ghostNFT

Collateralized NFT 2.0

Lightpaper

Ver. 01 2022

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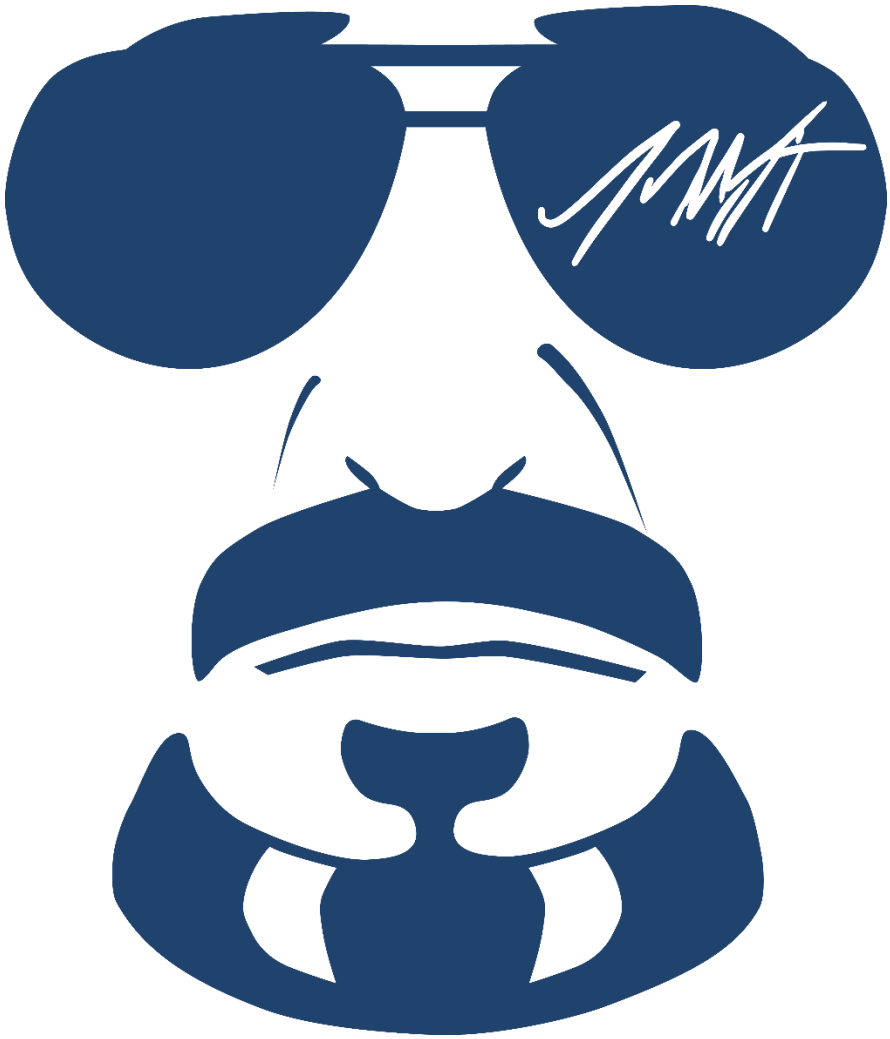
“If the majority holds some thing of value, you can be certain it has none.”

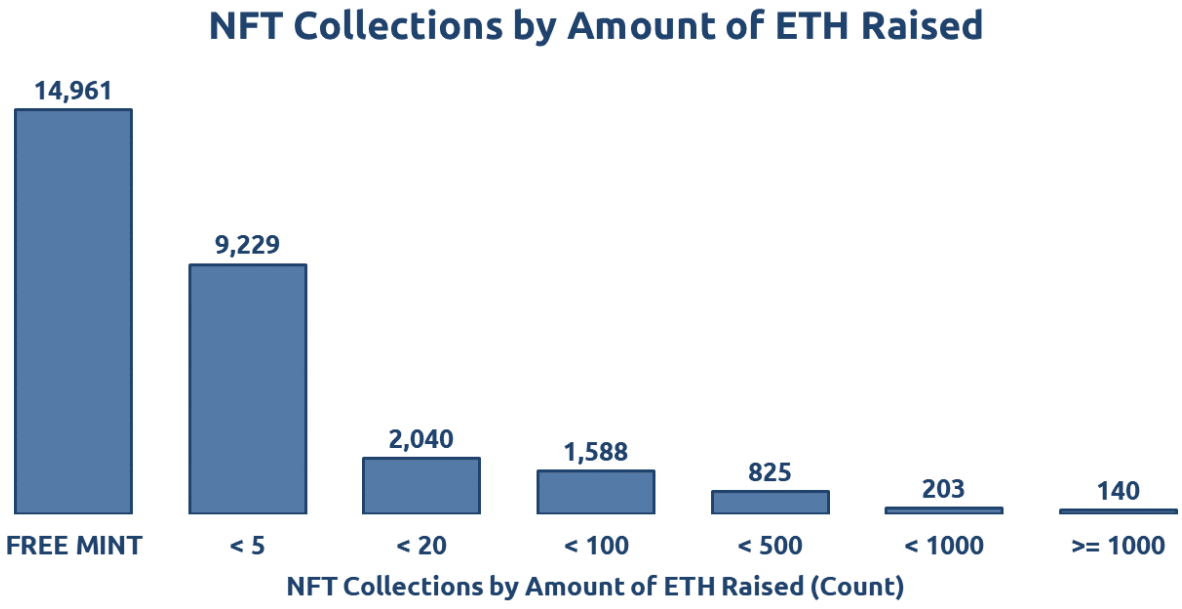
In memory of John McAfee.



