Design Document for:

GenetiX

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Version # 7.00

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1.0 Design History

Version 1.10

2.0 Game Overview

2.1 Synopsis

This document specifies a design of the gameplay for the game GenetiX. It is a 2D action/ adventure platform game exclusive for the Nintendo 3DS

2.2 Story and background

In the year 3013 earth a group of scientists specialising in the study of life matter and energy work in a hidden underground lab on the island Terra Nova. Using DNA extracted from a meteorite found in an ancient ruin they started a new project, code name Sigma. Conducting a series of experiments they were successful in replicating it to create an artificial being and named it Subject Alpha. It had the ability to transform as long as he had previously absorbed DNA into his own body from a life source. Subject Alpha was due for termination because he was unable to control his power. On learning of his fate Alpha escaped the facility. 10 Years from his escape the scientists were able to perfect their research and created two new subjects, Delta and Gamma. The facility came under attack by a military group known as W.O.L.F. who were interested in its BIO-Reactor, a device that produced self-sustaining energy, to create a weapon. They stole the reactor, experiments and kidnapped many scientists. Delta and Gamma were released from their test chambers by Max, the scientist that created them, before getting kidnapped himself. Now Delta and Gamma must venture out into the unknown world and use there powers in order to save Max and retrieve the reactor before the weapon is complete.

2.3 Art style

2.4 Aesthetic

2. 5 Limitations
Since the art is in 2d and the platform is a hand held console, the screen size and resolution(256 × 192) limits the number of objects on the screen. If the limit is crossed, the objects can not be clearly seen. Also the NDS game card's capacity is limited from 8-512MB. This causes to rethink and re-evaluate our design, and focus more on the core game play.

2.7 Softwares to be used
2D Art
Gimp(http://www.gimp.org/) and flash professional
CC(http://www.adobe.com/au/products/flash.html) for animations.
Music and Sound effects
Audacity(http://audacity.sourceforge.net/)

2.8 Editor/Engine(2D way)

The engine would be built from scratch based on the software development kit(SDK) of Nintendo DS. This engine will have the following features:

- Scene Management
- Resource Management
- Loading and displaying sprites(including animations), Tilemaps, Sprite Fields
- Tilemap engine
- Animation editor
- Particle systems
- Sound / Music handling
- Input handling
- Collision detection / Physics[Box2D physics engine integration(http://box2d.org/)]
- Scriptable AI "agents"/ entity system
- A* path finding
- Camera system
- OpenGL ES based
- High Score Server
- Pause, resume and exit system
- Multi-Touch interaction

2.8.1 Languages
The core of the engine would be programmed with C++ and it will have the option of scripting with Lua or Python.

2.8.2 Physics

Using box2D as a physics engine, the following features will be implemented:

When on the ground:

- Apply gravity to objects
- Apply ground friction
- Apply left/right movement force, based on the controls
- Apply collision detection

When in the air:

- Apply air control
- Apply air resistance
- Apply regular or reduced gravity
- Apply left/right movement force

- Apply collision detection

When in the water:

- Slow down movement
- Physics largely remains the same
- Halve the pertinent variables, but some like gravity will not exactly be half
- Apply collision detection

3.0 Gameplay

The player plays through the story of the game unlocking new levels as they progress. They can return to any location previously unlocked with no consequence to the main story. By doing so a player can farm currency or find the hidden sub-levels that might have previously been inaccessible.

3.1 Objectives

The main story objectives will be told as the player progresses though the game but will also be displayed when on the map interface. Highlighting locations on the map when a player is choosing a destination a key will be displayed showing their progress of that location (see figure 1).

(*Figure 1*) World Map

4.0 Mechanics

4.1 Shooting

The laser gun is a customizable weapon that allows the player to install new abilities using special capsules. Examples are Freeze ray, absorb ray. Every time the gun is upgraded, it has a new attachment.

The laser gun is the main attack of the character. The character can shoot both vertically and horizontally. If the character moves the joystick from vertical and horizontal while still holding the trigger it will create a spray between the axes. This also helps create balance between movement and shooting with the Nintendo 3DS' one joystick.

(*Figure 2*) weapon spray

In figure 2, the player was shooting to the right and then moved the joystick up while holding the trigger, making it possible to shoot in all directions.

4.2 Hidden Levels

While progressing through the different levels of the game the player might notice passages that are either blocked or inaccessible in some way; these stages remain closed off until the character unlocks a corresponding power from a boss. For example to enter the underwater sub-level the player must defeat the boss Frosh to absorb its power of underwater breathing. If the player has not acquired this ability yet they will slowly lose breath and eventually drown. The sub-levels are side missions which contain a Puzzle Challenge and are not required to be completed in order to finish the main story line. These will not be easy to find, as they are not listed on the map and are

easily over-looked when progressing through the main levels. There is one hidden sub-level for every level of the game.


