GDD for Recon: Last Descent

Inhalt

1. Game Vision

a. Vision Statement:

i. Long

Land, build, loot, fight, flee, extract… if you can. In Project Zeus (working title) players land on a future version of Earth that has been greatly impacted by the outbreak of an ancient virus in the year 2100. A small number of humans were able to escape to try and build a new society on Mars after a terraforming process. After landing on Mars and completing the terraforming process,after 300 years, humanity is about to get a second chance. In this vital moment the spaceship's “quantum core”, a device that powers the ship, breaks. Without that object the people who were supposed to prepare the colony and wake everyone else up from cryo-sleep can’t fulfill their objective. Before all hope is left the awake humans remember that they left a prototype of the quantum core on Earth, and they decided to send one of them to earth to retrieve it. They quickly discover that the Earth isn’t what it used to be. Giant insects are now the apex predators. Plants have taken strange shapes and begun to be bioluminescent. The person chosen to carry the burden of saving humanity is the player.
The gameplay combines Real-Time-Strategy gameplay elements with the thrill of extraction games, like Escape from Tarkov. To achieve this the gameplay is split into two parts; One on the ground where the extraction process takes place and one on the players’ spaceship where they must prepare for their missions.
The main bulk of the gameplay takes place on the planet where the extraction part of the game comes into play. Players land on the planets surface and must gather resources and loot without alerting the planets wildlife. To achieve this goal they have different robots at their disposal that aren’t affected by the virus. To keep the robots and buildings running players must gather a energy resource by “quenching” phosphorescent minerals. If that energy runs out the players’ units and buildings shut down. Gathering different types of loot will allow players to upgrade their units, build new unit types and progress the overall story. The planets flora and fauna have developed in a way that is very hostile towards anything entering their territories. At the beginning of the game fighting is never the best choice as enemies are very quick to call for backup which can easily snowball into a huge swarm of creatures rushing at the players base. If that happens the only choice is to leave everything behind and extract, taking heavy losses. If players are satisfied with their yield, running out of energy or being overrun by enemies they must extract with everything they can. Things left behind on the planet will be lost forever.
The gameplay on the spaceship is more on the passive site, as it is all about preparing the next surface exploration. For this, players have multiple tools at their disposal. A printer that creates new units and buildings from the scraps found on the planet. Blueprints found on the surface can also unlock the ability to create new unit types. A surface scanner which will give players information about their next run, such as weather conditions, loot locations and unusual enemy behaviors. They are also able to upgrade their dropship to carry more loot, units etc.

ii. Short

Land, build, fight, loot, extract... if you can. After the outbreak of an ancient virus humanity was forced to flee the earth and terraform mars to survive. Just before the terraforming is done the spaceship, which humans need to finish terraforming, breaks. It is now your task, as the player to return to earth and retrieve the parts needed to repair the ship. However, the earth isn't what it once was. flora and fauna have been transformed into a dangerous environment which barely resembles the world humans once knew.

b. USPs:

Our main USP is the never seen before genre mix between RTS and Extraction game. Both games have some similarities like needing to player to think ahead and plan their actions accordingly to ensure that victory is all but guaranteed. The parts we take from Extraction games is the danger of losing progress, low supplies and planning your "loadout" before starting a run. The things we take from RTS games are the controls, unit diversity, combat system, ability to build things and the requirement to manage your resources.
In addition to this we have out unique setting. Postapocalyptic worlds are everywhere but ours stand above the rest with its design heavily focusing on enormous bioluminescent plants that have reclaimed almost all of humanities achievements. To the point that signs of humanity have almost completely vanished and can only be found in some remote corners of Earth.

c. Genre & Setting

Project Zeus is a genre-mix between a Real-Time-Strategy and an extraction game. By combining aspects of these two genres, we want to create a whole new experience for players. The game takes place on a future version of Earth which has been ravaged by an ancient virus and is now inhabited by giant mutated versions of insects. Insects aren't the only things that have changed. Some trees have become so large that they started blocking out the sun in some regions. Additionally the mutated insects and some of the plants have developed bioluminescent properties, illuminating the areas that don't have access to the sun anymore. Plants aren't the only thing that now have these illuminating aspects, the predators roaming the surface also use them to lure in prey. Players, coming from a Mars colony must land on an overgrown tropical island to retrieve parts of their destroyed ship, which has been badly damaged on Mars. There is an abandoned research station on this island. In the past it was used to build the spaceship that saved humanity. Now it once again is the place where humanities fate as the part needed to repair the ship lies deep in its belly.

d. Game Progression:

Over the course of the game players will drop onto the planets surface multiple times, trying to get further and further into the research facility. As such there are two types of game progression in our game: One over the course of a single extraction process and one meta-game progression in which players get better and better with upgrades and new units.

Let's first look at the progression of an extraction process:

- Early Game:
  In the early stages of an extraction process players should use their Recon units to scout out the immediate vicinity of their dropship to check for any enemies and find

energy minerals. Once that is done, they send out their workers which establish mineral harvesters at the energy minerals close to the dropship. This establishes a constant income of energy for the first stages of the game. Once that is done they should send their Recons out further to look for valuable loot. To defend their Mineral Harvesters they may activate one of their fighters to kil any enemies trying to sabotage the operation.

- Mid Game:
  In this stage players have a constant stream of energy and have scouted parts of their surroundings and discovered loot in the environment. As scouts aren't able to collect loot, they must now send out the workers to pick up the loot they found. The problem being that workers are very weak and don't have a large field of view. As such they are very vulnerable to enemy attacks. Recons may be able to defend them from 3-4 enemies but if there are anymore, they will be overwhelmed. For this case players should activate some fighters to escort the workers towards the loot.

- Late Game:
  The farther players move out, the more dangerous and likely it is to encounter enemies. As the most expensive loot is most likely to be found deep into the wild players must send their workers and fighters there. This will most likely lead to a confrontation with the wildlife. Once a confrontation with multiple enemies has started it is likely that a enemy swarm isn't far. Players must quickly gather everything they have looted and stash it on the dropship. At this point they must decide which units to leave behind in favor of being able to take loot with them. Then it is time to extract and start the Meta game.

Now let us look at the progression of the Meta Game, which takes place on the spaceship.:

- Early Game:
  In the beginning players don't have many options available to them. As they haven't collected many metal scraps, any blueprints or other important items. The only things they can do at this point is starting new extraction processes and rebuilding units they have lost.
- Mid Game:
  In this stage of the game players can upgrade their units to be able to progress further in the extraction progress of the game. Their dropship will also have some upgrades available that will make their lives easier. They will also have found blueprints that allow them to create whole new units that enable further exploration of the surface.
- Late Game:
  in this stage players can apply the final upgrades to their units and dropship and unlock the most powerful units in the game. They can reach the deepest parts of the research station and find the item that lets them finish the game.

One extraction process takes around 10 – 20 minutes and the time on the ship is kept to be ca. 5 – 10 minutes depending on how much players have to upgrade, build and plan. In a typical play session players will sit down to player 3 – 4 extraction processes. Over the duration of such a session players will reach new spots on the map, learn new things about the games' story and progress their units or dropship in minor or major ways. Leaving them fulfilled with the feeling of accomplishment.

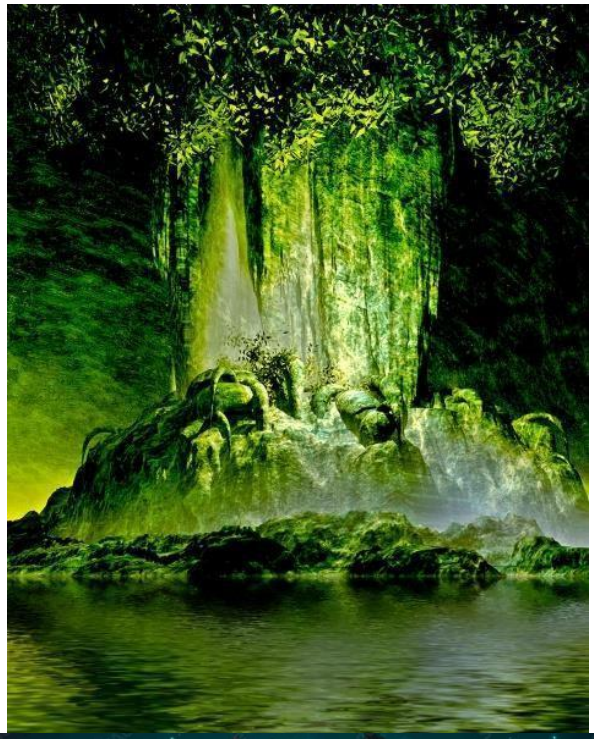
e. Core Gameplay & Fun:

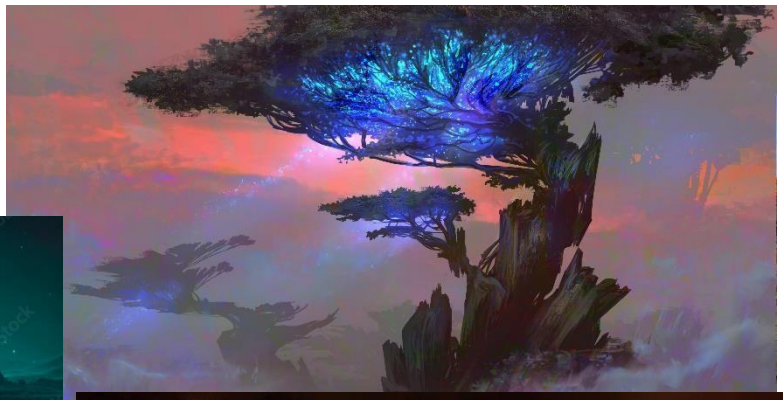
The main loop players will encounter in our game is the following: Explore Loot Fight Extract Plan Explore. The main question we want to have the players ask will always be “Should I leave with what I have now or is it worth risking it all for better loot?”. This dichotomy is at the core of the players’ experience. During the loop players will go through a range of emotions:

- Curiosity, invoked by the strange and interesting world.
- Stress, when players are tasked to defend a swarm of enemies whilst also having to bring back the loot they have gathered to the dropship.
- Loss, when a worker carrying a valuable piece of loot is defeated.
- Triumph, invoked by players successfully extracting with all their loot and units still intact.
- Discord, when players were able to get a valuable piece of loot but lost a lot of units in exchange, making them question if it was worth it.
- Accomplishment, when their good planning before an extraction process led to a successful run.
- Fear, when the swarm quickly approaches the units and dropship.
- Determination, when a run ended moments before something great was achieved and now they return with more and stronger units.
- Progress, when they unlock a new upgrade for a unit, knowing it will allow them to stay on the surface for longer / venture deeper into the facility.
- Dread, not knowing where the next enemy could be hiding. Knowing that every bad encounter could lead to a large step back.

These emotions all play together to create an atmosphere and mood that feels oppressive for most of the time, as players are never able to feel like they are completely in charge / have completely conquered the planet and it’s wildlife. They will always need to play cautiously, as one bad move could lead to them potentially losing a large amount of progress. But if players are able to withstand these circumstances, persevere and adapt to the conditions of the planet. They get the rush of successfully winning bit by bit. With every small win feeling like a miniature David vs. Goliath battle. These successes will keep players hooked, as they will feel the rush of going deeper and getting more valuable loot, whilst also always being just one step from losing everything.

f. Look & Feel





g. Project Scope

Player count: 1
Game Duration: 12h
Level Count: 1
Zones in the Level: 5
Unique Units: 3
Enemy Types: 3
Unique Buildings: 1

h. Quality Goals

- Consumer Promise:
  - Hard Decisions:
    Players must make difficult decision over the duration of the game regarding the fate of their units and what things they prioritize.
  - The thrill of being hunted:
    Players will feel like they are the one being hunted. They will never be able to feel in control and the ones hunting enemies.
  - The fear of losing everything:
    Players will always dread losing their progress and question their next moves.
  - Feeling of accomplishment:
    Successfully extracting with a lot of loot will fill the players with a great feeling and leaving them wanting more.
  - Replayability:
    Due to loot spawning in random spots and weather events, no two extraction processes will feel the same.
- Quality Goals:
  - Performance:
    The game will run smoothly, even during dense fights featuring many enemies and particle effects.
  - Not game breaking bugs:
    The game will not feature any bugs that will pull the players out of their immersion or make the game frustrating.
  - Intelligent enemy AI:
    Enemies will seem as though they are smart. Thanks to goal oriented action planning and state machines, enemies seem to independently make plans and work together to defeat the players units.
  - Readable UI:
    The games' UI will be easily readable, not hiding any important information behind menus.
  - Game Balance:
    The game is balanced so no units seem overpowered or enemies feel unfair. The usage of energy by the different units is also finely tuned to allow players to explore the surface, whilst also always having to keep on eye on the gauge.
- Project Priorities:
  - Focus on Gameplay:
    We want to especially focus on the combination of gameplay elements from RTS and Extractions games as this is our main USP.

- Focus on visual clarity:
  A game set inside a dark and densely overgrown environment is most likely to run into readability issues.
- Focus on lighting:
  We will focus on the lighting going out from plants and enemies, as this is the main factor of our visual uniqueness.

