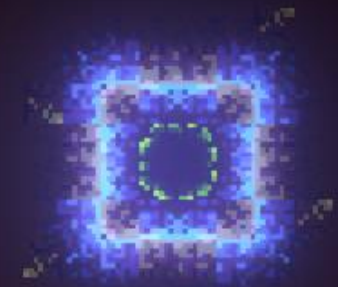


★ The Last Pixel Defender: Game Design Document

Realisation and Dissemination (7005)

★ MA Game Design 2021/2022

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## One-Liner

Delve in this cute, adventure-exploration game. Explore and fight over the pixel land, seeking the fallen defenders and defend the world from corruption.

## Tagline

Wake up, champion, it is your time to defend the world. You are the last and best hope of the world!

## Concept

*The Last Pixel Defender* is a Metroidvania game developed with pixel art. The Visual style are strongly bounded with the gameplay and create unique experience for the player. Behind creating a interesting gameplay experience, the game is also trying to bring a message of “Graphics doesn’t always matter”.

The game concept was coming from a comedy short video, while I give it a more detailed background story setting, and a more balancing gameplay design. The story is about the pixel world is corrupting, an evil mage is trying to pull the pixel world in to voxel world.

Player will have to obtain the R, G, B artifacts from volcano, forest, and underground glacier, and enter the Voxel Wormhole, to defeat the mage.

In recent decade, “Having Good Graphics” is becoming a key indicator to identify if it is a good video game. While there are still games like Minecraft, Terraria still shows that good, creative and unique gameplay is more important than good graphics like Anthem.

Especially to indie game developer, put more effort on the gameplay is more ideal way to make the game be success. Indie game developers and designers sometimes will struggle on their development due to lack of 3D artist. *The Last Pixel Defender* is trying to show the uniqueness of the very classic pixel art style, and to empathize graphics, or is it 3D game, should not be matter on deciding is the game good. Story, gameplay & mechanics are the things I would like to focus in.

## Localization

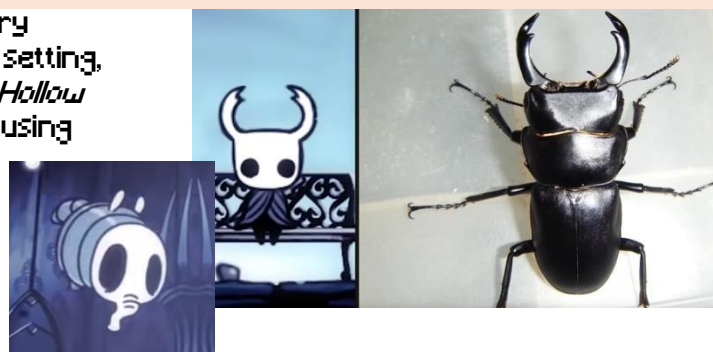
English, Traditional Chinese and Simplified Chinese will be available for *The Last Pixel Defender*.

## Inspiration

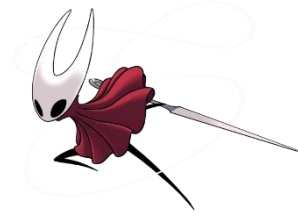
### Inspiration – Setting

The core background setting is very traditional world-saving type story setting, while it was inspired by games like *Hollow Knight* (2017), *Gato Roboto* (2019), using animals as the main characters in game.

In *Hollow Knight*, characters and enemies are all bugs, create a consistency in art style and



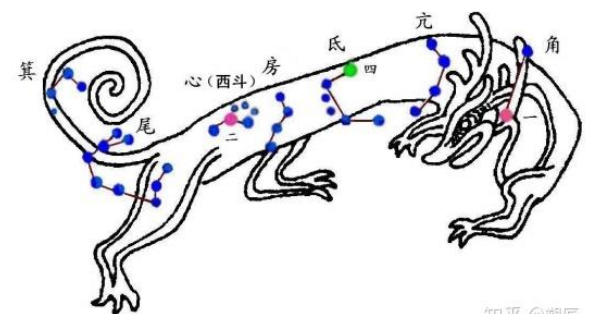
create a very unique world setting with this design. Characters like the *Hollow Knight* itself was a kind of beetles, with character like “Hornet” was some kind of weaver. *Hollow Knight* also designed their boss and NPCs by different bugs like dragonflies, flies, butterflies, etc.



The character design strongly influenced the character design work in *The Last Pixel Defender*. In the game, characters are designed as fox, Deer, Lizard, etc. As inspired by *Hollow Knight*, the characters' attack, story are based on that creature's characteristic. For example, in *Hollow Knight*, Hornet is a weaver and so she is holding a needle, produces silk strands and uses them to fight. In *Last Pixel Defender*, after player complete a side story / saving an NPC, the player will gain a new ability that related to the animal they save. After player saving the Rabbit Defender, they will gain a buff on

jumping, after saving the Deer Defender, player will gain a badge of bravery, which is the antler of the Defender.

As the characters in game are designed as animal, the species of them are inspired by the Twenty-Eight Mansions from the Chinese constellation system. Similar with the Constellation system in the West, while the Chinese constellation has 28 mansions. Each of them have one kind of animal representing. The Eastern Palace is represented by the Azure Dragon, and Heart Mansions was represented by Fox, was also symbol of love in the culture. Similar with the Legendary Nine-Tailed Fox, the Heart Fox also has diverse appearance in Chinese culture, from ancient poem, novel to modern days video games.



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In game, there are twenty-eight defenders and all of them are inspired from the constellation system. In the first zone, player will meet the deer, Earthworm and rabbit. They are representing Net Mansions, Chariot Mansions in the Southern Palace and Room Mansions in Eastern Palace representatively.

Additionally, *Tunio* (2022) also inspired the character design of *The Last Pixel Defender*. The protagonist of *Tunio* is an



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anthropomorphic fox, hiding the soul-like hardcore gameplay behind the cute and colourful graphics. The protagonist - Zorro in *The Last Pixel Defender* is also an anthropomorphic fox. The character design and the hardcore gameplay could create a high contrast experience for player.



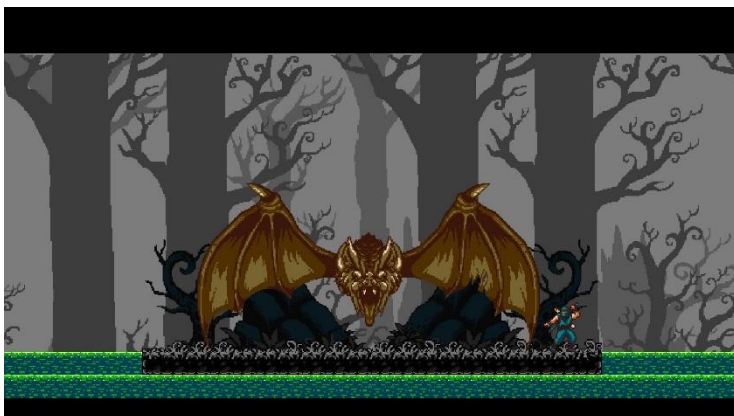
### Inspiration – Mechanics

*The Last Pixel Defender* is a Metroidvania game, the mechanics was inspired by several games, video, and create unique gameplay experience after mixing them together.

*Evoland* (2013), *Doom* (2016), *Super Mario Odyssey* (2017) and *The Messenger* (2018) inspired the mechanics in the last part of the game. The graphic change from early 8-bit style to 3D in *Evaluand*.



There also similar mechanics used in *The Messenger*. Player could pass through the portal to switch between 8-bit and 16-bit world. The mechanics in The

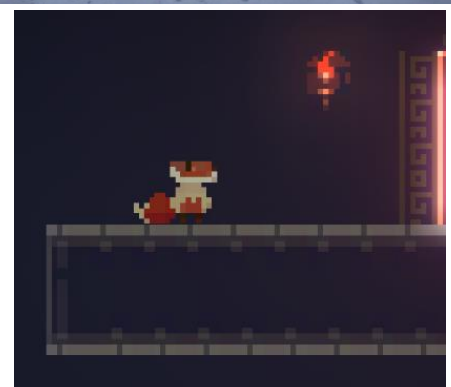


Messenger is also part of puzzle-solving, player have to switch between 2 worlds to find their way out, or to enter secret room. During the boss fight it is also a part of the boss mechanics and narrative design. The design used in these 2 game are strongly linked with "Time", and making player won't feel bored when they return to some map they passed before.

Also, in *DOOM* and *Super Mario Odyssey*, there are also some levels that they reused the classic art style of the series, in the middle of the levels with modern graphics. The design inspired *The Last Pixel Defender*. While unlike these games, *The Last Pixel Defender* is more about space (voxel vs pixel) but not time (8bit vs 16bit/3d). The mechanics was only applied into the very last stage of the game, creating a very special experience to player after a 5-10 hours long gameplay in a 2D pixel world.

Supraland (2019) shows a good example for a 3D Metroidvania game. Supraland created many amazing level and puzzle, player will have to use their ability and interactable object in the open world to solve. In the 3D gameplay part of *The Last Pixel Defender*, the world will be created in 3D voxel. The voxel castle will contain several levels and boss waiting for player to explore and complete, before player could enter the final gate and face the boss. Supraland's mechanics proved that Metroidvania is also workable in a 3D setting, allowing player to use their ability to solve puzzle as it is in 2D.

The resurrect mechanics was majorly inspired by a comedy short animation made by RushSong (2022) and *Sekiro: Shadows Die Twice* (2019). In the short anime, the character will lost one pixel every time they die. And only his hair is left when facing the final boss. To make balancing the difficulties and the design concept, in *The Last Pixel Defender*, when player died and decide to resurrect immediately, 2 rows of the pixel will be removed from the character, while the losing part are immune to all kind of attack. The player can resurrect ?

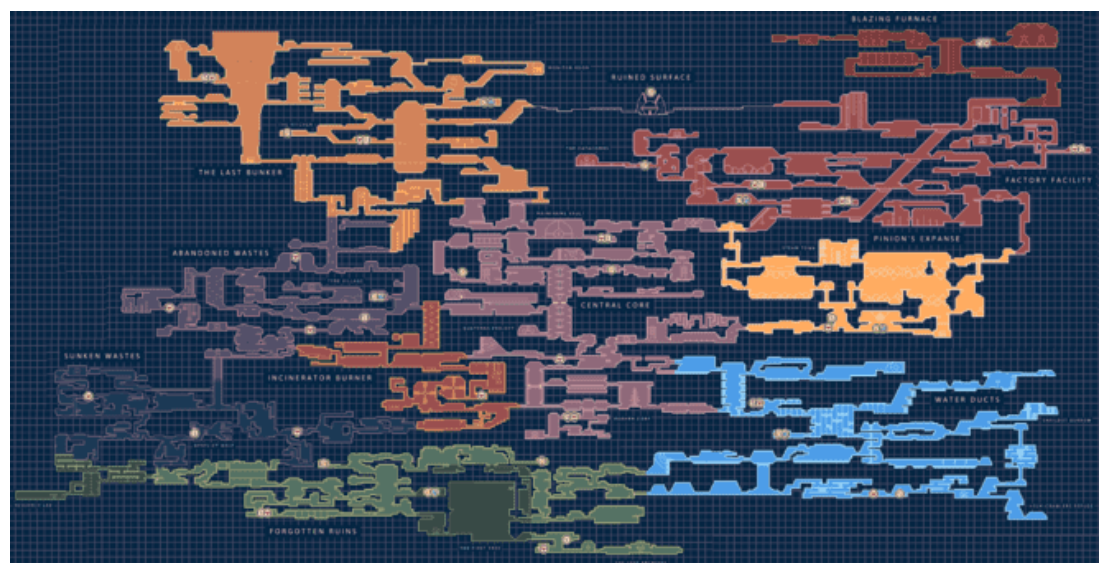




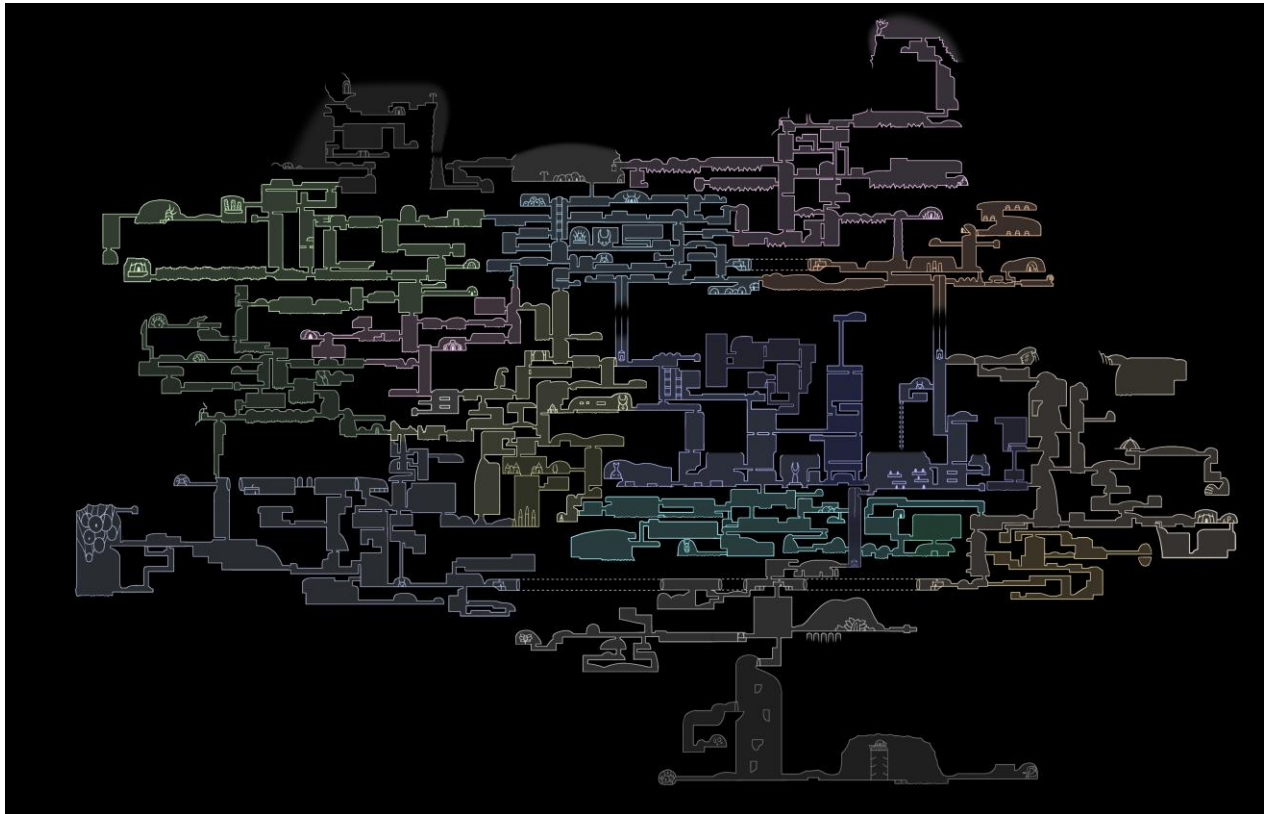
times before the used up all their pixel. They will have to restart from the beginning of the level once they use all the pixel on the character. *Sekiro: Shadows Die Twice* proved that such kind of resurrect system is workable in Soul-like game. And with some equipment/badge, player could develop different builds with the mechanics.

Lastly the game is also influenced by other Metroidvania game. Metroidvania game provided an open-world space, which divided into different zone for player to explore. Similar with *Hollow Knight* and *Haiku, the Robot* (2022) break their map into different zone and putting puzzle, traps, enemy and boss into different room. The room and its content are all designed to fit the zone' theme.

