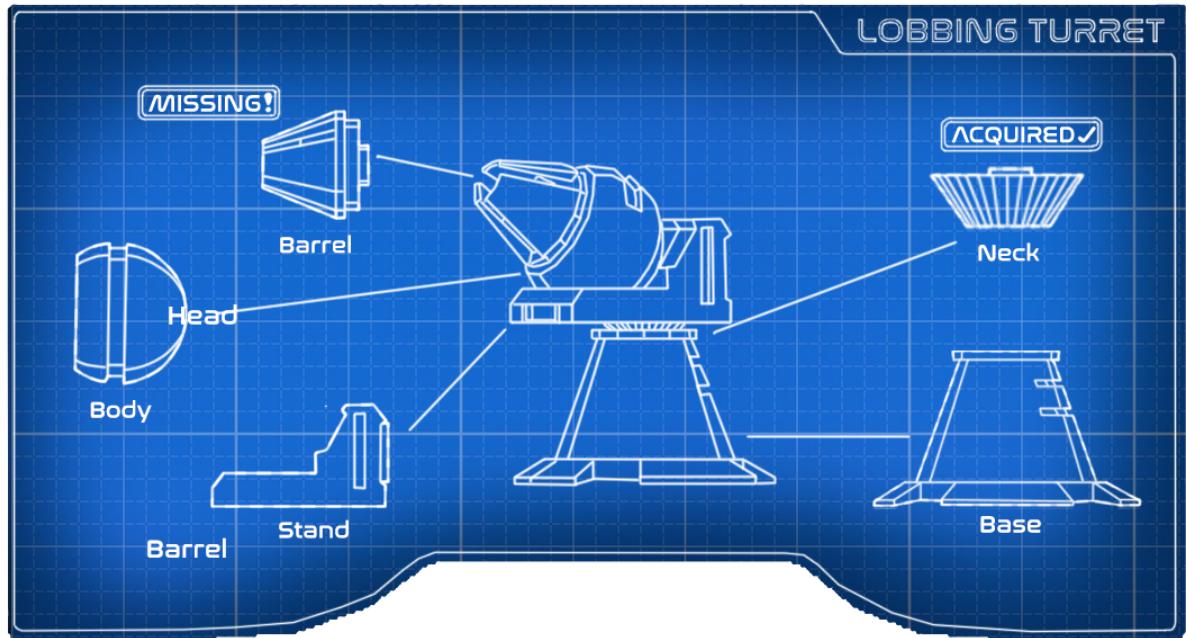
3. Factory Stations screen

- Core selector(workbench)

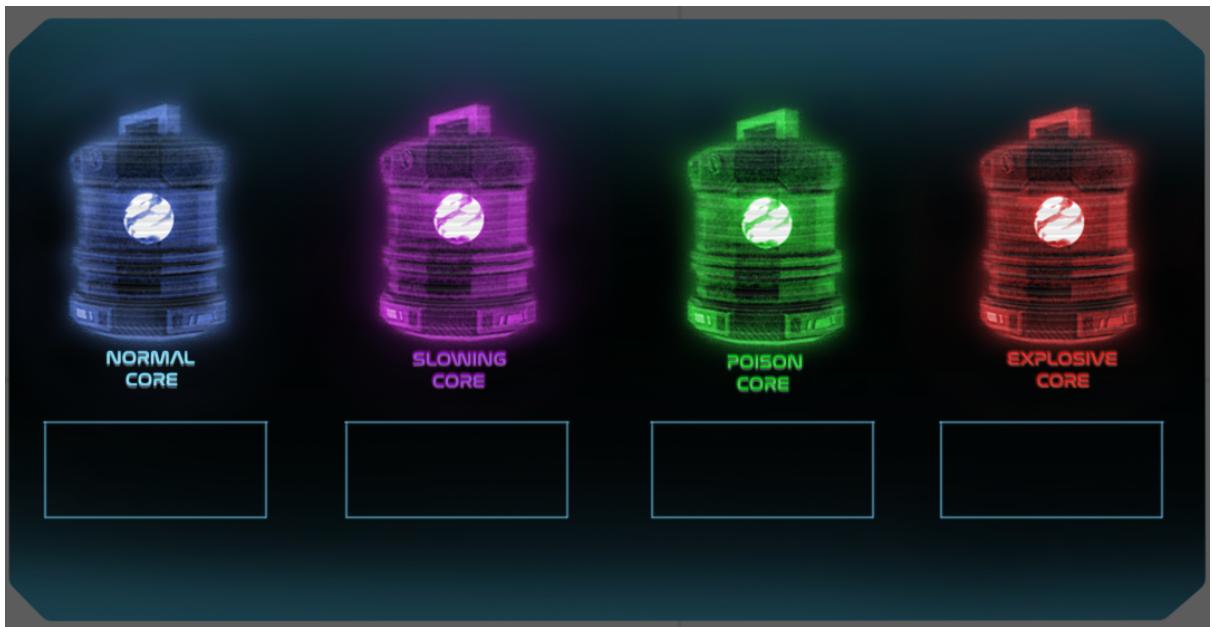


- Blueprints screen(workbench)