2. Game Rules

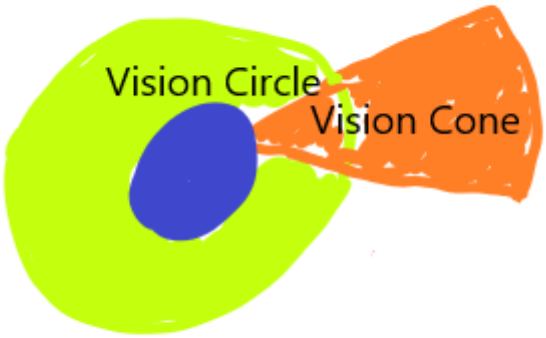
a. Feature Specification:

Project Zeus features a whole host of features that will make the game interesting and keeping players hooked.

- **Exploration:**
  Earths surface has been drastically altered since the outbreak of the virus, exploring this new environment is one of the most important features Project Zeus has.

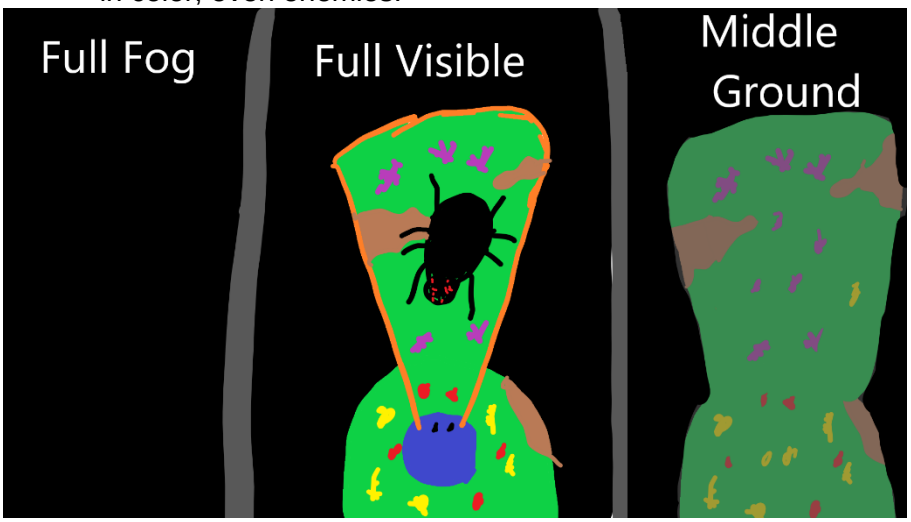
i. Fog of War:

Fog of War covers the map, making exploration dangerous, as there could be enemies hiding in every corner. Using the right units to uncover what lies beyond the fog is one of the most important acts of the players. All units have two areas with which they can uncover what's lying beneath the fog. The Vision Circle around them and the Vision Cone, which reveals everything in their field of view.



The fog of war should have three different "states":

- (1) Completely enveloped in fog. A location has this state, when the players have never been there. They can't see anything.
- (2) Semi enveloped in fog. This state occurs when the player was previously at this location but has left. They can see the geography and things like trees etc. IMPORTATNT: Enemies don't show up. Additionally, the colors are a bit different from places the player can actively see. Grayed-out or simply "drained".
- (3) Fully visible. This state appears when a player has the location in their current vision. So, either their vision circle or vision cone. In this state everything is fully visible in color, even enemies.



Programmers can use this Unity Add-On: https://assetstore.unity.com/packages/vfx/shaders/fullscreen-camera-effects/aos-fog-of-war-249249 as it offers a lot of the aspect desired for the project.

Once a player uncovers a location it switches from state 1 to state 3. Should they move away, and that location leave the vision fields, it will change to state 2.
All locations that have been discovered will stay in state 2, even if the player extracts and comes back.

The Fog of War has no bearings on enemy units they have the full map explored but still can only see players if they enter their vision fields.
Each unit type has a different range of vision. These can be defined using the Add-On. Problems could come up when trying to morph it into a cone shape. If that happens this aspect must be thought over again.

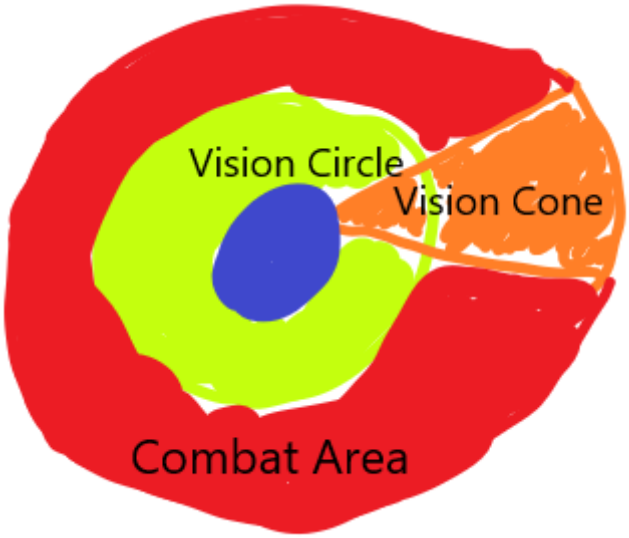
ii. Combat:

1) Units in combat

The only way to settle conflicts on this new Earth is to eradicate the opposition or die trying. For this the players have different units at their disposal that each have their own strengths and weaknesses. Players must strategically decide which units to take with them into combat to win in the most efficient way. All units have the following variables:

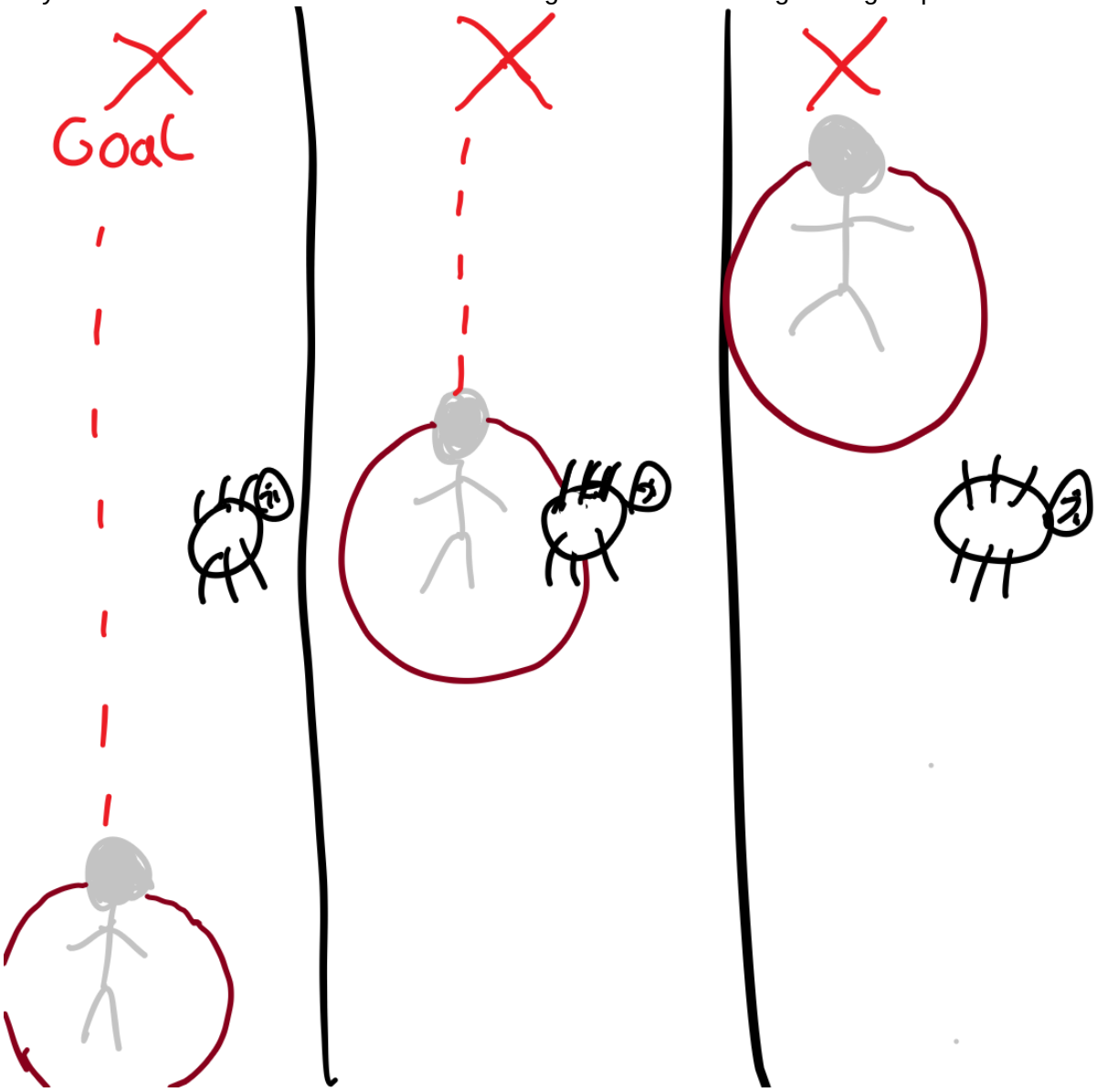
- **life:** How many hp do agents have. Once this value hits 0 or below the unit dies and enters the dying state.
- **attackDamage:** The amount of damage this agent deals with one attack function.
- **attackRange:** The distance needed for the agent to attack.
- **attackSpeed:** How fast the agent attacks**, defined in seconds**.

- **Combat Area:** This is a circle-shaped collider with "**Is Trigger**" box checked in the editor. Its **radius** is the **same size** as the **vision cone** (check picture for visual explanation). This area is used to register all hostile agents during combat.



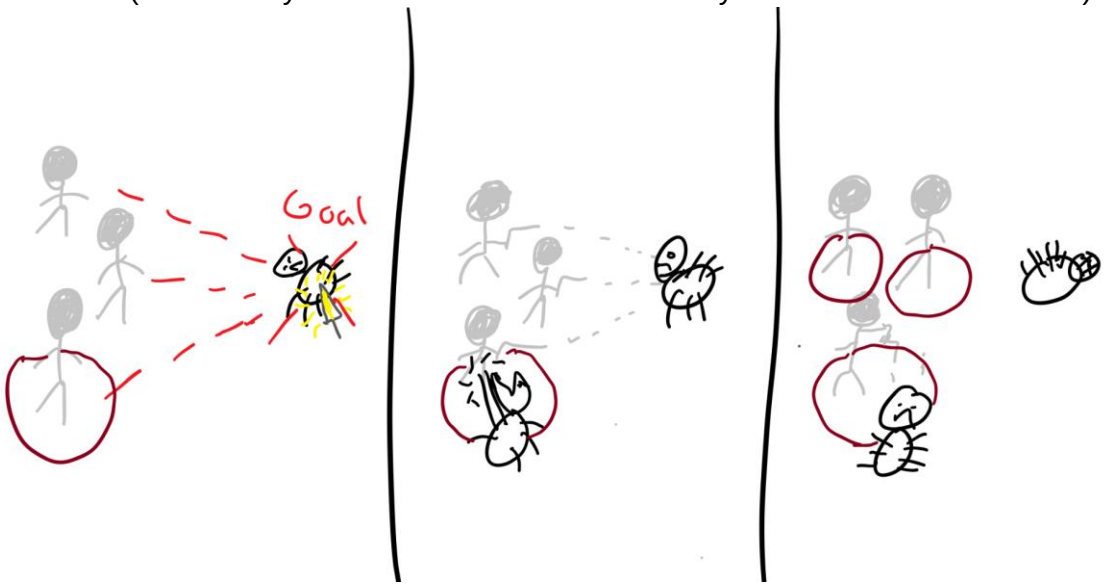
Combat works in the following way:

- When units are given the order to move somewhere that order has the highest priority. Player Units will not enter combat while moving towards their designated goal position.

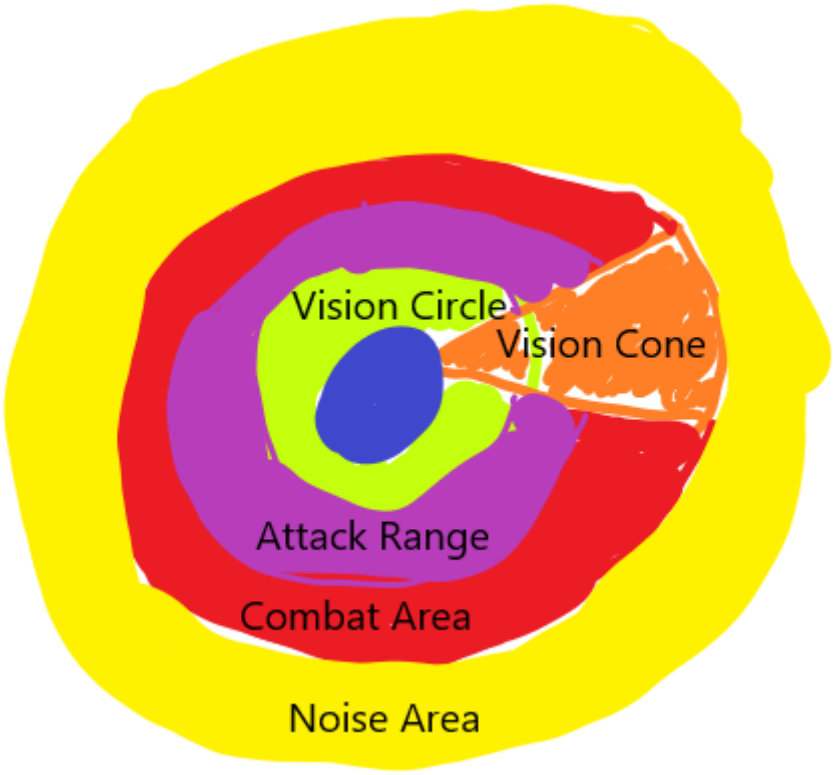


- Players are able to right-click an enemy to set them as the target position. When the mouse hovers over an enemy it will change sprite to show that players can interact with the enemy.
- If an enemy is set as the target position, then units will attack that enemy and only that enemy when it is in range.
- The enemy is set as the target position as long as it is visible. As long as the enemy is visible it is the target position, even when it moves the target position will update to go along with the enemies position.
- Should the enemy become “invisible”, by entering the FoW the enemies last known position is set as the target position.
- They will attack that enemy until it is dead or until other orders are given. So even if the unit is attacked by another enemy, their priority is still the enemy they were ordered to kill.