Inspired by this game, *The Last Pixel Defender* also break the map into Volcano, Dungeon, Cave, Underground Glacier, forest and the voxel world. In volcano zone, creatures are designed to match with the theme, such as the creatures are surrounded with fire. Additionally, similar with the games, *The Last Pixel Defender*'s plot are also developed with obtaining new ability. In *Haiku, the Robot* and *Hollow Knight*, player could gain ability like double jump, super dash, which helps them to access some room that they cannot reach before. This allows player to get into new zone and continue the story.







The boss design and difficulties are inspired by all soul-like game such as *Elden Ring* (2022), *Dark Soul* series (2011) and the behaviour of it are inspired by *Hollow Knight*. The behaviour of the enemies in *The Last Pixel Defender* is created after observing from the above game. Including walking from point to point, chasing player once detected, enemies flying around in the large room and shooting projectile towards player. These behaviour are inspired by the games, created a soul-like hardcore boss fight experience. Similar with all other soul-like game, the boss are usually larger than the player. Like *Astel*, *Naturalborn of the Void* from *Elden Ring*, and *False Knight* from *Hollow Knight*, the boss could give less dodging space for player and create pressure when moving towards them.



The boss usually have slightly more health than other enemies. While the combat system is influenced by *Hollow Knight* and Haiku, the Robot more, boss usually have a high attack rate and player is losing 1 heart when getting hit. Additionally, the health of the boss will not be shown, while some boss' attack rate will raise once health is below a certain percentage.

## Selling Point

2D platformer and Metroidvania games are very classic and ideal genre for indie game development. The Last Pixel Defender is a single player, soul-like Metroidvania game. The game was inspired by games like *Tunic*, covering the hardcore gameplay with adorable characters and fancy pixel art style. The game aiming to provide a unique soul-like experience to player. The open world of the game is split into different zone, each zone has a unique theme.

Different with some other Metroidvania title, the gameplay is more about combat than parkour, with varieties type of enemies and boss, creating tense and excited combat experience. The Last Pixel Defender has its own unique mechanics as same as all other Metroidvania titles. Player could resurrect in front of the boss, spending rows of the pixel to continue the unfinished fight. Once player losing half of the body, they combat style is completely different, giving a fresh gameplay, challenge for player.

Additionally, when player defeated the last boss in the 2D pixel world, player could enter the 3D voxel world and seek for the final boss. The change between 2D and 3D is seldom seen in game, especially in Metroidvania title.

## Target Audience

The Last Pixel Defender is targeting in all gamers, especially on soul-like game lover, Metroidvania game lover and 2D platformer lover. Additionally, the game is also targeting for player would like to experience an impressive story in a hardcore Metroidvania game, similar with *Hollow Knight*.

The game has no violence (Blood) content and extreme language, so it is suitable for player from 8 and above. While consider the difficulty, it is recommend for player 16 and above.

## Game Design

Research –Studying what makes a good Metroidvania from *Hollow Knight*

Metroidvania is a subgenre of Action-adventure genre, focusing on creating a non-linear and utility-gated exploration gameplay.

The name Metroidvania is a combination between two classic video game series *Metroid* (since 1986) and *Castlevania* (since 1986). Metroidvania games featured a large, interconnected world map to explore, while some acquired items or abilities to access.

*Hollow Knight* is one of the best Metroidvania in the market. Interestingly, the designer and co-director of Team Cherry, Pellen (2017) shied away completely from describing *Hollow Knight* as a Metroidvania when marketing. The animator and co-director Ari Gibson (2017) also hold a same view, while he added the game are designed to create an adventure in a big world. They built an interesting world with lots of thing to discover and see, keeping people engaged throughout.

## What makes a game a Metroidvania?

Metroidvania is diversity of mechanics. (Rodriguez, 2018). Rodriguez suggested a Metroidvania game is usually a side-scrolling platform game, whose features a large, interconnected map. During exploration, player has to obtain certain object, weapons or abilities to unlock different area. The map was composed by rooms and secret rooms. Enemies, objects and abilities are all placed in it.

Bruno (2020) supports Rodriguez definition. Bruno mentioned a Metroidvania features an extensive map, require a proper exploration, making good use of the skills acquired. Additionally, there are usually frequent fight against enemy waves.

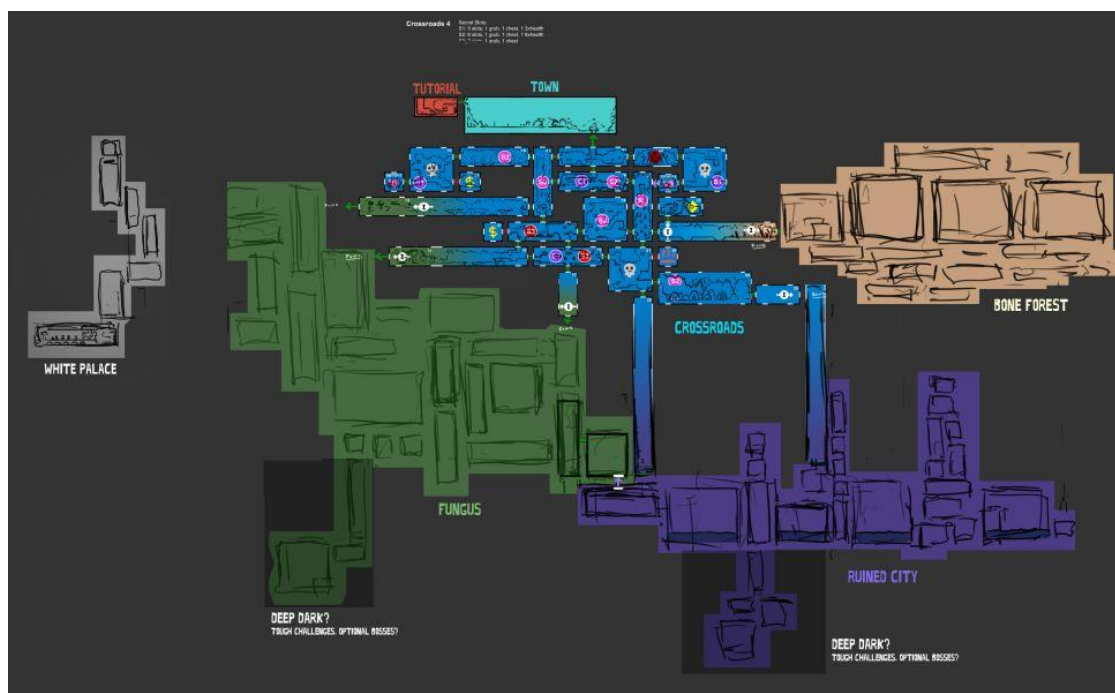
Other than the map and combat, Bruno also suggested a Metroidvania is narrative, and feature with character evolution and balancing of difficulties. While after Dark Soul series become popular, many Metroidvania game designer also added a “Soul-like” tag in their game.

The development of Metroidvania is complex. Bruno suggested the framework of building such games, included the below key aspects: large map navigation; Battle system, inventory, skill tree, NPC, puzzle-solving, dynamic map loading, etc.

## How to design a great Metroidvania map

The gameplay style develops an experience that is enthralling based on curiosity and challenge. (Bruno, 2020). When constructing the game map, Bruno also suggested in a typical game, there are lack of clear direction guidance, encouraging player to explore the level in their own. Sometimes, it force player to revisit the path they has gone through.

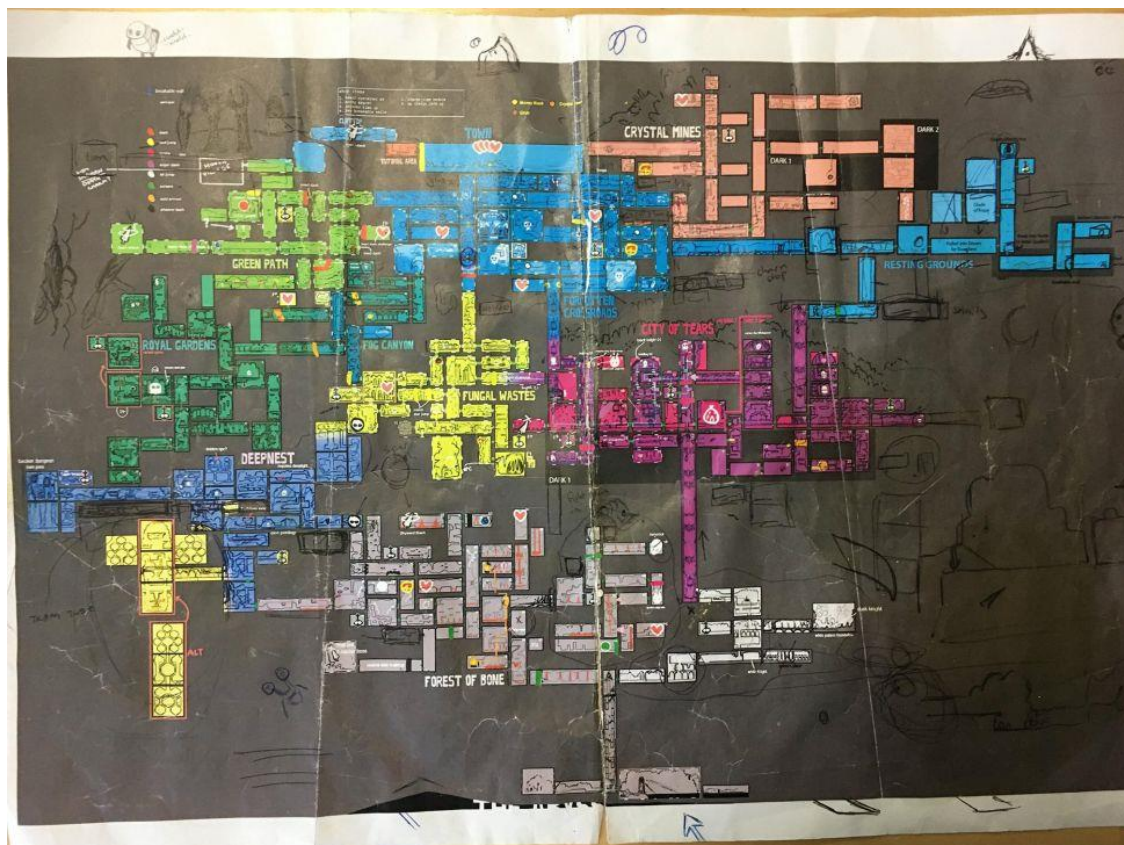
Before designing map, designers has to come up with all character’ s abilities and put them into a rough order, said by Fellen (2017). These abilities push the progress of a Metroidvania game forward. After that, decide the order and the path player take through the levels to get those power-ups.



After decided the path, it is the time to change the progression from linear to less linear, putting some power-ups being optional. Gibson (2017) supports the concept, in *Hollow Knight*, they chipped away at lot of hard gating in game, putting lots of power-ups optional. It is exactly what they expected and hoped to see that player are speedrunning the game and ignoring those power-ups. A non-linear design could make it more flexible and encourage player to either explore or challenge themselves.

Team Cherry expand the map from a core of the world, create more unique area for player to explore. The *Hollow Knight* designers give up the idea of making the map randomized, as it is bad for storytelling and not fun from a technical or design perspective. The Crossroads is heart of everything, and everything wrapped around it. They break the areas into small areas, like between Greenpath and Fungal Wastes, they shared a similar theme while has different experience. And when they decide to let player to revisit an area, they created a whole new area such as the Crystal Mines, to expand the gameplay. These enriched the content and created lots more different experience for player to enjoy.

The most effort in map design is to connect the map location and things, and make the world make sense. One of the most remarkable designs in *Hollow Knight* map is the Blue lake. Gibson mentioned it exists purely for narrative reason. It keep raining nonstop in the City of Tears, Gibson decided to put a big lake above it, to explain where the rain is comes from. Pellen also mentioned, player finding the connection between stuff is a nice reward. Every level they built is around the sense of discovery. The discovery is not mean finding 500 coins, but unique sight, characters and system, discover a new event in the world. Following the concept, it will be much easier to decide where to put areas like the Blue Lake as you think about a world instead of an abstract game. A good map is created by pathways that have the coherence, and ends up being an interesting, believable space.





Guidance is an optional element in a Metroidvania map. Gibson agree that game developer giving a much clearer goal to player is okay, while he would love to see player explore themselves. In the design of *Hollow Knight*, if player lost their way, the exploration would still let the player feel it worth the time. Player will not spend an hour cross same caves and find nothing but blockades and same enemies. Therefore, a good Metroidvania map should prevent player feel bored when they revisit the room. *Hollow Knight* added lots of little secrets and things for discover. Even player not making a lot of story progress, they might still find something missed last time when they revisit it.

Additionally, this is also a way for player to decide the pace of playing the game. Fellen's design let player to forge their own path, create their own adventure story. The player could discover a new area occasionally, which takes on a totally different tone. Player will realize they enter it too early, and not sure if they're meant to be. But it is still options for player to explore it, until they reach somewhere they do not have ability to reach.

Another the key things is keeps it simple. Fellen believes that all the parts of the game, including the enemies, bosses, world, power-ups, everything had a same pedigree and simplicity even they are made separately. Nothing is discordant when putting them together.



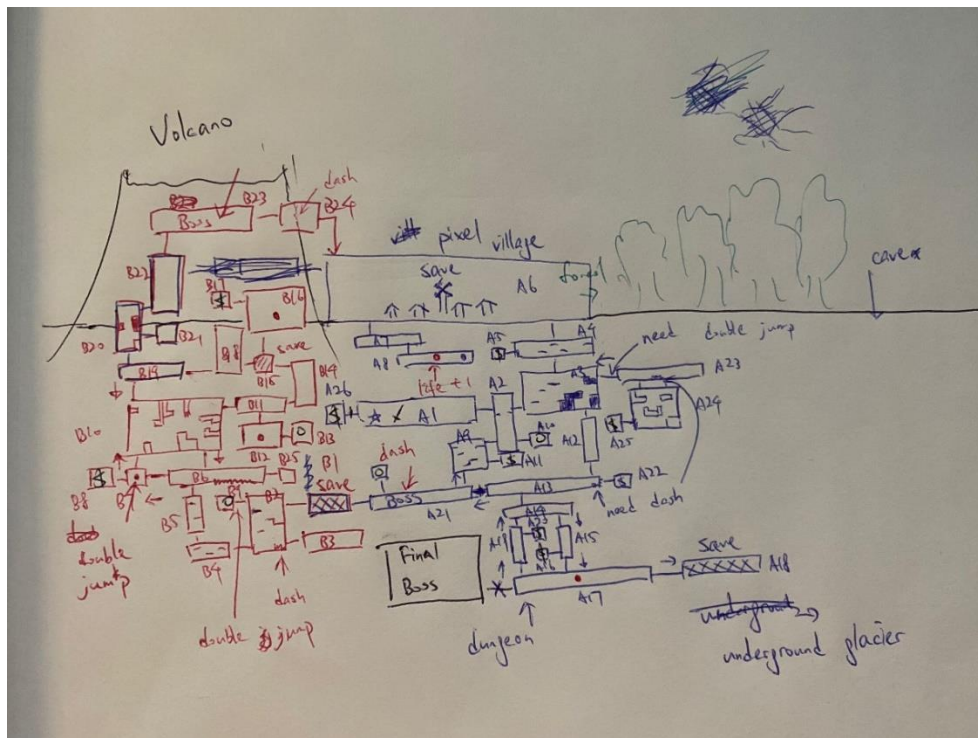
*One of the things we were really keen on is getting as many connections between areas as we could.* – William Fellen

### *The Last Pixel Defender*

*The Last Pixel Defender* is strongly influenced by *Hollow Knight*, and thus the game design and level design has referenced on the success of the game. The framework included the key aspects Bruno suggested. There is a large ma, with a complex combat system, player inventory, different ability given by badge, NPC with dialogue

and side stories and puzzle-solving level. *The Last Pixel Defender* follows the framework and develop its own unique mechanics.