(*Figure 3*) level blocking

In example figure 3 shows the steps to the Abyss in Dark Souls. To access this area a player must first kill a boss to acquire a ring in order to land safely. If this has not been done they will fall to their death.

4.3 Puzzle Challenges

Puzzle challenges are side missions that, once completed, grant a high amount of double helixes to greatly assist in upgrading a players' laser gun or transformation power. All puzzle challenges are found within the hidden sub-levels. The puzzle challenges range from easy to master. The earlier levels will contain basic memory block puzzles (see figure 4), and as you progress, the puzzle challenges will contain memory challenges that have longer, faster patterns. Other puzzles are pattern locks (see figure 5) and button timing puzzle (see figure 6). If the character fails to complete the puzzle they will lose 20% of their health as punishment. If the player has low health and does not wish to risk dying they are able to leave and return to the puzzle to try again as they choose. All puzzles are done using the stylist and the touch screen.

(*Figure 4*)
Figure 4 shows a Memory block puzzle
where a player must copy the pattern shown.
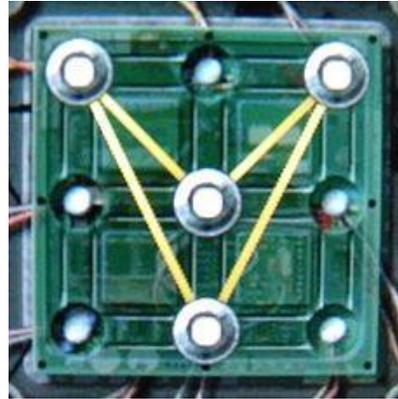
(*Figure 5*)
Figure 5 shows a basic pattern lock with
limited amount of moves allowed to
complete the puzzle.

(*Figure 6*)
Figure 6 shows a button timing puzzle where pressing the buttons correctly as they merge over
the same colour below.

4.4 Movement/abilities/control mapping

- The joystick is used to move the character.
- The directional D-pad button (up and down) is used to select Transformation powers.
- The directional button (Left and Right) is to toggle through laser gun types.
- X is to activate power
- Y is to crouch (hold)
- B is to jump
- A is to interact with objects/ NPC's
- Select is to access inventory
- Start is to pause the game.
- Pressing Y while moving will make the player roll.

(*Figure 7*) front of a 3DS   (*Figure 8*) back of a 3DS
Figure 7-8, showing the Nintendo 3DS's button layout.

4.5 Environmental objects

Environmental objects include cryogenic capsules, Power-ups and double helixes. Cryogenic capsules are common objects found in every level and sub-levels, when destroyed they drop Power ups and Double helixes. Power ups are objects that grant temporary abilities or revivals. E.g. Health, increased speed, slow motion. (See figure 9)

(*Figure 9*)

4.6 Currency

The Currency of GenetiX is in the form of a Double helix (see figure 10), it is used to purchase upgrades at stores. The higher the level of an enemy, the larger amount of Double Helixes are obtained.
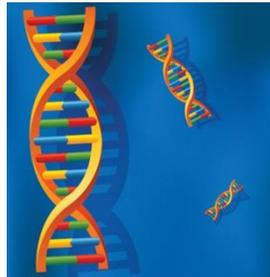
(*Figure 10*) DNA double helix strand

5.0 Weapons and Abilities

Weapons and abilities are improved along with the development progression of the character throughout the game. Abilities play a big role as your character must defeat experiment bosses to gain them.