- Once that priority enemy is dead the units will independently search for a new enemy to attack. (The enemy closest to them / the enemy that attacked them last)

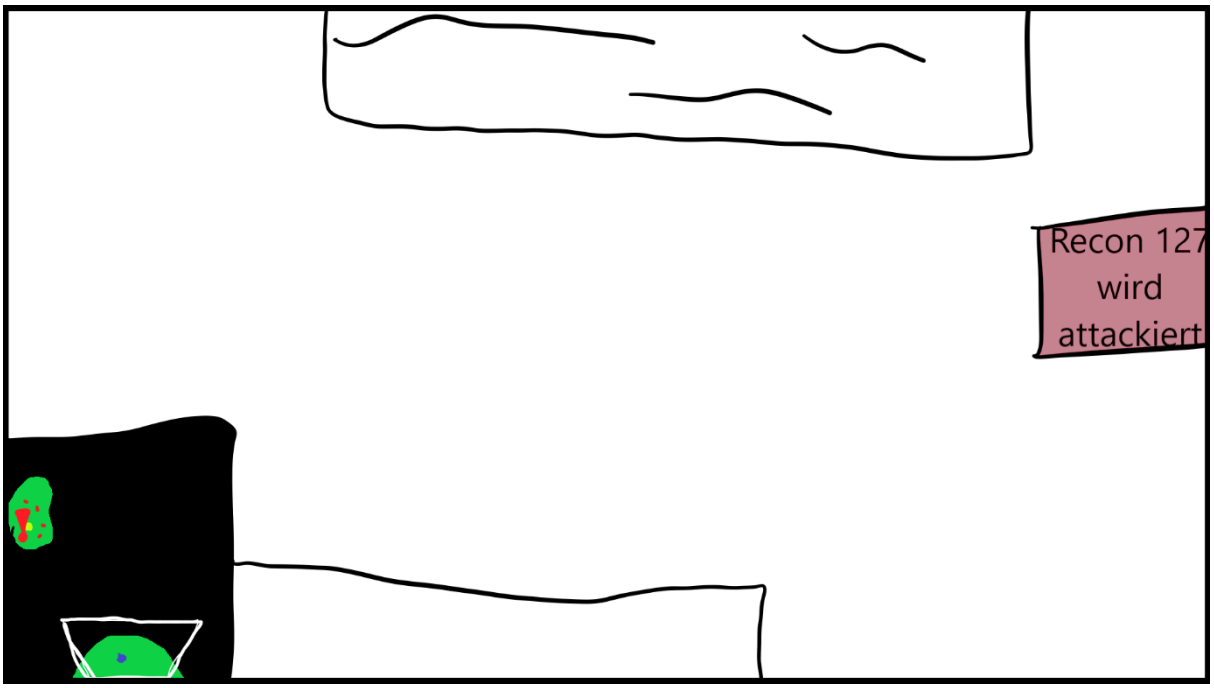


- When a unit stands still the old system is still in charge. The one explained here:
- When a hostile agent enters one of the **vision areas or the agent is attacked** it switches to the **combat state**.
- All **hostile agents in the combat area** are added into a **list** and **sorted by** who is **closest** to the agent.
- The agent **moves toward the closest hostile agent**. Once the hostile agent is **within** the **attack range** the agent will **start attacking.**
    - Should an enemy be “hiding” in the combat area, before combat starts and then the agent spots an enemy the enemy in the vision is prioritized as an enemy. This is only done until the next update of the list.
- Damage is not dealt using hitboxes and projectiles but rather using events in an animation. Once the **event is triggered** the **damage is done**.
    - Melee: The **event occurs** at the peak of the animation **when a hit** with an enemy **would occur**.
    - Range: In ranged combat, **once a shot is fired** the **event is triggered**.
- **Damage is done** in the script of the agent that is **taking the damage**. They have a function called “**TakeDamage”** which will take in the **attackDamage variable**. This **value** is then **subtracted from** the **life variable**. Should that variable reach **0 or lower**, the agent **dies.**
- Once the **hostile agent** is **dead** or **every 3 seconds** the function to **update the list** with the hostile agents in the **combat area** is called to choose a new target or stay on the old one.
- **Combat causes** a lot of **noise** to occur. This noise can **be heard** by nearby agents. Should that happen, the agent will **enter the Investigation state** and move towards the commotion. Should they spot any hostile agents they will also **enter combat.**
    - Noise is another **Is Trigger collider** surrounding the agent called “Noise Area”. All hostile agents in this collider are stored in a list. **Once** an **attack** is performed a function called **“HeardNoise”** is called with the **rough location of the agent** that performed the attack. **That location** is then used in the **Investigation state**.



This image is only an example for the Recon.

Should a unit be active and receive damage, it will send a distress signal to notify the player that it is in danger. Should the unit be activated at the time it is attacked it won't send a signal. Players are notified of this situation by an audiovisual clue. The unit will tell the player something like: "Recon 721 is being attacked." At the same time a UI-Pop-Up will appear on the right site of the screen with that information. If players click on that message their camera will move to the position of the attacked unit. While position will be marked on the minimap with an exclamation mark. So, players can see the location there also.



2) Buildings in combat:

In contrast to units' buildings don't always have the ability to fight back. Sometimes the only thing a building can do is its designated job. Still buildings have variables that are important when combat starts:

- **life:** How many hp does a building have. Once this value hits 0 or below the building is destroyed and enters the destroyed state.
- **attackDamage:** If the building is able to fight back this variable is the amount of damage it odes per attack. Else it is 0
- **attackRange:** If the building can fight back this is the distance needed for the building to attack. Else this is 0.
- **attackSpeed:** If the building can fight back this is how fast it attacks**, defined in seconds**. Else this is 0

Should a building be active and then attacked, it will send out a distress signal. This way players will know what is happening to the building and the building won't simply disappear without players noticing. If the building was inactive during the attack, it won't send a distress signal, as it is turned off. The unit will tell the player something like: "Quencher 3 is being attacked." At the same time a UI-Pop-Up will appear on the right site of the screen with that information. If players click on that message their camera will move to the position of the attacked unit. While position will be marked on the minimap with an exclamation mark. So, players can see the location there also. It has the same visuals as the unit notification.

a. Special Case: Dropship

The dropship is a special case when it comes to behavior during combat as it is a building that cannot be destroyed, or players will reach a permanent Game Over. For this reason the dropship must be defended by the players at all times. The dropship will automatically warn

players when enemies are approaching to tell them it is in danger. There are 3 ways to handle the way attacks on the ship can be handled:

- One point of damage will automatically lead the dropship to extract.
    - If this happens the items that are currently loaded onto the ship are taken with it, players have no last say what is taken and what stays.
- The ship can be destroyed if players aren't careful making them permanently lose.
- The dropship can take some damage before extracting automatically / a timer starts when it starts taking damage and when that timer reaches 0 it will extract.

These different options all have some pros and cons but how they will play out can only be really seen in gameplay. At this point I think option one and two are the best options, as both of them underline the consequences of not guarding the ship.

iii. The Swarm

The swarm is the most dangerous thing players can encounter while exploring the planets surface. Players cannot defeat it they can withstand its onslaught for a short period of time, but never wholly defeat it.

1) Visual

On a visual sight it is important for the swarm to appear as a kind of fluid that

2) Gameplay

There are two different types of swarm in Recon. One natural one, which is smaller and can be defeated and one never-ending one which won't stop until the player is gone.

SMALL SWARM:

This swarm appears when a Screamer screams and all nearby units appear to help it. Depending on the amount of enemies in the vicinity, the swarm turns out more or less impressive. It is important that this swarm only consists of real enemies that already exist on the map. Because of this this form of swarm can be defeated with enough units.

LARGE SWARM:

The swarm has multiple events that can trigger it to appear.

- Too many Screamers have screamed
    - If a certain number of Screamers (tbd) were able to let out a scream the hivemind is activated and the swarm will trigger.
- One Screamer sees too many player units:
    - If one Screamer sees 5(?) player units during their life they will also trigger the swarm as they have recognized that their nest is in danger.
- Player kills too many enemies:
    - If players kill too many enemies (20?) then the hivemind will realize that it is in danger and trigger the swarm.
- A Screamer triggers a second swarm, while one is already active
    - Should a swarm be active or about to appear, then if a enemy screams a second swarm will be triggered by that scream.

The swarm will appear from the direction it was triggered in. Then it will move towards the dropship destroying everything that is in its way.

As the swarm consists of never-ending hordes of arthropods it is not enough to simply order all enemies on the map to move towards the player units / dropship, as this number of enemies could be defeated by the player. As such new enemies need to be constantly spawned in for the sole purpose of building the swarm. These swarm enemies have the same properties as the normal enemies that are roaming the planet. They must be spawned outside of the current cameras view.

When the swarm is triggered, players get a warning that the swarm is imminent and from which direction it will come. The'll also get a timer that counts down to the moment it arrives. This

time must be used as efficiently as possible by the players to set up defenses and load everything on the dropship.

To make the swarm appear more menacing a screen shake could be implemented while it is on screen to underline their stampede-like qualities.

iv. Looting

There is only one unit that can loot. That unit is the worker. When a Worker is selected and then the players press the right mouse button on a lootable item, then that Worker will move towards the item and try to pick it up once it is in range. There are some conditions that must be met if a worker wants to pick up an item:

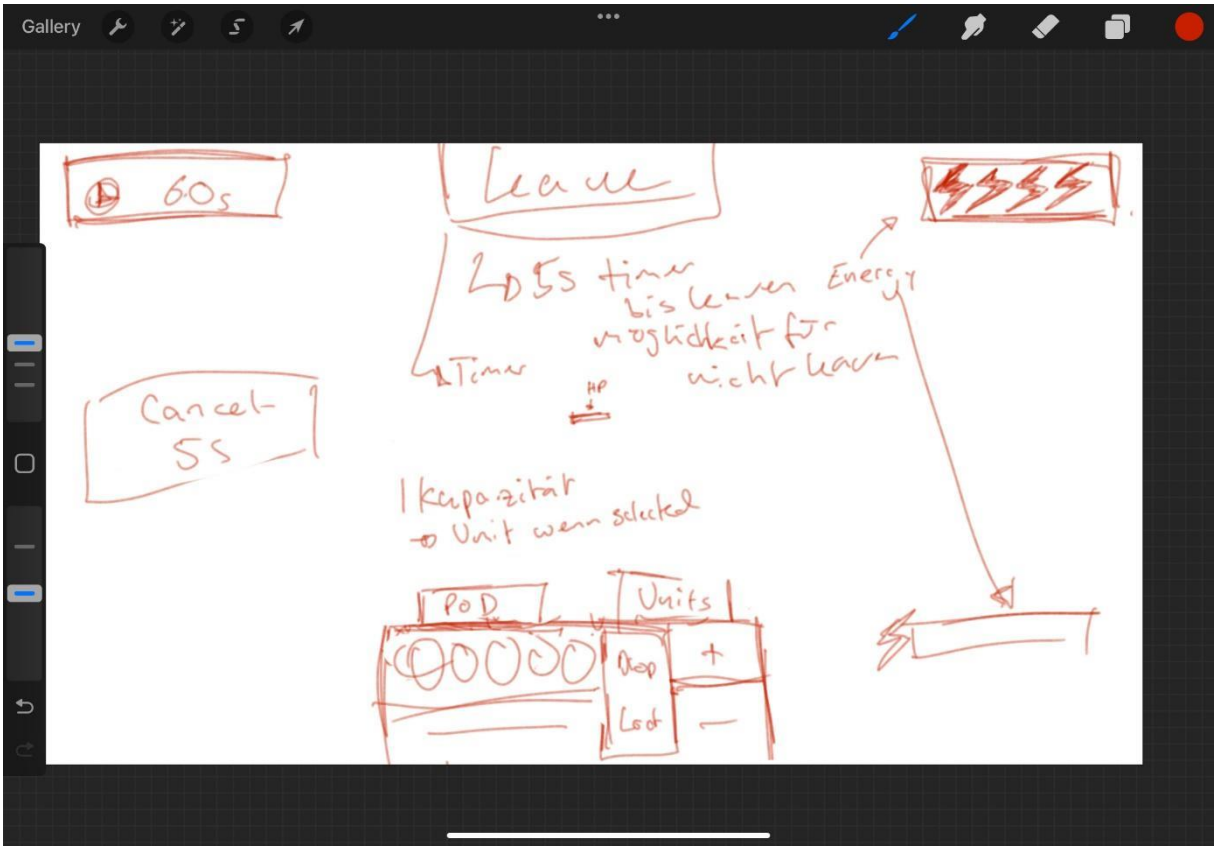
- The item must still be present. No other Worker can have picked the item up before.
- The item must be reachable.
- The Worker must not have anything in their hands at that moment.