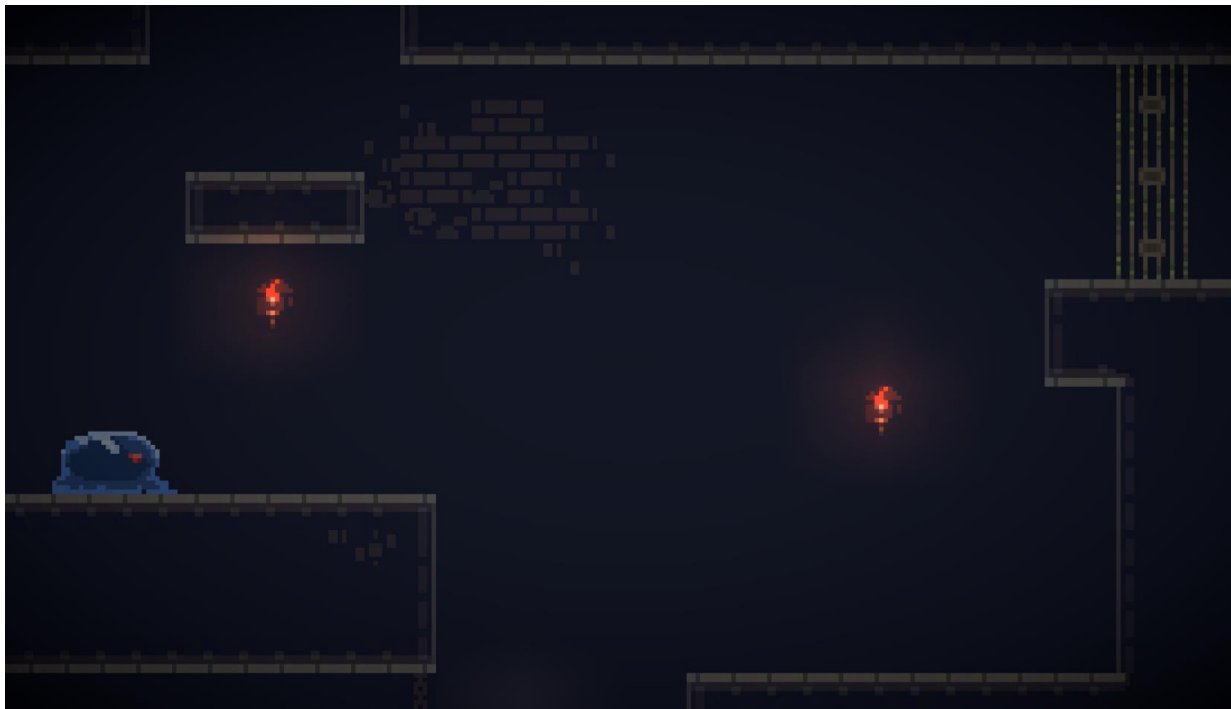
The early map design of *The Last Pixel Defender* follows Pellen and Gibson's working plan. The map contains at least three area representing R, G and B, which developed into the volcano, underground glacier, and the forest. The core of the map is the village where the story mainly developed in, where player could see the star and the voxel hole. Then start to connect between the game starting room to village, and connecting different zone, creating secret room to enrich the content.



Player is free to explore the whole map after the dialogue with the NPC in village. It is a non-linear progress that player could choose their own path. The below image shows the exits in room A13. Player could get into the boss room in current zone or continue to explore the cave beneath.

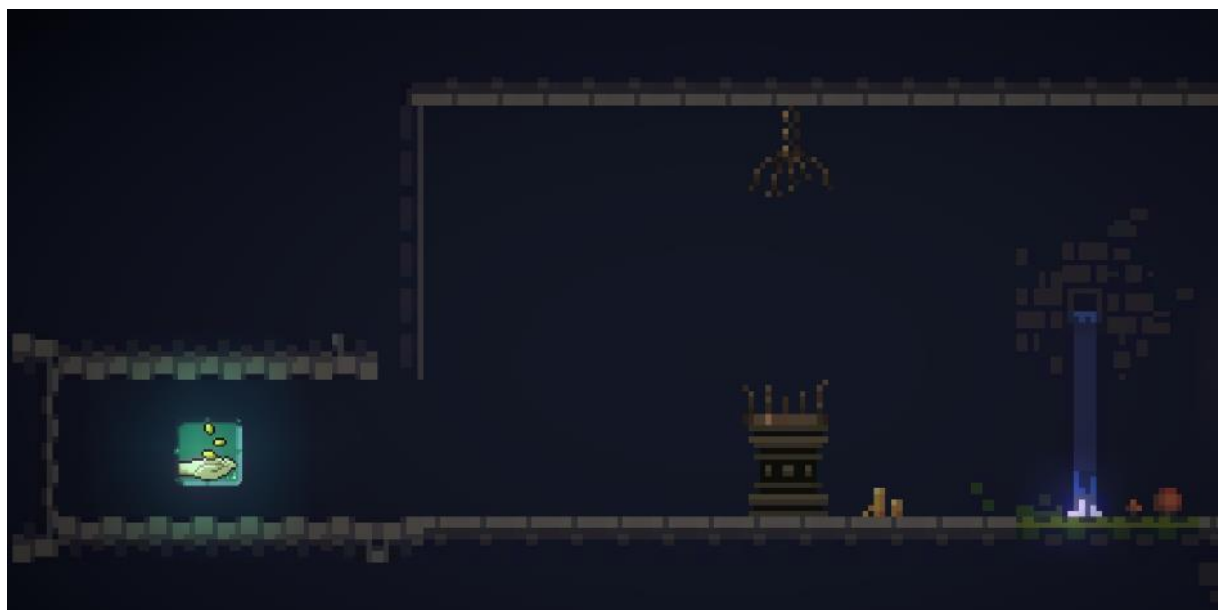


It is a sub-area of the whole dungeon level, with a theme of a mining area. Player could get the power-up of double jump in the area, and some other power-up, such as the cool down badge, which will help them in the exploration in volcano.



The above rooms is some examples on how the map is ability-driven in The Last Pixel Defender. These room could be found in early stage of the game, but player

cannot cross all the spikes in that stage. To cross the room and collect the items or to enter the next room, player has to obtain abilities such as double jump and increase their dashing time in their journey. It is a method to increase the game content and player could also discover something new when they return to these room later in game.



Secret room are also added into different room for player to explore. For example, in the first room where player spawn and start the game. There is actually a hidden badge. If player return to the room, they could discover such hidden elements.

Lastly, the map is designed to make everything in map reasonable and make sense. The enemy in each map is match with the animal type of the final boss of that area. For example, in the final boss in dungeon area is an earthworm, therefor the elite enemy of the level is also a worm, alongside with other creatures like bat that lives in



a dark place. For the detailed environment design, please refer to the [Environment](#) session of this document.

## Gameplay & Mechanics

Pixel Art was the art style of the game, it was also part of the mechanics and narrative. Similar with Souls-Like Game *Sekiro: Shadows Die Twice*, player could respawn immediately by spending 2 rows of its pixel. When player lost all its pixel, they need to restart from the auto saving point in the beginning of the zone.

The badge system also allows player to create different build and is part of the narrative. Some badge simply adding stats to player. Some other badge could allow player to play in a different build. For example, one of the badges increase player damage after they resurrect. It gives new options for player (maybe speedrun player) to reduce themselves into last life, while getting super high damage.

Player will get Pixel Point when killing enemy or opening chest. With these Pixel, player could spend them on the shop, purchasing badge using the ability to heal during the fight, and could also spend them on using heavy attack.

Player experience a change of combat style in the gameplay. When player lost half of their body, they are no longer able to use melee attack and switch to Soul Form. At this point, the combat system will switch from close range (Like what how we play in *Hollow Knight*) from long range shooting (Like Samus Aran in (2002)). In close combat mode, player's light attack will not cost any pixel, while after switching to balance between the increase of attack range, both Light and Heavy attack will cost pixel. Therefore, player cannot simply spam light attack and defeat all monster from long range.



Additionally, every time when player lose pixel there are also some changes to player itself. The body parts (Pixel Rows) that lost during resurrect are immune to all kind of attack and damage. This allows player to dodge some attack from the boss that they could not dodge before.

Besides giving advantage in battle, it is also useful during the map exploration. There will be some hidden path or short out in map that player could not get in when the

have full body. But if they lost some pixel, they are able to pass through the short out. These designs also encourage player to try to use the resurrect system.

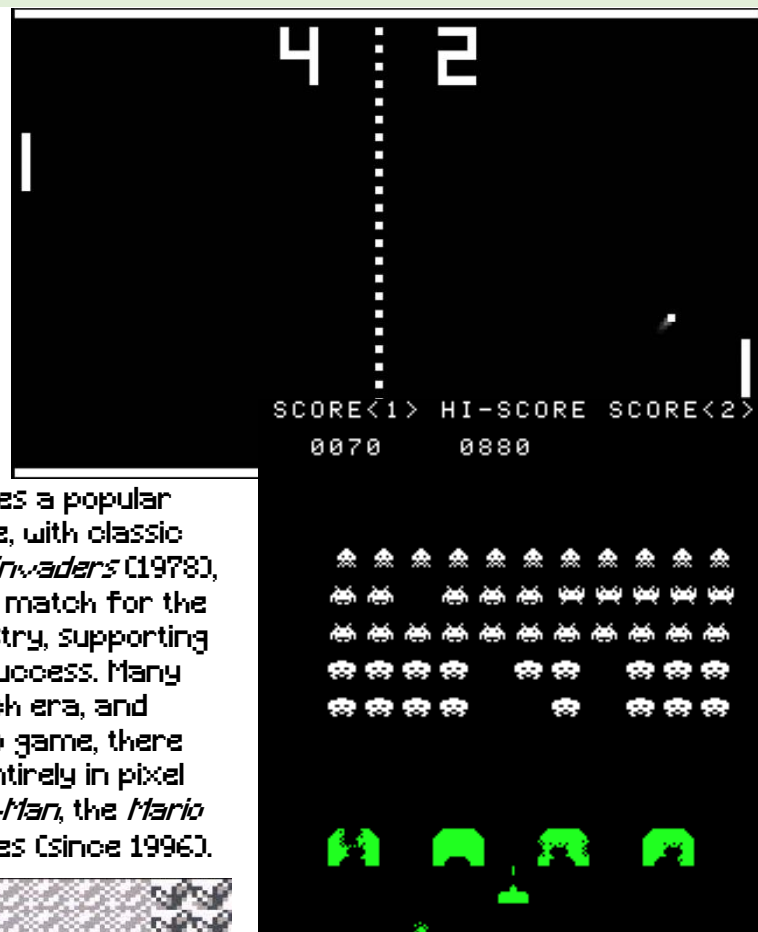
Other than changing in combat mode and the character portrait, player will experience a huge change in the art style and basic gameplay. Most of the gameplay is in 2D Pixel art style, while in the very late stage of the game, player will enter the Voxel Wormhole, reach the sky castle, which was built in 3D voxel. In this stage, player could explore in a voxel level inspired by *Minecraft* (2010). Player will have an extra dimension to explore and create a brand-new experience to player.

## Visual Style

### Research -Pixel Art

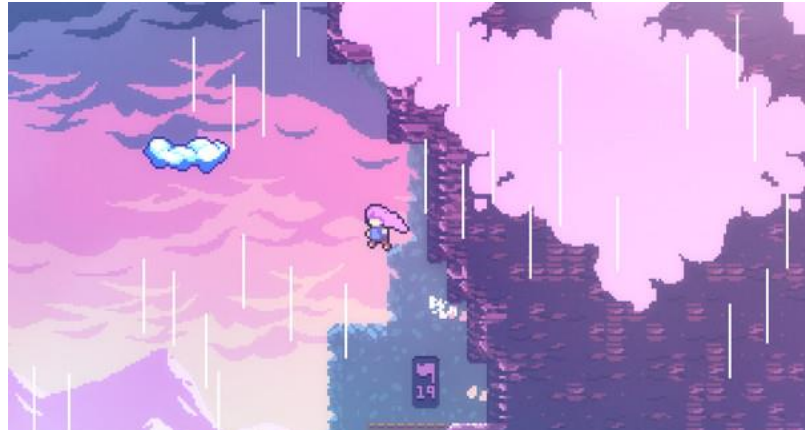
Pixel art is a classic form of digital art, built image with the exclusive and intentional placement of pixels. Pixel art is a pioneer in video game. In the early 70s, games like *Pong* (1972) by Atari is one of the successful examples of pixel art's appearance in early video games.

Pixel art associated with low resolution graphic consoles and PC widely in the 8-bit and 16-bit era. In this era, it becomes a popular form of art style in video game, with classic arcade games title like *Space Invaders* (1978), *Pac-Man* (1980). It is a perfect match for the young, developing gaming industry, supporting those early consoles to make success. Many great IP series starts from such era, and among the 50 best-selling video game, there are 24% of them are almost entirely in pixel art. Such as *Tetris* (1989), *Pac-Man*, the *Mario* (since 1985) and *Pokémon* series (since 1996).



These are some classic IP that still releasing new game recently, and games like Pokémon still breaking the sale record everytime releasing a new game, and those classics are still enjoying by those old fans. We can conclude that the Pixel art somehow help to build the kingdom of these IP.

What remarkable on the list would be *Terraria* (2011) and *Minecraft*. *Terraria* on the 9<sup>th</sup> of the list, where *Minecraft* is standing on the top of the list. Computer hardware technology developed rapidly in the past decades, and video games turns into a three-dimension era. It comes along with the competition on details of graphics, and it is getting tenser. In such background *Minecraft* and *Terraria* still make a remarkable sale with pixel/voxel art style and amazing gameplay experience. Other than that, TGA 2018 Best indie game



winner *Celeste* (2018), and popular games like *Stardew Valley* (2016), *Dead Cells* (2018), *Moita* (2020) and *Undertale* (2015) are all pixel games released in recent year and receive lots of support. These are a strong proof on the claim: "Graphic doesn't matter to make a good game" .





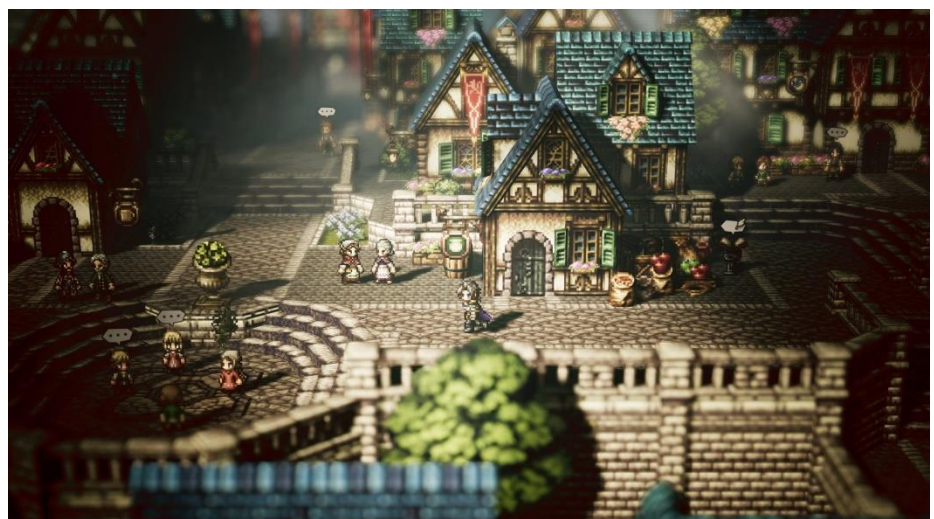
### *Advantage of Pixel Art*

With pace of technology increased, the pixel became larger, more detailed and more colourful, but pixel art game never dies.

