The Lost Treasure

A Play-to-Earn Game
By
ETNA Network

The Lost Treasure

Introduction

The Lost Treasure is a Play-To-Earn game where players battle or complete adventures using NFT game assets and earn tokens for every battle won or levels completed. The game adopts some part of the Greek mythology with a premise that is based on the idea that at a time that predates time, Plutus the god of treasure had hidden a huge amount of treasure as instructed by Zeus the god of the sky. Many tried to find the resting place of this treasure ruins but failed. The time came, after Zeus was long gone, a vital clue was revealed by Plutus, the resting place of the treasure was revealed to be somewhere in the deepest core of Mount Etna. Many heroes have travelled from far and near, from the past and the future to the Island of Sicily in quest to find the lost treasure.

As a play-to-earn game with an interesting storyline, it give game players an avenue to earn while having fun. In the development of The Lost Treasure, ETNA Network is kin to cater to all kinds of users, both experienced and the inexperienced ones buy providing game options that would serve both groups.

The Lost Treasure

Game Options

The Lost Treasure game offer players two playing options, these are:

- **The Simulation Option:** In this option, the player does not actually battle or control the game character during the game, both the player's character and the opponent are controlled by algorithm. The player can better his/her chances of winning by carefully selecting his/her game character, weapons, and enhancements. It is also key to select a level with a better odd of victory. This option is for inexperienced gamers, giving them an avenue to earn while still having some fun.

- **The Playing/Fighting option:** In the playing/fighting option, the player has to control the character making it fight its opponent or complete required steps in a level. Unlike the simulation option where the outcome of the battle is dependent on only data, in the playing/fighting option, the skills of the player also matters. This option is designed for seasoned gamers, players with skills. The playing/fighting option is designed to maximize fun while playing to earn.

Each of the game options come with different levels and modes and of course limitations as would be discussed in the next section.

The Lost Treasure

Levels And Modes of Game Options

More specific details of what players should expect for each of the options are discussed here.

Simulation Option

Modes:

Currently limited to one mode, a Player verses Environment (PvE) or Player verses Computer (PvC) mode which is essentially a player battling an opponent controlled by game AI (computer) and not by another player.

Levels:

This option has 4 different levels which differ by game difficulty and earning, they are:

- Novice
- Intermediate
- Experienced
- Professional

Fighting Option

Modes:

The Playing/fighting option has the following modes:

- Player vs Player/Environment mode
- Adventure/treasure hunt mode
- Tournament mode

Levels:

Similar to the simulation option, the PvE has the same levels but the PvP and even the Tournament mode does not since it is one player battling another.

The structure of the adventure is different and with several levels that get more difficult as a player progresses.

Game Architecture

The Lost Treasure, the first of many play-to-earn games (several versions and mode will be released) that would be deployed by ETNA Network adopts the architecture shown on the right. The game server, referred to the off-chain layer of the platform connects to the on-chain layer (the blockchain). This approach is adopted to enable scalability of the gaming platform with minimal latency.

Both layers intercommunicate and exchange data/information at different checkpoints thereby ensuring immutability within any game.

This approach also ensures efficiency from a gas cost point of view.

