MoneyTree

Fair & Fun DeFi, GameFi & NFTs

Abstract. MoneyTree hosts a collection of GameFi dApps which run 100% on-chain and are built on the basis of statistical fairness, there is no house edge, and all results are chosen with Chainlink VRF to guarantee transparency. MONEY is used as the underlying currency on the platform to interact with the mini games as well as purchase NFTs & loot boxes. MoneyTree is designed to provide passive income for holders as well as the opportunity for active players to win prizes without needing to stake or lock tokens. Holders of MONEY can claim weekly BNB & MONEY tokens in dividends and are automatically entered into a free weekly lottery which pays in BUSD. MONEY is deflationary; tokens are permanently burned whenever NFTs are purchased. There are 1 million unique and deflationary MoneyTree NFTs which can be burned and upgraded or staked to "grow" MONEY. MoneyTree NFTs are automatically entered into a weekly lottery where the owners have a chance to win more NFTs. There are only 30k legendary MoneyTree NFTs available. All NFTs are stored on IPFS and come with Attack, Health & Magic stats, these will be used in future games. MoneyTree is designed to be constantly improved with new functionality and games being developed on an ongoing basis.

1 Blockchain Gaming

1.1 On-Chain GameFi

Blockchain provides a unique framework for game development, offering advantages such as ownership of in-game assets and verifying the integrity of actions and processes. It also, however, comes with challenges, transactions on the blockchain can be costly, time consuming and unpredictable. Developers often choose to take a semi-centralised approach in which certain actions or assets are stored on the blockchain whilst the bulk of the processing is computed by an off-chain centralised server.

MoneyTree has been built to be fully transparent with all processes running entirely on the blockchain. Users have the ability to independently ensure that the logic used to process the games are as intended, with no interference from 3rd party inputs such as API dependencies or malicious users. The end user is able to interact with the MoneyTree dApps using the web3 integrated UI provided on the website or by directly interacting with the blockchain through an explorer such as BSCScan.com.

There is a collection of GameFi dApps available to play within the MoneyTree platform from launch. The games offer users with the chance to win more MONEY tokens or NFTs in a statistically fair environment, with no house-edge. Traditional luck-based games such as those seen within casinos are designed to generate profit for the central body which runs the casino, players are always at an overall disadvantage. Hosting the games on the blockchain allows the end user to pay for the operating costs i.e., the transaction when placing a bet or claiming a prize. This allows for the process to operate independently of a central governing body and hence there is no need for a house edge, players can keep all of the prizes and pay for all of the fees to run the underlying computation.

1.2 NFTs

Non-Fungible Tokens (NFTs) further widen the applications and use cases of blockchain. By utilizing NFTs, both digital and physical items can be assigned ownership on the blockchain as well as any additional metadata. This capability can make many processes more efficient and remove the need for a "man in the middle," an example of this is transferring the rights to a digital asset without the need for an intermediate party or 3 escrow system. It also ensures that ownership cannot be tampered with and no longer has a central point of failure.

A number of NFT collections have been created and deployed, these NFTs are often collected or traded. An issue often seen with current NFT collections is the underlying infrastructure, most NFT collections are stored in a centralized

server, for example, on the cloud. Whilst ownership of these assets is recorded on the blockchain, the underlying digital asset (NFT) can be edited in the back end, therefore editing the supposedly immutable asset that the user purchased.

A solution to ensuring that NFT collections cannot be tampered with is utilizing the Interplanetary File System (IPFS.) IPFS is a distributed framework for storing files across a cluster of nodes. Every item added to IPFS is encoded, this ensures that if any malicious node attempts to edit the file, the encoded hash would not match and hence the wider network would reject this file. IPFS operates in a similar fashion to the blockchain and is an ideal method to store NFTs where ownership is stored on the blockchain. MoneyTree stores all one million generated NFTs on IPFS to guarantee the availability of the NFTs as well as to provide absolute assurance that no NFTs can be tampered with.

The MoneyTree NFTs come with additional functionality over and above being able to assign ownership on the blockchain, this can be thought of as NFT 2.0. Every NFT comes with Metadata including an attribute list containing attack, health, and magic stats. The NFTs are deflationary and can be burned and upgraded to rarer NFTs, this process permanently takes the NFTs out of circulation and assigns the burn address as the owner. The NFTs can also be staked to claim weekly MONEY tokens in dividends, all NFTs are also automatically entered in to a free weekly NFT lottery. The MoneyTree NFT contract utilises a proxy, additional utility and functionality will continue to be added whilst existing metadata will remain immutable.