The most outstanding advantage of pixel graphics is they has unparalleled clarity and visual control, especially on small screens that aren't always the highest quality. (Bozzotta, 2015). It shows its advantage in the early growing stage of the industry, making video to develop in that hardware(consoles) and spread the charm of video games. And in nowadays, it is a great choice for indie game developers. Bozzotta suggested pixel art can be a very efficient way to produce a lot of artworks in the same style. To indie game developers, it is an advantage to them as they may not have an artist team, comparing with those AAA titles developers. A larger graphics also means a more detailed animation in order to make it looks smooth. There are many indie examples to mention, including *Undertale*, *VA-11 Hall-A* (2016), etc. These are great games showing the charm of pixel arts. Pixel art It is great replacement when the budget is low, and the time is not that much. Additionally, it is an art style relatively easy to learn when comparing with the more detailed drawing style.

Besides on Pixel art could isolated the most important element of an item and use only that. (Rancea, 2021). Pixel art is simplistic and perfectly fit RPG game, making player to feel more about the mechanics rather than just focus on the graphics. Additionally, it let the player to focus on the nature of the item. The art is simple enough for player to explore themselves without redundant explanation.

Pixel art is flexible to cooperate with other effect, create a unique and stunning visual effect. Games like *The Last Night* (CBA) and *Octopath Traveler* (2018) has created a stunning view in game with pixels. Square Enix Producer Masashi Takahashi suggested (2019), adding new elements like HD-2D, makes the classic pixel style game look interesting for modern player. These examples also shows a very amazing match between the HD-2D pixel and the use of Depth of Field. Pixel art is flexible, making it easy to match with different additional visual, camera, lighting effect, and create a modern graphic that look less plain old and outdated.





Lastly, nostalgia is underrated. Justin Davis thinks that pixel arts in video game also carrying player's personal memories and reminiscences. Many top, classics IPs like *Pokémon*, *Zelda* (since 1986) and *Mario* begins with the classic pixel art. Gamers grew up with these IP also keeps the modern pixel art popular. And sometime nostalgia makes these pixel classics even more unforgettable. *Pokémon Emerald* (2004) is no doubt one of the best



*Pokémon* games. While until today there still player enjoy playing this version and created the many fans made version base on Emerald, such as the *Ultra Emerald V*, *Emerald Kaizo*, etc. Nostalgia make pixel art a very mild art style that everyone could accept.

### *The Last Pixel Defender*

The Last Pixel Defender use Pixel art in its own purpose. As mentioned, as a personal game, it is important to understand what kind of resources we can get and use in game.

As Bozzotta suggested, we can put different pixel art together, but not making the whole thing looks weird. The reduce the time on assets researching and helps to build the game with a consisted style. For example, in the map showed below, it is a combination of 3 different set of tilemap, created by different artist. But nothing is discordant when putting them together.

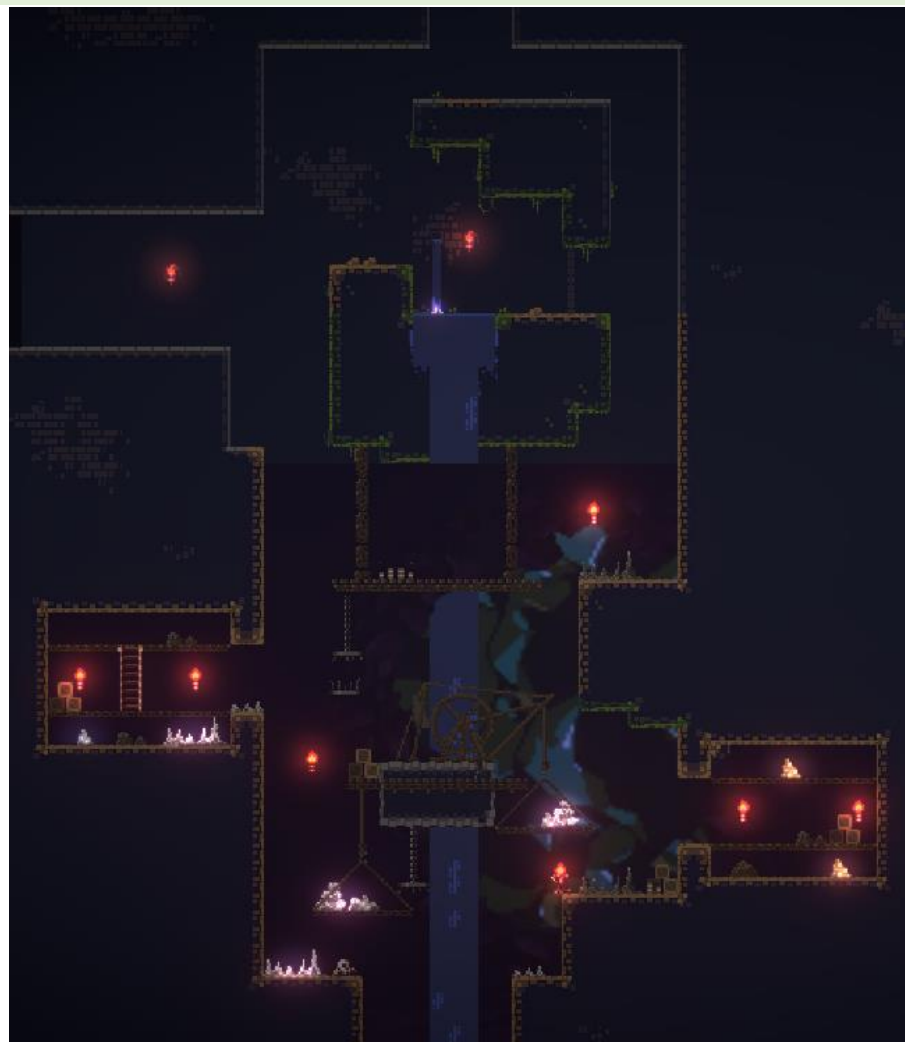
It also keeps player focus on the game mechanios. The game is using pixel art to match with its mechanios. Pixel art made the mechanios of the resurrect system more workable and deployable in design and development perspective. Beside an art style, it is also part of the UI and mechanio, working as an indicator to show player's status. Player could easily find how many percent of pixel their character lost every time when they resurrect.



## Environments

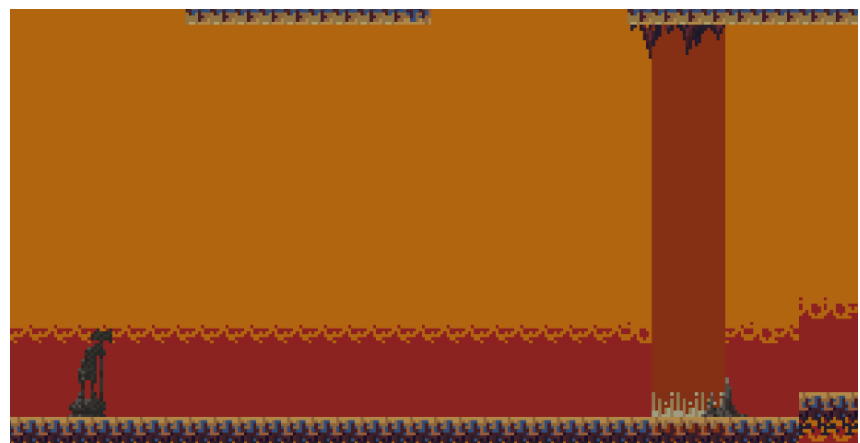
The game breaks the whole open world into different zone, which has a unique theme. The landscape in the levels are designed to create a complex, hardcore gameplay. Player has to explore the level while dealing with all the enemies in the platforms.

The environment is built by different texture and colour in details to empathize the features of the zone. The content, including enemies, traps are also tightly bound with the zone theme. For example, in dungeon zone, the colour theme will be in blue, and the floor are built with



bricks and stone, decorated with torch, mossy ground and water pipes. As player going deep, player will reach the mine area, where the ground are dirt, grass is rarely seen after decades of mining work. As replacement, player could expect a rocky background, elevating platform with crates and barrels, stone and glowing Pixel Ore on ground. The landscape will be more natural while player could still find some resting room, mined cave remain in the zone.

The design was also used in the volcano zone. In this zone, the colour will be brighter, with using red, orange, and yellow, created the high temperature environment. As same as using water to decorate the dungeon and mine area, in the volcano zone, lava replaced the function of water, while additionally the lava lake will also do damage to player, also replacing the spikes trap in the previous zone. As inspired by *Hollow Knight*, the environment of *The Last Pixel Defender* is strongly



connected. For example, player could see the water floor in room 12 and find it ends at the bottom of the cave (Room 17).

The secret room environment are designed in three different styles. The first type is commonly seen in the early stage of the game, there are less detail design, while playing as a role to introducing there are secret room in the game, and giving buff and rewards for player, to get better prepare before starting the story. While some of them contain classic parkour element, giving player a brand-new experience after long fight.

Secondly, the level is designed with fancy, stunning blooming effect. These levels are designed to give a short break to player, after a boss fight or a long journey. Player is encouraged to enjoy the view, take a short break, while searching for the rewards hiding in the room.



There are one kind of secret room that design with environment narrative. For example, in the below level shows the “Badge of Cool Master”, is hiding in a cave

deep in the mine. It is telling a story about its former owner, was exploring the unknown underground world, while lost his life in the dangerous room. Another example is when player obtain the “Sword of the Pixel Knight”, the badge is on the corpse of the Knight. There will be some more similar case like the “Defender’s Comb”, player could get this badge next to the dead body of the Defender of Chicken.



Last but not least, guidance is added in game but hide in the background. After awaked from deep sleep, player is answering the calling by the stars, and the stars is guiding the player to begin the journey. Therefore, player could see the stars on the background shining, guiding the correct path to the village and start the journey. Instead of simply pointing the way with arrow, this also create an exploration experience for player. Another example is after player arrived the village. Player could talk with the Deer NPC and start his side quest; he will tell player there is a boss under the water. While player could actually skip the dialogue while they could still find



that there are some fish jumping out from the water, encouraging player to jump into it. Additionally, if player jump into it with out talking with the NPC, the dialogue will be different when they report to the NPC.

What's more is on blocking the player from certain room. As shown in the below image, player will find they could not wall jump to the room in the right. They are only able to get into the room until they get the double jump ability. And some one-way path such as the high mountain wall next to the village. It is not possible for player to climb from this side, while player only can jump from the other side after completing the volcano zone.



### Interactable Object

There are four different types of interactable object player could find in The Last Pixel Defender. These interactable object could aid on player' s journey.

- Normal Chest & Golden Chest
- Pixel Potion
- Extra Health Heart
- Badge

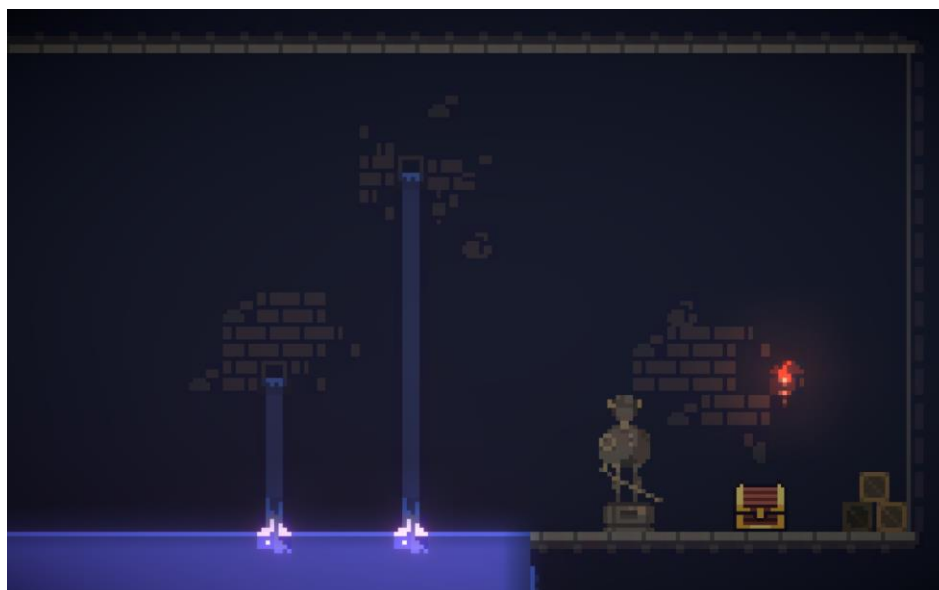
#### Normal Chest & Golden Chest

Normal Chest and Golden Chest is one kind of interactable object that player could interact by attacking it. The chest will open and give player certain amount of Pixel, aiding their journey.

Normal Chest is commonly seen on the map, providing 10-20 Pixel. The chest will reset, and player could always open it again every time the map is loaded.

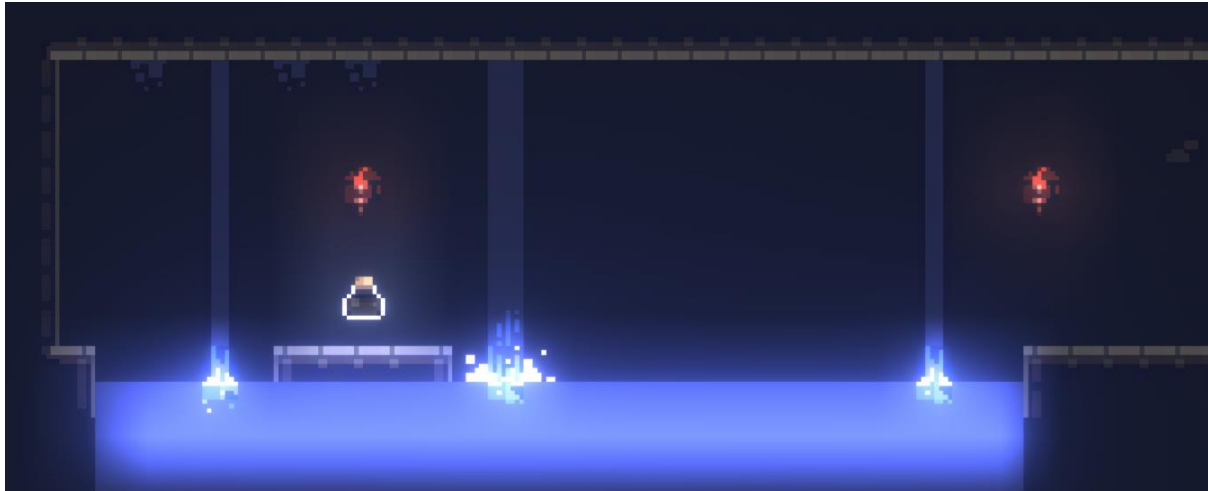


Golden Chest is rarer, only appear in every boss room and in some secret room that is low in difficulties. After player defeated the boss and unlock the path, player could always find a golden chest, each of them provide about 100-150 pixel.



### Pixel Potion

Pixel Potion is one kind of interactable object that player could interact with by simply touching it. Player will lose 2 rows of pixel from their character after resurrect, and Pixel potion is the only way to regen the losing Pixel. It will be reset if only if player lost all the pixel and restart on the previous check point.