5.1 Laser Gun

The laser gun is the characters main weapon as they use it to immobilize enemies or capture experiments.(see figure 11)
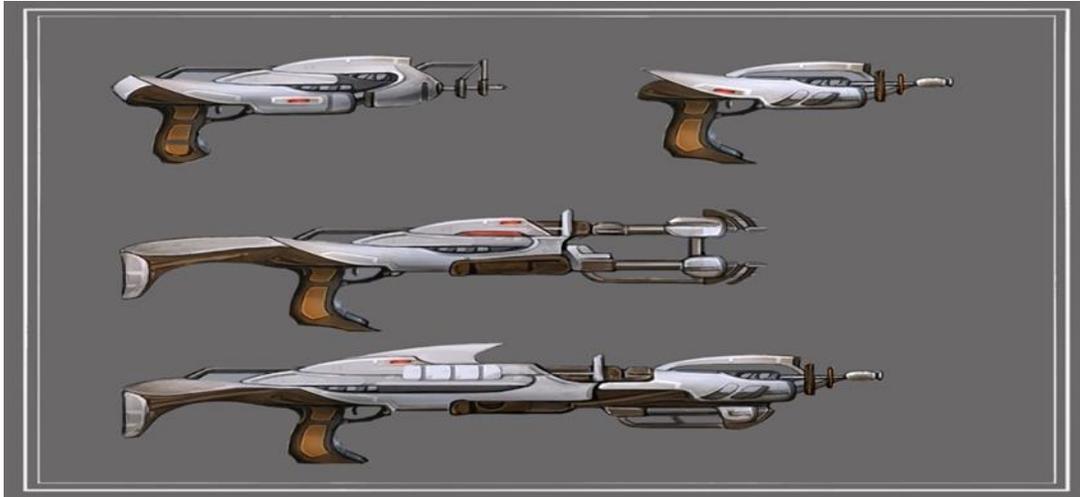
(*Figure 11*) Laser Gun concepts

5.2 Transformation Ability

When using the transformation ability the character changes his/her form gaining similarities of the boss from which the experimental power is acquired from. For example, a flying boss will give your character wings and the ability to fly, an underwater boss gives your character gills and fins and allows them to breathe underwater etc. (see figure 12).

(*Figure 12*) Transformation

6.0 Upgrades

6.1 Absorbed Power
When the character defeats the boss of a level, they then absorb the power of that defeated boss. The boss's power is related to its species. For example the boss Grino uses a charge attack and on absorbing a player then has the charge ability; this is used to break through walls or knock enemies to the ground. There is a cool down time when a power is used to maintain balance in the game.

6.2 Store
There are two accessible stores on the map; one of the 'stores' is a secret lab the scientist built as a safe house if the lab was ever destroyed. There the player can upgrade their laser gun. The second store the player will encounter is a secluded Dojo run by Beta. He built it as a hideout as well as a fortress from Alpha. A player can upgrade their transformation powers from him. Transformation upgrades are passive such as a stronger charging attack or swim faster but also reduced the cool down time.

7.0 Characters

7.1 Overview
The main characters are experiment that has been created in an underground laboratory on the island of Terra Nova. He/she is the perfect specimen out of all the experiments within the laboratory, but does not know why they were created. After an attack on the laboratory he/she is released from the confinements and must find out who and what they are.

7.2 Playable characters
Delta – The male protagonist and first successful experiment from the Sigma project.
Gamma – The female protagonist and second successful experiment from the Sigma project.

7.2.1 Creating a Character
You are given the choice to choose whether your character is a male or female protagonist.

7.2.2 Character Customisation
The clothing is customizable throughout the whole game as you can buy them from small lab shops or by looting containers, lockers etc. You may also customize your captured experiment's appearance and skills as they progress along with you.

7.3 Non playable characters

7.3.1 Max
The Scientist in charge of the Sigma project. Max is kidnapped at the start of the game and is forced into helping Alpha build
7.3.2 Alpha
The first failed experiment of the Sigma project. Alpha was due for termination due to his uncontrollable emotional state when his body over evolves during transformations. Escaping

from the lab Alpha went on to create the military organization W.O.L.F. in order to take control over mankind. He is the antagonist and final boss of the game.

7.3.3 Beta
The second failed experiment of the Sigma project. Beta was unable to perform successful transformations due to his weak powers but was born with superior intellect and was released from the lab to live a normal life. Beta will appear early on in the game and will act as a shop where the player can use double helixes (currency) acquired to upgrade their transformation abilities. He will join the player end game assisting in taking down Alpha.

7.3.4 Commander Crush
Commander Crush belongs to W.O.L.F. and is always accompanied by his two subordinates, Ziff and Biff. He is the comical reoccurring mid-boss that always happens upon the protagonists' path to stop them.

7.3.5 Ziff/ Biff
Are the subordinates of Commander Crush and are often seen getting yelled at by him.

8.0 Enemies and Monsters
You will be fighting against a number of failed escaped experiments and hostile foes that will challenge and forge obstacle along your path.

8.1 Failed Experiments
These are the subjects that have been bred within the laboratory on Terra Nova. They are a cross species of various animals who have lost their animal nature (see figure 13). You may also capture these experiments to raise them yourself and become loyal to help you along your journey.