GAME SYSTEM ARCHITECTURE
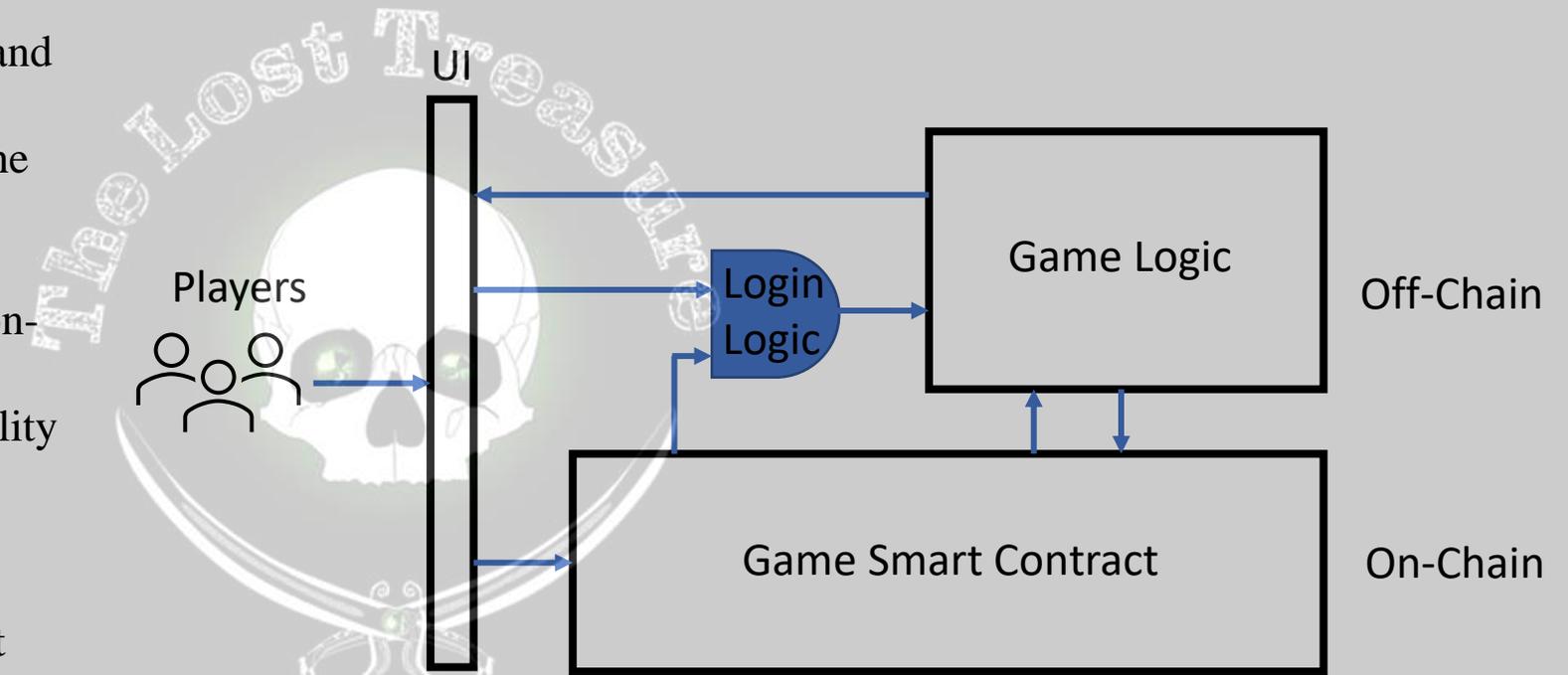
Metabolism – Price Model For Assets

The metabolism models described are those used in the simulation games. The model for the actual fighting game follows the same structure but differs.

Character NFTs

The diagrammatic model describes the metabolism – price algorithm for each NFT game character.

A mathematical model for the algorithm is as follows:

$$Meta_C = \begin{cases} 50, for\ p < 1k \\ 50 + N, for\ 1k \leq p < 50k \\ 120, for\ p \geq 50k \end{cases}$$
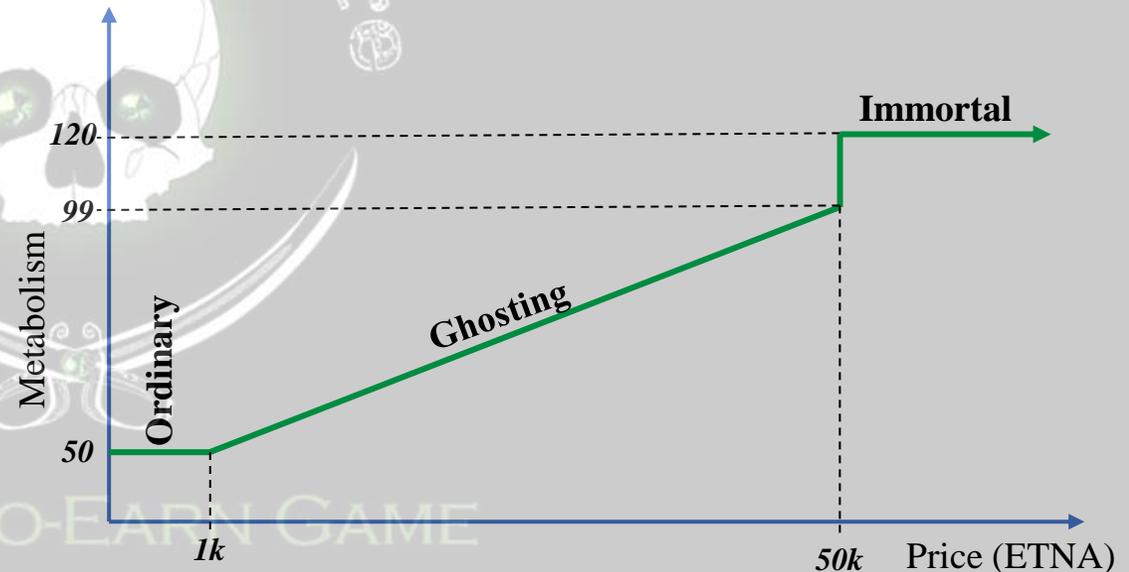
Where:
- p is the price of the NFT character in ETNA
- N is the number of thousands in p.