For more information on loot items click here.

v. Unit Inventory System:

There is only one unit that needs an inventory and that is the Worker. Even then they don't have a real inventory that players can open. Instead, they are only able to carry single items in their hands.

Workers have the ability to drop the item they are currently holding.
When a worker is selected, the UI in the middle-bottom screen will switch to show information about the units currently selected.



It will show the units currently selected and below that the overall weight of the loot they are carrying. Should only one Worker be selected it will only show the weight that one is carrying.

vi. Ship Inventory System

The ships inventory system is represented by a circle on the ground around the dropship. Units and loot that are within that circle are in the inventory.

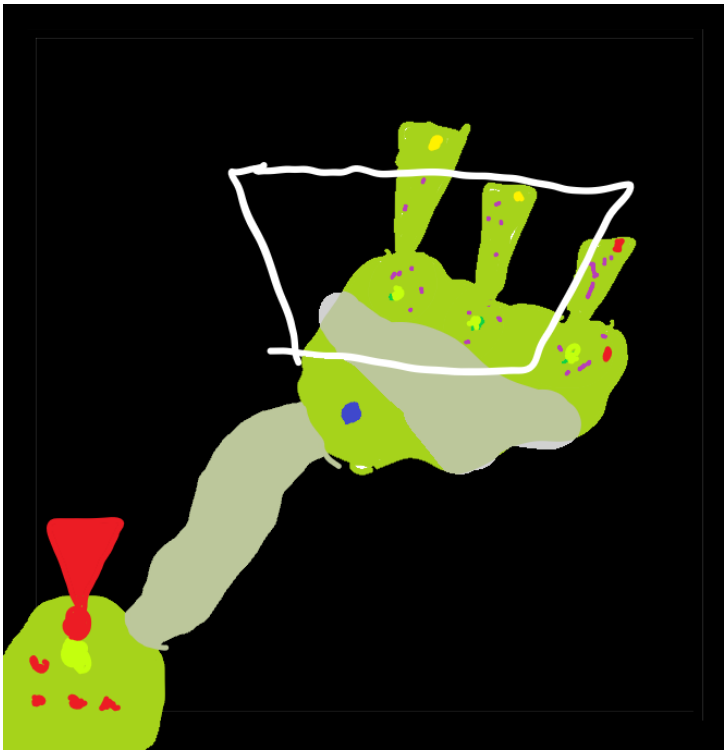
At the bottom of the screen, players can see the exact value of weight currently on the ship. This is important as players must always stay within a certain limit to be able to take off. Should the maximum weight limit be exceeded the ship can't take off. The players won't be able to press the launch button and also if the launching timer has started and then players try to bring on more loot that exceeds the weight limit, then the launch will be canceled.
Items that are within the inventory can be picked up and transported outside to reduce the weight.
Items that are held by Workers that are in the inventory are also counted towards the inventories total weight.

vii. Minimap

To help with exploration players have access to a minimap which help them oversee a large area of Earth's surface. The minimap is located at the bottom left of the screen. It shows a real-time view of the things that are going on around the are of the camera. It allows the player to quickly navigate around the level with their camera, this makes it easier for the players to micro-manage their units and not lose sight of them. On the minimap things are represented by dots of different colors:

- Green: Player Units
- Blue: Player Base
- Red: Enemies
- Yellow: Loot
- White trapezoid: The current area shown by the game camera
- Red Exclamation Point: Unit or Building that is currently being attacked.

The minimap, like the level is covered by Fog of War at the beginning of the game but players have the ability to lift that fog with their units. The units' vision areas remove it on the minimap. The Fog of War on the minimap has the same three states, the FoW on the active gameplay side has.



Minimap functionalities:

- Left clicking on a position on the minimap will move the main camera to the corresponding position in the 3D-game.
- Players can zoom in and out of the minimap by having the mouse over the minimap and scrolling with the wheel.
    - Furthest zoom-out, shows the whole game-map.
    - Most zoomed in shows…

- Pressing the mouse-wheel and moving the mouse will allow players to move the minimap.
- The trapezoid moves when the camera moves. It will always be on the minimap screen. So, if players move to an area that isn't currently shown on the minimap, the minimap will also move in that direction.
- Three different FoW stages like the FoW on the 3D-game.

viii. Extraction:

When players have decided it is finally time to leave they will need to extract using their dropship. This is the final step in the gameplay cycle and also one of the most crucial to a players success. To extract successfully players must first bring all their belongings to the dropship, they must then decide what to take with them and what to leave behind.

- **Different Unit Types:**
  Players can choose between a variety of units. Each of them are unique and are the best at specific jobs, so choosing the right unit for each extraction is important.
- **Resource Management:**
  Energy is the most important resource at the players' disposal. Keeping an eye on it, so it doesn't run out, ending an extraction, is the player's most important task. As each unit and building uses Energy to work, players have to constantly de/-activate units and buildings, depending on the current situation.
- **Buildings:**
  The ability to construct different structures allows the players to leave a permanent mark on Earth's surface. These structures all have different functionalities and conditions, some can only be build in certain spots.
- **Enemies:**
  Putting a wrench in the players plan to find the Quantum Core, are the mutated arthropods living on Earth now. They come in different sizes, shapes and with different abilities. Fighting will be a tough challenge, forcing players to make difficult decisions about sacrifice and pay-off.
- **Weight management:**
  The dropship players use to land on the surface can only carry so many things. This limit is important when players plan their extractions, as depending on how much loot they find, they'll need to leave some units behind. These units will be lost forever. This dichotomy of units vs important loot is at the core of each extraction.
- **World design focused on luminescence:**
  The design for future Earth focuses on all different kinds of luminescence, biolumin-, phosphor- & fluorescence will be the main light-sources players encounter. Glowing weeds, mushrooms, trees and other kinds of plants are dotted all over the place. Additionally, enemies designs also implement this philosophy.
- **Unit type specific tech-paths:**
  All unit types have a unique upgrade path. These upgrades will significantly boost the usefulness of a unit.
- **Unlocking new Units:**
  By finding blueprints on Earth players can permanently unlock new unit types.
- **Scanning the surface:**
  Before each extraction players have to opportunity to scan the surface for intel about the weather conditions and loot locations.
- **Preparing for an extraction:**
  Players must carefully pick the units and buildings they take with them on each extraction based on the intel they got by scanning the surface. At the same time they must think about how much loot they'll gather and what they in turn will need to leave behind.

b. Controls

The main input device for the game is the mouse. Players use the mouse to select units, give orders and to everything on the spaceship. There are some cases in which a keyboard input is needed but these are few and far between.

To select a unit or building, players will have to hover over it with the mouse and then press the left-mouse button. If they want to select multiple units, they'll need to hold the left-mouse button down and mark every unit they want to select by creating a rectangle, like people can do on the desktop. To give the order to passively move, players must have at least one movable unit selected and then go to the position they want their unit to move towards. There they'll need to press right-mouse button. Should the players desire their units to aggressively move, they'll do the same, but need to press "Q", whilst giving the order to move.

Moving the mouse to one of the screens' edges will cause the camera to follow the mouse in that direction. The camera can additionally moves by pressing down on the scroll-wheel and simultaneously moving the camera. Using the scroll-wheel will allow players to zoom in and out of the game. Moving it to the front will zoom in, while moving it back will zoom out.

On the spaceship players will be able to interact with everything by clicking on it using the left-mouse button. Hovering over interactable objects will lead them to be highlighted.

c. Camera

In our game the camera has a ratio of 16:9. The camera in Project Zeus will function as it does in most RTS games. It shows the game from an isometric angle. This angle can't be changed, i.e. players cannot rotate the camera along any of the axes. Players can impact the thing the camera shows by zooming in or out using the scroll-wheel. Players can zoom in to 150% and zoom out to 50%. Moving the camera works in two different ways, first by moving the mouse to the edges of the screen and second, pressing down on the mouse-wheel and moving the mouse at the same time. There also need to be a button to reset the camera to its standard values when it comes to rotation and zoom. In Unity we will use Cinemachine, as it has already a lot of useful features and will allow us smooth camera movements and the usage of multiple virtual cameras at the same time, without giving us much trouble. To control the camera multiple variables are needed:

- Camera Speed: 13
- Zoom-In Rate: 6
- Rotation Speed: 60
- Max FOV:65
- Min FOV: 20
- Standard FOV: 45

d. Artificial Intelligence

To achieve naturalistic unit behavior, no matter if player-owned or enemies, we will use a different kinds of programming frameworks. These will lead to units feeling smart and minimizing frustration in the players.
The first framework we'll use is Unities build-in pathfinding system. Using this we can units that move in a "smart" way, as they'll always take the shortest route possible towards their goals. It also allows us to change the goal of a unit, while it is still moving. The NavMesh that is connected to this system is also easily editable to give the level designer more freedom in how they want to design the environment.
To handle the way units, especially enemies, decide what how they should act we implement State Machines and Goal Oriented Action Planning (GOAP). These two systems will work hand in hand to make the AI feel more alive. All units will always have a goal, each goal is connected

to one or more states that will be ran through to decide what to do next. A handful of units also have unique states and goals that only they will be able to enter. This gives the feeling of more diversity between units types, as players must take these unique actions into consideration, when planning their next move.

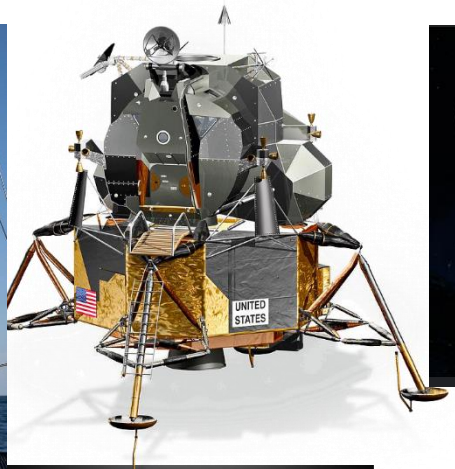
3. Game Content

a. Dropship

The dropship is the beating heart of the whole operation. It transports the players to the planet, stores their gear and takes them back up to the spaceship again. So for the player it has two uses, one as a mode of transport and two as a base of operation on the surface of Earth.

i. Visuals

The dropship needs to look like something that is able to fly land on a planet and also make its way back, whilst also having the look of a building on the planet. A building that is able to store robots, loot and energy. These two design goals must be met on the visual side. To make this work, the ships drive(s) must be at the bottom of the ship when landing, to make it logical that the ship can take off again.



ii. Gameplay

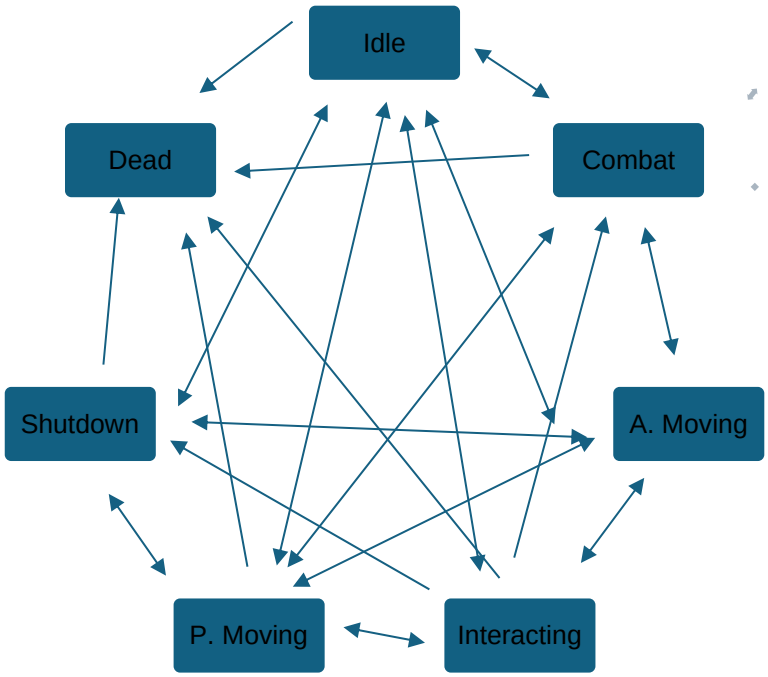
On the ground the dropship functions as a safe haven for the player and their units. There is a parameter around it which is visually represented by a circle of light. This circle removes all the FoW around the ship. Whilst in this circle units use less energy, than they would if they

were activated anywhere else. BUT they still use some energy. If players don't want them to use any energy they must load them onto the ship or deactivate them. The dropship functions as a central inventory for the players and their loot. For more details on how that works click here or got to the "Ship Inventory System" chapter.