Introduction

The ERC-721 standard was proposed in January 2018. Starting from Cryptokitties project getting its fame in 2017 to Doodles success in 2021, NFT space attracted a lot of attention resulting in ever-increasing ecosystem, spiking trading volumes and diverse sets of NFT collections.

Despite massive publicity, an absolute majority of NFT collections failed to attract sufficient fundraising from their respective communities favoring few statistical outliers. According to data provided by Nansen, more than 66 percent of NFT collections raised less than 4 ETH per collection. Including free NFT drops, the percentage of NFT collections raising less than 4 ETH per collection grows to 81 percent.



Source: Nansen

Comments: NFT Collections by Amount of ETH Raised for Contracts Deployed Between Jan 1 to Jun 30, 2022.

Figure 1. NFT Collections by Amount of ETH Raised.

Some NFT collections introduced gamification techniques. One of the most popular incentive mechanisms was NFT staking, where users would stake their NFTs and receive yield rewards in the native token. Supply of the native token would increase to "generate yield", but the fundamental value backing increased token supply would not grow proportionally leading to collapse of the entire tokenomics in bank-run scenarios.

Further innovation in the NFT space was introduced by NFTfi. NFTfi focuses on the NFT floor price to enable the market value of the NFT serve as a collateral in lending protocols. NFT floor price is impacted by supply-demand dynamics of the NFT market which typically experiences higher volatility relative to price action of the general crypto market. Additionally, potential price manipulation in individual NFT collections may artificially increase NFT market prices and, thus, increase the floor price accounted for by lending protocols. Using NFT floor price based on the market value alone is both volatile and unreliable.

Would not it be great to equip NFT holders with fundamentally verifiable collaterals generating real yields? Would not it be useful to equip NFT Creators with tools to design engagement for their fans.

This is why **ghostNFT** was born.

ghostNFT pioneers the concept of NFT 2.0 to enable additional gamification for NFT collections and bring more successful stories to the NFT space. ghostNFT brings collateralized NFTs with yield-generating collateral utilizing DeFi 1.0 and DeFi 2.0 protocols. The new open-source standard behind collateralized NFTs (gNFT) brings new layers of NFT utility.

NFT 1.0 vs. NFT 2.0

The NFT 1.0 Collections featuring Crypto Punks, Bored Ape Yacht Club, World of Women, and Doodles demonstrated ability to organize massive crypto following around a specific brand and idea. After CryptoKitties success in 2017-2018, reappearance of NFT 1.0 in 2020-2021 felt more magical than most could imagine; however, the concept of NFT 1.0 is getting antiquated.

NFT 2.0 standard solves a number of problems the crypto community experienced with NFT 1.0. Benefits include sustainable NFT royalties backed by real assets, on-chain verifiable floor price, discounted collateral enabled due to integration with ghostDAO (DeFi 2.0 protocol), and introduction of additional monetization streams for NFT Collection Creators.

NFT 2.0 solves the problem of jumpstarting new NFT collections by giving NFT Collection Creators DeFi-based toolkit to engage community. NFT drops collateralized by native or external tokens naturally become more desirable. NFTs can be collateralized at the time of minting or post-minting. Healthy competition between NFT Collection Creator and its fans to become the first collateral provider accelerates NFT collection adoption.

ghostNFT protocol is at the forefront of innovation with a goal to further shape the NFT 2.0 space.

NFT 2.0 Standard

The ERC721Envious standard is an extension to ERC-721. ERC721Envious is implemented with back-to-back compatibility with OpenZeppelin. ERC721Envious standard enables to collateralize individual NFTs and NFT collections. ERC721Envious standard enables minting of fresh new NFTs (Native gNFT). ERC721Envious standard also enables to add collateral to already minted NFTs (External NFT) and turn them into collateralized NFTs (External gNFT).

ERC721Envious Data Structure

Suggested reference point of the NFT collection is tokenId. tokenId is unique, and it can be used to search for information.

It is proposed to store the data by pairing of two mappings: direct and indirect.

Direct mapping implies a connection between tokenId and an array of ERC-20 token addresses allowing to store unique token arrays under each tokenId. Thus, direct mapping gives users the flexibility to use any token as collateral.

Indirect double mapping implies a relationship between tokenId, address, and balance. tokenId and address can uniquely define the value.

Suggested data structure allows the smart contract to be autonomous, without any administrators.