Example:
if the price of the NFT is 3,550 ETNA then M = 50+3 = 53
If the price of the NFT is 35,050 ETNA, then M = 50+35=85

The higher the price of an NFT game character, the higher its metabolism (power) level

Metabolism — Price Model For Assets

Weapon NFTs

The metabolism level of Weapon NFTs are defined as a fixed value, unlike those of character NFTs, it does not vary with price.

In current version, the metabolism level for Weapon NFTs is set to 10, that is:

$$Meta_W = 10$$

Enhancement NFTs

Similar to Weapon NFTs, the metabolism level of Enhancement NFTs are defined as a fixed value, unlike those of character NFTs, it does not vary with price.

In current version, the metabolism level for Enhancement NFTs is set to 2, that is:

$$Meta_E = 2$$

The power level of a player character is equivalent to the resulting metabolism level of the character, selected weapons and enhancements combined

CHARACTER

POWER

WEAPONS
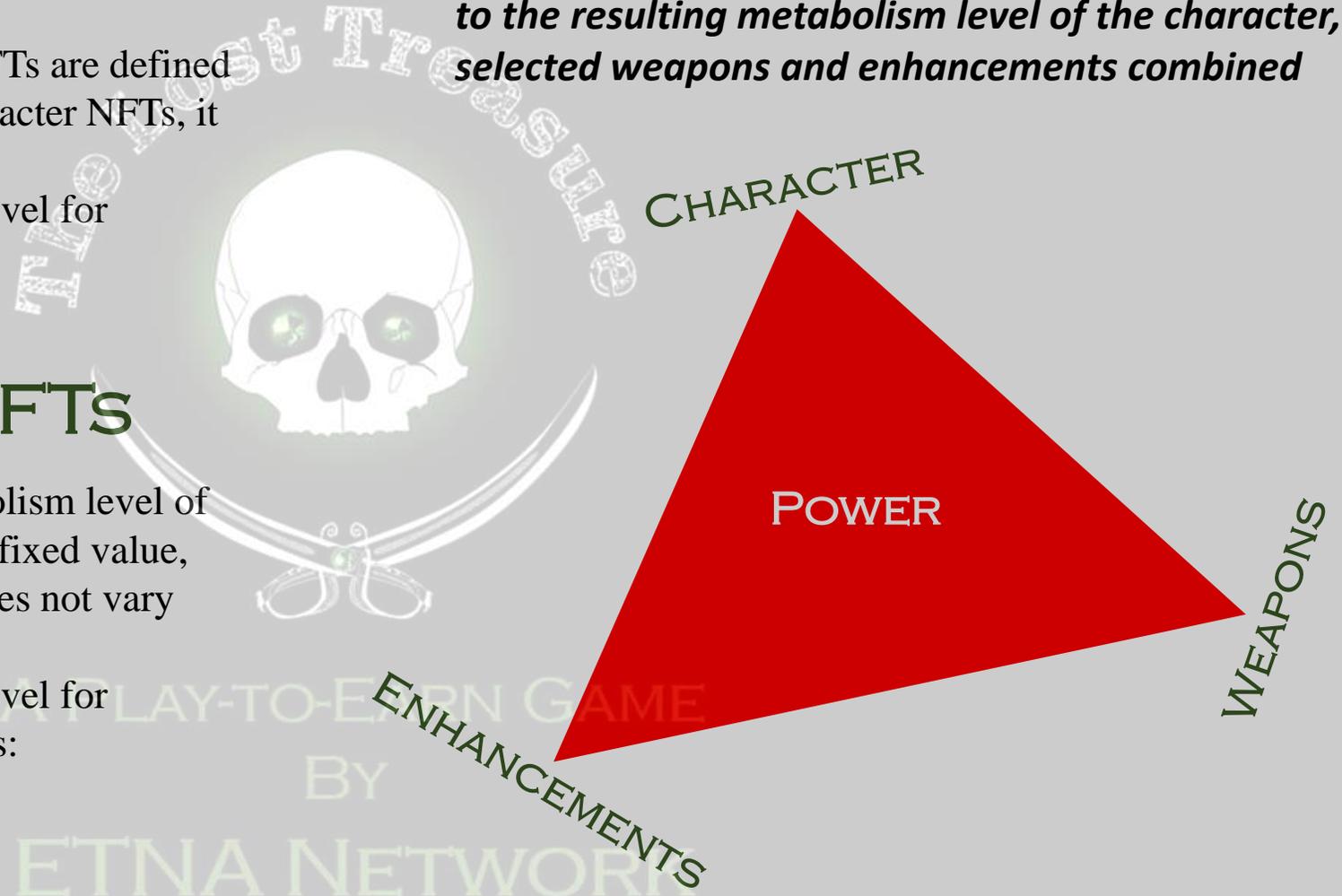
ENHANCEMENTS

The Metabolism Potion

What it is

The metabolism Potion is a Special Enhancement NFT that serves as a character energy or power booster. When a character uses it in battle, the metabolism level of the character is increased significantly, thereby giving the player an edge over the opponent. With boosted power, the player has significantly higher odds of winning and consequently, higher earnings.

How To Get It

The Metabolism Potion is a very rare and priceless game asset. It cannot be bought like other game assets. This NFT game asset will be airdropped to holders of NFT characters or holders of at least 500 ETNA.

Boost Level

The Metabolism Potion gives a game character a metabolism boost of 20. That is:

$$Meta_{SE} = 20$$

This is very significant as will be shown below

Booster Effect Analysis

Consider a scenario where a player battles, here is an analysis of the outcome.
Battle Parameters:

$$Meta_{Character} = 90, \; Meta_{Threshold} = 150$$

Metrics	Without Boost	With Boost
Victory Confidence	60.0 %	73.3 %
Battle Expectation	3.00	3.67
Expectation in 10	30.0	36.7

Based on the results of the analysis, a player with Metabolism Potion is expected to earn 6.7 more ETNA tokens than a player without in 10 battles

Battle Power

What it is