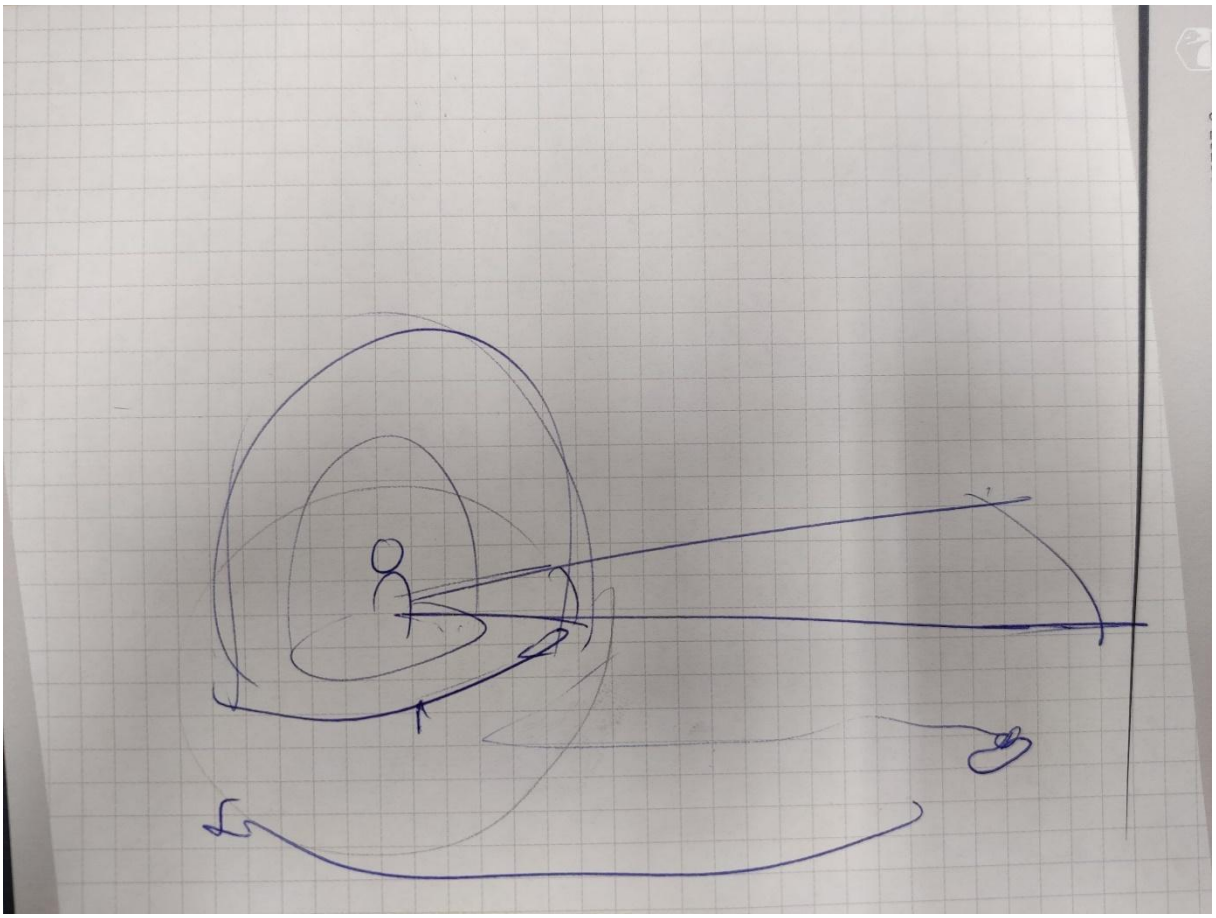
b. Units

The players units are all robots that were originally designed to help rebuild humanity on Mars and fulfill as many functions as possible. As such they are designed to be as efficient as possible. On a technical level units have State machines with 7 states. These 7 states are shared by all units:

1. Idle State:
   In this state units are waiting for player input, or to be attacked by an enemy at which point they will switch to the next state. This state requires a low amount of energy, as units don't do many things.
2. Combat State:
   In this state units are fighting with enemies. They gather all enemies currently in their combat zone in a List. They will then attack the one at the top of their list. Should that enemy die, they update the list and attack the new top enemy. They are allowed to move to be able to attack that enemy. When all enemies are dead they switch into the idle state. This state requires a medium amount of energy.
3. Passive Moving State:
   This state is entered when a unit is selected and then the player clicks with RMB to a spot on the map. Units will then take the shortest route there. Should they encounter an enemy on their route they will only attack that enemy if it attacks them first. This state requires a medium amount of energy. The energy intake is higher if the unit is carrying loot, except for the Gatherer.
4. Aggressive Moving State:
   This move is the same as the Passive Moving State except that units will attack any enemies they encounter on their way, entering the combat state. This state is entered when a Unit is selected an a point on the map is selected, while pressing a certain button. This state requires a medium amount of energy. The energy intake is higher if the unit is carrying loot, except for the Gatherer.
5. Shut-Down State:
   This state turns an unit off, meaning that it doesn't use any energy anymore and enemies have a harder time spotting them. In exchange for that their vision range is drastically shrunk and they can't fight anything that attacks them. When they gain a new order in this state they will first have to turn on an animation before being ready.
6. Dead State:
   In this state units are dead, they don't use any energy and lose the loot their carrying. They can't be resurrected and don't listen to any commands.
7. Interacting State:
   This state is triggered when units are interacting with something in the world be it loot or other things. This state takes the same amount of energy as idling.



Units have a vision cone around them revealing everything that is close to them in a, depending on the unit, small to medium radius. Some units have the special abilities to look beyond that small radius. They have a second vision cone that extends outwards from the vision-circle.



Because of the tall trees the planet's surface is very dark. As such all units wear some sort of lantern on them to luminate their path. This radius of the lanterns' light is the same circle in which the fog of war is lifted around the unit.
Units are all based on humanoid designs symbolizing their affiliation with humanity.

i. Worker

Workers are one of the most important units players have at their disposal as they are the units that enable their expeditions in the first place. Workers are bulky as they need to be able to carry heavy machinery as well as a lot of loot. They aren't suitable for combat, even though they are pretty durable, as they have no weapons. In exchange for that they are a real multipurpose tool. Their two functions are being able to construct the "Mineral-Quencher" (and other buildings), as well as being the only unit able to carry loot. Their original use case on Mars was to help build the new society whilst also being equipped with a variety of tools that could be used to harvest minerals, energy from different sources the humans on earth weren't able to rule out could exist on Mars.

1) Visuals

On the visual side Workers are designed to be as efficient as possible at as many jobs as possible. This means that they are very compact but have a lot of things inside them. This is visualized by them having a lot of different hidden compartments all over their body. (Additionally their hands aren't simple hands but their fingers are all kinds of tools, like a drill, tongs etc.) Even though they are built compactly standing at 160cm they have the ability to reach high places by using their telescopic arms and legs which they can extend to make them taller. On Mars they were used as a multitool. Able to almost do any job humans needed them to do.

- Moving Animation
- Shut Down / Turn On Animation
- Attack Animation (Punch or Attack using a Tool)
- Load off Loot Animation
- Picking Up Animation
- Idle Animation (It opens random compartments, revealing weird / absurd tools inside.)
- (Constructing Animation)
- Death Animation (Breaks in half)

2) Gameplay

Workers are the units most vital to the players' success. They are the only ones capable of constructing buildings and carrying loot. They have very low combat capabilities but in exchange for that come with a whole host function they can leverage to help the player secure a foothold on Earth's surface. Their main use is staying close to the base and ensuring a steady flow of resources.

- HP: Medium
- Movement Speed: Medium
- Vision Range: Low
- Attack Range: Low
- Attack Speed: Medium
- Attack Damage: Low
- Carrying Capacity: High
- Energy Usage: Low

They have a state that is unique to them the "Constructing"-State:
During this state a worker constructs a building. They are locked inside this state until the build is finished. The state requires the same amount of energy as the Idle State. This state can be entered from:

- Idling
- A. Moving
- P. Moving
- Combat

It can enter the following states:

- Idling
- A. Moving
- P. Moving
- Combat
- Dead
- Shutdown
- Interacting

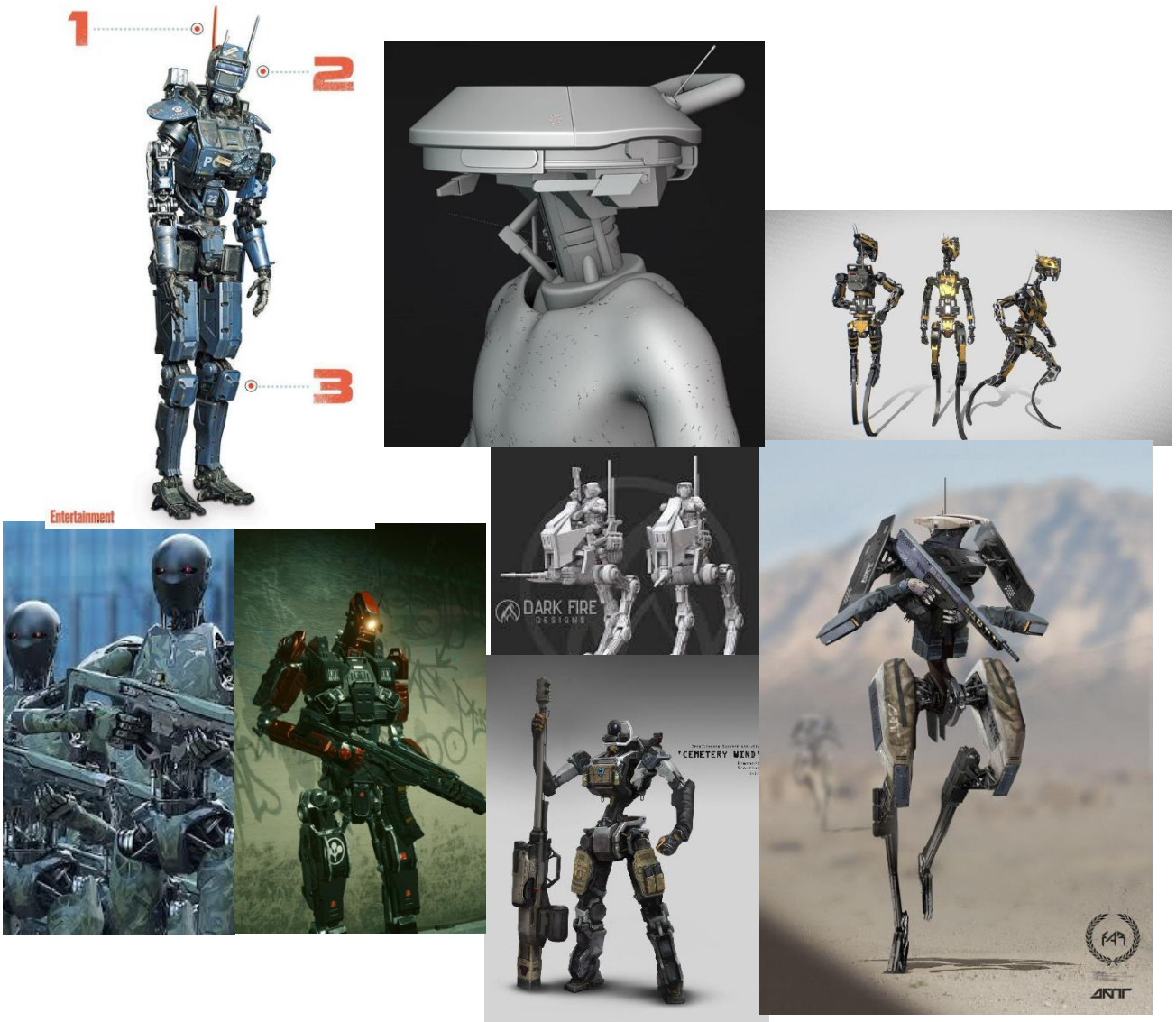
The best way to use Workers is to, at the beginning of an exploration, move them to the nearest energy source and construct a Mineral Quencher. Then keep them close to the base, as they aren't very useful moving around the wild by themselves. Then, when loot is found or a Quencher is full, make them collect these things and transport them to the base.

ii. Recon

Recons are the players most basic combat unit. They aren't very sturdy but as compensation are able to move very fast and have a large range of vision. They can handle weapons, but their light-build doesn't allow them to carry a large amount of loot. On Mars their original purpose was to explore the parts of the planet that weren't yet terraformed and help out in everyday activities. For the first purpose they design allows them to travers a wide range of terrains. To defend themselves on the surface they carry a long range high-caliber rifle.

1) Visuals

The Recons' visuals should reflect their **light build** and purpose to **move fast** but also **across many different terrains**. As they were meant to actively help out in human society their design should resemble a human being. They need ergonomic and long legs to be able to quickly traverse any terrain, additionally they must have a humanoid form and features to help out humanity and handle weapons.



Animations needed:

- Running animation
- Shut-Down Animation and Turn-On Animation:
  For Inspiration look at the battle droid animations from Star Wars: https://www.youtube.com/watch?v=bjCLlsOvKrQ
- Shooting Animation
- Picking Up Animation
  They pick up the object in front of them and then, using their robotic arm lift it over their head and on the “shelf” on their back
- Idle Animation
  They move their head slightly from left to right, scanning their surroundings for enemies
- Death Animation (Falls over like a human)

2) Gameplay

In the actual gameplay the Recons’ main purpose is giving the players intel about their surroundings. They can achieve this using their high mobility and large vision range. Their light build helps them save energy and allows them to be active for a long time without eating too much of the players resources. Their main means of attack are a high caliber, long range rifle. The rate of fire for that weapon isn’t high, so even a small group of enemies can easily overwhelm a lone Recon. As their main purpose was reconnaissance, they aren’t equipped to withstand large amounts of damage or have large carrying capacities for loot.

- HP: Low
- Movement Speed: High
- Vision Range: High
- Attack Range: High
- Attack Speed: Low
- Attack Damage: High
- Carrying Capacity: Low
- Energy Usage: Medium

The best way to use a Recon is to use their big vision, as they can spot enemies before they spot them. Then players can use their high speed to avoid these enemies or if their sure no other enemies are around using their high attack range to take out that single enemy.