1.3 Fairness

MoneyTree has a fair launch on Oct-16-2021 with no pre-sale. An anti-whale measure was active for the first 24H to prevent an unfair distribution of tokens by limiting the maximum transaction size. The initial liquidity added to PancakeSwap was immediately burned ensuring indefinite liquidity for users and the developer wallet has been locked until 2024 with DxSale to provide further confidence to investors.

Many of the existing games involve some element of chance, obtaining a true source of randomness on the blockchain is typically unachievable. Most smart contracts will revert to using a pseudo-random which can either be known in advance or can be manipulated by miners. MoneyTree integrates with Chainlink VRF throughout the platform ensures that a true source of randomness can be obtained on-chain. This service is provided by the network of Chainlink nodes and can be validated by users.

Given the decentralised nature of the MoneyTree platform, the luck-based games are designed with no house-edge. Removing the house-edge gives end users the chance to bet tokens without a statistical disadvantage, in theory a user's balance will always average out the same since no cut is taken and all of the games provide a fair chance. Statistically fair games of chance are only possible in a blockchain environment where operating costs are virtually zero apart from the transaction fees which can be paid by the end user.

The DeFi & GameFi applications are accessible to all users without discriminating against income. Games can be played with as few or as many tokens as the user pleases without affecting their chances of winning and prizes are always paid out in proportion to the number of tokens bet. All of the lottery processes take in to account each individual fraction of a token to ensure that even the smallest holders have a fair and mathematically proportional chance of winning.

1.4 Transaction Fees

All transactions involving MONEY apart from playing the games incurs a transaction tax, this tax is imperative to the tokenomics of MoneyTree and underpins the Defi & GameFi processes

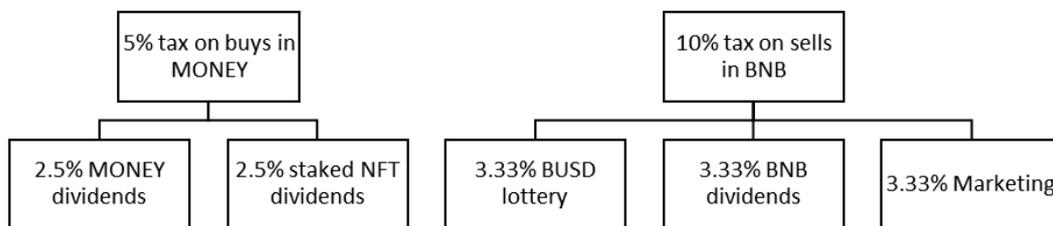| **PancakeSwap**	**WhiteBIT**
Buys: 6% slippage	Withdrawals: 5% tax
Sells: 12% slippage	Deposits: 10% tax

Peer to peer transfers also incur a 10% transaction tax

The above taxes as well as the revenue received from purchases of NFTs or loot boxes are redistributed to holders in some manner, this can be in the form of dividends, burns or adding to the weekly lotteries. The splits are as follows:

PancakeSwap Taxes
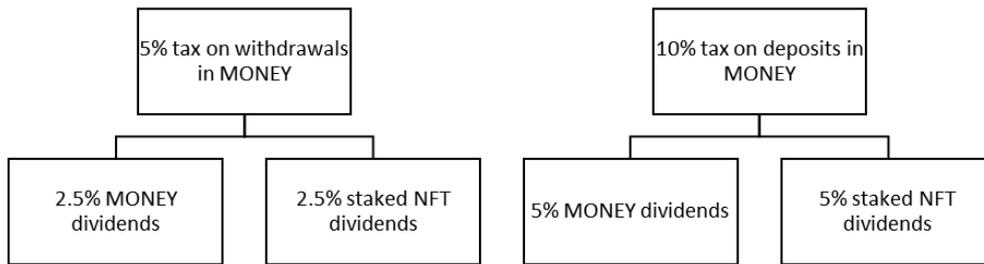
WhiteBIT Taxes

NFT & Lootbox Revenue

2 DeFi

2.1 Dividends For Holders Of MONEY

Holders of the MONEY token are eligible to claim dividends on a weekly basis without needing to stake or lock tokens, this allows users to benefit from passive income whilst maintaining the capability to play games. A snapshot of all balances is taken on a Monday at which point users are able to claim their share of the weeks dividends. The dividends can be claimed on a weekly basis or left to build up and claim after a prolonged period time to save on gas fees, dividends are stored on the blockchain like all MoneyTree processes and hence any owed dividends will never expire.