Every time a character battles, the power level or metabolism level of the character decreases by some amount. The amount by which the metabolism level decreases is the energy the character used up in the battle, and it is known as the Battle Power.

Battle Power Model

The Battle Power is modelled as a decrease in metabolism level by a constant value. Regardless of the outcome of the battle, after each battle, metabolism level will decrease by this value. The Battle Power is given by:

$$B_P = \begin{cases} -5/battle, for\ Novice \\ -6/battle, for\ Intermediate \\ -7/battle, for\ Experienced \\ -8/battle, for\ Professional \end{cases}$$

Revitalization Period

This is the time period it takes for the metabolism level to reset to its initial maximum value. It is measured from the last battle the character fought and it is given by:

$$R_P = 24\ hrs$$

Battle Scenario

Consider a player who battles with a character with $Meta_{Character} = 90$, the player fought five battles in the following order:

Professional, Intermediate, Novice, and Experienced.

After first battle, $Meta_{Character} = 90 - 8 = 82$

After second battle, $Meta_{Character} = 82 - 6 = 76$

After third battle, $Meta_{Character} = 76 - 5 = 71$

After fourth battle, $Meta_{Character} = 71 - 7 = 64$

The last battle is the fourth one, this means that the character metabolism level will be revitalized 24hrs after the time the fourth battle was fought.

Character Net Power

What it is

This is the net power of NFT character selected by a player. Since the power of each asset is expressed in metabolism level, the net power of an asset of character is given by the net metabolism level of the character.

Net Power Model

The net power is simply the sum of the individual metabolism level of all the NFT game asset a player selects for a given battle or game. This is given by:

$$P_{CHA} = (Meta_C - \sum_{i=0}^{N} B_P) + 10W + 2E + 20E_S$$

Where
W is the number of weapons, $(0 - 3)$
E is the number of enhancements, $(0 - 5)$
E_S is the number of booster enhancements, $(0 - 1)$

Battle Scenarios

Suppose a player battles with a character whose price at the time of the battle is 3550 ETNA, if the player uses 3 additional weapons and 5 enhancements for 5 battles in the order Professional, Professional, Experienced, Intermediate and Novice. Find P_{CHA} after each battle.