ERC721Envious Standard

Utilizing tokenId as a point of reference gives ability to use connection of each unique NFT in the collection to a large number of ERC-20 tokens used for NFT collateralization. Distribution functionality for all NFTs in the collection should be implemented through two data structures: the number of distributed tokens and the number of tokens taken from each tokenId, with consequent transfers to the storage of each tokenId.

Some functionality is intentionally left unimplemented to enable customization for projects that will be integrating ERC721Envious standard. Unimplemented functionality includes:

- Collateralize NFT collection with discount
- Harvest collected commission fees

IERC721Envious

Documentation will include smart contract interface to enable other projects to interact with ERC721Envious smart contracts. IERC721Envious will include the following functions and events.

IERC721Envious Functions:

- Harvest
- Collateralize
- Uncollateralize
- Disperse

IERC721Envious Events:

- Collateralized
- Dispersed
- Harvested

EnviousHouse Smart Contract

A lot of NFT collections have been already minted. ERC721Envious standard needs to have an extension to enable Creators of External NFT Collections take advantage of the collateralization feature. EnviousHouse is an additional smart contract that will provide identical functionality to ERC721Envious standard.

EnviousHouse will include additional functionality to register External NFT Collections, which will be analogous to deploying an ERC721Envious. This functionality will require the Creator to deposit sufficient amount of collateral and disperse across the entire NFT collection to avoid potential spam activity from NFT Holders or random actors from the NFT space.

NFT Holder

NFT holders own a specific NFT using NFT collection address and tokenId. This data structure guarantees that a given NFT holder is the owner of a specific NFT at any given time.

ERC721Envious standard allows anybody to send any ERC-20 token or any combination of ERC-20 tokens to collateralize a specific NFT. ERC721Envious standard enables NFT holder to conduct the following functions:

- **Collateralize** enables any user to collateralize a specific NFT.
- **Uncollateralize** enables holder of a specific NFT to redeem her collateral partially or in full.
- **Disperse** enables all NFTs to collateralize all NFT items of the entire collection.

NFT Collection Creator

The Creator is interested in drawing attention to her NFT collections to increase monetization and improve community engagement. ERC721Envious standard enables Creators to create a verifiable floor price for the entire NFT collection for both buyers and receivers of NFT airdrops.

ERC721Envious standard enables Creators to create additional monetization streams from their NFT collections. The following fees are purely optional and are at full discretion of the Creator:

- Collateralization Fee
- Uncollateralization Fee
- NFT Transfer Fee

Collection fees will be forwarded to the treasury pool. The access to treasury pool will be on a DAO token, which must be registered before the creation of the NFT collection. Simultaneously, external investors and community members can fund the creation of an NFT collection prior to its actual deployment. ERC721Envious standard enables NFT Collection Creators to conduct the following functions:

- **Collateralize** enables Creator to collateralize a specific NFT.
- **Disperse** enables Creator to collateralize the entire NFT collection.
- **Create** enables Creator to launch an NFT collection with a predefined set of fees, including collateralization fee, uncollateralization fee, and NFT transfer fee.
- **Harvest** enables Creator to withhold accumulated fees using the DAO token.

NFT 2.0 Floor Price as NFT Royalties

While any ERC-20 token or any combination of ERC-20 tokens can serve as NFT backing, NFT 2.0 standard focuses on utilizing yield-generating collateral. Verifiable floor price for an individual NFT item or entire NFT collection keeps growing over time incentivizing fans to join a given NFT project as soon as possible.

Stablecoins (DAI, USDC, USDT) as collateral will not generate royalties, but may be used with AAA cryptos (ETH, BNB, AVAX) to control volatility of the collateral portfolio.

The real target for generating NFT 2.0 royalties is DeFi 1.0 and DeFi 2.0 projects, including DEXes and DeFi 2.0 protocols. Staking LP tokens from Uniswap, Sushiswap, and Balancer into NFT collateral will gradually increase the collateral value due to accumulating interest from DEX transactions.

Staking DeFi 2.0 tokens may offer even higher APY. For example, native GHST token from the ghostDAO protocol may offer above average yields and arbitrage opportunities due to ghostDAO being deployed on multiple blockchains. Read **ghostDAO Lightpaper** to learn more. NFT 2.0 integration with ghostDAO enables discounted collateral due to the nature of DeFi 2.0 protocol dynamics.

ERC721Envious Presets

A number of presets will be incorporated into ERC721Envious standard to give maximum flexibility for NFT Collection Creators and NFT Holders.

Brief description of the initial four presets can be found on **Figure 1**.

Preset	Fees	NFT Collateral Distribution	NFT Collection
BasePreset	None	Uniform	Normal
RoyaltyPreset	Collateralization Fee Uncollateralization Fee NFT Transfer Fee	Uniform	Normal
VRFPreset	Collateralization Fee Uncollateralization Fee	Random	Normal
DynamicPreset	Collateralization Fee Uncollateralization Fee	Uniform	Dynamic

Figure 1. ERC721Envious Presets.

BasePreset

BasePreset is a standard example of using the extension. It is ready to be deployed on any EVM-compatible blockchain without any additional actions by the developer.