It can enter the following states:

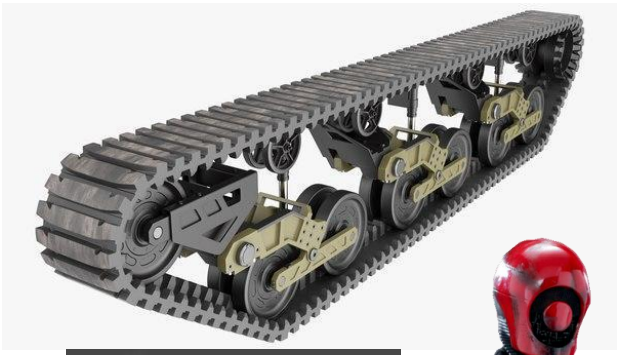
- Idling
- A. Moving
- P. Moving
- Combat
- Dead
- Shutdown
- Interacting

iii. Fighter

Fighters are the player's most effective way of dealing with their enemies. They are the most expensive and energy-consuming units. In exchange for that they are heavily armored and carry a heavy weapon and a large amount of ammunition to squash the planet's pests like bugs. They move slowly and should only be activated if really needed. Their huge size and loud movement will also make them very easy to detect by enemies, making them inefficient at scouting out the planets. On Mars they were meant to serve as the planet's security force. The designer went all the way with giving them an intimidating design and heavy weaponry to discourage any dissidents from rising up on the new world. If they fire their gun for a long amount of time, their weapon will overheat, leading to it not functioning for a certain amount of time. Enemies can use this moment to get close.

1) Visuals

Fighters are heavily armored and made to withstand even the harshest conditions. They are designed to 1 be very durable and 2 be very intimidating. Standing 5 meters tall, they have a stable stand to prevent being knocked over. They move on tank-like tracks, being able to slowly but surely move over all kinds of terrains. Their one arm is a heavy machine gun to deal with enemies at a distance, whilst the other arm is a blade to deal with enemies up close. They wear a canister on their back, storing their ammunition. Their Head consists of one big eye, they use to survey the area.








Animation needed:

- Moving Animation
- Shut Down / Turn On Animation
- Long range attack animation (Shoot out of the left arm)
- Overheating animation (The Gun turns red, and the unit turns it towards the sky, to symbolize the overheating.)
- Melee Animation (It swings the blade from one side to the other)
- Idle Animation (Stand around, scan the region for enemies)
- Death Animation (Explodes)

2) Gameplay

During gameplay Fighters are the perfect unit to defend a spot, attack a nest of enemies or escort a Worker to a stash of loot. They can take as much damage as their able to dish out. They work best in already explored regions or as a defender, as their slow and loud movement speed makes them easily recognizable for any enemies, which will in turn call for backup until there are so many enemies that not even the Fighter is able to take them. Additionally their big size hinders them from going through tight spaces. They also aren't as versatile regarding the terrain they can travers. Their large size also makes them **a priority target for enemies**.

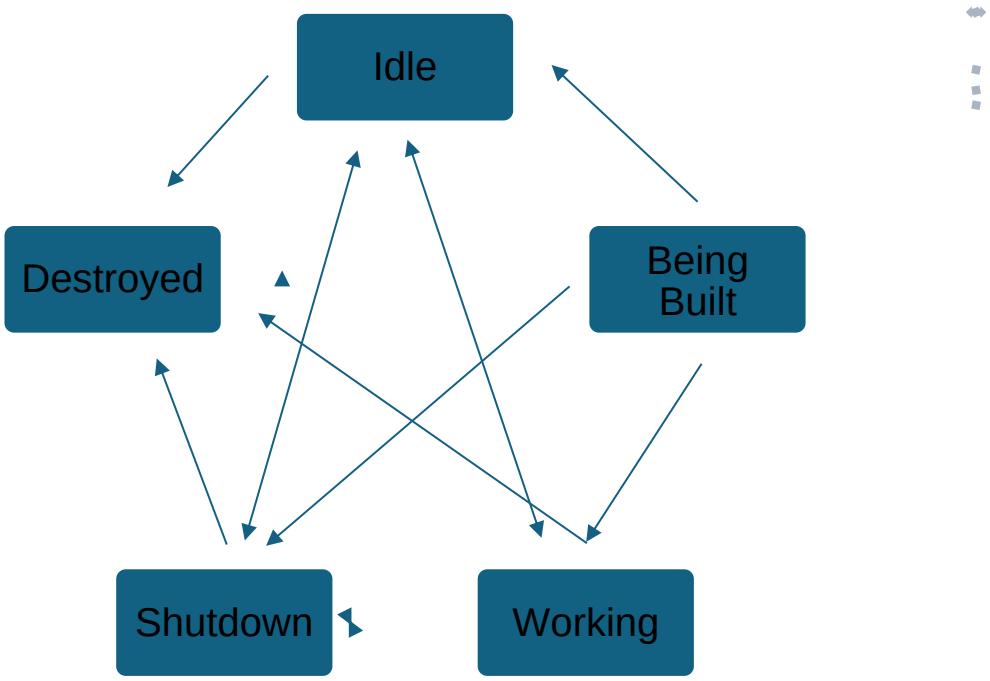
- HP: Very High
- Movement Speed: Low
- Vision Range: Medium
- Attack Range: Low - Medium
- Attack Speed: High
- Attack Damage: High
- Carrying Capacity: None
- Energy Usage: Very High

The best strategy to use with Fighters is to activate them as a defense unit, when enemies are approaching the ship, to buy more time, or as an escort for Workers moving into dangerous territories.

c. Buildings:

Buildings are the main way players can leave a mark on the planets' landscape and establish them being there. Buildings are used in a multitude of ways, some are used to store materials and energy and others can help defend the players dropship and units from approaching enemies. In contrast to units buildings don't have to necessarily disappear once the player leaves the planet. They are sometimes able to survive and be used in future extraction processes. Should the Worker constructing a structure die during the construction process the building will disappear. Buildings usually have 5 different states:

1. Being built:
   In this state buildings can't do anything as they are just in the process of being built. They don't use any energy yet.
2. Idle:
   If a building has nothing to do it will stay idle, using a small amount of energy.
3. Shut Down:
   In this state buildings are shut down, they don't do anything and don't need any energy.
4. Working:
   In this state the building is working as intended. The purpose of each construction is different, so the energy intake of this state is different for each building.
5. Destroyed:
   After having sustained too much damage a building is destroyed, entering this state. It can't return from this state and doesn't use any energy.

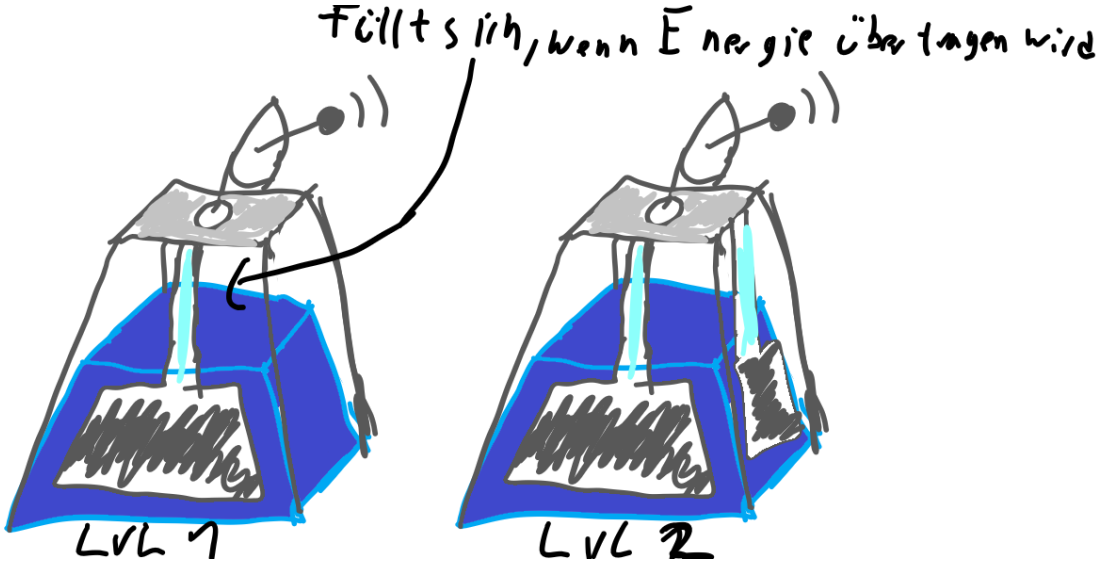


i. Mineral Quencher

Mineral Quenchers are the main way players get new energy to power their units and buildings. They are built at the beginning of a run on top of a glowing Mineral and then constantly quench it until it has “run dry”. Once a Quencher is connected to the dropship it starts generating energy. He energy it generates through the quenching process is wirelessly transmitted to the dropship. This is possible thanks to scientific progress in the past 80 years.

1) Visuals:

On a visual level it is important to be able to see the mineral underneath the Quencher. This is crucial as the fading glow of the mineral is the visual representation of the resource being depleted and player at some point in time needing to find a new one. As quenching works on touch, it is important for the Quencher to have a part that is constantly touching the Mineral. Maybe a small drone that circles the Mineral. To visualize the Mineral being drained, the quencher also needs some kind of glowing part, as quenching transfers the glowing particles of one material to the next one.



2) Gameplay

At the beginning of the extraction the Quencher shows up, lying next to the dropship. By selecting a worker and right-clicking on it, they will pick the Quencher up. To transport it the worker will carry the Quencher in their hands to the mineral

Workers can’t pick up loot while carrying the Quencher. The Quencher can be dropped anytime and be picked up at any time.

To use a Quencher Workers must carry it from the dropship to one of the Minerals. Once there they will place it and the Quencher will automatically start to produce energy. Should the mineral, the Quencher is set on, be depleted they will let out an audio and visual clue so players know that it can’t produce any more energy. Workers then can reposition it to another Mineral. Should enemies find one of the Quenchers they will attack and destroy it. When being attacked it will also give out a signal to notify the player.

When a second Quencher is placed on a mineral which another Quencher is already working on, that Quencher will be upgraded to Level 2. This means a faster Energy production and also a change of the model.

- Quenchers must be manually deconstructed and brought to the dropship.

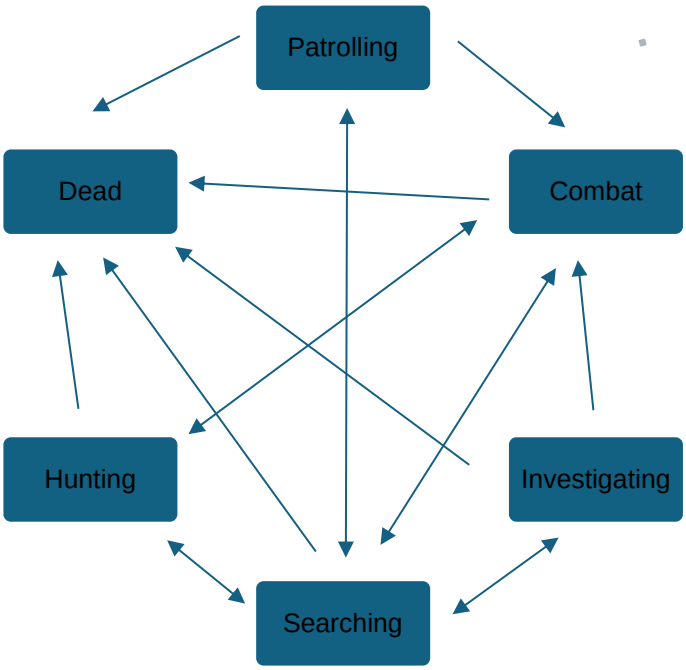
Energy production is dependent on the level of the quencher but the rate at which energy is harvested by a Quencher is the following: 5e /s. The higher the level of a Quencher is, the higher the rate of getting energy becomes.

- Energy Usage: Low
- HP: Medium

d. Enemies:

Just exploring the surface with high-tech robots would be way too easy, as such there are enemies roaming around on the hunt for anything entering their territory. Unlucky for the player that their ship has landed right next to their territory and the quantum-core is at the heart of the nest. Enemies take the form of giant mutated Arthropods, which have become the apex predators in the last centuries. The mutations stem from their exposure to the virus. To adapt to their new bioluminescent surroundings these predators have evolved to have bioluminescent body parts which they use to lure in prey looking for food. Enemies use a state machine and goal-oriented action planning to search for the player and hunt them down. They have the following 7 states / goals:

1. Patrolling:
   In this state the enemy follows a set path. When they spot a player, they aren't immediately hostile, as they first must confirm that, what they spotted really is an enemy.
2. Investigating:
   If an enemy has briefly seen or heard a player unit they will move to that position in order to confirm what they saw.
3. Fighting:
   If an enemy has definitely spotted a player unit they will go into an offensive state moving towards the players. Depending on the enemy type the way they attack will be different.
4. Searching:
   If players managed to flee from a fight or the sight of an enemy the enemy will set an area and patrol along a certain path in it. Once they are finished with their patrol of the new are they will return to the old one.
5. Hunting:
   When players try to run away from the enemy during a combat encounter or while they are in the sight of an enemy that enemy will chase them. If they lose sight of the players units, they will stop and return to their original patrol path.
6. Dead:
   Enemies enter this state after being defeated by the player units. They die. The corpse stays at the position it dies until players extract. That is the moment it despawns.



i. Screamer

This is the first enemy type players will encounter. On its own it doesn't possess many combat abilities and can be easily overpowered. It's true strength when fighting in a group with other like itself. To get this advantage in combat can scream and alert nearby allies to its position. These allies will then swiftly close in on the Screamers position to support it in combat. Players will want to avoid this by either evading Screamers, killing them before they have the chance to scream, or retreating when they hear the scream. **IN GAME THE CURRENT MODEL IS TOO SMALL. IT HAS TO BE SCALED 2x-3x TO FUNCTION WELL / BE EASILY SEEN!**

1) Visuals

- Like all enemies the Screamer is a large mutated arthropod. In this case a spider. It is roughly the size of a German Shepherd. Thanks to the mutation it has evolved to possess luminescent body parts. These glowing parts will emit an intimidating red color when calling for back-up to signal their enemies that they should retreat now. The "scream" mustn't really be a scream coming from the mouth it could also be another loud kind of sound the Screamer emits, like rubbing together its mandibles.