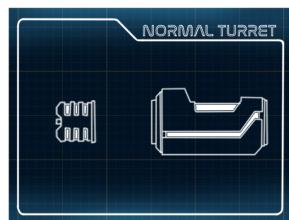
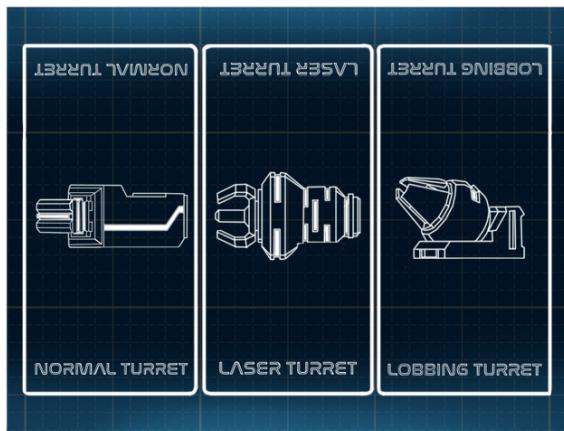




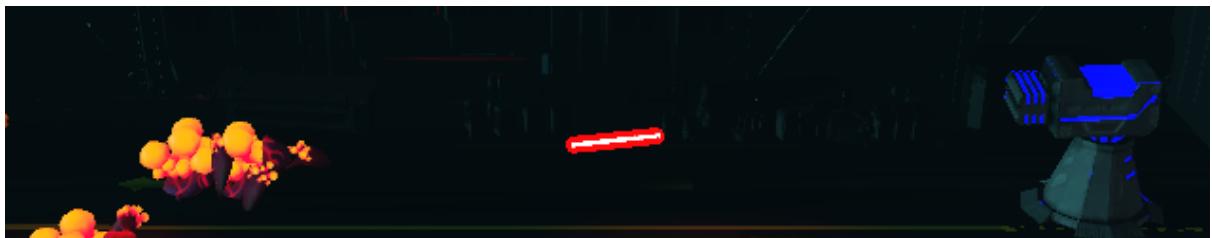
- Type of core(core compressor)