RoyaltyPreset

RoyaltyPreset allows to add royalties in the form of Collateralization Fee, Uncollateralization Fee, and NFT Transfer Fee.

VRFPreset

VRFPreset randomizes collateral allocation for NFT collections. There are 2 ways to incorporate randomization:

- ***Raffle.*** VRFPreset will randomly select a specified number of wallets to uniformly distribute the specified amount of digital assets.
- ***Giveaway.*** VRFPreset will help randomly allocate specified total amount of digital assets across a selected set of wallets.

VRFPreset integrates **Chainlink VRF v2**.

DynamicPreset

DynamicPreset brings additional layer of gamification to NFT Collections utilizing dynamic NFTs. DynamicPreset enables NFT Collection Creators to introduce levels measured in the ERC-20 token of choice based on which the NFT will be dynamically changing. For example, NFT Collection Creators can introduce different levels of collateral amount based on which the NFT rarity will be increasing or decreasing respectively.

ghostNFT & ghostDAO

ghostNFT is an extension of ghostDAO protocol. It is important to bring the benefits ghostNFT receives from the ghostDAO protocol.

ghostDAO is a decentralized multi-chain reserve currency protocol based on the eGHST token. ghostDAO protocol is powered by GHOST native blockchain enabling anonymous cross-chain transactions of GHST. Each eGHST token is backed by a basket of assets (DAI, USDC) in the ghostDAO treasury, giving it an intrinsic value that it cannot fall below.

Single-Chain Architecture

ghostDAO offers a number of functionalities to the user. User can stake, bond, sell, borrow, and bridge. The user can also become a DAO member. ghostDAO architecture encompasses the following utility tokens and pairs: eGHST, sGHST, GHST Token, GHST Coin, GMV, and LP.

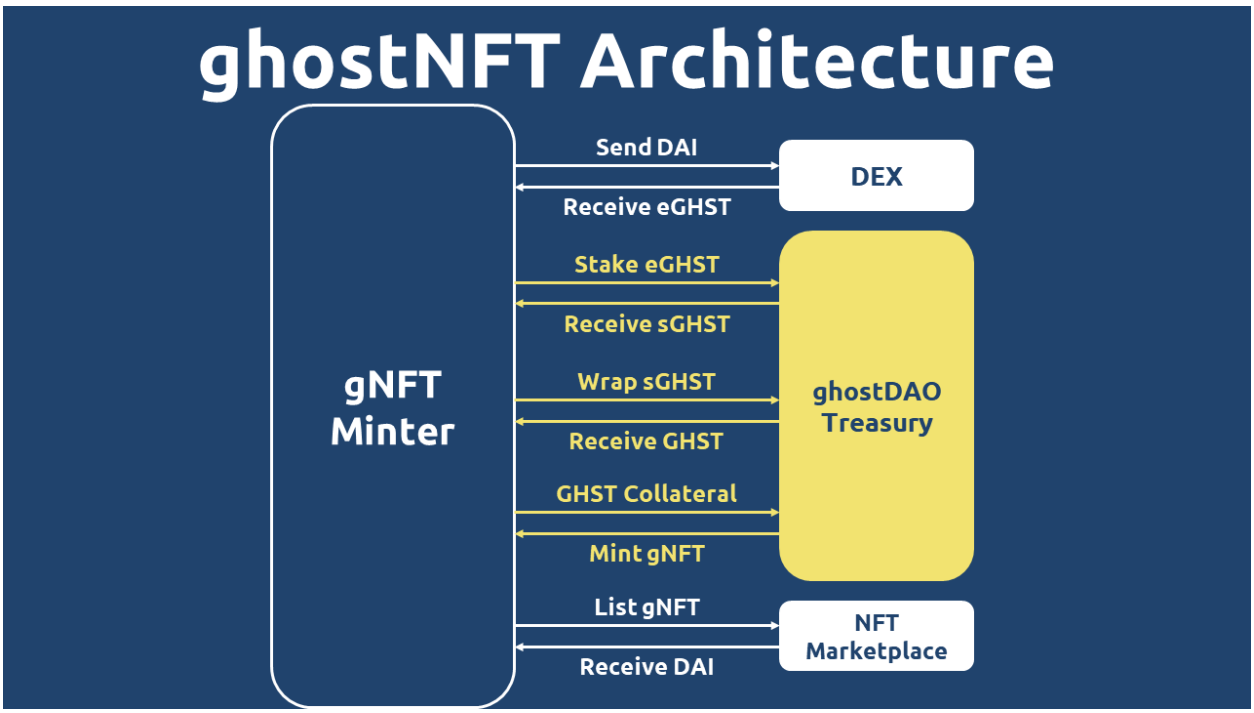


Figure 2. ghostNFT Architecture.

eGHST Token

eGHST is an EIP-20 compatible token with additional EIP-712, EIP-2612, EIP-3156, Access Control, and Safe Math functionality. eGHST also has functionality to mint, burn, and burnFrom due to elastic supply of sGHST.

sGHST Token

sGHST is an EIP-20 compatible token with additional EIP-712, EIP-2612, EIP-3156, Access Control, Safe Math and Rebasing functionality. sGHST is a receipt for the proportion of the total supply of eGHST. User receives sGHST at a 1:1 ratio to its staked eGHST.