### Extra Health Heart

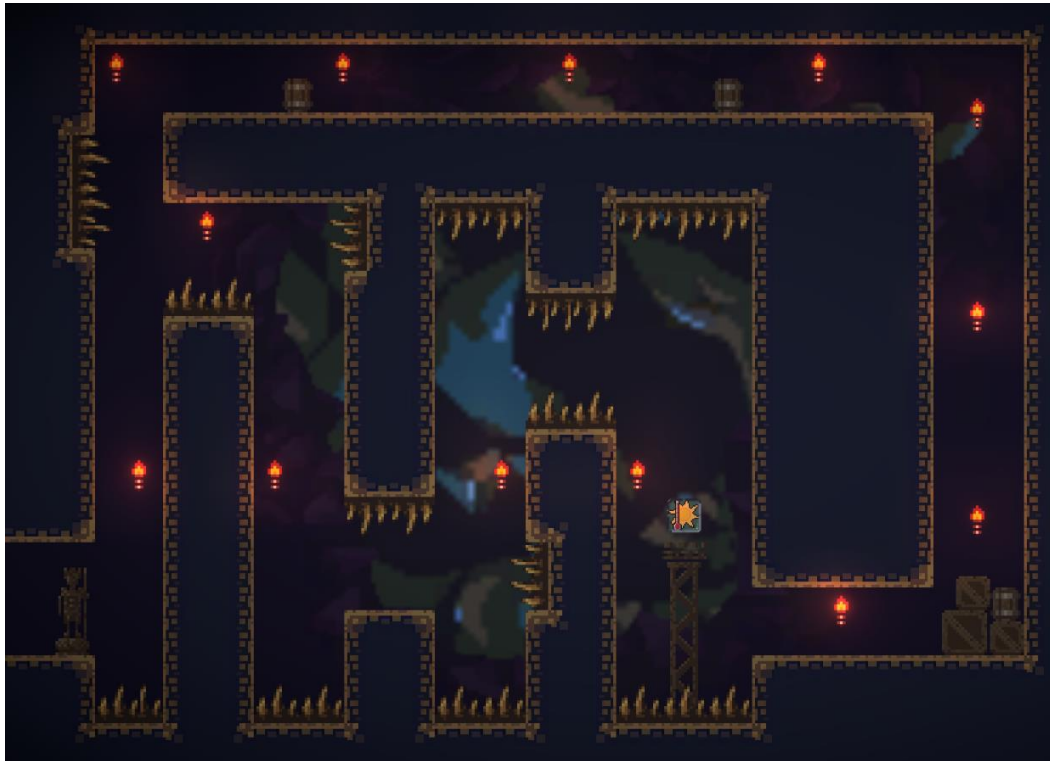
Extra Health Heart is one kind of interactable object that player could interact with by simply touching it. After player collected the heart, it will immediately heal the player to full health and increasing player's maximum health by 1. It will be reset if only if player lost all the pixel and restart on the previous check point.





## Badge

Badge is one kind of interactable object that player could interact with by simply touching it. Badge could be reward by NPC after completing side story or collect in secret room during the exploration. The badge will provide buff to player, including increase the damage done, increase the pixel received from killing monsters. Player could check the badge they received from the inventory and read the favor text on it. The badge will be reset if only if player lost all the pixel and restart on the previous check point.

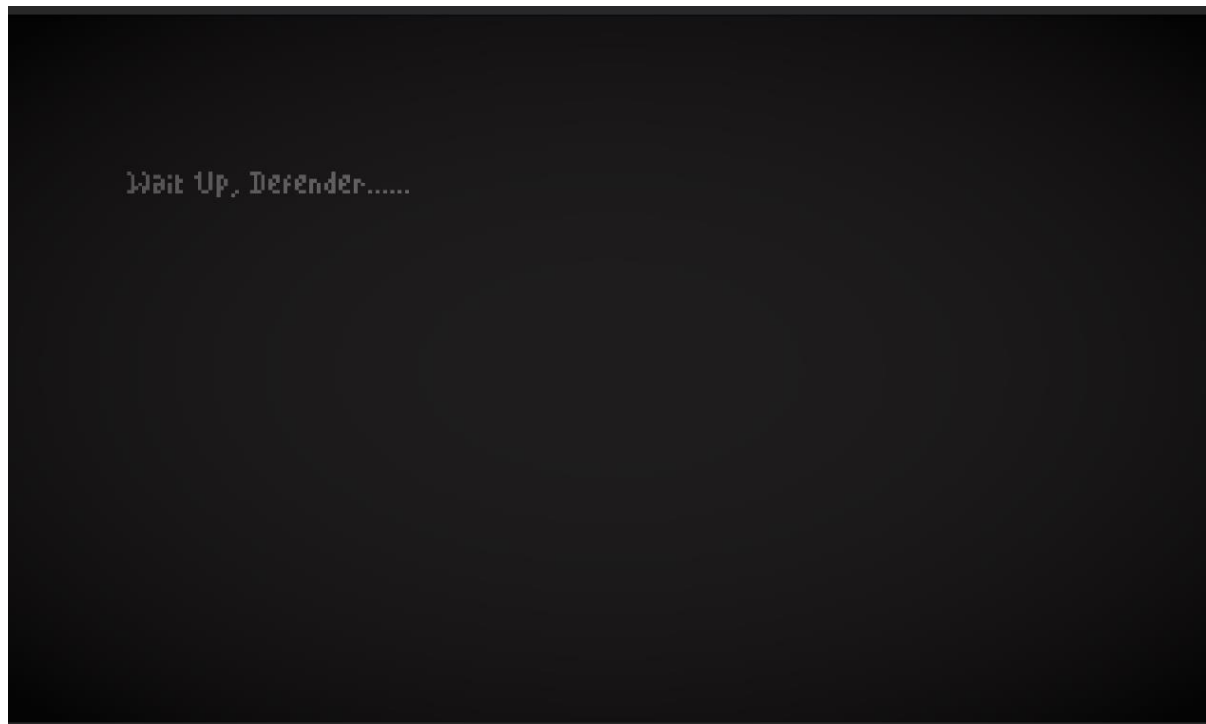


## UI

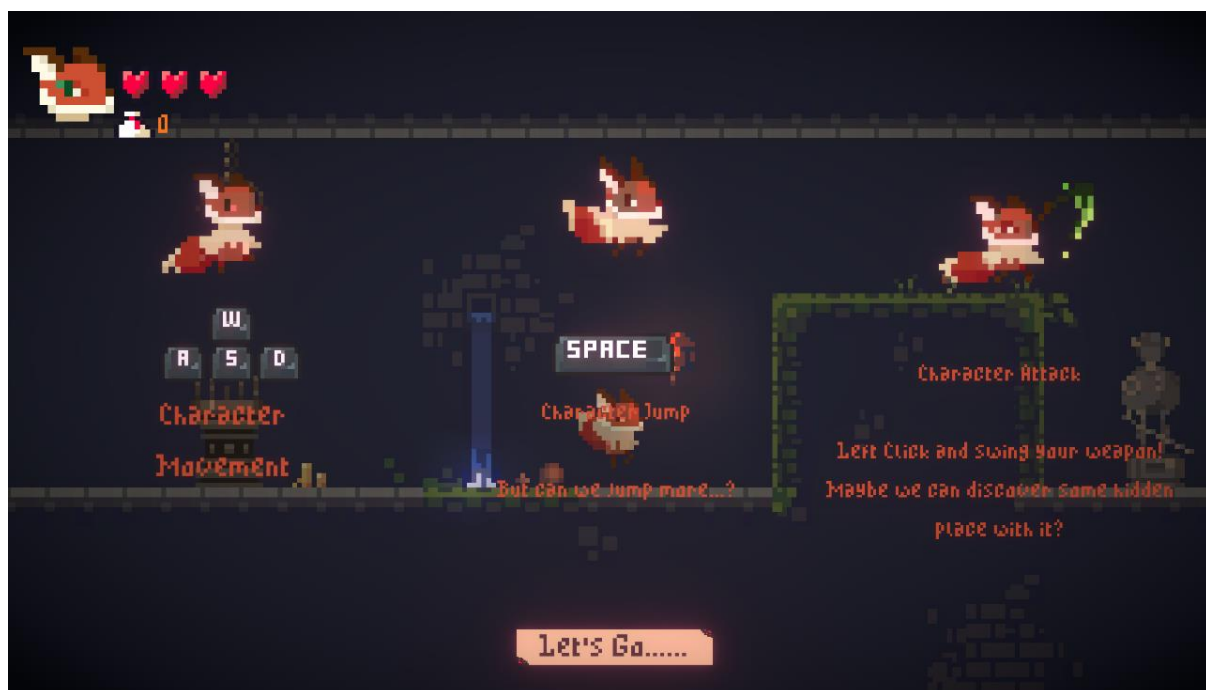
The Last Pixel Defender will go with a more classic Metroidvania style, inspired by similar titles like *Hollow Knight* and *Haiku the Robot*, showing player current status on the scene. There are also menus in game for player to check the badge they received, reading the text and understanding what buff the badge is provided.



In the main title screen, there are 3 options for player. Those are very common elements, including start a new game, load saved process, and quitting the game.



The game starts with a CG scene, showing words and telling some background story about the game, and finally it will woke player up and start the game.



Once player starts their journey, player will interact with the trigger, and the tutorial showing the basic control will pop up and asking player to confirm after reading the details. Player will understand how to move, jump, attack, dash, heal and check menu with the tutorial. Additionally, player could understand the extra usage of some ability, such as attack could break the fog and revealing the hidden room in the map.



Player status will be shown on the top left corner in scene as above. The UI shows the player's portrait (the fox's head), player's health and the amount of pixel one the player currently own. At the beginning, player will have 3 hearts, and it will be darkened when player get damaged (as shown as the image below). Player could use the healing ability or obtain the Extra Health Heart to regen the health and increase the maximum number of Hearts. The amount of pixel will also display on screen by a clear value, so player could do the resources management better, deciding to use it on healing, heavy attack, etc.



When player lost all health, a gameover UI scene will show and leaving two choices for player. If player decide to die, then player will respawn on the last manual save location, with all saved progress, status remain.

If player click "Resurrect", player will respawn immediately at the current position, while losing 2 rows of pixel from their character (as shown as the smaller



image). If player lost half of its body, it switches to soul form and have different combat style. Additionally, when player lost all the pixel on the body, they will back to last “Zone Start” check point, and will have to replay the whole zone again.



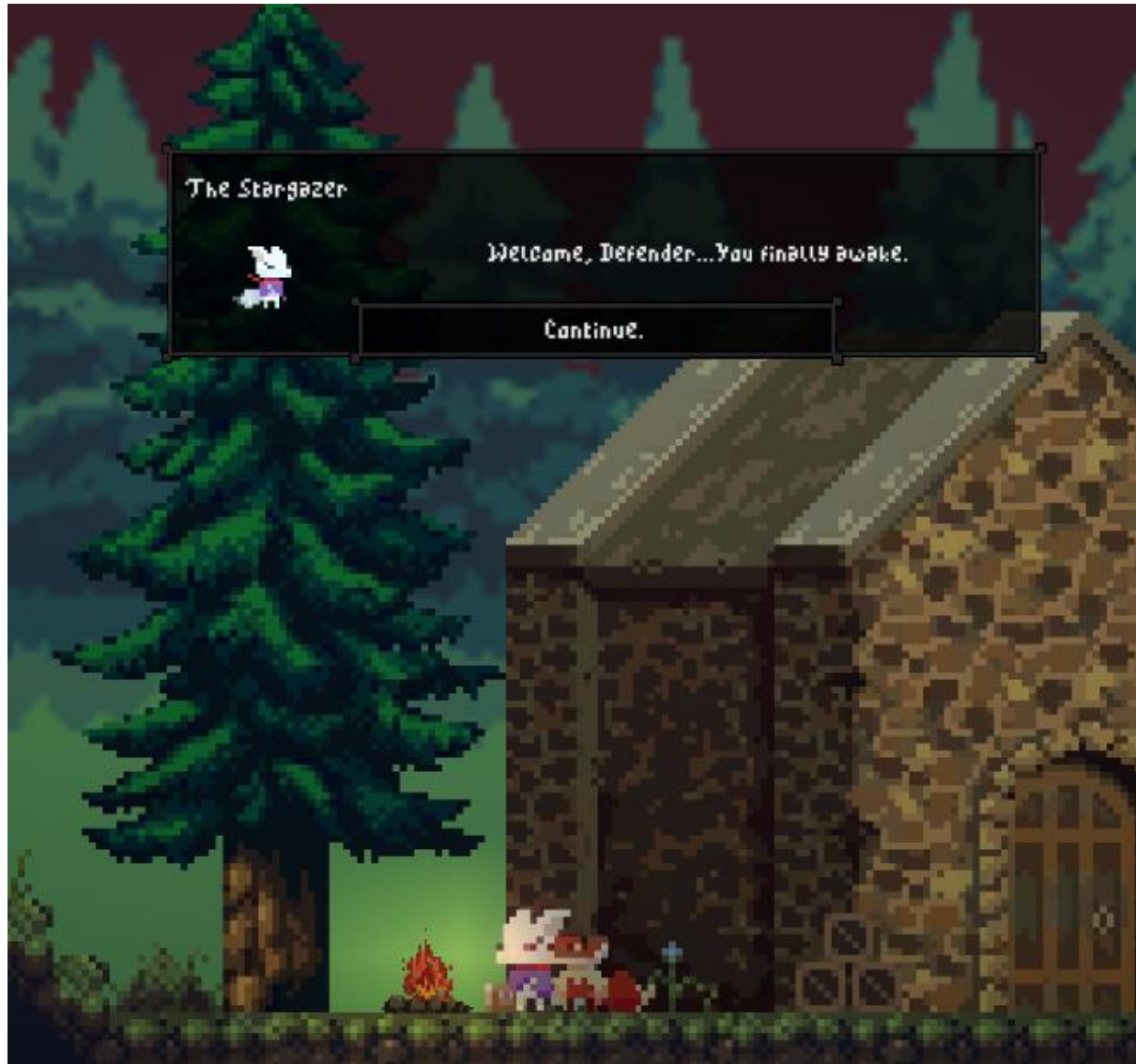
The above image showing the 2 different save point in *The Last Pixel Defender*. All the saving point are surrounded by light effect, so player could identify them easier in the map.

The one on the right side is an auto save “Zone Start” check point. Player will automatically save the progress when they first time passing it. When player lost all the pixel, they will restart from this location.

The statue on the left is the manual saving point. The interacting button will shown on top of the statue, guiding player to make a save when passing it.



The inventory scene will show all different badge player received in their journey. On the left player could select the badge they are interested to check. On the right-hand side will display the selected badge's icon, name and description. The description will include the favor text to introduce its background story and with one line to introduce what kind of buff it provides.



When Player get close to the NPC, player could press E (hints will also show up like the save point one) to start the dialogue. The UI will always stay in the middle of the screen, with 1-2 options display. The UI design is clean, showing the portrait and name of who is talking, and the dialogue. Player could not move until the dialogue is complete. The dialogue will be different according to player's progress.

## User Experience

The game aims to provide a unique soul-like Metroidvania experience, when comparing with all the other game with same genre in the market.