The dividends are derived from the transaction taxes as well as a split of the revenue generated from NFT purchases. The transaction tax prevents users from trying to purchase MONEY before the dividends snapshot and selling after as this would be unprofitable. When users claim their dividends it will send them their total owed MONEY tokens as well as the BNB dividends owed. Even holding 1 MONEY token would entitle you to claim dividends to ensure fairness, however, this would be exceptionally small as dividends are paid out in proportion to your

holdings when compared to the total supply, excluding any official wallets or tokens held in exchanges. The formula for estimating your dividends is as follows:

$$\frac{X \times D}{2 \times \sum_{i=0}^{n} Y_i}$$

X = Tokens held by user
D = Total dividends in MONEY tokens
n = Supply of MONEY
Y = Holder of MONEY (excludes official wallets)

2.2 Dividends For Staked NFTs

All MoneyTree NFTs can be staked through the SMTNFT smart contract, an interface to this dApp is provided on the platform called "Grow $MONEY" users are able to choose a number of NFTs to stake at once, the maximum number of NFTs that can be staked in one transaction is approximately 125, this is a gas limitation of the Binance Smart Chain network. If it is a users first time staking NFTs with MoneyTree they will need to first run an approve function to give the SMTNFT smart contract the rights to transfer their NFTs.

Once a user has staked NFTs they will automatically have SMTNFT tokens minted and sent to their address. The proportion of SMTNFT tokens that a user owns when compared to the overall supply provides an estimate for the percentage of the weeks dividends for staked NFTs that the user will be able to claim. Depending on the rarity of the NFT staked, the user will receiver a different amount of SMTNFT tokens, as follows:

- Common: 1 SMTNFT
- Uncommon: 2 SMTNFT
- Rare: 4 SMTNFT
- Epic: 8 SMTNFT
- Legendary: 16 SMTNFT

This once again ensures that users are able to claim dividends proportional to the number of NFTs staked and those who only have common NFTs are still included and able to benefit from staking without an additional bonus being added to rarer NFTs. As with Dividends for holders of MONEY, users do not have to claim every week and can instead leave these to build up. NFTs staked remain eligible for the NFT lottery. The formula for estimating your dividends is as follows:

$$\frac{(\sum_{ix=0}^{nx} C_{ix}) + (2\sum_{ix=0}^{nx} U_{ix}) + (4\sum_{ix=0}^{nx} R_{ix}) + (8\sum_{ix=0}^{nx} E_{ix}) + (16\sum_{ix=0}^{nx} L_{ix}) \times D}{2 \times (\sum_{i=0}^{n} C_i) + (2\sum_{i=0}^{n} U_i) + (4\sum_{i=0}^{n} R_i) + (8\sum_{i=0}^{n} E_i) + (16\sum_{i=0}^{n} L_i)}$$

C = Common NFTs
U = Uncommon NFTs
R = Rare NFTs
E = Epic NFTs
L = Legendary NFTs
n = Supply of NFTs
D = Total dividends in MONEY tokens
nx = NFTs owned by holder

2.3 BUSD Lottery

Once a week on a Friday, the BUSD lottery runs. All holders of MONEY are automatically entered in to the lottery, nothing needs to be done to enter and there is no charge. Simply hold MONEY to enter for free, forever. The more MONEY tokens held, the higher the likelihood of winning this includes fractions of tokens. All official wallets and exchanges are automatically excluded. The BUSD lottery chooses 3 winners each week, the prize split is as follows:

- 1st : 67%
- 2nd : 22%
- 3rd : 8 11%

All winners are automatically paid and do not need to claim their prizes, the winners are chosen using Chainlink VRF and the winners are sent BUSD to the same address which held the MONEY tokens. The lottery has extremely low operational costs when compared to traditional lotteries. Most blockchain based lotteries require manual entry or cost tokens to enter each week. The BUSD lottery for MoneyTree remains free forever and offers players the chance to win every week. Since the lottery pays out in BUSD it does not effect the token price, other lotteries which pay the winners in tokens tend to see a decrease in price as the winners cash out the prize.

As the market cap of MoneyTree grows so will the size of the weekly BUSD jackpot size, the lottery has been designed with the functionality to pay more users as the size increases. The MoneyTree BUSD lottery has been tested to scaled to over 1 million active holders and has the underlying design to become the decentralised global lottery system with minimal barriers to entry.