- Laser Cutter screen



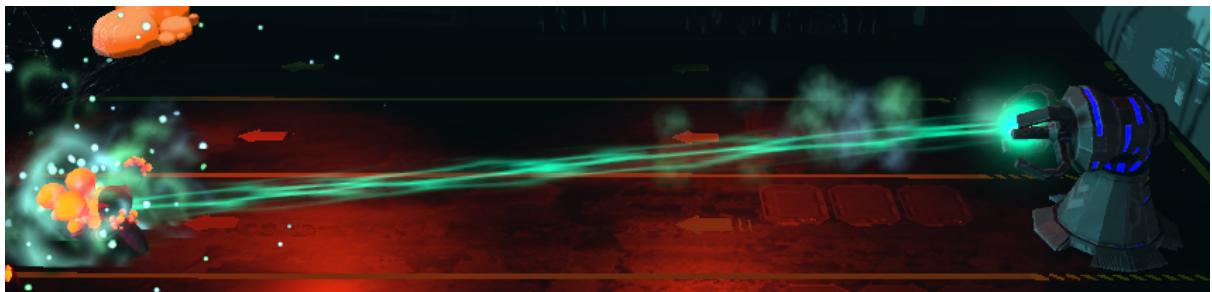
VII. VFX Design



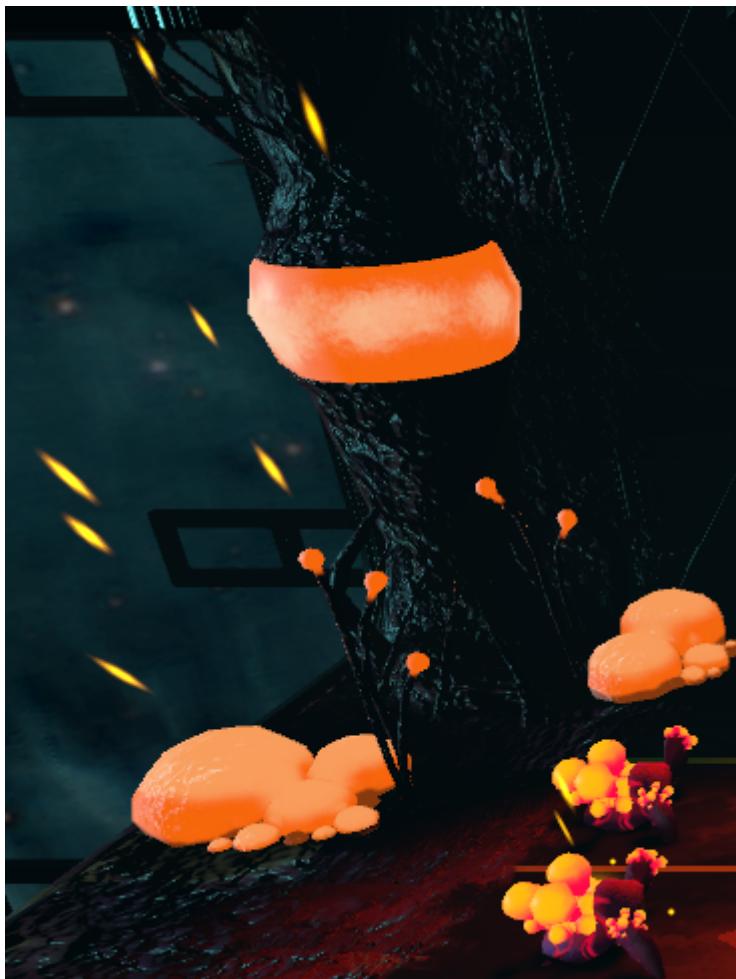
Normal Turret Projectile



Lobbing Turret Projectile



Laser Turret Projectile



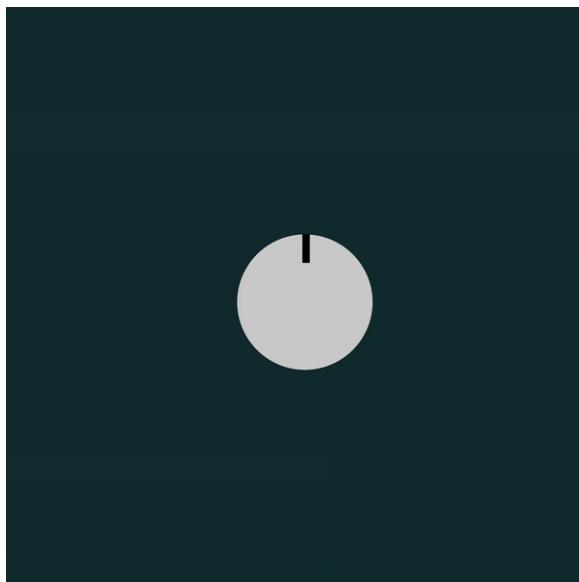
Hit spark



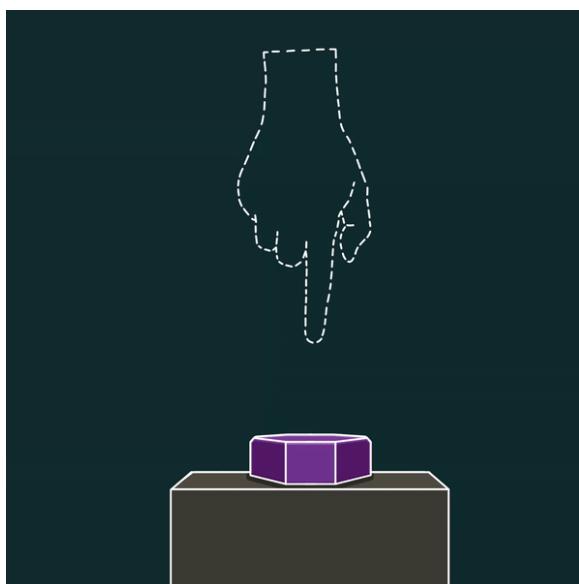
Healing Enemy healing particle

VIII. Tutorial Animations

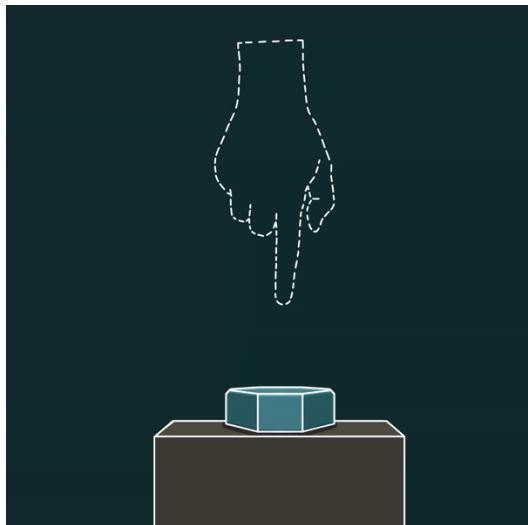
- Input 3 Knob:



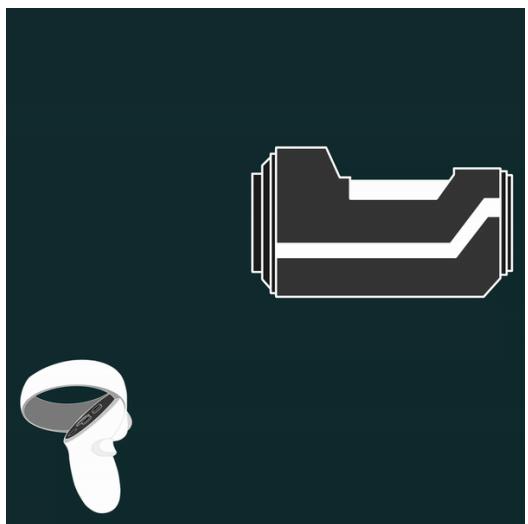
- Input 3 button



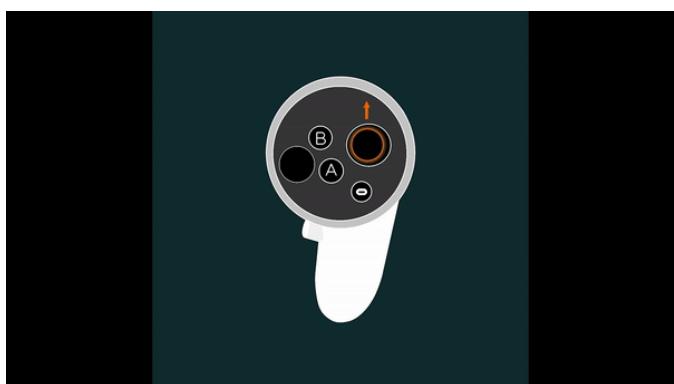
- Input 2 button



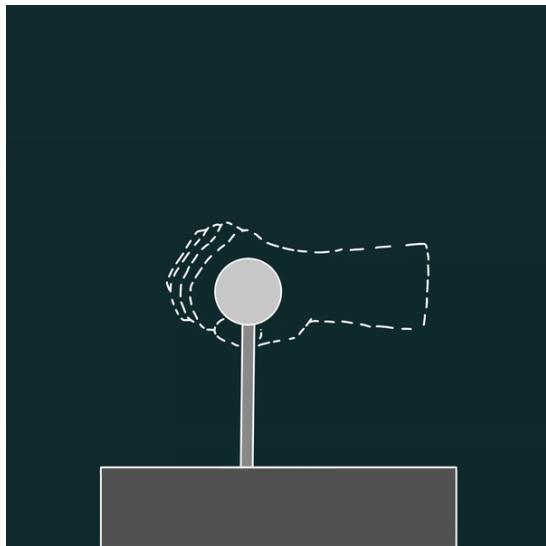
- Building turret



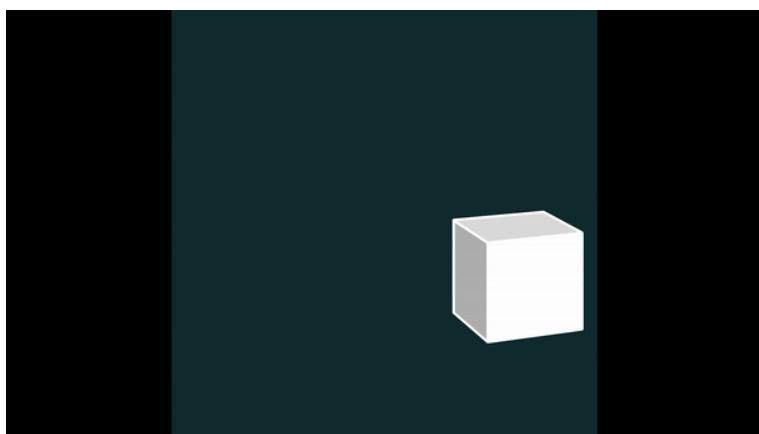
- Walking tutorial



- Input 4 lever



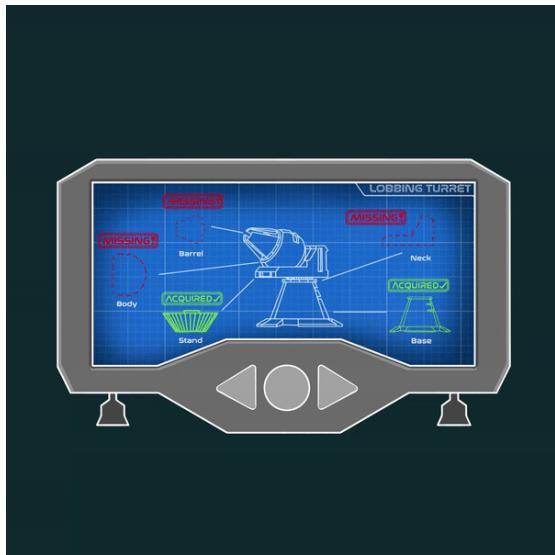
- Grabbing tutorial



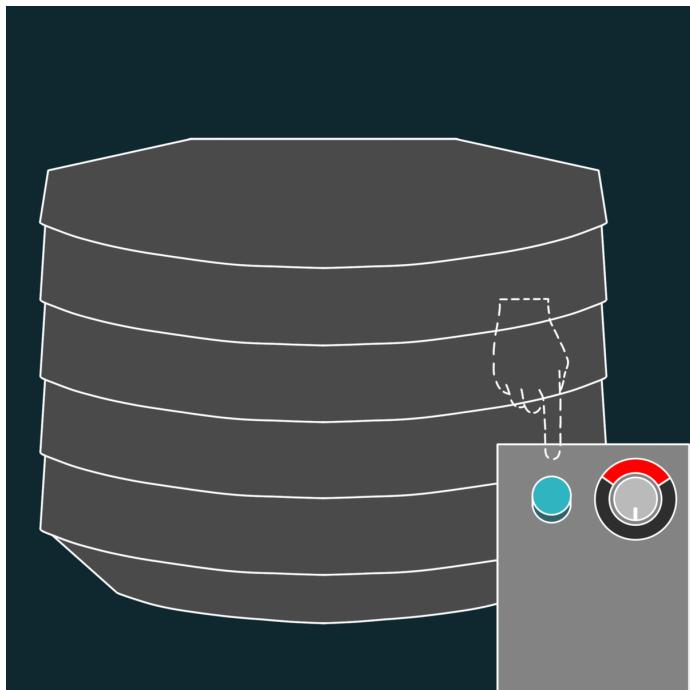
- Core spawner



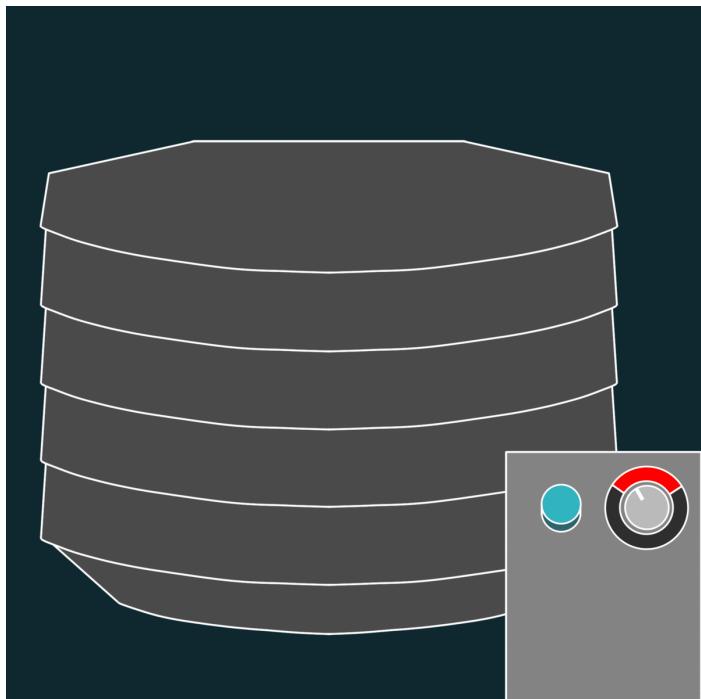
- blueprint



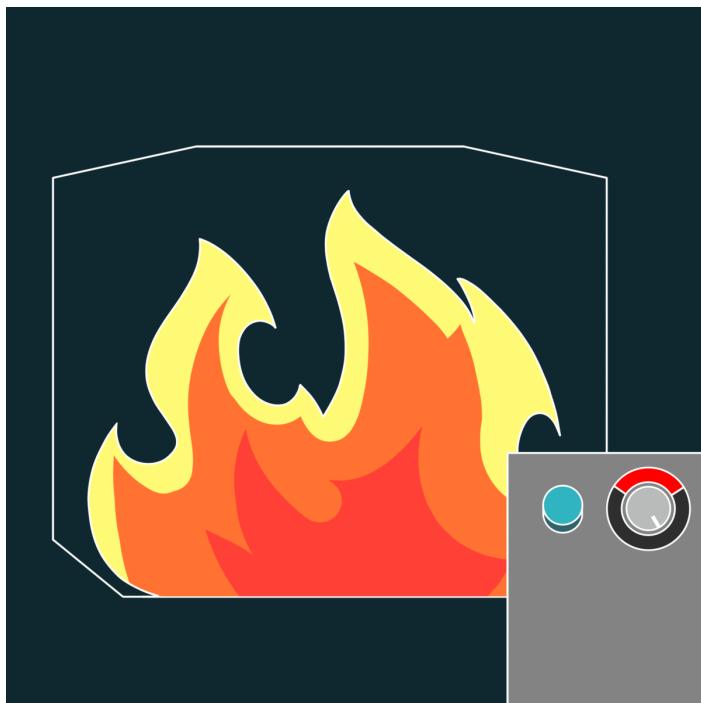
- Furnace Tutorial 1



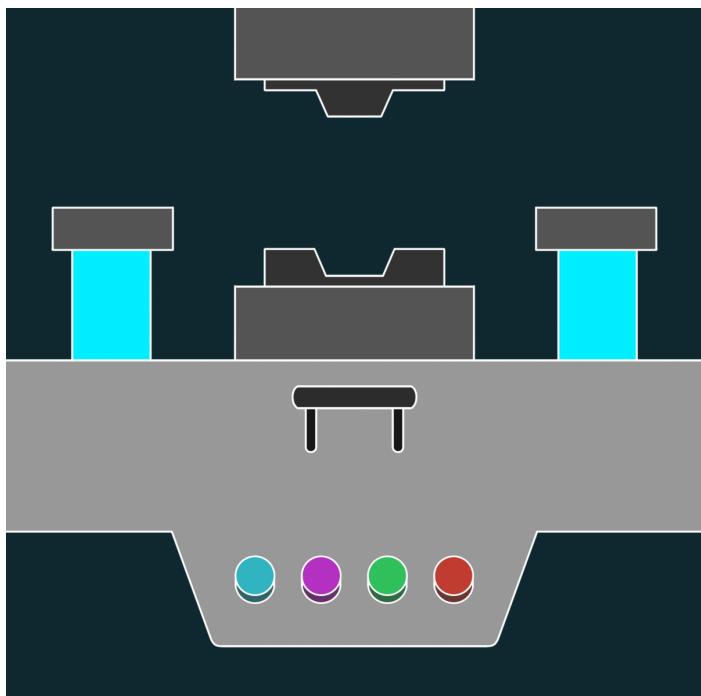
- Furnace Tutorial 2



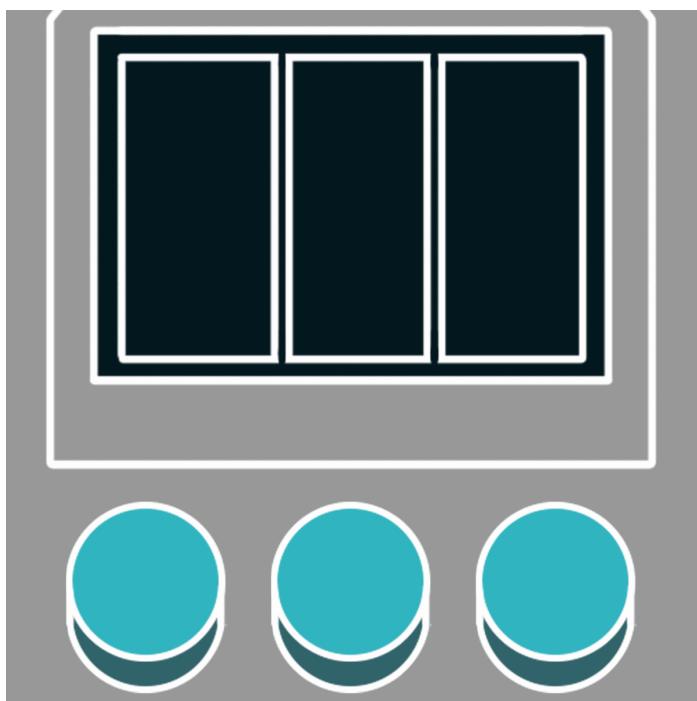
- Furnace Tutorial 3



- Core Compressor Tutorial



- Laser Cutter Tutorial

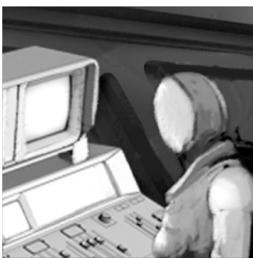


-Conveyor Belt Tutorial

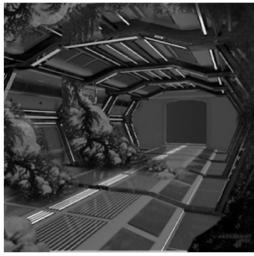


IX. Cut Scenes/Storyboards

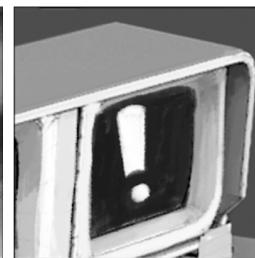
The plot takes place onboard a space station you and your party members work on.



As you approach the site, you soon realise that the station is suddenly being infested and invaded by an unknown alien species.



You are sent to investigate a distress alarm somewhere on the space station.



The commander of the space station takes control of the ship, ordering the engineers to build turrets for him to deploy. Together you and your team must fend off waves of aliens as you await incoming help.



Team Profile

Chloe Chan Si En (Team Lead):