GHST Token

GHST is an EIP-20 compatible token with additional EIP-712, EIP-2612, EIP-3156, and Safe Math functionality. The non-rebasing wrapper is used to package up sGHST in a non-rebasing container, which can be used as a DAO governance token. GHST will be swapped for a GHST native coin on a GHOST native blockchain at a 1:1 ratio.

GHST Coin

GHST is a native coin on the GHOST native blockchain. GHST on Ethereum can be swapped for GHST on the GHOST native blockchain at a 1:1 ratio. GHST can be staked on a GHOST native blockchain as a validator or nominator.

GMV Token

GMV is an EIP-20 compatible token, which serves as a receipt for the proportion of the total supply of GHST native coin for early adopters. GMV is issued in the initial amount of around 12,000,000 and is automatically staked at the same rate as eGHST. Total amount of GMV tokens will be included into GHOST native blockchain genesis block as total initial supply.

LP Token

LP is a Liquidity Pool on a decentralized exchange (e.g. Uniswap, Sushiswap) consisting of eGHST and a stablecoin. Examples of LP include eGHOST-DAI and eGHOST-USDC pairs.

gNFT

gNFT is a collateralized NFT. Collateral can take the form of eGHST, GHST, LP, or any other ERC-20 tokens. Later versions of ERC721Envious standard and ghostNFT will enable collateralization of gNFTs with exotic assets such as rebase tokens and NFTs.

gNFT Bonding

ghostDAO integration with ghostNFT repurposes the functionality of bonding from the ghostDAO protocol in a form of discounted NFT collateral. eGHST tokens offered via ghostDAO bonds are accepted by ghostNFT protocol as discounted collaterals adding another use case for eGHST token and, thus, creating additional demand for it.

$$1\ GHST = 1\ eGHST \times \prod_{i=1}^{n}(1 + APY_i)^i$$

$$1\ gNFT = k \times GHST \times (1 - discount)$$

where

$$n = term\ of\ holding\ eGHST$$

$$APY_i = APY\ accruing\ on\ term\ i$$

$$k = number\ of\ GHST\ tokens\ collateralizing\ given\ NFT$$

$$discount = bond\ discount\ on\ eGHST\ via\ ghostDAO\ protocol$$

gNFT Royalties

NFT Collateral can take the form of eGHST tokens as demonstrated on **Figure 3**. LP tokens can also be used as NFT Collateral, including LP tokens representing eGHST/Stablecoin pairs, may produce fundamentally-backed gNFT royalties. Fundamentally appreciating gNFT collateral due to bonding discount or DEX fees accrued from holding LPs is what separates NFT 2.0 from any current illusory attempts to bring royalties promised in the NFT 1.0 space.

Native gNFT and External gNFT

The most important part of ghostNFT is that any NFT can be collateralized, whether it's a fresh new collection or an existing collection. Basic collateralization flows for both Native gNFTs and External gNFTs is shown on **Figure 4**. As long as the NFT collection was minted in accordance with the ERC-721 standard, the collection or its individual items can be collateralized via ghostNFT. Minted NFT Collections that didn't follow ERC-721 standard may still be registered on ghostNFT by the smart contract admin.