Battle	Without Boost	With Boost
1, P	085	105
2, P	077	097
3, E	070	090
4, I	064	084
5, N	059	879

Note, for the above calculations, $Meta_C = 53$, $W = 3$ and $E = 5$. Without boost and with boost, E_S is 0 and 1 respectively.

OPTIONS TO GETTING GAME ASSETS

To obtain NFT games assets required to play the games, players have 3 options, these options are:

BUY NFT GAME ASSETS

Players can buy game assets from the NFT marketplace. This is a win-win situation because the game assets in The Lost Treasure are modelled to appreciate in price with demand. Also, they can be continuously used to play games to earn and can be sold back anytime the players wants to do so.

Game assets can be purchased or sold anytime at: https://nft.etna.network/

SCHOLARSHIP PROGRAM

This is feature that allows people who have several NFT game assets to sponsor others. It is a sponsor-scholar type feature where the sponsor provides the assets required and the scholar gets to play for free and a percentage of the earnings made by the scholar goes to the sponsor.

This feature will allow players looking to be a scholar to apply directly and also allow sponsors to grant sponsorship and self-manage their scholars.

RENT NFT GAME ASSETS

ETNA Networks also provide players who cannot buy assets or do not want to buy assets an avenue to rent game assets. This gives users a cheap way to have access to the games without having to spend on owning assets.

Gameplay Description

Requirements

To play a game, here are the requirements:
- Connected address needs to have at least one NFT game character.
- Connected address needs to hold at least 100 ETNA.

Restrictions

Here are the restrictions that comes with the games:
- Players can only battle 7 times for free within 24hrs. After 7 battles, the player can choose to pay to access more battles or wait for 24hrs to gain access to more battles.
- NFT characters, weapons, enhancements and even super enhancements can be used for battle in only one wallet address within 24hrs. If an NFT game asset was used in an address and then transferred to another wallet, the game asset will not be selectable until 24hrs elapses.

Starting a New Game

Here are the steps a player takes to start a game:
- Player connects using Metamask or wallet connect
- If connected wallet meets the minimum requirements, player can proceed.
- Player select his character NFT and selects the specific ID (this is a required step)
- Player selects weapon NFTs for the battle, player can select up to 3 weapons and the weapons can be the same type (this is optional)
- Player selects enhancement NFTs, player can select up to 4 enhancements and they can be the same type (this is optional)
- Player selects super Enhancement NFT (booster) and enters the specific ID (this is optional)
- Player selects game level he/she wants to play
- Player then battles.
- Outcome of the battle then displays after the battle
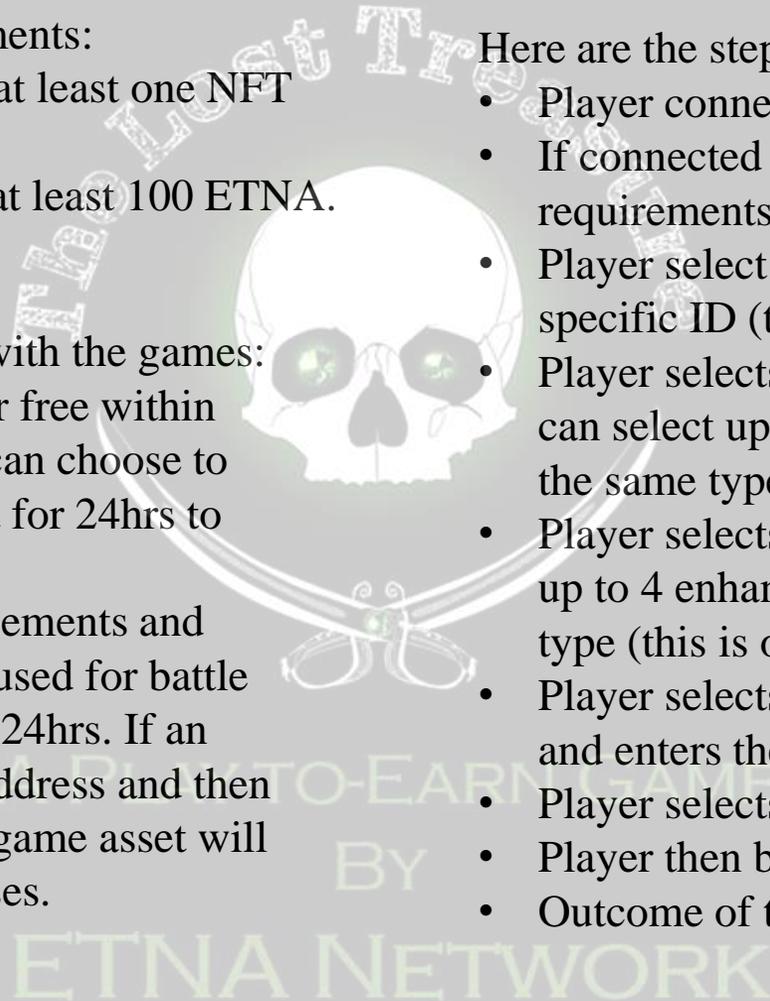
Gameplay Flowchart