Animations needed:

- Walking animation:
- Attack Animation:
  (Jump at the player, trying to bite them)
- Scream Animation:
  (Raise the body part that makes the sound to the sky. Visible soundwaves emitting from that part. Depending on what the scream is, change the detail.)
- Death Animation:
  (The Spider falls back, lies on its back and curls its leg towards the torso)

2) Gameplay

When entering combat Screamers will check how many allied forces are currently in combat alongside them and how many player units they are fighting. Should there be less than | Player Units * 3 – 1 | enemies in combat the Screamer will call for backup. The scream will target all enemy units in a certain range. These units will then enter the searching state with their target of investigation being the Screamers position. This will lead them to move towards that location and joining the battle, should they spot the players units. They have a fairly large vision sight to be able to spot enemies easily but the Recons sight is still better.

- HP: Low
- Movement Speed: High
- Damage: Low
- Attack Speed: Medium
- Vision Range: Medium

e. Resources / Loot

Dotted all over the surface a variety of resources just waits to be found and collected by the player. These resources all have different uses for the player so players can't afford to neglect searching for one of them. Resources are split into two different groups:

- Generic Resources
- Special Resources

These two resource types differentiate in the way they are found, are regenerable, are used and their rarity. Spots containing resources are always clearly distinct from the rest of the environment to make it easier to spot these things and not accidentally run past. To ensure this these spots are highlighted by lights, look visually distinct from everything around it, are pointed out by units or highlighted on the mini map. When a unit carrying a resource dies that resource will be dropped at the position of the death. Other units can still pick up where they left off. Should players extract without picking up the resource, depending on the type, different things will happen.

i. Generic Resources:

These resources are the ones players will find plenty of. This is good, as they will also need plenty of them. Generic resources are split between energy and metal scrap. Whilst energy is more important during immediate gameplay than metal scraps, metal scraps play an important part in the players progression. Generic resources are virtually endless, as players must be able to beat the game no matter how many runs they need. As such Energy Minerals will replenish after being depleted and each run will spawn new time capsules with metal scraps. If the unit carrying a generic resource die and the player extracts without collecting it, the resource will disappear forever.

- Energy:

Energy can be gathered by quenching Energy Minerals. These minerals are bright phosphorescent rocks sticking out from the ground. Using Quenchers players can take the energy from these rocks and use it for their own. Energy is used to power all units and buildings players possess, so if it runs out the players whole operation stops forcing them to extract with empty hands. As such it is very important to always keep one eye on this resource. On the spaceship energy is used to power the machines. So it can also be taken up to the spaceship when the energy storage is full while players extract. Once a Mineral is depleted it will take 2 – 3 runs until it can be harvested again by the player.

- Metal Scraps:

Metal Scraps show up as generic looking loot blocks that Workers can pick up. They all consist of the following variables:

- Name
- Weight
- Scrap Value

These are randomly assigned to simulate a variety of lootable items.

ii. Special resources:

Special resources are resources that will allow the player to make significant steps toward their goal of saving humanity. These resources are unique and always have set positions. Same as the metal scraps they can only be used on the spaceship. Should the player extract after a unit carrying a special resource dies, without picking it up again, then the resource will reset to the point it is set to spawn.

- Ship parts:

  There are 4 ship parts that are needed to complete the slice. Each of them is positioned in one of the four different biomes on the map, in hard to reach spots, crawling with spiders.

  Should the player have all 4 items on their ship they will have finished the vertical slice. They don't have to extract with all of them at the same time. It is enough to get them one by one.

iii. Possible future resources:

- Blueprints:

Blueprints can be found all over the research facility. Upon extracting with a blueprint and feeding it to the spaceships 3D printer, players are able to create a new unit type.

- Upgrade Chips:

Upgrade chips can be used to permanently upgrade a unit type. The type of upgrade is dependent on the unit type.

- Voice recordings:

Voice recordings can sometimes be found along with generic loot. Upon being picked up a voice recording will start playing its content. These are recordings of how the last humans spent their days. Through these recordings players are able to learn more about the games story and world. They have no weight and no scrap value.

f. Spaceship:

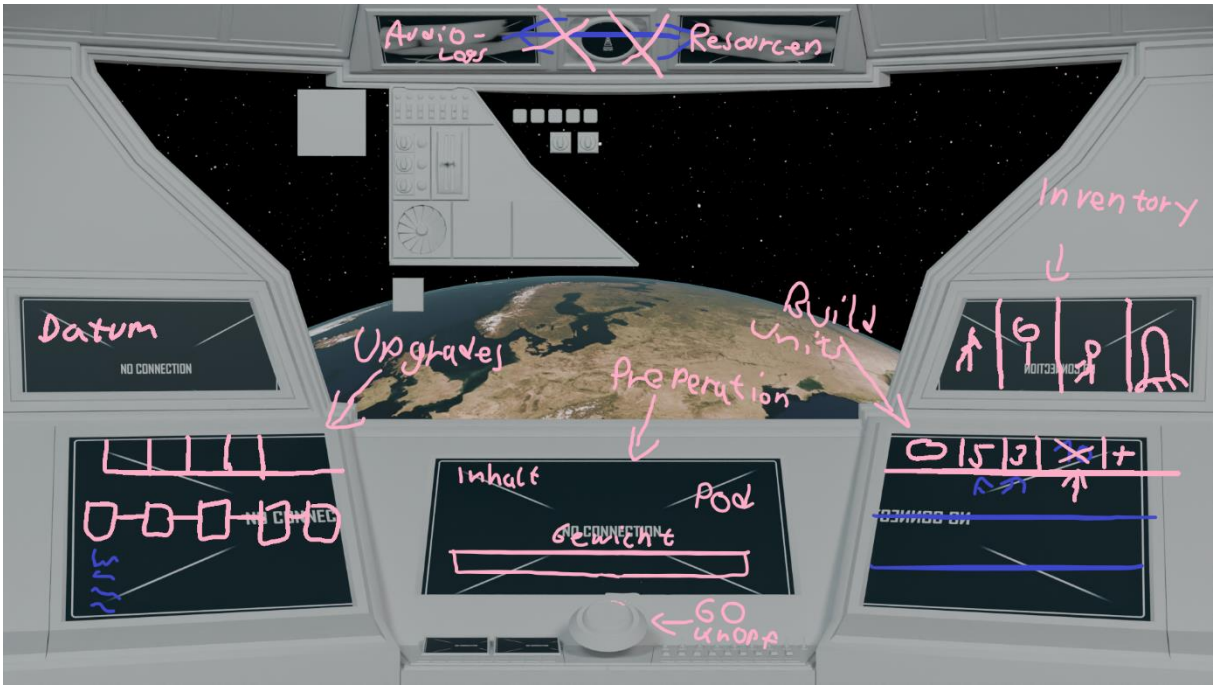
Whilst exploring Earth's surface makes up the bigger part of the gameplay, the things players do on the spaceship are just as crucial. Here big decisions like, what units to take with you, which upgrade to pick and what to unlock next are made.

i. Visuals:

The spaceship has a very clean interior as it hasn't seen much use up until the point of the game. It features mainly white and golden colors with blue and orange accents. It has a futuristic look. Players are able to see the surface of Earth from a window. Each of the function's players can do are represented by their own panels. Players have the possibility to see everything they need with one view, so no information is hidden from them.

All things the players can interact with on the spaceship are represented by a screen. These screens are all placed around a window looking out into space and onto the surface of earth.

The layout of the screens is important as the most important as the most important information must be on the biggest screens.



Going from top to bottom:

- Top left: Shows the audio logs the players have collected and lets them relisten to them.
- Top right: Displays the current resources the player has
- Middle left: Shows information about the current location and world such as date, temperature, climate etc.
- Middle right: Displays the players “inventory” i.e. which units and buildings are currently ready to be deployed.
- Bottom left: Shows the upgrade screen. Here players are able to upgrade their units. Each unit has their own tab like a browser.
- Bottom middle: The dropship window. Here players can select units and buildings for their next extraction.
- Bottom right: Here players can build new units and buildings if they have enough resources for it.

ii. Gameplay

On the spaceship players have access to a multitude of tools that will help them become better and reach their goals. The functions are:

- Print new units
- (Unlock new units)
- Upgrade units
- Upgrade the dropship
- See the current resources
- Listen to found voice recordings

- Preparation for the next extraction

All these things, when done with care, will help players to progress further on their extractions. These gameplay options are all visually represented by diegetic menus, fitting seemingly into the games world without taking the players out of their immersion. All units that return from exploration will automatically be repaired upon arrival on the spaceship.

1) Print new Units and Buildings:

When players have collected enough scrap metal and energy from the surface they can use the ships built-in 3D printer. In the game it is represented by a screen in the cockpit. Players are given information about what stats a unit and building has:

- Cost of Production
- HP
- Damage Potential
- Energy usage
- (Tips about how to use them)

Here in exchange for energy and scrap-metal players have the possibility to print new units. This can be used to replenish their ranks after an especially costly extraction. Depending on the unit type players must pay different amounts to print a new one.

Workers: 25 Metal Scraps & 10 Energy
Recon: 15 Metal Scraps & 10 Energy
Fighter: 30 Metal Scraps & 20 Energy
Quencher: 10 Metal Scraps & 15 Energy

iii. (Unlock new Units)

With the blueprints found on the surface of Earth players are able to unlock new unit types at the printer. From the moment players unlock these units they are available to be printed for the rest of the game.

iv. Upgrade Units:

The upgrade panel in the cockpit contains a tabs system similar to web browsers. At the top players can switch between the different units and their upgrade paths. To be able .to use upgrades players must first find and extract them. Each unit type has a unique upgrade path working towards making them better at their job and the players life easier. There is a straight progression path for each unit type without the opportunity to choose which upgrade to unlock next. Upgrades aren't unit specific, so when players upgrade a unit type all units, of that type, will get those upgrades.

- **Worker Upgrades:**
  1. Better Quencher:
     The Quencher that a worker carries with them is more efficient at collecting energy.
  2. Better storage space:
     A worker can now carry two pieces of lot with them.

3. More energy efficient:
   Workers use less energy while being active.
4. More Quenchers:
   A worker now starts with two Quenchers at the beginning of each extraction.
5. Light build:
   Workers now weigh less.
6. Automatic Cable:
   The cable needed to transport energy from the quencher to the dropship will now be laid automatically.

- **Recon Upgrades:**
  1. Larger Vision Cone:
     The vision cone and the vision circle around the Recon increase in size.
  2. Faster Speed:
     The Recon is able to run even faster.
  3. Silenced Weapon:
     The Recons rifle is now silenced, making it so enemies can't hear it shooting.
  4. Invisibility Module:
     Whilst standing still the Recon will be invisible. Enemies can't see sense them unless bumping into the Recon. Shooting and moving will make them visible again. Becoming invisible is a active ability that uses a certain amount of energy to be maintained.
  5. Better Invisibility:
     Invisibility will now also stay active whilst the Recon moves. The energy consumption is lowered. Shooting will still reveal the Recon.
  6. Permanent Intel:
     Recons have 5 beacons they can place in the fog of war. In a parameter around a beacon the fog of war will stay revealed, giving the player more insight, even when the Recon has moved on.

- **Fighter Upgrades:**
  1. Better cooling:
     The fighter can keep firing for longer before overheating its gun.
  2. Better Range:
     The distance at which the Fighter can attack enemies is increased.
  3. Melee Weapon Upgrade:
     The blade becomes a chainsaw to better deal with enemies in close range.
  4. Better armor:
     The Fighters armor gets an upgrade to be able to withstand more damage.
  5. Distance Weapon Upgrade:
     The machine gun turns into a mini-gun allowing for a faster fire-rate, longer sustained fire and thus more damage.
  6. Third arm:
     The Fighter gets another gun-arm on their back to be able to deal with enemies from behind.

v. See the current resources

It is important for the players to always be aware of how many of each of the resources they have at the moment. Because of this there is a screen always displaying this information to the player. It shows:

- Current Energy
- Current scrap metal

vi. Listen to found voice recordings

Sometimes when players find loot they will also find a voice recording of the last surviving humans. These voice recording will give the players more insight into what happened with earth and how the last humans spent their days. Players can listen to the voice recordings all they want when they are on the ship.

vii. Upgrade the Dropship:

The only means of transportation between space the spaceship and Earth is a single dropship. If players want to beat the game, just upgrading the units isn't enough. The dropship also needs to be considered as it is the heart of the whole operation without which none of the extractions would be possible. The dropship has three different aspects which can be upgraded 4 times each.