I was in charge of the production side of the game, making sure the team was on track for every milestone and handling most of the communication between us and the client. I was also involved in the development side, mainly the programming of the factory stations. I believe my strengths lie more in project management and game design but I do have a base knowledge in programming.

Low Hsin Yi (Lead Programmer):

I was in charge of programming the game managers and enemies. I was also in charge of making sure that the programming team would meet the deadline, redistributing tasks if required. My strengths lie in programming and helping to solve bugs that appear during playtesting.

Sim Wei Yew (Game Design Lead):

I was in charge of the game design for the game, along with the programming of the turrets and helping out with the factory side when needed. My strength probably lies in level designing, adjusting the different variables of the game to improve the player's experience as much as possible. I am also able to program whatever is required of me without much trouble as well.

Arsyad Jazali Bieshaar(Art Lead):

I was the art lead, mainly in charge of the art direction, style and setting of the game and I created the environments and UI. Through this project I got to show my skills in 3D modelling, environment and prop concept art, UI art, realistic 3D textures, level designing and also being a technical artist. I would say I am able to come up with creative and interesting concepts such as the atmospheric and dark alien infestation theme of the game and expressing it through my concept art. I am also able to come up with unique designs for props and am able to execute them through 3D modelling. As the level designer, I also try my best to make sure the environment is well designed with props and details and am able to execute the atmospheric lighting for the game.