2.4 NFT Lottery

Similar to the BUSD lottery, the NFT lottery runs every Friday and all holders of NFTs are automatically entered in to the lottery. Chainlink VRF is chosen by looking at the total supply of MoneyTree NFTs, including both staked and unstaked

NFTs. Winners automatically receive newly minted NFTs automatically to their account without needing to claim.

The rarity of the NFT impacts the prize that the winner receives. This ensures there is a fair and balanced reward to likelihood ratio for common and legendary NFT holders. The more NFTs held, the more likely a holder is to win, however, depending on the rarity of the NFT chosen the user will receive more or less NFTs as the prize, this provides users with a decision to make depending on their level of risk/reward. The split is as follows:

- Common: 1 NFT
- Uncommon: 2 NFTs
- Rare: 4 NFTs
- Epic: 8 NFTs
- Legendary: 16 NFTs

3 Money Tree dApps

3.1 Numberdome

Numberdome is a chance based in which users have to choose 3 numbers from 1-5 each, Numberdome gives a 1 in 125 chance of winning. Each ticket to play costs 10k tokens and the number of tokens won if all numbers match is 1.25m tokens, ensuring statistical fairness. The prize of 1.25 million tokens is relatively low when compared to the overall supply and hence winners selling should make a relatively trivial impact on the price.

The winning numbers are drawn once a day using Chainlink VRF and the results are stored on the blockchain as well as published on the various social channels. Winners do not have to manually claim their prize as the game has been designed in such a way that when the numbers are drawn, any winners are automatically minted their 1.25m token prizes. Due to the statistically fair nature of the game and the fact that tickets purchased are burned, Numberdome does not affect the overall supply of MONEY but will cause occasional fluctuations around the current supply.

3.2 Gridlock

Gridlock is a simple game of chance that can be thought of as roulette but without the 0. Removing the 0 absolutely eliminates the house edge and provides users with a fair chance-based game. Gridlock is designed so that users can place as many tokens as they please, on as many different positions as they wish to, for the chance to win more tokens. All tokens placed will be automatically burned,

however, if a user matches the daily winning number, the user will be minted 12x the tokens placed on the winning number. Tokens placed between numbers, columns and rows will all be placed with the mathematically appropriate number for each spot, e.g if a user places 3 million tokens on row 1 it would be the equivalent of placing 1 million tokens on positions 1, 2, and 3. Translating these off-grid positions into an array of length 12 reduces the complexity of solidity and hence reduces gas cost for the end-user.

Given the lack of a "house-edge" in our game, if the user played 1 million games their overall balance would fluctuate but, on average, would stay the same. Similar games to gridlock often add an extra position to the board to skew the odds in the houses favour whereas all Money Tree games are no loss with no house edge.

3.3 Versus mode

Versus mode revolves around live events and lets users stake tokens against one another based on their predicted outcome of a binary event. The total pot from both sides is calculated once the event is completed and the winning side can claim a proportionate number of tokens to what they staked from the loser's pot. In essence,

Versus mode provides a platform for players to stake tokens on their side where the returns are determined by the opposition, instead of a centralized organization providing the odds. This provides a more transparent system where all the inputs and outputs are determined in a peer-to-peer fashion, given this, versus mode does not affect supply.

3.4 Lucky Limbs

Lucky Limbs is a statistically fair game of slots where users pay for the VRF cost and therefore are able to receive the results and prizes on demand. The process for playing Lucky Limbs involves running two transactions. The first transaction makes a call to Chainlink VRF and also maps the number of credits purchased to the user's address. The second call runs once VRF has provided the random number, the second transaction is used to process the VRF results and mint all owed $MONEY tokens and NFTs to the player.

Given the prizes are sent to the player in the second transaction, there is no need to manually claim these rewards. The user interface provides a traditional slot machine style experience where the player can spin the machine, however, in the backend the entire process can be run on the blockchain by simply running the two transactions without interacting with the user interface whatsoever.

The cost per credit is 3k $MONEY tokens, to ensure the game does not affect the overall expected supply of $MONEY, the prizes paid out amount to an average of 3k $MONEY tokens per spin. Given that users can also win NFTs, 25k $MONEY tokens are minted to the dividends wallet whenever this occurs. This ensures that the supply does not become extremely deflationary. Given that NFTs are assigned a value of 25k tokens (derived from the average lootbox purchased) this 25k must be taken into account when calculating the average prize of 3k tokens per spin. To ensure this is the case, the 25k tokens are split between $MONEY and NFT dividends, as if the user purchased a lootbox.