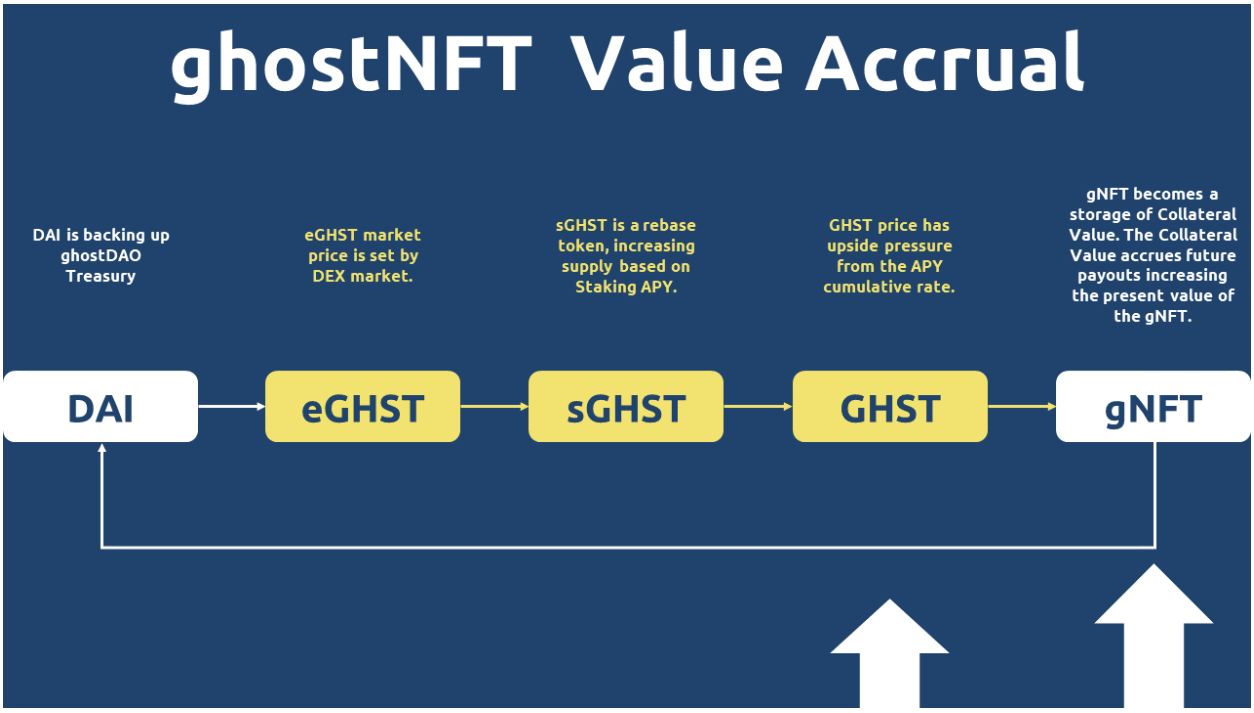


Figure 3. gNFT Value Accrual.

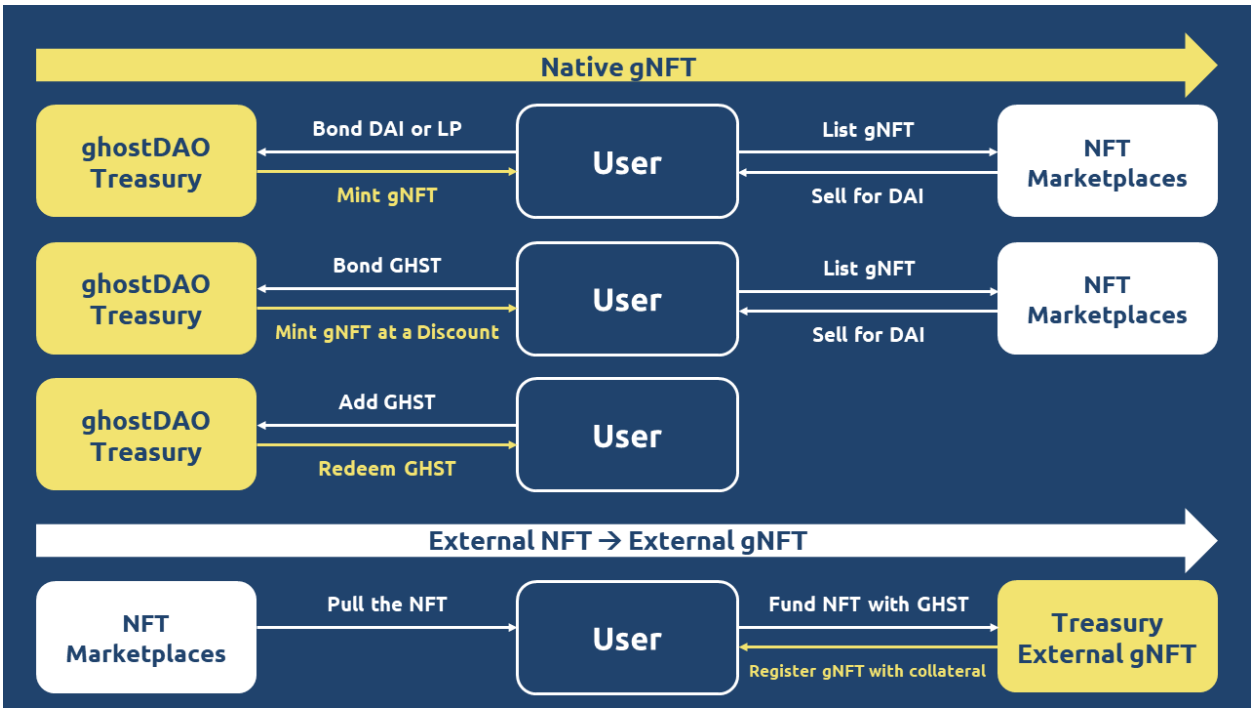


Figure 4. NFT Collateralization: Native gNFT vs. External gNFT.

Game Theory

Game theory models described in the **ghostDAO Lightpaper** are equally applicable to the ghostNFT protocol. The most important excerpts will be replicated in this lightpaper. Please read the **ghostDAO Lightpaper** for a more in-depth explanation.

(4, 4) Model: ghostDAO

ghostDAO protocol and GHOST protocol enable NFT 2.0 by marrying NFT 1.0 with DeFi 2.0.

Decentralized cross-chain DeFi 2.0 enforces the Game Theory concept incentivizing cooperation amongst network participants to generate the greatest gain for the entire network.