Step A: The player login using Metamask or Wallet connect.

Step B1 & B2 : Game mechanism checks if logged in address has at least 100 ETNA. If no, player proceeds to buy or get sponsored. If yes, player proceeds to next step.

Step C1 & C2 : Game mechanism checks if logged in address has at least 1 NFT Character. If no, player proceeds to buy, rent or get sponsored. If yes, player proceeds to next step.
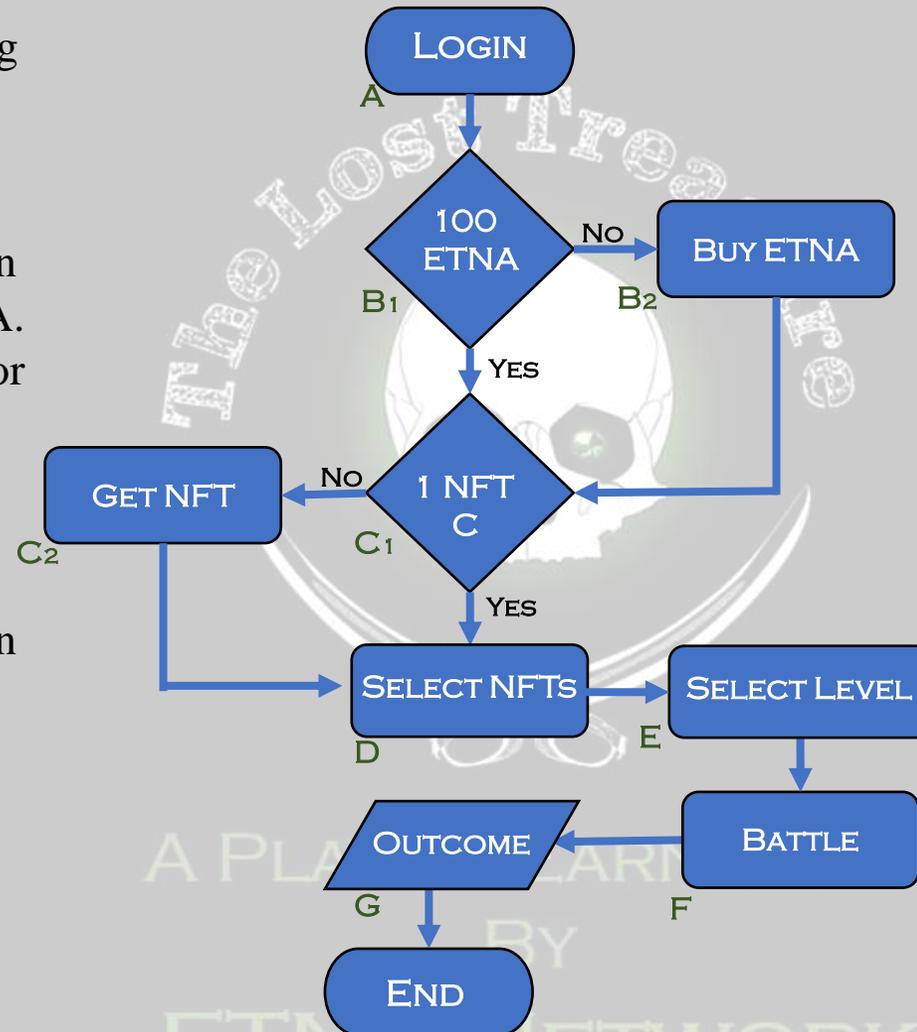
Step D: The player is required to selects NFT character. In addition, player can select 3 NFT weapons, 5 NFT enhancements and a booster but all the additions are optional.