The odds for Lucky Limbs have been validated through running simulations on Testnet. The results for over 100k simulations show that the credits users purchased is almost precisely equal to the number of tokens won + (NFTs won * 25k tokens) Given that 25k tokens are minted to dividends whenever an NFT is won, Lucky Limbs will contribute to the weekly dividends and will on average increase the size of the weekly dividends.

4 NFTs

4.1 Generation

All one million Money Tree NFTs are created and deployed on launch. At first glance one million NFTs will seem like an exceptionally large number but the MoneyTree NFTs are deflationary with NFTs being burned whenever they are upgraded. The final position is likely to only have 30k legendary NFTs remaining. The NFTs also use a vast number of unique assets, there are over 4.5 trillion possible unique combinations. The 1 million NFTs are categorized into different rarities: Common, Uncommon, Rare, Epic & Legendary.

4.2 Skills & Attributes

All of the NFT attributes are stored as metadata following the standards recommended by OpenZeppelin. Each of the NFTs come with an attack, health & magic score. These scores are derived from the accumulative sum of the assets and the appropriate attack, health & magic score on each underlying asset. The overall NFT skills will be highly correlated with the overall rarity of the NFT, however, given they have been programmatically generated, there is always an element of randomness which could create exceptions to the rules. Future planned mini games will utilize the NFT's overall skills in-game.

4.3 Storage & Security

NFTs are secured in the Interplanetary File System (IPFS), including their skills. All NFTs are pinned for a minimum of a 12-month contract by Pinata. These NFTs are uploaded within 1 directory, and all assigned a unique content identifier (CID). The CID is encrypted into the solidity to prevent any NFT outside the folder from being minted onto the blockchain. Many NFT collections will mint 10,000 to 20,000 on launch. However, given the 1 million NFTs and unorthodox upgrade mechanism, it would be unfeasible to mint all of these on launch due to extreme gas fees.

Therefore all 1 million NFTs have been deployed on IPFS in advance of the coin being deployed. Users can mint NFTs which are stored in the directory. When a user does this, the NFT and its associated URI are minted to the blockchain. Whilst this system is slightly unorthodox it ensures that NFTs are as secure as if they had been minted on launch. A by-product of this system will be the appearance of 0 NFTs available at launch and a maximum supply of 1 million NFTs, however, the maximum supply will almost certainly never be reached due to the burning mechanism in the upgrade NFT game.

4.4 Lootbox

Loot boxes can be purchased with MONEY or BNB. When purchased with tokens 90% of the total cost is redistributed as dividends to MONEY token holders and 10% is permanently burned. Holders also benefit from the deflationary pressure caused by the burned tokens.

Regardless of whether a Loot box is purchased with BNB or MONEY, a 0.01 BNB charge will be levied to cover the cost of the Chainlink VRF call. This functionality is important as, without it, a situation could arise where many VRFs are being called for and LINK is being consumed without the marketing wallet being able to cover these costs.

Whenever a Chainlink VRF call is made on-demand by the user, they will pay an appropriate amount of BNB. As the price of BNB and Link fluctuates, this charge will be adjusted to reflect this. 10 Given the VRF call is made on-demand for the lootbox, the user must pay for 2 transactions. The first makes the VRF call, and after 10 blockchain confirmations the user must run a second transaction to mint their NFTs, this will be based on the number returned by the VRF.

4.5 NFT Upgrade

This game allows users to burn 2 NFTs of the same rarity to produce 1 NFT of the rarity above. It is not possible to upgrade Legendary NFTs. Due to the on-demand nature of the VRF calls in the NFT upgrade there will be two charges to the user, similarly to the Loot box. The first charge will be 0.01 BNB The second

charge will be significantly cheaper. Gas costs remain consistent across NFT upgrade calls.

4.6 Marketplaces

Common NFTs are not winnable in any loot boxes as these can only be purchased with tokens in the Marketplace. Similarly, to Lootboxes, 90% of the $MONEY cost is distributed as dividends, the other 10% is burned. A percentage of higher rarities of NFT is also available for purchase from the Marketplace, but the majority will need to be won in games, loot boxes or upgraded.

Users can resell and trade MoneyTree NFTs on the BSC NFT marketplaces which MoneyTree has official stores setup. This includes Lootex.io, TofuNFT.com & NFTrade.com. Users are able to see all of their NFTs here along with the attributes and stats. Users can place bids or offer to outright purchase NFTs from each other and benefit from the built in escrow system.