	Stake (Buy)	Bond	Bridge	Sell
Stake (Buy)	$(3, 3)$	$(1, 3)$	$(1, 3)$	$(-1, 1)$
Bond	$(3, 1)$	$(1, 1)$	$(1, 1)$	$(-1, 1)$
Bridge	$(3, 1)$	$(1, 1)$	$(1, 1)$	$(-1, 1)$
Sell	$(1, -1)$	$(1, -1)$	$(1, -1)$	$(-3, -3)$

Figure 5. (4, 4) Model.

In ghostDAO $(4, 4)$ model, a user can take one of the following four actions:

- Staking (Buying) $(+2)$
- Bonding $(+1)$
- **Bridging** $(+1)$
- Selling (-2)

Decision-making behind every action can be described as following:

- Players are expected to stake when they anticipate an expansion in supply and/or price;
- Players are expected to sell when they anticipate a contraction in supply and/or price and would like to leave the protocol thereafter;
- Players are expected to bond when they do not anticipate significant downside, but do not have strong directional bias;

- Players are expected to bridge when they anticipate an expansion in supply due to earning a higher ghostDAO staking APY on a different blockchain or earning GHOST block rewards in addition to ghostDAO staking APY rewards on the existing blockchain.

Staking, bonding, and bridging are considered beneficial to the protocol. Selling is considered detrimental.

Staking has the effect of pushing the price up $+2$. Selling has the effect of pushing the price down -2. Bonding has no price effect, but provides a discount of $+1$ to the bonder. Bridging has no price effect, but provides higher supply $+1$ to the bridger.

If both actions are beneficial, the actor who moves price also gets half of the benefit $(+1)$. If both actions are contradictory, the bad actor who moves price gets half of the benefit $(+1)$, while the good actor who moves the prices gets half of the downside (-1). If both actions are detrimental, both actors get half of the downside (-1).

Average payoff of the $(4, 4)$ model is 1.50 with only 1 out of 16 outcomes being in the negative territory.

		Ethereum				Binance		
		Stake	Bond	Sell	Bridge	Stake	Bond	Sell
Ethereum	Stake	(3, 3)	(1, 3)	(-1, 1)	(1, 3)	(3, 3)	(1, 3)	(-1, 1)
	Bond	(3, 1)	(1, 1)	(-1, 1)	(1, 1)	(3, 1)	(1, 1)	(-1, 1)
	Sell	(1, -1)	(1, -1)	(-3, -3)	(1, -1)	(1, -1)	(1, -1)	(-3, -3)
	Bridge	(3, 1)	(1, 1)	(-1, 1)	(1, 1)	(3, 1)	(1, 1)	(-1, 1)
Binance	Stake	(3, 3)	(1, 3)	(-1, 1)	(1, 3)	(3, 3)	(1, 3)	(-1, 1)
	Bond	(3, 1)	(1, 1)	(-1, 1)	(1, 1)	(3, 1)	(1, 1)	(-1, 1)
	Sell	(1, -1)	(1, -1)	(-3, -3)	(1, -1)	(1, -1)	(1, -1)	(-3, -3)

Figure 6. (7, 7) Model.

(7, 7) and (10, 10) Model Expansion

Substantial improvements observed in the (4, 4) model through introduction of the bridging may inspire some to expand the model further to (7, 7) and (10, 10).

Model (7, 7) is an extension of the (4, 4) model from one to two blockchain networks. Model (7, 7) presented on **Figure 6** assumes that both players are interacting with ghostDAO from two blockchains (Ethereum and Binance).

Respectively, model (10, 10) presented on **Figure 7** assumes that each of the players is interacting with ghostDAO from three blockchains simultaneously (Ethereum, Binance, Avalanche).

		Ethereum				Binance			Avalanche		
		Stake	Bond	Sell	Bridge	Stake	Bond	Sell	Stake	Bond	Sell
Ethereum	Stake	(3, 3)	(1, 3)	(-1, 1)	(1, 3)	(3, 3)	(1, 3)	(-1, 1)	(3, 3)	(1, 3)	(-1, 1)
	Bond	(3, 1)	(1, 1)	(-1, 1)	(1, 1)	(3, 1)	(1, 1)	(-1, 1)	(3, 1)	(1, 1)	(-1, 1)
	Sell	(1, -1)	(1, -1)	(-3, -3)	(1, -1)	(1, -1)	(1, -1)	(-3, -3)	(1, -1)	(1, -1)	(-3, -3)
	Bridge	(3, 1)	(1, 1)	(-1, 1)	(1, 1)	(3, 1)	(1, 1)	(-1, 1)	(3, 1)	(1, 1)	(-1, 1)
Binance	Stake	(3, 3)	(1, 3)	(-1, 1)	(1, 3)	(3, 3)	(1, 3)	(-1, 1)	(3, 3)	(1, 3)	(-1, 1)
	Bond	(3, 1)	(1, 1)	(-1, 1)	(1, 1)	(3, 1)	(1, 1)	(-1, 1)	(3, 1)	(1, 1)	(-1, 1)
	Sell	(1, -1)	(1, -1)	(-3, -3)	(1, -1)	(1, -1)	(1, -1)	(-3, -3)	(1, -1)	(1, -1)	(-3, -3)
Avalanche	Stake	(3, 3)	(1, 3)	(-1, 1)	(1, 3)	(3, 3)	(1, 3)	(-1, 1)	(3, 3)	(1, 3)	(-1, 1)
	Bond	(3, 1)	(1, 1)	(-1, 1)	(1, 1)	(3, 1)	(1, 1)	(-1, 1)	(3, 1)	(1, 1)	(-1, 1)
	Sell	(1, -1)	(1, -1)	(-3, -3)	(1, -1)	(1, -1)	(1, -1)	(-3, -3)	(1, -1)	(1, -1)	(-3, -3)