The game is strongly influenced by one of the best role model *Hollow Knight*, creating a map that connected to each other closely, with detailed background setting. The location of the map are all designed in purpose,

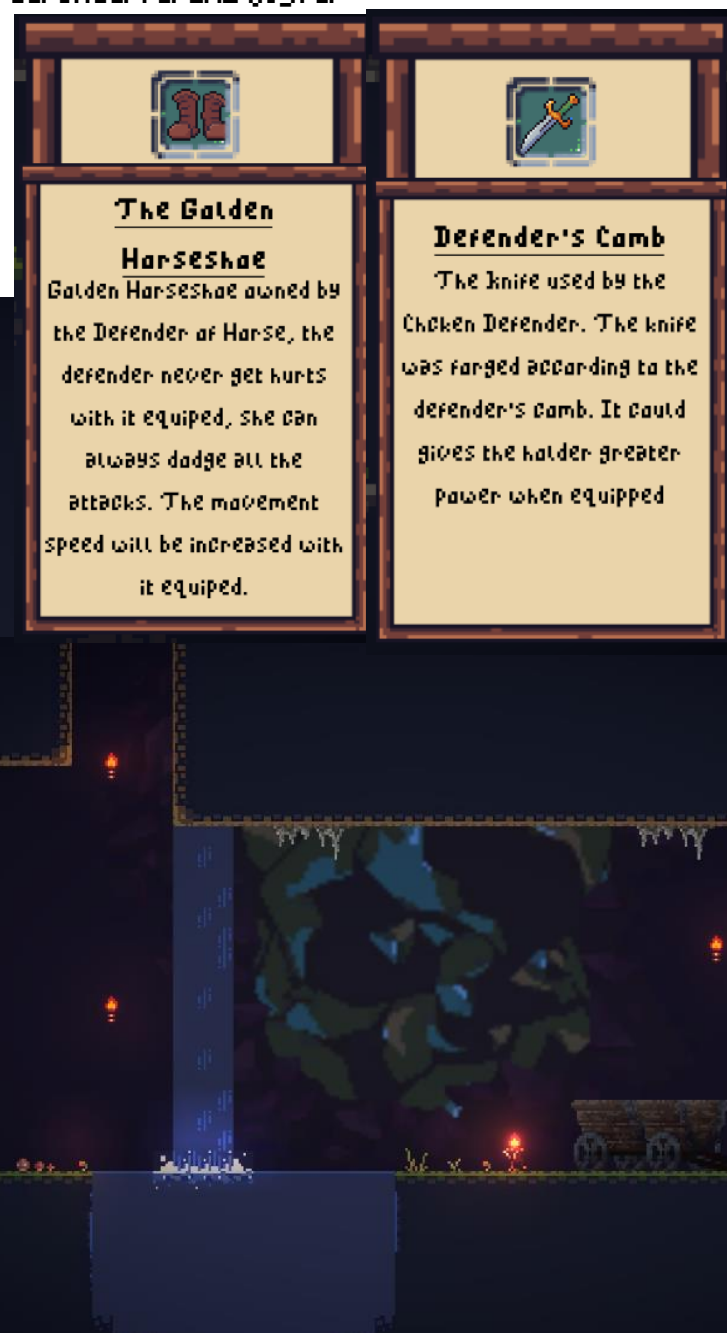
with a great light effect, enhancing the atmosphere and user experience. For example, in game player could see waterfall from a room and if player going deep with the water, player could find it ends in the boss room and create a small lake in the room.

The Last Pixel Defender aim to provide an amazing soul-like Metroidvania experience to the player. Some Metroidvania games like The Messenger are different from *Hollow Knight*, beside boss fight, solving puzzle and parkour is the main feature of the gameplay.

In The Last Pixel Defender, player could expect to have amazing combat design and experience with the boss. Through studying their attack pattern, figure out the way to defeat the boss and the minions, instead of dying again and again during jumping and dashing.

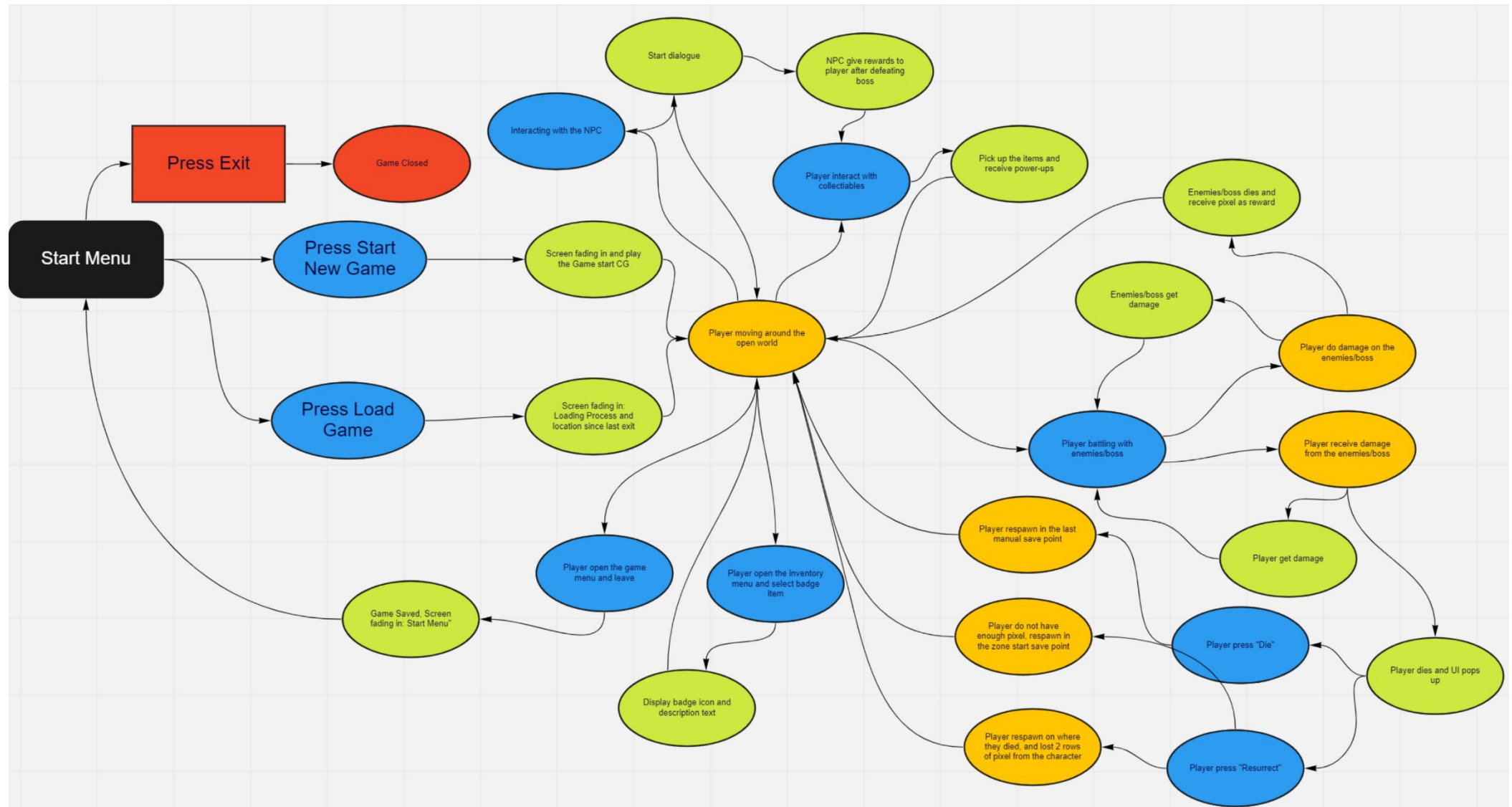
The Soul-Like experience could make player feel cheerful and joyful once they successfully defeat the boss.

Besides, player could expect a fragmented narrative design in game. Although there are characters like the other Defender that tries to explain the story, player also have to collect documents, badge over the land to understand the whole story.





## Immersion Plan and Interaction Plan



## Audio

Music and Sound effect will add into the game, to enhance the immersive experience and to create a better atmosphere in game. The audio will change between maps to create a suitable atmosphere, including to relax, to explore and to fight with the boss.

### Music

The Last Pixel Defender picked the background music with orchestra classics. The background music is different when player is in the Village, in the dungeon and in the boss room.

A relatively relaxing, brisk and melodious music will be use in the village, title screen and few secret rooms. Usually in these room have no enemies or anything that could do damage. The music could make player relax and exploring the room. It created a relax atmosphere for player to read the dialogue and look for the way to obtain the interactable object like the potion, badge, etc.

While player in the dungeon or in the volcano, the music is melancholic, soft and dark. The music is trying to create the feeling of loneliness, that player is exploring, fighting for the world alone. Also, the volume is low so that the background music will not cover the sound effect like slime walking, player attacking, etc.

Lastly the audio will switch from a soft music to music that is strong, loud and fast in tempo. It is trying to create a mood for player to focus and feel the pressure from the boss. This is commonly seen in all kinds of Soul-Like video games such as *Elden Ring*. The music create an atmosphere for an epic fight, empathize the different between boss and all other enemies.

### SFX

Variety types of sound effect will be added to game. The sound effect is also part of the world building and ensuring an immersive world for player to explore.

Attack, movement of different enemies has their own set of sound effect. For example, during the slime moving, it will create a sound effect that sounds like something sticky is moving on the ground, while you could hear sound that something is rubbing the ground while the snake is slithering. Enemies will roar during they perform attack, get hurt and died. Creatures like the fire worm in the dungeon will create sound when a fire ball projectile is launched; in the Volcano Zone, while the explosive zombie is getting close, it will start roaring faster and faster, and eventually explode itself. When enemies get hurt, they will also moan as feedback to player' s action.

The sound effects for attack, getting damage and death are also suitable for player, while player have some extra sound effect. Player' s ability like jumping, dashing and healing has their specific sound effect, the sound effect create extra feedback to player' s action alongside with the visual particle effects.

Additionally, player will hear some lively sound effect whenever they triggered the save point and obtained interactable items. This is also feedback for player to understand they have just done/achieved something.

## Narrative Design

### Setting And Background Story

Long time before the game starts, twenty-eight heroes stabilized the world with the Stargazer and most of the heroes went into a deep sleep afterward. A kingdom then built on the land and name the heroes “Defenders” praising them for what they did to the world.

During the development of the kingdom, people find an object call “Pixel” , an element form the whole world, with very high value and potential. The King ordered to mine for more Pixel and start to use it as the official currency in the kingdom. In this time, there are wizards putting effort on studying it. The infinite potential of the Pixel attracted the attentions of some ambitious wizard and warlord. Civil war outbreak in the kingdom and in the chaos, a wizard controlled all the study of Pixel, and decided to create a new world, by destroying the original world.

The wizard break a hole on the sky and pull the castle into another side, created the voxel realm, and start pulling the rest of the world into it. The event was known as “The corruption” . People tries to escape from the land and find somewhere safe.

The Stars sense the dangerous and summon the defenders. The stargazer observed this and wait for the defenders to be awaked. But the wizard is so powerful and defender are not team up yet, some of the defenders are defeated and controlled by the wizard.

The protagonist - Zorro is the last the Pixel Defender summoned by the stars.



### Plot

The story begins when with Zorro woke up by the calling of the stars. Zorro woke up in the middle level of the dungeon, following the guidance of the stars, he escape from the dungeon and arrived a nameless village. The residence has gone, and player will find the Stargazer waiting for him in the village.

The village was acting as the main hub that the plot developed. After talking with the Stargazer, player could start to explore the underground and find the way to touch

the sky. Zorro will meet other defenders like Cervi, Hoppel in his journey. After helping them, Zorro will be rewarded their power, to assist him in his journey. Beside the living defenders, player could also find the dead body of some defenders in his journey and retrieve their power.

The defenders seal the artifacts in 3 locations after stabling the world long time ago. Zorro will climb up to the top of the Volcano, go deep into the Underground Glacier and go into the Forest to retrieve them. After collecting the artifacts, player will be able to unlock the chapel' s door and face the boss - Fallen Dragon Defender. After defeated the Dragon, Zorro could ride him to pass through the Voxel Hole in the sky, and reach the voxel kingdom city.

In the city, Zorro will witness the final battle between the forgotten defender Neko and the Dog Defender. After Zorro clear the path to the castle, he will eventually face the wizard and decide the fate of the world.

## Character Design

### Zorro-kon



Zorro-Kon, also known as Zorro (Fox in Spanish), is the protagonist of the game and one of the twenty-eight Pixel Defender. He went to a deep sleep with his fellow defenders after stabilized the world long time ago. As the world is corrupting again, the defenders was summoned to defend the pixel world again.

Zorro make no exception, he was woken by a mystery voice (the stars) in the dungeon below the little village. When we woke up, he followed the guidance of the stars, start fighting for life and try to understand what is happening outside. The other defender are all gone, he is the last hope to defend the pixel world

When he arrives the village, he will then meet his stargazer Mirena and start his journey of saving the world. He will meet many other defenders, either losing or being controlled, and collect the three artifacts in his journey.

Its name Zorro-kon is combine with the Spanish word of fox, Zorro and "Kon" means the sound fox make.





## The Stargazer - Mirena

Mirena is a stargazer, a mystery female Fox that Zorro first meet in the village. As a stargazer, her duty is to observe the guidance of the stars, and to help the defender to complete their mission.

Mirena is a character inspired by the role of the Fire Keeper in Dark Soul 3 (2016). Similar to the Fire Keeper, her job is assisting the defender, which is Zorro, to complete the mission of saving the world.

After Zorro woke from the dungeon by the calling of the stars, Zorro will reach the village and meet Mirena for the first time. She tells Zorro about himself, and about the calling of the stars in the first dialogue. Mirena also give hints on directions and talk about the background lore for Zorro to understand what is happening.

After player defeat the Fallen Defender Terra, Mirena will appear in the room linking the dungeon and volcano. She will talk about the story about how the defenders stabilizing the world before they fall into deep sleep. Then she will ask Zorro to follow the guidance of the stars, searching for the artifact.

*"When the enemy fallen...its body became the land, its hairs become the Eternals Grove; its blood was frozen in the Deep Labyrinthian....."*

*The defenders took its heart and shoot to the other side of the land. A mountain formed where the Heart landed. And the defender falls into a deep sleep.*

*Until the stars call them again....."*

Her name is from the French word Renard (Fox) and "Mikon", the sound made by a very popular anime Fox character Tamamo.



## Hoppel

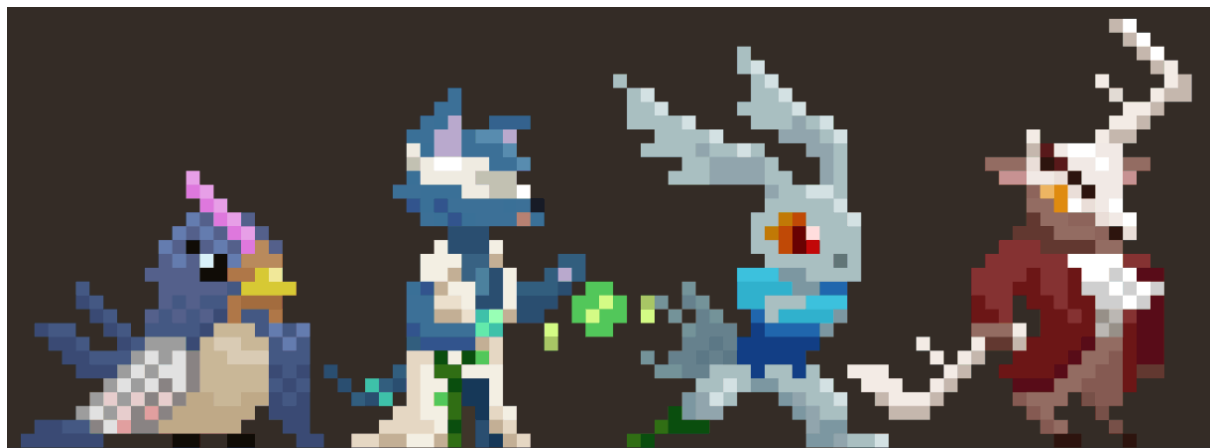
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The Rabbit Champion. Zorro will meet Hoppel in the depth of the dungeon, after defeating the boss under the mine.

Hoppel was once the Champions to defend the world, while it lost his leg in a battle, he could no longer jump as before which he was proud of. He was corrupted then saved by Zorro.

Zorro will then gain the ability to double jump.

His name was inspired by the German word Hoppeln and hop in English, which is strongly related to the characteristic of a rabbit.



## Hiron

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The Swallow Champion. Zorro will meet Hiron after beating the final boss in the volcano.

Hiron was once the Champions to defend the world, while it lost her wings in a battle, she could no longer fly as before which he was proud of. She felt lost and could not return to the village after losing her wings.