5 User Interfaces

5.1 Claim Rewards

Claim rewards acts as a hub for users to get a comprehensive overview of any rewards owed to them. From this dApp, users can claim their dividends, token rewards from games that don't award tokens automatically and any owed NFT prizes. Unopened Loot boxes can also be claimed in this dApp, if for instances, a user disconnects or leaves the page during a loot box purchase.

5.2 Front End

Whilst MoneyTree has been developed to work fully on-chain and independently of a centralised front-end, the user experience is significantly reduced in the absence of an easy to use front-end. Hence, the website includes a front-end web application for each of the above dApps, The front end allows users to connect to Metamask and send web3 transactions through the front end. The end users experience is significantly more pleasant and less prone to errors using the front end; however, it is worth noting that $MONEY can operate independently of any front end due to its fully on-chain design.

6 Future Development

6.1 Full Automation

MoneyTree aims to be a fully automated process that requires no manual intervention at any stage. Further integration with Chainlink is planned during Q1-22 to add Keeper capabilities. Keeper will allow any functions currently being manually run, for example, the lottery, to be run on a periodic basis and in an automated fashion. Triggers can be set up to ensure that Keeper maintains all aspects of the smart contracts "upkeep." This will further enhance the decentralized design of MoneyTree and will provide investors with more confidence and security.

6.2 Future games

MoneyTree has been designed to have full mini game and NFT functionality on launch - this was to ensure users can benefit from a complete platform on day 1 without being reliant on promises and plans in a roadmap. Due to the rapidly changing nature of the industry, Money Tree will be constantly looking to expand the existing collection of games. Plans to utilize the NFTs attack, health and magic stats are in development and should be available by Q1-22 at the latest.

6.3 Metaverse

MoneyTree was built with the long term ambition to join the Metaverse as the decentralised arcade and casino. The Metaverse will require chance based games similar to the real world and MoneyTree is looking to provide this functionality in a statistically fair manner, eliminating the house edge and providing a fairer experience for all players within the Metaverse. Having all processes run on the blockchain provides the capability to easily develop additional user interfaces overlaid on the games, whether this is a website, a mobile app or a full fledged virtual reality application within the Metaverse.

7 Smart Contract Self Audit

MoneyTree is built with a transparency-first mindset with users having the ability to verify the integrity of every transaction and process that occurs within the platform. In line with this vision, all of the smart contracts have been self-audited, the results are provided below. All wallets used by the MoneyTree team or the platform itself are also listed below.

Wallet	Address
Pancakeswap	0xb0036c7fe9d14ca4f27f90415c5b4c71061e8bbf
Team Wallet (Locked until 2024 DxSale)	0x81e0ef68e103ee65002d3cf766240ed1c070334d
WhiteBIT	0x33eac50b7faf4b8842a621d0475335693f5d21fe
Developer	0x6f02797A1176F6DB9b7965DD42ea61D398cCBAf9
Unclaimed Dividends	0x73ef41B761A9FD80C327F885Cd6dD08c30D05812
Unclaimed NFT Dividends	0x43158D2c0932972000281fc9cE93750a658212fF
Unclaimed Versus Mode	0xcb5c44369095B7FCc4aB10bA1C090E8DA630a9BE
Marketing & Operational	0x9584AeeC19BEF61d284f590B71C564f363d84895
Tax	0xb43cF85a531Eb975c87EE81aAd56Bb799E401466
MoneyTree Deployer (For Upgrades)	0x7036EcaddF4811cD28E0e46FdBcf47411D501E33