Tan Jing Yi (Artist):

I was in charge of creating the aliens in the game and bringing them to life. My main

contributions include creating concepts, 3D modelling, UV mapping and texturing, rigging and skinning, and animations for the aliens. I was also in charge of checking all the other artists' models for errors, offering assistance in areas of 3d modelling, modelling of the laser gun and creating some of the animations for the UI in the Tutorial Level. My strengths are mostly in the field of 3D modelling and animation, particularly towards organic assets.

Evangelista Marian Judith Pulayan (Artist):

I was the artist in-charge of the turrets. My role ranged from concept design, 3D modelling, texturing and animations. Additional to the turrets, I was also the artist for the boxes that broke apart in the 'Laser Cutting' station and game poster, as well as one of the two artists working on the Tutorial Level UI animations. I would say my strengths lie in texture creation and application, where I would help the team with any issues or queries regarding textures, UVs and Adobe Substance Painter, and create my own textures on Adobe Substance Designer, as well as 2D art, mainly shown in my concept art and 2D animations.

References

Overcooked 2!

- Cooperative gameplay and addictive game loop of assembly line
- Random events (obstacles) that occurs during the level [also derived from assembly line]
- Scoring system

Plants Vs Zombies:

- Wave System

1. Cooperative and addictive game loop

One of Overcooked! 2 main mechanic is the assembly line, where players are required to cooperate with each other to complete as many orders as possible within a certain timeframe (varies per level). The urgency that this time limit imposes on the players, combined with the fact that the players are required to rely on each other, results in the addictive nature of this game; where players need to utilise good and effective communication with each other so that they can get a better score by completing more orders.

The cooperation between players can be seen from 2 things that the game has push the players towards:

- (1) Players are separated into different sections so that they are forced to communicate well within their party to be able to get all the ingredients together to complete the dish on time. (similar to real assembly line work)
- (2) The game also forces the players to work on multiple orders simultaneously in order for them to complete orders on time as some dishes require faster movement.

2. Scoring System and Wave System

We have merged the scoring system and the wave system for our game. Referencing Overcooked! 2, we calculated the score based on the speed that the players take to clear all waves. We are also creating a leaderboard to show the fastest time as opposed to the star system that Overcooked has.