Zorro will then gain the ability to dash further after saving her back to the village, from the top of the volcano.

Her name Hiron was inspired from the French word "Hirondelle" (Swallow).

## Garou

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The Wolf Champion Zorro will meet Garou after beating boss in the middle of volcano zone.

Garou is one of the twenty-eight Defender that stabilized the world long time ago. During her exploration in the volcano, Neko appeared in front of her and ask for duel. Their fight woke the mountain guardian and Garou lost her eyes in the fight against Neko and the guardian.

After Zorro defeat the guardian, he will discover Garou lying in the corner of the room. She will thanks Zorro and gave him a blessing by her magio power.



Zorro will gain the ability to sense the hidden object or path in room with her blessing.

The name Garou was inspired by *Garuru (Wolf's barking sound in Japanese)* and Loup-garou, meaning werewolf in French.

### Cervi

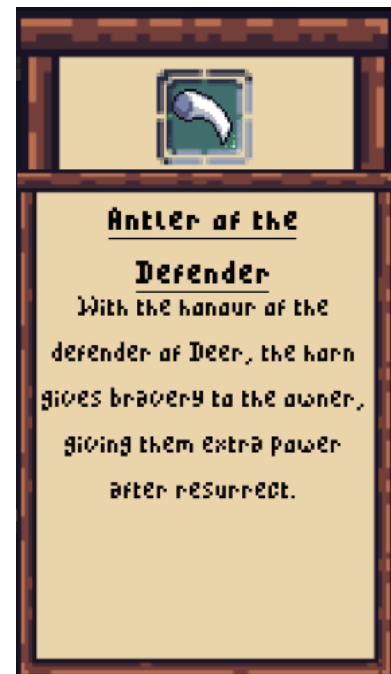
The Deer Champion. Zorro will meet Cervi in the village after defeating the optional boss under the village.

Cervi is one of the twenty-eight Defender that stabilized the world long time ago. In his adventure, he tries to track and hunt the infamous bounty hunter Saukung in the dungeon. But he failed and fall into Saukung trap, losing his antlers in the fight.

To him this mean he lost the honor of being a warrior, lost his bravery to continue his journey. When Zorro arrive the village, he would talk with Cervi, hoping him to back to the journey again. Zorro will jump into the dungeon and get his antlers from Saukung and return to Cervi, proving there are still hope.

As a reward of getting back the antler, Cervi let Zorro to keep his antler, which is the badge of bravery. The badge could strengthen Zorro attack after using rows to respawn.

Cervi's name was from the word "Cervidae". Deer is one kind of animals forming the family Cervidae.



## Boss List

### The forgotten Defender - Neko

Cat was the forgotten one in Twenty-Eight Mansions. Neko was a sword master that does not like the 28 defenders. While he is not helping anyone, but he was tracking his rival - the Dog Champion. During his journey, he defeating Garou and causing her blind. After the battle with Garou, he sense that Zorro is on his way to the volcano, he will wait for Zorro in the deep of Volcano.

During Zorro's journey, will meet Neko several times. Sometime he is the boss player has to fight with, sometime he is a friendly NPC, giving player hints to continue the journey. At the very late of the game, Zorro will find him in the sky castle, having a duel with his enternal rival.



### The fallen Defender - Terra

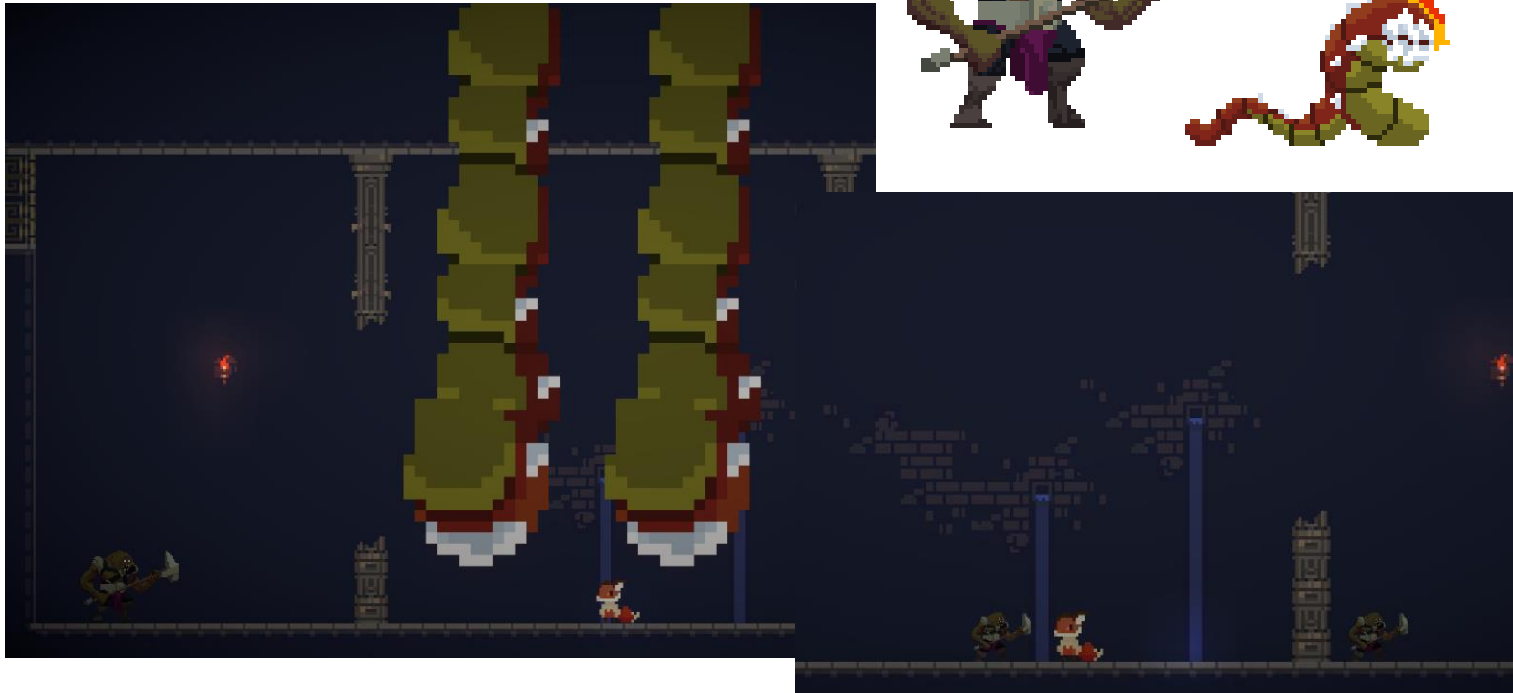
The fallen Defender Terra is the first main quest boss Zorro will face in the dungeon zone. Terra was captured by the wizard and turning him against the defenders.



In the dungeon, Zorro will find his minions, fire worm, creature that will shoot fire ball towards Zorro. During the fight with Terra, he will also summon 2-3 big worm, drop from the roof and attack player.

As Terra is designed base on earthworm, when Zorro defeat him, he will split into 2 mini boss and continue to fight with Zorro. Zorro have to defeat all three of them to end the fight.

Terra's name was from the word "Terra", the alternate name of Earth, showing that it is an earthworm.



### The fallen Defender - Taurus

The fallen Defender Taurus is the final boss player will face in the volcano zone. Same as other fallen defender, Taurus was defeated and become the wizard's vassal, against the defenders. The appearance of Taurus is surrounded by flame, as it is in the heart of the volcano.

Taurus defeated The Swallow Champion Hiron, breaking her wings and making her not able to escape from the volcano. When Zorro exploring the volcano, he will find Taurus's minion, an ox demon chase and attack him.

In the fight against Taurus, beside shooting a large fireball against player, as same as a bull in bullfighting, Taurus will keep rushing towards player, and create flame on the ground.



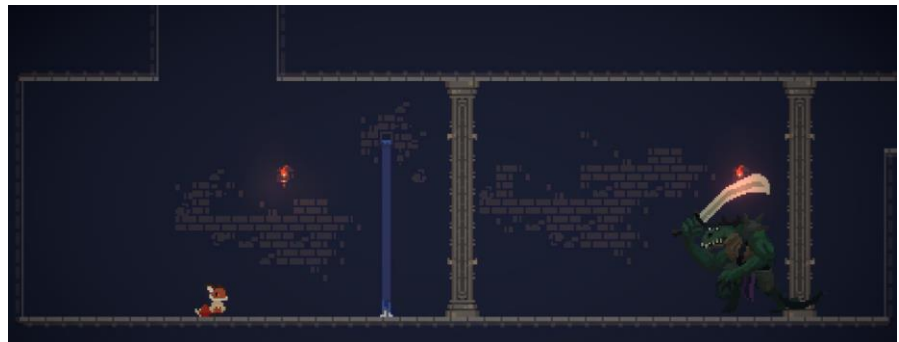


Taurus' s name was from the second astrological sign in the modern zodiac, which the Zodiac symbol is a Bull.

### Saukung, The Buck Hunter

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Saukung is one of the boss Zorro will meet in the dungeon zone, is part of the side story of The Deer Champion Cervi. Saukung is an infamous bounty hunter, being active once the world started the corruption.



Before Zorro awake from deep sleep, Cervi tracked Saukung down and tries to capture him in the dungeon. While Saukung discovered Cervi and set a trap to defeat him. Cervi lost his antler during the fight, losing his bravery to continue fighting against the corruption. Eventually, Zorro woke and meet Cervi, and finally defeat Saukung and get back the antler.

Saukung' s name is inspired by the Japanese name of Geckos Shukyu (守宮), which is also oftenly use in Hong Kong. Saukung is from the pronunciation of the word in Cantonese (Saugung)

### The Pixel Miner Rhypu

---

Rhypu is the boss located deep in the dungeon, which is a mine that the fallen kingdom mining a kind of ore called "Pixel Ore" . Pixel is the material form the land, and once the people from the kingdom discover the use of the ore, they became greedy and started to dig for more pixel.

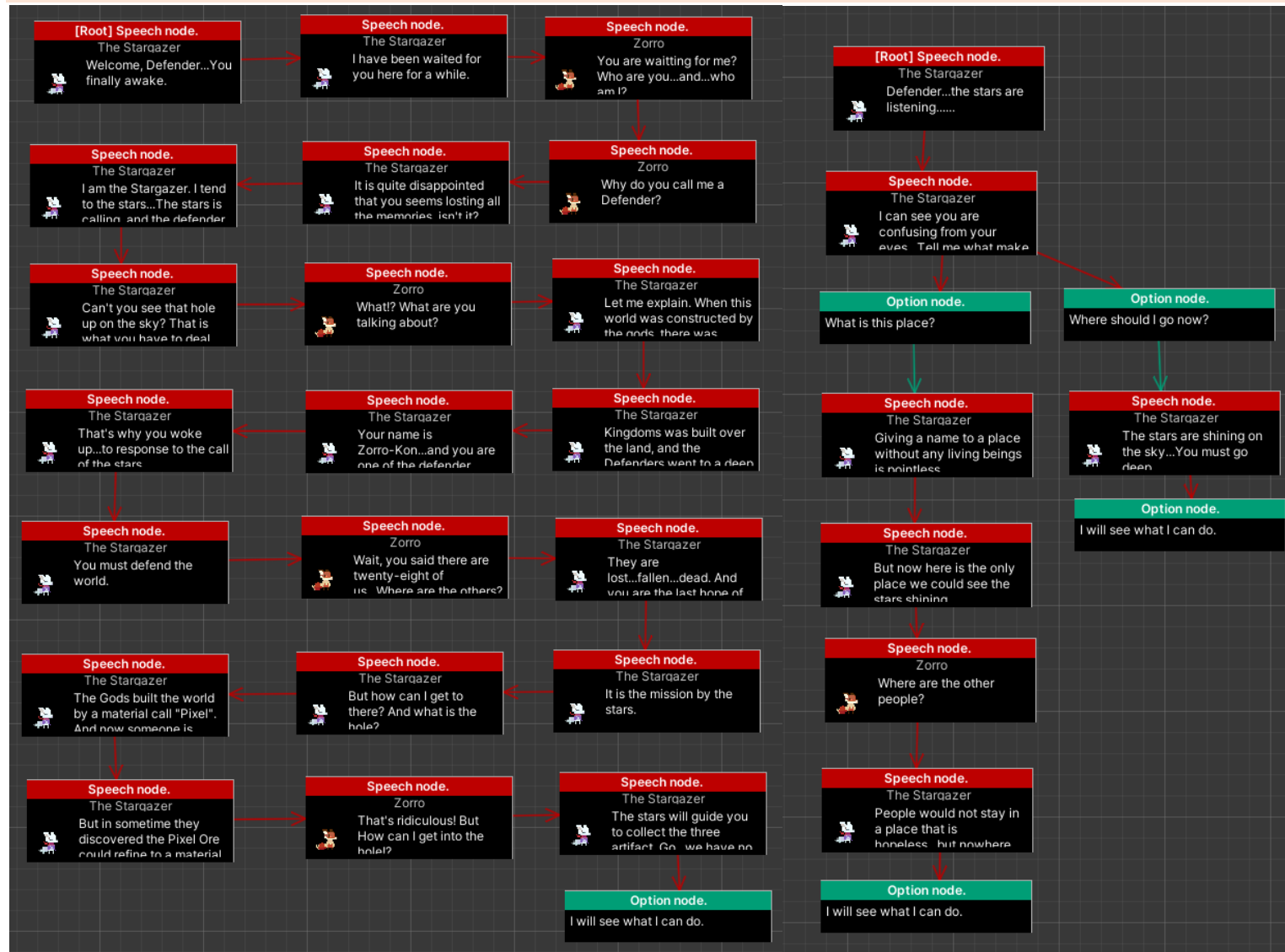
Creatures like Rhypu that looks strong are enslaved by the people from the kingdom and forced them to work in the mine, mining pixel for them.