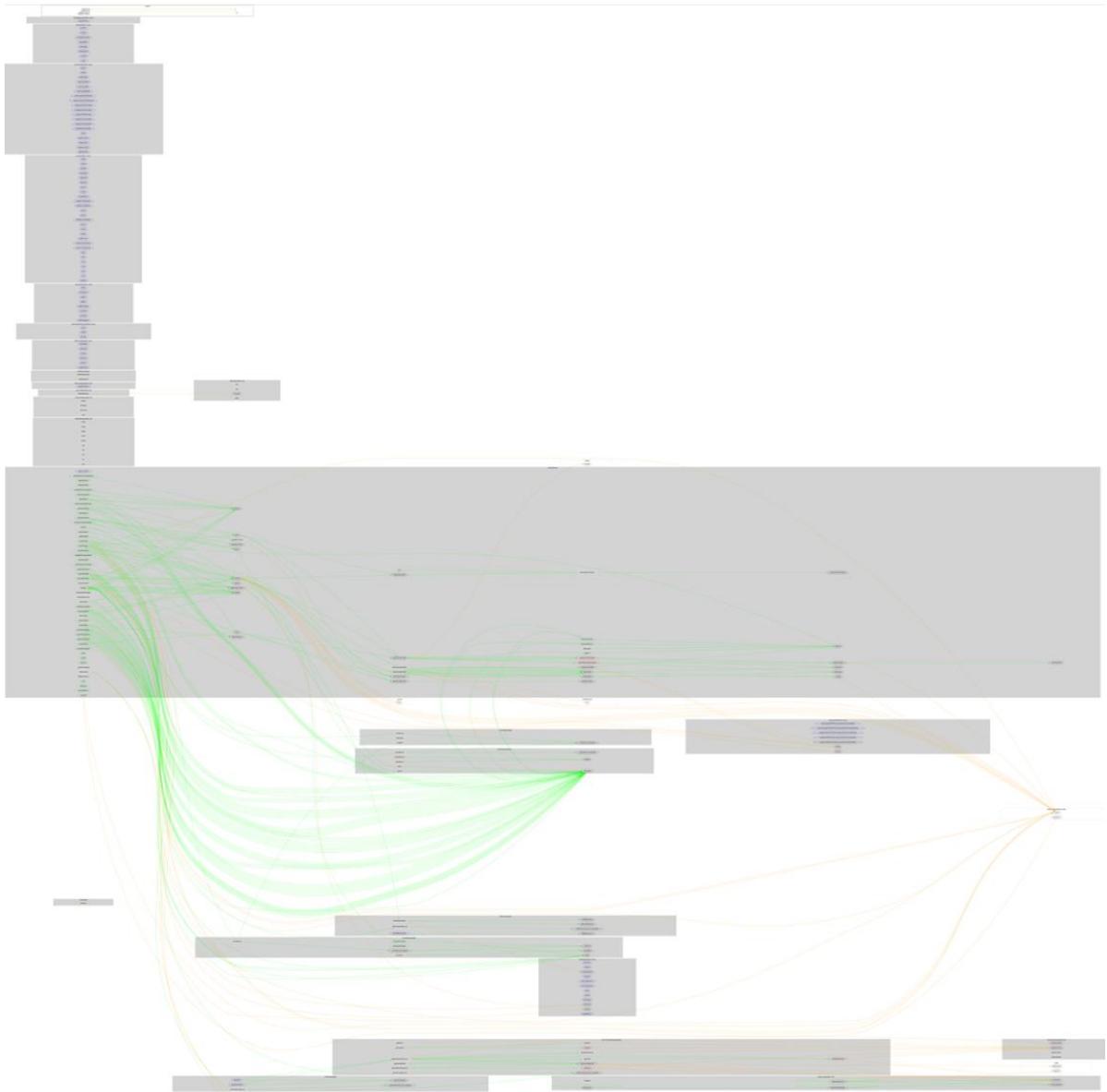*Official Wallets – Excluded from all rewards, prizes & taxes*

Smart Contract Self Audit

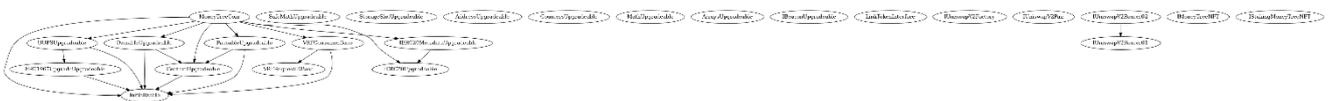## $MONEY – 0x2d5b21074D81Ae888c01722ec0657f20521be893