(*Figure 13*) Failed Experiment

8.2 War Operations and Liberal Faction (W.O.L.F.)

They are a group of soldiers who aim to use the experiments to create the greatest military force in the world (see figure 14). They are led by a powerful man known as Alpha Wolf.

(*Figure 14*) A W.O.L.F. soldier

8.3 Alpha Wolf

He is the tyrannical leader of the organization W.O.L.F. and will stop at nothing to get what he wants. He is not a person to be trusted especially among W.O.L.F. (see Figure 15)
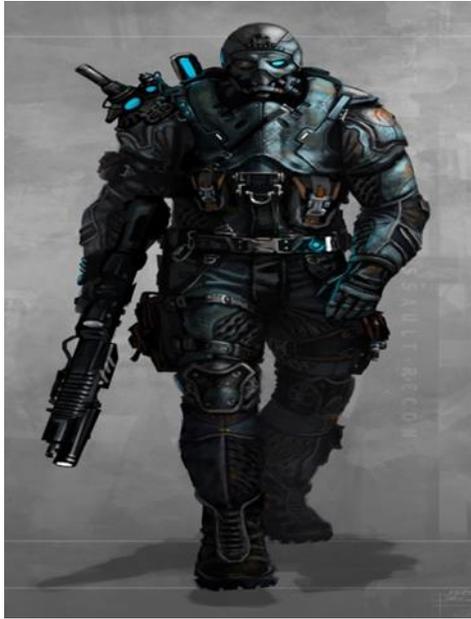
(*Figure 15*) Alpha Wolf

9.0 The Game World

9.1 Overview
The world of GenetiX is on an island with various levels of exploration whether it be up in the clouds or under the sea. The player will be able to travel to all the locations that Terra Nova has to offer. Everything you see off in the distance while you're in another area, you will be able to travel to later on.

9.2 Levels
The levels of the game will be broken down into key locations of Terra Nova such as the starting hidden laboratory, Ex city, Scientist safe house, underwater laboratory, Alpha's sky fortress.

9.2.1 Starting Laboratory
The place where the game begins and holds information about the island and known locations. It also contains information about the characters backstory, and the beginning of the Sigma project. (see Figure 16)

(*Figure 16*) Starting Hidden Laboratory

9.2.2 Features

The starting laboratory will consist of basic challenges in order to teach the player the controls of the game. After learning basic movement they will acquire the ray gun and fight a few enemies to learn attacking. The first boss fight will be just before exiting the level where the player will view a cut scene showing commander crush and his two subordinates in over their heads trying to capture a wild experiment. They flee and the player has to verse the experiment where they will acquire their first transformation power.

9.2.3 Schematic

The basic level design will consist of a series of platforms, pits and ladders that a player must overcome, starting from left and exiting on the right (see figure 17).

10.0 Camera

The camera of the game will be positioned in a side-scroller view following the characters movements wherever he/she may go. It can follow the character practically anywhere.

10.1 Underwater and Flying

The camera will be displaying a side view of the character where they will move around the view of the camera but not beyond it (see figure 18). Note: This view is only enabled when fighting the flying and underwater boss experiment and travelling to another area

(*Figure 18*) Flying view

11.0 Music and Sound Effects

Sound contractors will be told about the budget and time limit of the project and the implementation of music i.e. each level has a different music that matches its situation and surrounding and the music loops per level. Like in the haunted dimensions level the music is scary but funky. During the boss battles, the music is more thrilling. The sound effects are exaggerated like cartoons.

12.0 AI

Forms of Ai used:
Scripted AI(Combat AI): Enemies or NPC's move in a pattern and also use ray-casting followed by path-finding.
Rubberband AI: Also known as dynamic game difficulty balancing, this refers to AI that adjusts difficulty based on player performance (for example speeding up boss movement when his health gets low quickly).

Pets are more passive, they defend the player and boost his statistics/powers. They help pickup items such as health potions and power ups.

Enemy AI

Soldiers(W.O.L.F.)- defensive.

Standard
These are the most common enemies with normal size, average speed, low damage and they possess melee or ranged weapons. These have low health but their strength lies in number.

White-coloured standard soldiers
They drop an item every time they are killed

Ghost soldiers
They are like standard enemies but they can revive for once when they are killed.

Bulky
These have great health and strength, slow movement and are more resistant to bullets but, still can be damaged with transformational attack. They only use their physical power (punch and wake up attack). Big Enemies can not be knocked down like standard enemies.

Failed Experiments- offensive:

Spider-monkey (low health but great damage**)**
It crawls the floor quickly, climbs the walls and attacks the player by exploding near him or her.