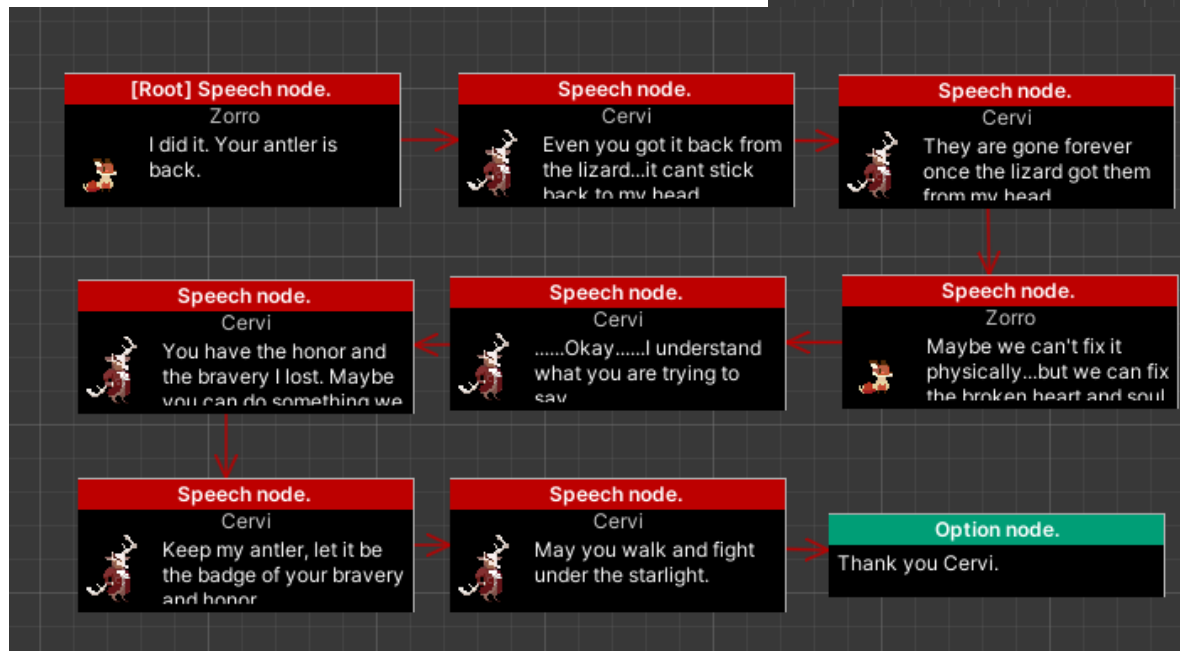
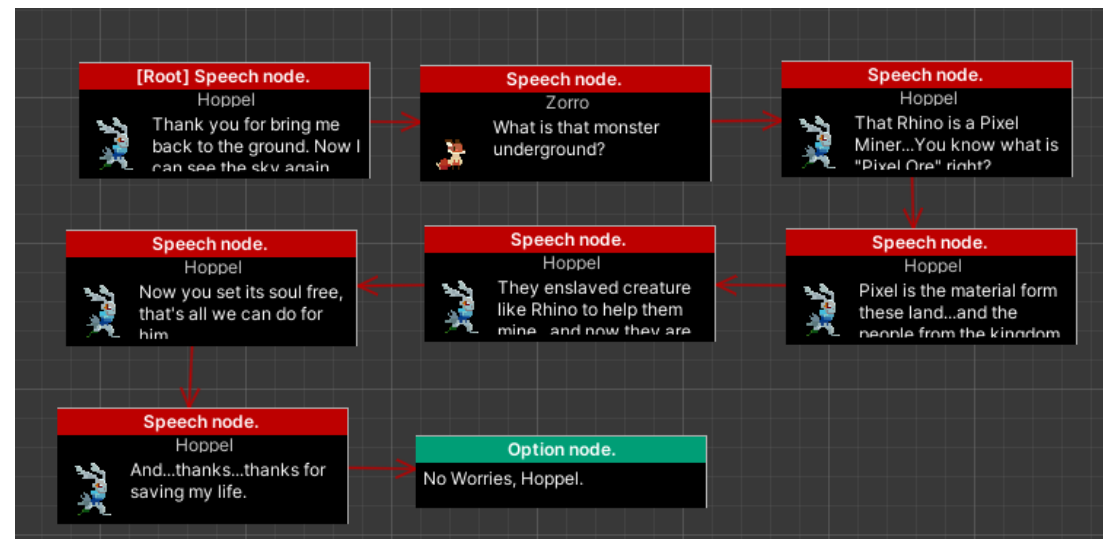
Once the kingdom fall and the corruption started, people leave the land and leaving the slaves under the mine. Rhypu is one of them and raging underground. The Rabbit Defender Hoppel followed the guide of the stars and went to investigate the mine. He broke his leg when he is facing the Strong Rhino monster underground. When he is about to give up and feel he will die in the mine, Zorro defeated Rhypu and saved him back to the village.



Rhypu' s name was a combination of the word Rhino and ppu, meaning horns in Korean.

## Dialogue Example





## Favor Text



### Merchant 'S Hand

Great Merchant's hand are always full of Pixel, they could find it anywhere. Pixel gained after defeating enemy will be increased



### Magic Potion

Magic Potion crafted by the forgotten alchemist in the fallen kingdom. When casting healing spell, will recover extra health.



### Sword of the Pixel

#### knight

The Sword given to the knights in the fallen Pixel kingdom. With the sword equipped, the holder could fight with extra power.



### Defender's Comb

The knife used by the Chicken Defender. The knife was forged according to the defender's comb. It could gives the holder greater power when equipped



### Blessing of the Stars

By the name of the star, blessing the holder of the badge to have a chance to escape from death. With the Badge Equiped, player will not lost pixel after resurrect once.



### The Golden

#### Horseshoe

Golden Horseshoe owned by the Defender of Horse, the defender never get hurts with it equiped, she can always dodge all the attacks. The movement speed will be increased with it equiped.



### Antler of the

#### Defender

With the honour of the defender of Deer, the horn gives bravery to the owner, giving them extra power after resurrect.



### Badge Of Cool

#### Master

Forge by the Legendary Cool Master, for the adventurer to explore the unknown world. With badge equipped, player will not be slow down in the Uatcana Area.



### Touching the sky

Power blessed by the stars and owned by the Defender of Rabbit, letting the defender Jump and touch the sky. The blessing gives the ability to double Jump.

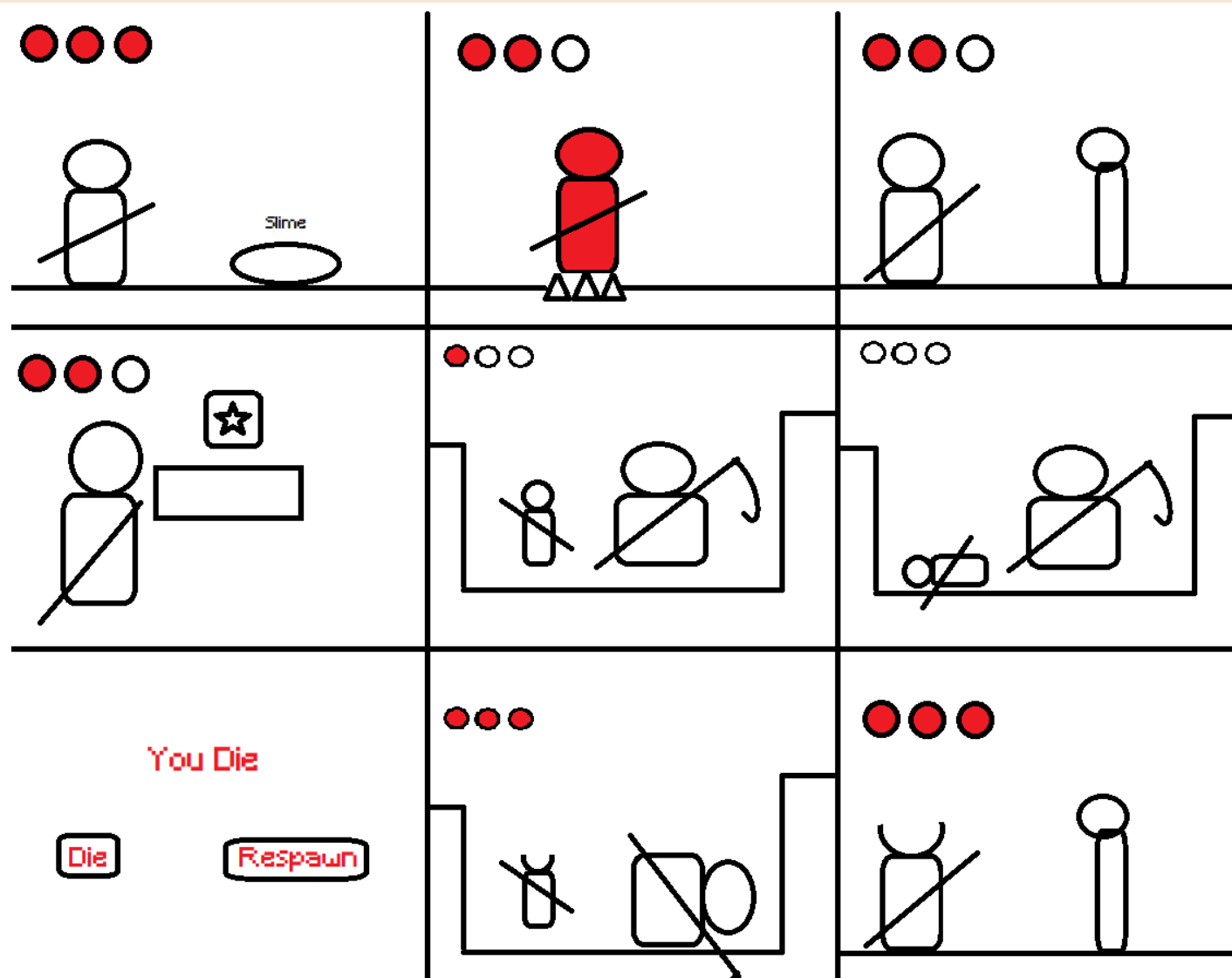


## Storyboard

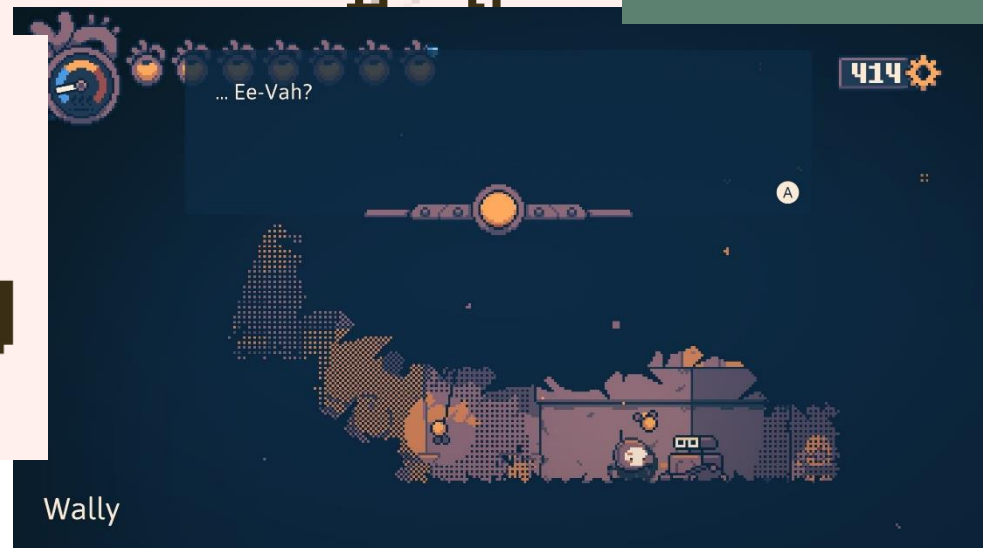
The Last Pixel Defender is combat and explore based game. The major gameplay including fighting against minions, jump over traps during exploration, interacting with NPCs, and obtaining power-ups.

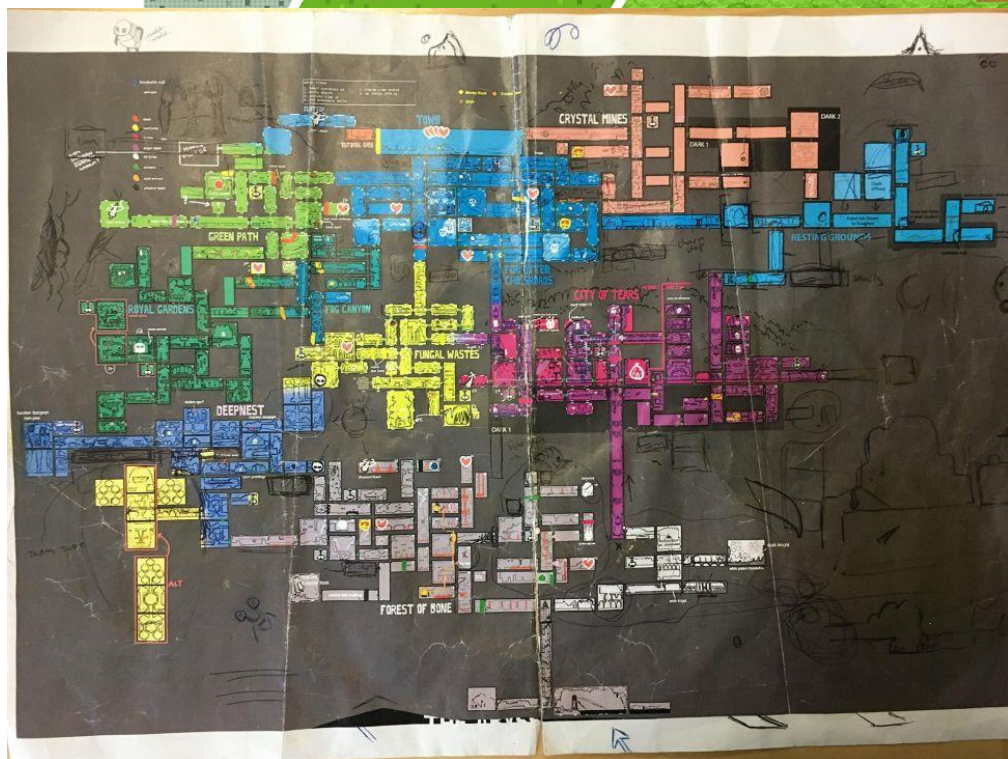
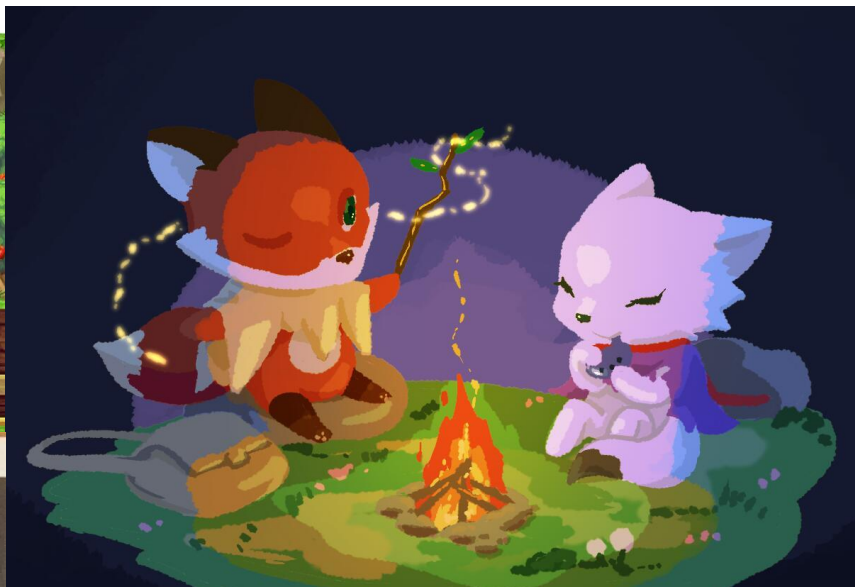
The core, unique mechanics is a pixel-deducting respawn system. If player dies in the game, for example they died during the boss fight, inspired by games like Sekiro: Shadow Die Twice, player can respawn in front of the boss and continue the fight. While different from these games, the cost of respawn is the pixel on player's body. Player will lost rows of pixel from their character and remain until losing all pixel and restarting the zone.

The game story is also driven by dialogue. After defeating bosses, there are usually NPC related and player can interact with them, to proceed the story and get rewards from them.



## Moodboard





## Player Feedback

The game was tested by my classmates and tutor in class. Overall, the comments are highly positive while there are some minor mechanics should enhance, to create a better gameplay experience.

### Rebalancing

The game has done some balancing work after testing. In some rooms, the enemies a too much and making the gameplay too difficult in the early stage. Player is easy to get into low pixel before they reach the village. Enemies behaviour and amount was adjusted to lowering the difficulties in early stage.

Additionally, a new ability, allowing player to regen pixel with huge amount of pixel was added. These gives player extra options on the gameplay, especially when they are holding huge amount of pixel. This also balancing the difficulties of the game and prevent player restart the whole game so often.

Player will also receive certain amount of pixel after dying, beside make it more sense (as we spend pixel when adding pixel on body), it also prevent player have no pixel to continue the fight, especially in the soul form when light attack also cost pixel.

### Visual Effect

Besides on balancing, there are also some improvement on visual effect. The effect when player respawn has changed to make difference with healing. UI and camera are rescaled to fit computer that are not using 16:9.

Although there is some bug occurred during the testing, while the player still feedbacks positively, and they do enjoy the gameplay.

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