Step E: The player is required to selects the Level to play. Player can select Novice, Intermediate, Experienced or Professional

Step F: The player battles

Step G: The outcome of the battle displays.

Flowchart nodes:
- LOGIN (A)
- 100 ETNA (B1) — NO → BUY ETNA (B2)
- 100 ETNA — YES → 1 NFT (C)
- 1 NFT (C) — NO → GET NFT (C2)
- 1 NFT (C) — YES → SELECT NFTs (D)
- SELECT NFTs (D) → SELECT LEVEL (E)
- SELECT LEVEL (E) → BATTLE (F)
- BATTLE (F) → OUTCOME (G)
- OUTCOME (G) → END

Expectations and Deliverables

Earning Expectations

As this is a play-to-earn game, players have great opportunity to earn ETNA tokens for every game played and won with no risk as this is not a betting game. The amount earned per game vary depending on the level played. A level with less difficulty has the lowest earn and that with the most difficulty of winning has the most earning.
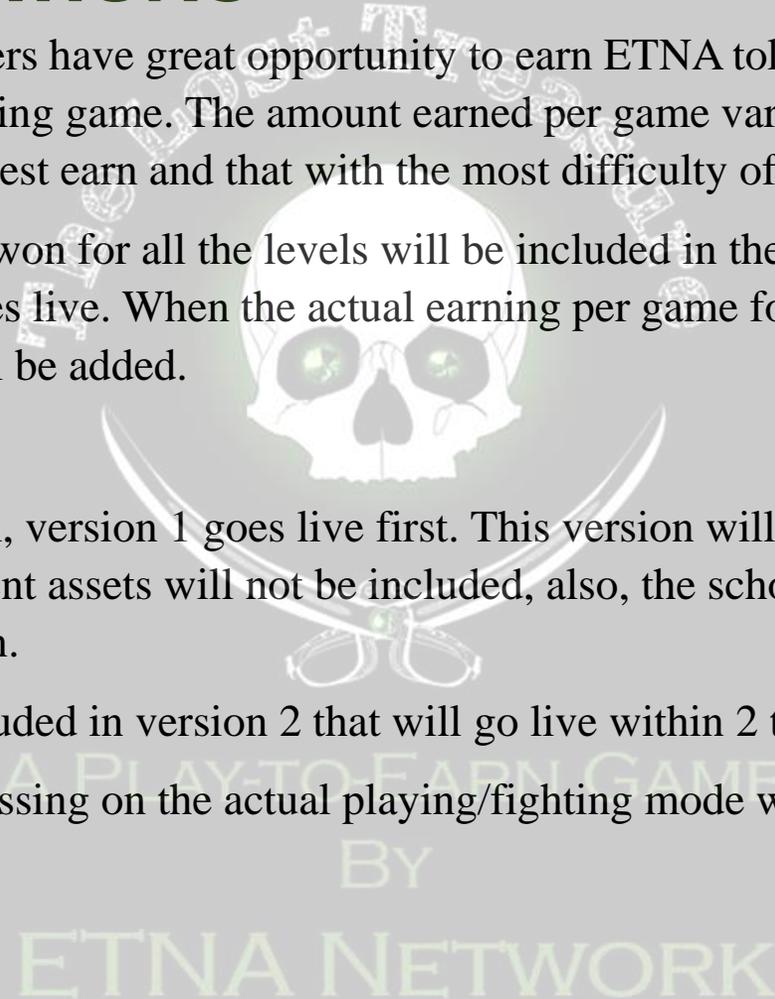
The amount earned for every game won for all the levels will be included in the update of this document as would be released right when the game goes live. When the actual earning per game for each level have been added, an analysis of the earning potential will be added.

Deliverables

The Lost Treasure simulation option, version 1 goes live first. This version will have all attributes as documented here. In this version, the option to rent assets will not be included, also, the scholarship program will not be included. Version 1 will go live soon.

All the missing features will be included in version 2 that will go live within 2 to 4 weeks after version 1 is live.

Development is also actively progressing on the actual playing/fighting mode with full PvP and PvE fully integrated.

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