Bear-dog (low health and medium damage**)**
They are fast and they try to pounce on the player. The pounced player looses it health until he frees himself. Only way to avoid it is to attack it in time.

Zombie-guerilla: It converts soldiers into zombies and they become more lethal and twice as fast.

Bat-Scavenger (low health but huge damage**)**
It tries to snap up the player and feast on it.

Bosses(attacks become faster each time they are hit):
1. Commander Crush and subordinates
They appear each level with a basic combat AI. At first stage, they fight bare handed with his allies and later on he appears with new weapons, combat vehicles and air-crafts. Once defeated, the player can use the weapons and ride vehicles.

2. Grino (rhino mutation)
He rushes at the player to strike him with his horn. Upon dodging, Grino becomes vulnerable when he gets stuck after striking a wall and takes some time to recover. He spawns enemies during the battle distracting attention of player from his strike. Grino also performs tremor move. If the player does not jump in time, he gets hurt.

3. Frosh (frog)
His tongue tries to catch the protagonist and on getting caught, Frosh tries to strangulate him but the buttons are mashed to escape. Player's health loss depends on how fast buttons are mashed. When Frosh's health remains half, he performs frog leaps making him disappear and he tries to land on the player. Upon dodging, Frosh becomes dizzy and vulnerable until he recovers. Frosh tries to recover health at intervals by diving in water and he can be avoided to do so.

4. Alpha (final-boss)
Alpha possesses all the player's abilities and does not get hurt in normal circumstances as he is surrounded by a shield of energy. As he can not control his powers, he unleashes a medium range energy blast around him becoming exhausted and vulnerable until he recovers. He also becomes exposed when set on fire by pushing him towards the blazing right and left sides of the boss battle stage.

5. Mandrate (venus flytrap mutation)
He is static at the right side of stage with mouth mostly closed. His vines emerge from floor to attack. His special is slow recharge devouring attack which gulps the player. Upon collision with vine, the player is grabbed and buttons are mashed to escape before Mandrate eats him. The player can strike Mandrate's open mouth during devour attack. He gets hint before the vine emerges when floor cracks.

6. Experiment X (hidden-boss) - Blind-ogre accompanied by mini-ogre. The player can not jump across big ogre. They perform big blows. Big ogre has specials like bear hug and super throw. Long range super throw involves throwing of mini-ogre. The player needs to combat closely as shooting is useless. He does not get much chance to strike but when big ogre receives damage, he attempts for a bear hug. When dodged successfully, mini-ogre gets hugged leaving them vulnerable.

Individual Analysis

Writing a game design document was a completely new experience for me and it was quite interesting as well. Though I faced some issues in the start but I managed to overcome those. Like I was appointed the aesthetics element, but with out consulting me, it was changed to technical element even though the pitch presentation was near. Moving from aesthetics to technical element was an unexpected transition for me.

Overall this design document of Genetix meets the requirement of the criteria and is well written and formatted except for some things that could have made the document up to the mark. The story and background has been well done, the three act structure has been followed in it and it keeps the player motivated throughout the story. The game mechanics are also innovative especially the combination of shooting and transformational ability makes the game more interesting to play. Puzzles have also been included which make the game a complete package and the control mapping is easy to get adapted with.

Firstly, the art section was quite disappointing. The complete section was not emailed in time so it could not be embedded in the document properly. Instead of using pictures from the internet, hand drawn pictures could have been used that would give better idea for the unique look and feel of the game. A little hand drawn concept art for the levels, characters(especially antagonist and protagonist), weapons and their moves would be very illustrative. For example, thumbnail sketches could serve for this purpose really well. The aesthetics and art section of the document is unfinished in which the visual style could have been discussed in detail and the specific art style is not clear. The graphical user interface(GUI) concept sketch is also missing and the flow chart of menu interface is also missing.

In the story element, flow charts of levels are missing. Though it has not been discussed whether the story is linear or non-linear but still the story section was well designed. The game mechanics could have been discussed more using the terminologies of games design. The specific framework to be followed by the design document has not been mentioned.

In the game mechanics, the magic bar, charge, kii or chakra has not been stated anywhere and it has not been attributed to the transformational ability otherwise the player will have infinite strength and gameplay will become easy. The flying ability also does not make any sense unless a magic bar has been appointed to the player to limit the player flying up to a certain time other wise gameplay would become easy. The statistics of the main antagonists like health, damage, speed, movement and jump height have also not been clearly stated.

In the technical portion, I have stated one of the main features of the 2D engine and limited the technical element to the point. I took me some time to figure out the technical limitations but upon consultation with our tutor, I figured it out.