- More storage:
  This upgrade will allow players to take more units with them and also extract with more loot.
- More efficient energy usage:
  The dropship will use less energy while active.
- Larger energy storage:
  The energy storage of the ship is larger, allowing it to start each extraction with more energy and preventing it from filling up too fast on the surface.

These upgrade possibilities can also be found on the upgrade panel in the cockpit in a separate tab for the dropship.

viii. (Preparation for the next extraction:)

Before players set out, they must prepare well, as bringing the wrong units with them could end in a premature end of a run. To ensure that players are prepared well, they can scan the surface for environmental hazards like different weather conditions. Eminach weather event comes with its own modifiers that will make life easier or harder for the player:

- Snowstorm:
  - Organic Beings act slower
  - Vision is smaller
  - Units require more resources to keep operating
- Rainstorm:
  - Vision smaller
  - Parts of the map are flooded

- Heatwave / Acidic Rain:
    - Weapons overheat faster
- Tornado:
    - Units and enemies caught up in the tornado will be destroyed.
    - Player dropships can’t be destroyed by the tornado.

A scan also reveals the rough location of loot spots to the player, so they know where they need to go in the next run to find valuables.

g. Story:

Players take control of one of the last humans alive, on an expedition to Earth ,from Mars to save humanity. In the year 2100 an ancient virus was released at one of the poles. The virus was able to spread quickly as infected people didn't show any significant symptoms until weeks after being infected. This coupled with the virus being airborne led millions of people being unknowingly infected. When the deaths started scientist immediately started working on a cure. Sadly this was already too late as the virus had already claimed hundreds of thousands of deaths. After the death toll surpassed one million in just a few months a group of scientist split up from the ones searching for a cure. They saw the only chance of humanities survival among the stars. And thus they secretly started construction on an arch that would carry 1000 human along with seeds, livestock and technology to remake humanity on another planet. The planet they chose was Mars, as there were already sign of water on there and the probability of building a ship of the size they needed that could reach the planet were high. So while these scientists build their ship on an island on the coast of South America, a first cure was released. Sadly the cure was ineffective and couldn't stop the virus. In the meantime, the ships construction went very well, especially after the engineers developed the "Quantum-Core", a new type of engine, able to power the whole ship while needing almost no fuel.
Jumping forward into the year 2110 the number of deaths has reached 100 Million and the construction of the ship is finally completed. Without wasting time, the engineers, their closest families and sponsors board the ship and enter cryo-sleep. Their plan is to land on Mars and then terraform the planet for the next 300 years to make it inhabitable for humanity. To achieve this a small group of 10 scientists and engineers is tasked with waking up from time to time to look over the progress of the terraforming and prepare everything for the awakening of the rest of the settlers.
In the year 2112 humanity lands on Mars and starts the terraforming process. In the meanwhile society on Earth has completely broken down and wars have started, increasing the speed at which humanity is wiped out.
Around the year 2200 humanity is almost completely wiped out. There may be some survivors in small groups in some remote parts but they stay isolated.
In the year 2450 the terraforming process of Mars is finished and humanity is just about the bloom again. The small preparation team is just about to start with the waking up process, when an especially large solar flare hits the arch, destroying the quantum core. Just like that, almost all hope of restoring humanity is lost. Until of member of the team remembers a prototype of the Quantum Core they used to work on, on that island. Seeing as they aren't able to repopulate a planet with the small amount of people at their disposal and their rations running out in the next years, the group decides to send one of them back to earth to get the prototype.
That person is the player. They are sent to earth with everything they could need to explore the surface. Most importantly a 3D-Printer and some robots so they don't have to go onto the surface themselves and potentially get infected by the virus. So the player is send on their way to safe humanity. After arriving in earths orbit the players send out a first squad of robots, only for them to be quickly dismantled by the planets new lords. Giant mutated arthropods. They aren't the only thing that changed. Plants have become taller, so tall that there are trees blocking out the sun. To adapt to this new darkness, in conjunction with the virus mutating everything it comes into contact with, many animals and plants have developed glowing body parts.

The players mission now is to, step by step, make their way into the research facility until they can locate the Quantum-Core prototype, bring it back to Mars and save humanity.

h. Game end:

There are two ways to end the game. One is by completing the objective and winning. The other option is losing and getting a “Game Over”.

i. Win Condition:

There are four important items scattered over the map. One item in each of the big biomes. Players must extract with each of these items. For this it isn’t important for the player to extract with all the items at once. They can extract them one by one. The items represent parts needed to repair the spaceship or something close to that. Once the player has extracted all these items, they’ll get a screen congratulating them on finishing the Vertical Slice. They can continue playing for their own pleasure but won’t have a goal anymore.

ii. Lose Conditions:

There are 2 distinct lose conditions that can end the game.

- The dropship is destroyed:
  Should players fail to protect the dropship then they’ll have no way to get onto Earth anymore. This counts as a fail state, as without a way to get to Earth they can’t do any extracting.
- No more units left & no Scrap to make new units:
  Should players reach the point that all their units are dead and that they don’t have any scraps left to create new ones they’ll also automatically lose. The player character can’t go to the surface and thus no extractions can be made.

4. Interface:

The games interface is the link between the game and the players. Without it the game would still be playable but players would miss out on crucial information. For this reason the design of the Interface is important. It has to be clear, as to what information the players will get, without being so big that it interrupts the gameplay or clutters the screen.

a. Hotkeys

To allow players to swiftly move between units and keep an eye on every corner of the map hotkeys will need to be implemented. These hotkeys can help the players quickly move across the map & when units are in danger to instantly jump to them. The following Hotkeys are needed:

- Pick up Quencher
- Deploy Quencher
- Drop Quencher
- Drop Loot
- Activate Units
- Deactivate Units
- Return to dropship
- One button to switch between each unit of each type e.g.
    - Workers
    - Fighters
    - Recons
- Button to instantly jump to units that are fighting

b. Tutorial:

When first starting the game players will be overwhelmed with the things they can do and won't have any idea what they can do and more importantly what they should do. For this reason we will need to implement a short tutorial at the beginning of the game that explains all these details. The best-case scenario would be for the tutorial to include images & videos that show what is being explained via text. The things that will need to be explained are the following:

- Unit types
- Energy
    - What is it used for
    - How can I get more
    - How can I save energy
- The dropships inventory
- How to interact with the game world
- How enemies work
    - (The swarm, if it exists)
- Loot
    - What is it used for
    - How to get it
- The players goal
- Hotkeys

- The buttons on the screen
- The things players can do on the spaceship
    - Create new Units
    - Load the ship
    - (Upgrade Units)
- The games story

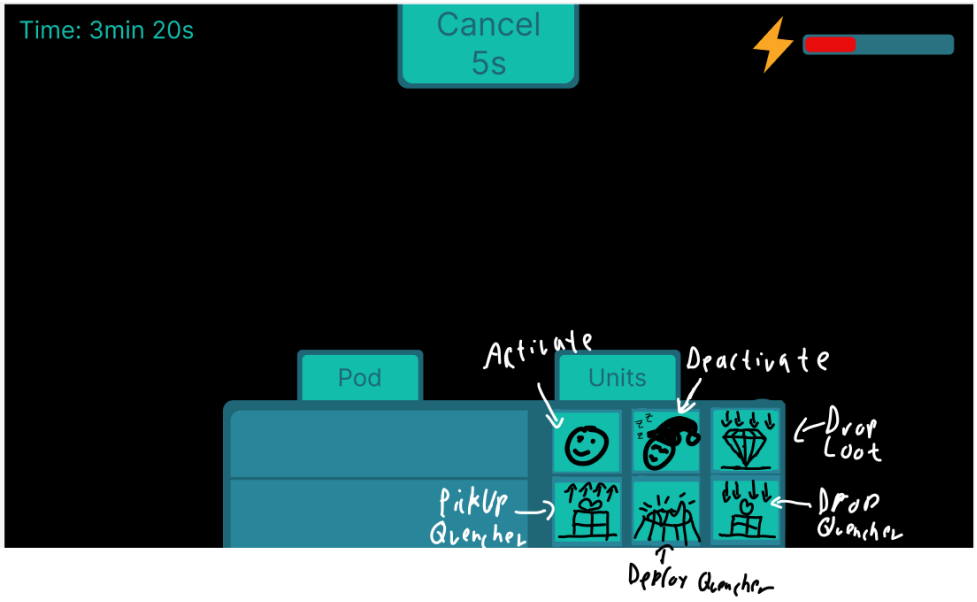
c. Interface-Styleguide:

Our UI is closely oriented at other RTS when it comes to the layout. The colors are muted, as to not take over the players' attention. It should integrate seamlessly into the games world, to make it seem like it belongs to the space ship and isn't just some UI that was added to the game just to add an UI.

d. Basic Interface

Stylistically the In-Game-UI should fit into the game in a diegetic way. In the game players control their units from a spaceship in the sky. So in a way they are like the players, controlling units from far away. This commonality can be used when designing our UI. We make the games UI look like the UI the player character would see on their spaceship monitors. Using this technique we can connect the player to their character more and make them game more immersive.
There are certain pieces of information the players need to have access to at all times and some information the need based on context. The information is:

- Mini Map (optional)
- Timer of how long the extraction has been going on for
- Current Energy Amount
- Button to Launch the Dropship and Countdown Timer



Additionally, to this information players will have two different tabs at the bottom of the screen, similar to browser tabs. One gives them information about the dropship and the other about

the units they have currently selected. The tabs are switched automatically when the player selects / deselects units or manually by clicking the buttons.

- Units Tab:
    - Which units are currently selected
    - How much Scrap are they carrying
    - How much does the scrap weigh
    - Case sensitive Buttons that are greyed out when conditions are met:
        - Buttons to de- / activate the units (Only when units are selected and de- / activated)
        - Button to drop loot (Only when a selected Worker carries loot)
        - Button to pick up Quencher (Only when a selected Worker is in range to pick up a worker)
        - Button to deploy Quencher (Only when a selected Worker carries a Quencher and is in range to deploy it on a mineral)
        - Button to drop Quencher (Only when a selected Worker carries a Quencher)
- Dropship Tab:
    - Current Ship Health
    - Current Ship Weight

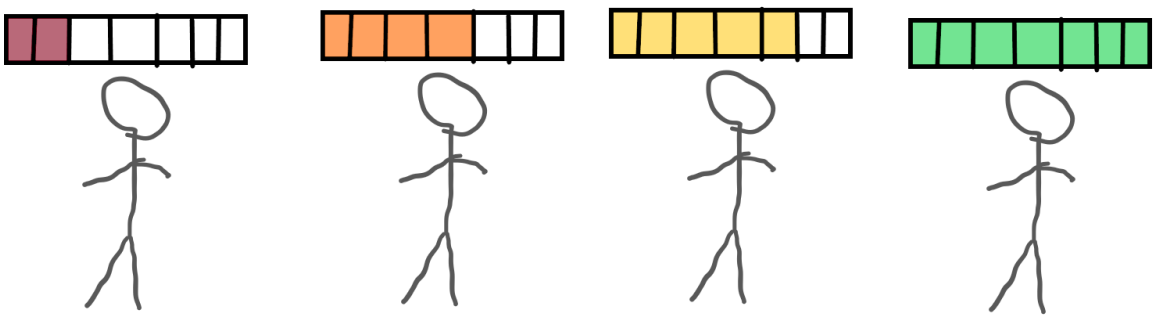
e. Combat Interface:

In combat information must be easily readable and readily available as decisions in this situation are more important than all others. The most important information that has to be displayed are:

- Unit health
- Enemy health
    - (Should they be shown or is it more intense when players have no information on enemy hp?)

Health is displayed above the heads of each respective agent in a bar. The bar is sectioned into segments with each segment representing 10HP. When the agent loses health, the bar gets emptied. The lower the health of a friendly agent the redder the health bar becomes to indicate that it is close to death.

If enemy heath bars were to be shown, they'd be always red(?), no matter how low their health is.



5. QM Strategy:

In RTS Games, more than others, balance is the key to an enjoyable player experience. For this reason we have to test the game often. This allows us to not pivot too far into one direction and realizing the error in our ways too late. For this reason, all features implemented into our game undergo multiple steps of testing:

1. Prototyping / Iteration:
   When we have decided on a new feature it is the Game Designers Job to think about, how it could be implemented into the game. After looking at similar games and the way they implemented a certain feature the Game Designer will draw up three versions of the feature in our game. These features will then be tested by the Game Designer in form of a paper-prototype or, if the technical side is far enough, as a version inside the game. Once the best version is found the feature enters the next stage.
2. Testing In-Game:
   The feature will be fully implemented into the current version of the game, so everyone in the team can test it. Once enough internal team-members have tested the feature and given their seal of approval the feature is as good as in the game.
3. Open testing:
   Once certain milestones have been reached, the most current version of the game will be handed out to a select group of people who will test the game in its current state. They will be given a questionnaire to fill out. In this questionnaire they'll be asked about the aspects of the game that were implemented since the last test and the overall state- This feedback is then taken to the Game Designer who will filter out feedback that can't be used and focus on the things that are implementable / are useful. Depending on the degree of the feedback the Game Designer might need to go back to the Prototyping stage or maybe they'll only need to tell the programmers to tweak some numbers.