

Alpha Release

1. Development stage

Currently, Team 7 has fully implemented functional minimum, low target, desirable target and some features from the high target, such as turrets. At this point it is possible to start the game and finish it in both singleplayer and multiplayer. The screenshots to corroborate this statement are provided below.

Below is a layered task breakdown up to the high target that provides information on the development stage of each feature.

Layered task breakdown	Development stage	Projected hours	Actual hours
Functional minimum			
Game engine components:			
Render queue	completed	10	20
Basic shading	completed	15	5
Collision system	completed	20	40
Camera	completed	10	15
Basic UI	completed	5	10
Game design:			
Basic 3D models	completed	5	5
Basic static level	completed	10	15
Basic GUI	completed	7.5	7.5
Game mechanics:			
Input and controls	completed	5	30
Basic food collection	completed	5	15
Low target			
Game engine components:			
Lighting and shadows	completed	40	50
LAN	completed	50	90
Game design:			
Improved 3D assets	completed	15	40
Improved map design	completed	15	35
Desirable			
Game engine components:			
Sound effects	completed	5	5
Game mechanics:			
Advanced food collection	completed	7.5	7.5
Fighting system	completed	25	25
Game design:			
Improved GUI	completed	7.5	15

High Target			
Game Mechanics			
Environment danger/obstacles	in development	15	10
Level system	N/A	15	N/A
Game Design:			
Soundtrack/additional sound effects	N/A	7.5	N/A
Extras			
Map editor	completed	N/A	15

2. Challenges and new features

During the development process we encountered a number of challenges which proved to be harder than expected. However, most of the work was aimed at adding new features, such as turrets and advanced food collection, or making improvements to existing ones in order to make the game playable.

2.1 Challenges

2.1.1. Number of lightsources

Originally, we implemented lightmaps in order to render multiple lights in a single scene. However, that approach means rendering the scene multiple times for every light, which is, obviously, highly inefficient. In order to circumvent the problem, we decided to go with a simple solution of passing two different types of light sources (spotlights and pointlights) in arrays to the shader. This way does not allow a dynamic number of light sources in the game, thus we made a reasonable assumption on the state of the environment and simply limited the maximum number of pointlights and spotlights. Finally, in order to improve the performance of the game we implemented "light culling", meaning that we don't pass lights to draw calls that will not affect the mesh to be rendered.

2.1.2. Merging

Quite a challenging process that followed the development throughout the whole time was the actual process of merging the code that each of us wrote separately. Furthermore, sometimes certain mechanics that worked in the singleplayer would fail to function properly in multiplayer.

2.2 Features and improvements

2.2.1. Fighting system

We changed the dummy bullet into an energy projectile (Fig. 2.1). The energy projectile itself is a simple plain object with a texture applied to it, that we made ourselves.

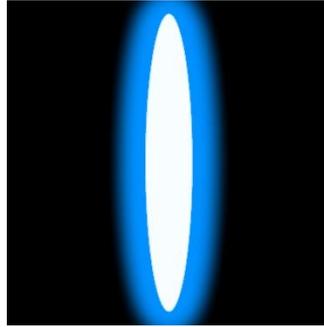


Fig. 2.1. Energy projectile

Moreover, we added respective sounds. Finally, we added functional turrets (Fig. 2.2) in the game that shoot at the player provided he was discovered by their spotlight or provoked them by shooting at them. A turret can be destroyed and will respawn at its original position after a brief period of time. The same applies to the player. Should he get killed by a turret or another player he will eventually respawn at his spawn point. It is important to mention that should the player be killed he will lose all of his collected food supplies (Fig. 2.3). However, the food supplies stay at the same place and can be picked up by any player.

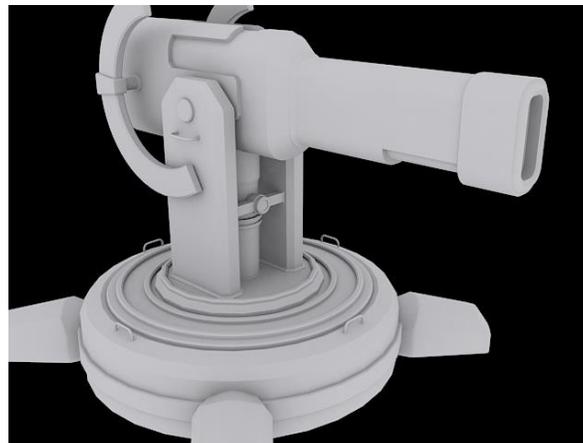


Fig. 2.2. Turret



Fig. 2.3. Lost food supplies

Furthermore, a player can get an edge against an opponent by employing the system of boosts. In order to travel faster press shift. In order to cut down the damage by 0.5 and bring up the shields press N (Fig. 2.4)