The time can vary from each play through of the level as we are going to implement the wave system of Plants Vs Zombies as mentioned above, with the random lanes and order. Each time a wave is cleared, the next would start after a fixed interval. For the rules of the wave system, we plan for the random order to be only applicable within each wave, to prevent too much unpredictability during game balancing. Currently, we have not decided on the total amount of waves to implement, but we do note that Plants Vs Zombies usually have around 1-4 waves per level.

3. Obstacles sub mechanic

Overcooked! 2 also implemented obstacles in various forms (such as fires, moving tables and environmental hazards) that makes the game loop more exciting. We noticed that these obstacles provided a twist to the different levels in Overcooked! 2 so that the levels do not feel similar. It also provides excitement to an otherwise repetitive game loop so that it remains addictive and exciting. Furthermore, the fire is

used as a consequence when the players aren't focusing on a particular station. We have implemented the fire hazard for the furnace.

Appendix

I. Asset List - Art

3D

Environment (Factory)	Quantity	Environment (Tower Defence)	Quantity
Work Stations		Grid / Playing Field	1
Furnace / smeltery	1	Surrounding area/ terrain	1
Model		Turrets	3
Texture		Model	
Laser Cutter	1	Texture	
Model		Animations	Shooting
Texture			Placing
Core Compressor	1		Destroyed
Model		Enemies	3
Texture		Model	
Workbench	1	Texture	
Model		Animations	Walk
Texture			Attack
Floor	1		Death
Model			
Texture			
Conveyor belt	1		
Model			
Texture			
Walls	4		
Model			



Texture			
Order Screen	1		
Model			
Texture			
Turrets (Factory)			
Normal turret head parts	2		
Model			
Texture			
Lobbing turret head parts	3		
Model			
Texture			
Laser turret head parts	3		
Model			
Texture			
Shared turret base	1		
Model			
Texture			
Shared turret neck	1		
Model			
Texture			
Shared turret cores			
Normal	1		
Model			
Texture			
Poison	1		
Model			
Texture			
Slow	1		
Model			
Texture			
AOE	1		

Model				
Texture				

2D

Factory UI	Quantity	Tower Defence UI	Quantity
Blueprints	3	Turret Icons	12
Turret head part icons (workbench)	3	Turret conveyor belt	1
Normal turret	2	Turret order screen	1
Laser turret	3	Turret choice icon	3
Lobbing turret	3	Core choice icon	4
Neck icon (workbench)	1	Send order button	1
Base icon (workbench)	1	Pause screen	1
Factory Tutorial Animations	12	Pause button	1
Order screen UI	1	Resume Button	1
Turret base choice indicator	3	Options Button	1
Core choice indicator	4	Options Screen	1
		Volume slider	1
		Back Button	1
Menu UI	Quantity		
Title/ Main Menu Screen	1		
Start Game Button	1		
Options Button	1		
Leaderboard Button	1		
Quit Button	1		
Back Button	1		
Options Screen	1		
Volume slider	1		
Leaderboard Screen	1		
Gamemode Selection Screen	1		
Tutorial Button	1		

To Lobby Button	1			
Lobby Screen	1			
Create Room Button	1			
Join Room Button	1			
Input Room Code Area	1			
Character Selection Screen	1			
Character icons	2			
	Commander (PC)			
	Engineer (Vr)			
Ready Button	1			
Enter Group name area	1			
Edit Group name button	1			
Start Game Button	1			
Credits Screen	1			
Victory Screen	1			

II. Asset List - Sound and Music

Audio Feedback (Factory)	Quantity
Furnace metal door shuttle open/close	2
Furnace dial sound	1
Furnace finish sound	1
Furnace on fire sound	1
Fire extinguisher	1
Laser cutter laser sound	1
Laser cutter station button sound	1
Laser cutter finish metal drop sound	1
Core compressor close	1
Core compressor open	1
Core compressor buttons	1
Core compressor lever	1

Workbench middle button (spawning)	1
Workbench navigation buttons	1
Attach turret make sound	1
Conveyor belt pass	1
Conveyor belt fail	1
New order arrive	1
Fire Alarm Sound	1

Audio Feedback (Battlefield)	Quantity
normal enemy walk	1
normal enemy attack	1
normal enemy die	1
shield enemy walk	1
shield enemy attack	1
shield enemy die	1
healing enemy walk	1
healing enemy attack	1
healing enemy die	1
wall hit	1
turret place	1
turret remove	1
normal turret shooting sound	1
lobbing turret shooting sound	1
laser turret shooting sound	1

Others	Quantity
victory sound	1
defeat sound	1
main menu background music	1
factory background music	1
commander background music	1
UI button click	1