MoneyTreeFunctio
nReport.pdf

Functional Dependency Graph

https://mtnft.s3.us-east-2.amazonaws.com/MoneyTree.png

Inheritance Graph

https://mtnft.s3.us-east-2.amazonaws.com/MT-Inheritance.png

Smart Contract Self Audit

$MTNFT - 0x1a67c38339589c0c1a1d02075090cbce786165fb

MTNFTFunctionReport.pdf

Functional Dependency Graph

https://mtnft.s3.us-east-2.amazonaws.com/NFTs.png

Inheritance Graph

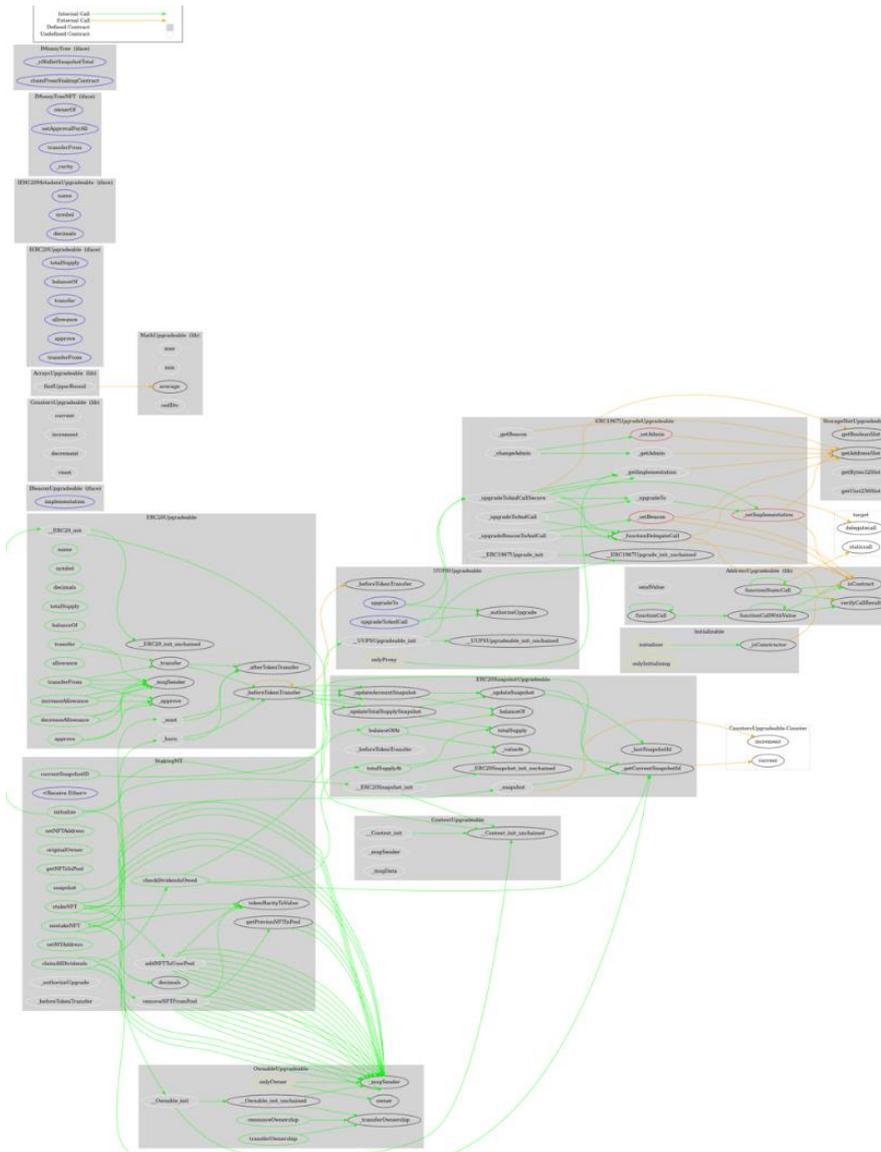https://mtnft.s3.us-east-2.amazonaws.com/NFTs-Inheritance.png

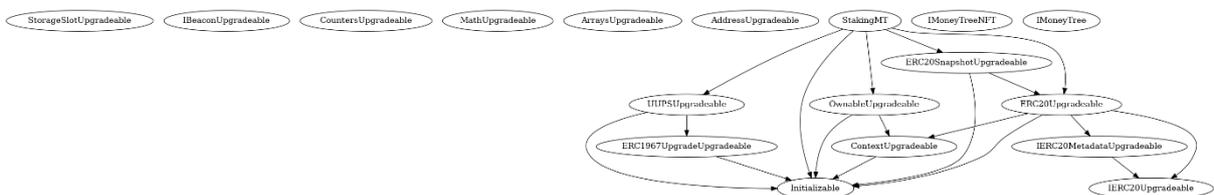# Smart Contract Self Audit

$SMTNFT - 0x8fa734e43b2a25904bb3b3fbe9f93534796fa632

SMTNFTFunctionReport.pdf

Functional Dependency Graph

https://mtnft.s3.us-east-2.amazonaws.com/Staking.png

Inheritance Graph

https://mtnft.s3.us-east-2.amazonaws.com/StakingInheritance.png