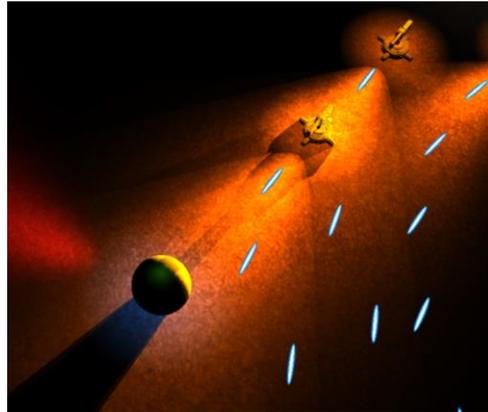


Fig. 2.4 Shields

To avoid confrontation a player can turn off his spotlight and hide behind a building (Fig. 2.5)

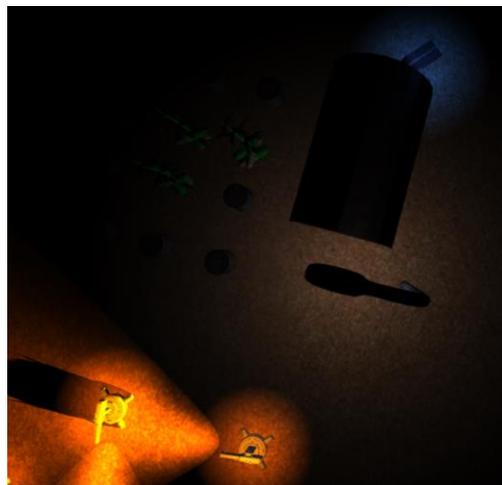


Fig. 2.5. Hide and seek

Finally, when a player gets hit his point light briefly flashes orange.

2. 2. 2. Game goal

It is now possible to finish the game by collecting a certain predefined amount of food. At this point it is set in the configuration file, however we are planning to add a menu screen by the time of alpha demo presentation that will allow players to set the winning criterion. The game can be finished in both singleplayer and multiplayer.

2. 2. 3. Advanced food collection

We added another food item (barrel, Fig. 2.6). The proper animation for the lid to open is yet to be implemented in-game, however the barrel can be collected.



Fig. 2.6. Barrel food item

Finally, after the food items are collected they will be randomly respawned as a barrel or a food plant.

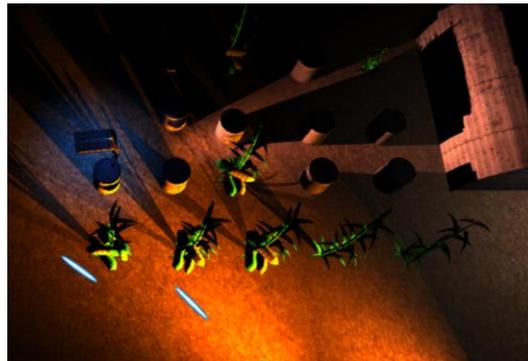


Fig. 2.7 Food items

In order to permanently claim the food items and not lose them in a fight a player must unload the supplies at his base (Fig. 2.8) by going near it and pressing the U button.



Fig. 2.8. Base

The collected points field in the top right corner of the screen will be adjusted accordingly.

2. 2. 4. Multiplayer

In order to make a multiplayer match a user must place two drones on the map along with their respective bases (Fig. 2.9).

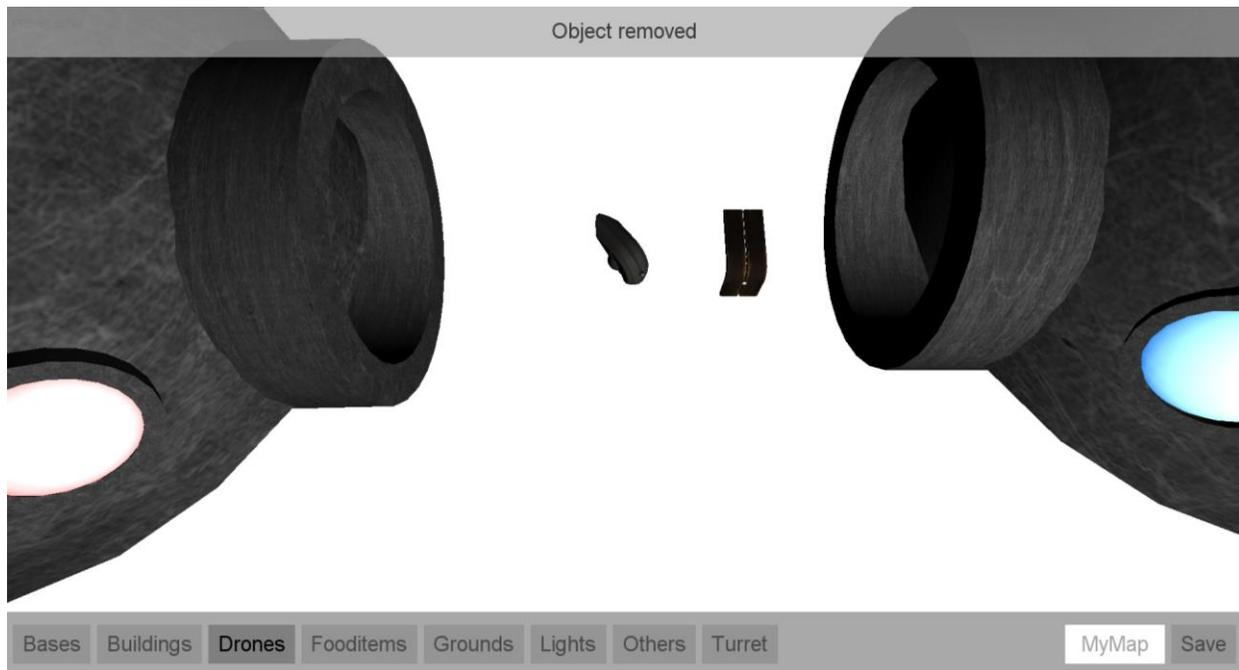


Fig. 2.9. Multiplayer setup

We also created a second model that is used to clearly identify the enemy drone (Fig. 2.10).

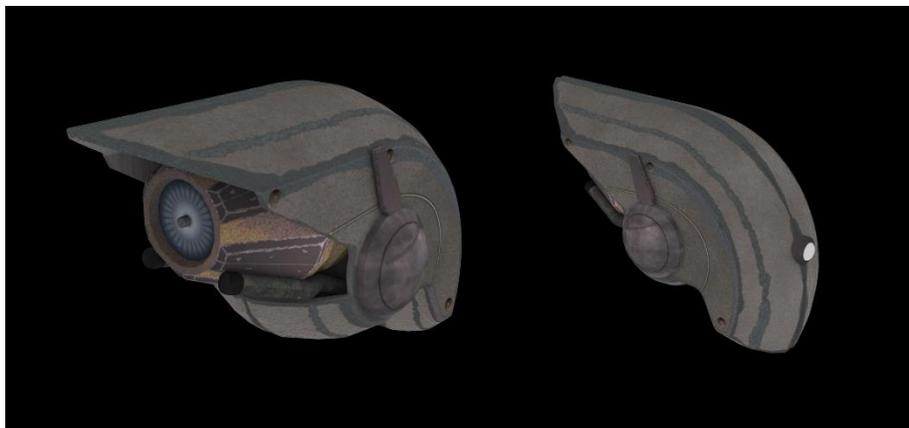


Fig. 2.10 Second drone

Finally, we developed an improved lobby screen for the multiplayer (Fig. 2.11)



Fig. 2.11. Lobby screen

3. Conclusion

To conclude with, Alpha Release demo represents a playable project in which two players or one can start a game, engage with the environment and complete the main objective of collecting food items, thus winning the game. At this point we were reminded one more time of the importance of balancing, such as the speed of bullets, respawn time of the turrets, etc. From now on, we intend to improve the visuals (both in-game and gui) even more and jump into playtesting stage, balancing all kind of elements, such as the amount of shield, health points, density of turrets on the map, etc. Finally, we will start making a well-balanced map for the final presentation.