Figure 7. (10, 10) Model.

(7, 7) and (10, 10) models bring higher level of complexity without payout distribution improvement. (7, 7) model's payout average is 1.35 with 4 out of 49 unfavorable outcomes. (10, 10) model's payout average is 1.28 with 9 out of 100 unfavorable outcomes.

ghostNFT Improves ghostDAO

(4, 4), (7, 7) and (10, 10) models are all marginally improved by ghostNFT since the protocol encourages users to stake eGHST behind NFTs. The longer users stake eGHST the more resilient is the entire ghostDAO protocol.

Incentive Dynamics

Users can practically take one of three actions while collateralizing NFTs from collections which have not been registered with ghostNFT:

- Collateralize an individual NFT (Collateralize)
- Collateralize an entire NFT Collection (Disperse)
- Register an NFT collection and collateralize an entire NFT Collection (Register)

It is important to emphasize that the Register action consists of two steps: registering an NFT collection and collateralizing an entire NFT Collection.

Essentially, ghostNFT creates an imminent race between Creators and Users to collateralize NFTs as presented on **Figure 8**.

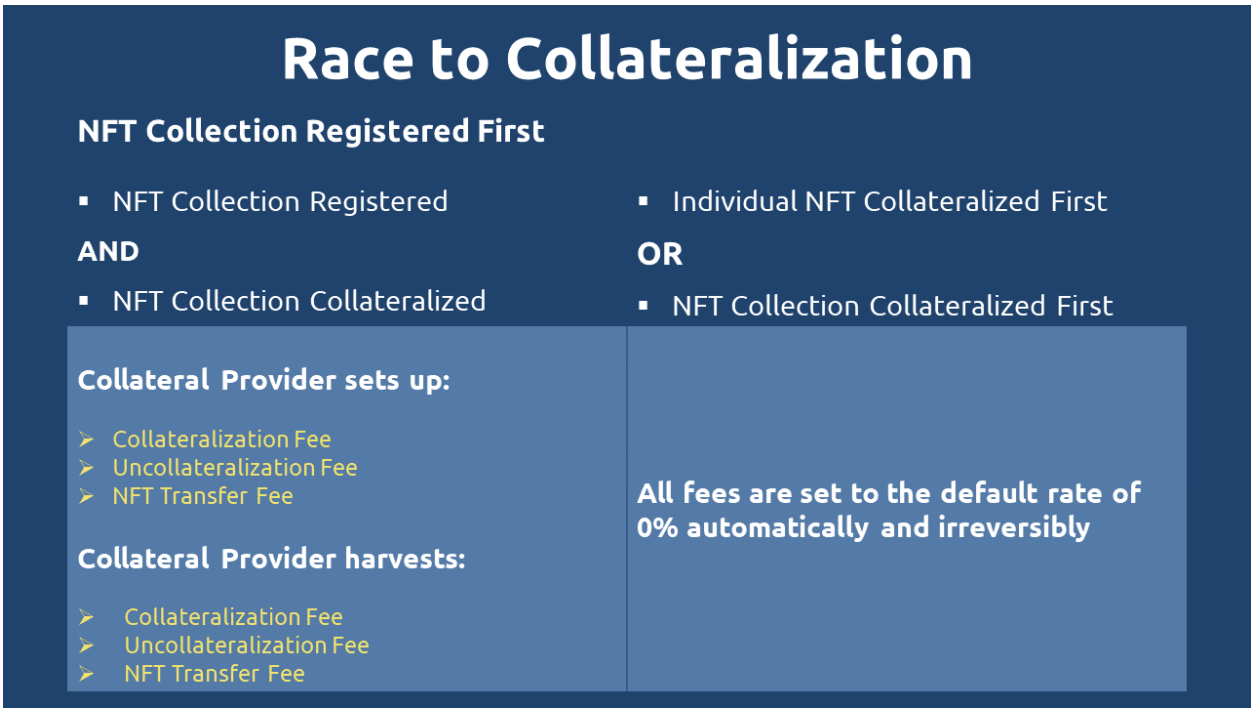


Figure 8. ghostNFT Incentive Dynamics.

ghostNFT incentive dynamics goes like this. Creators are incentivized to Register before any User Collateralizes or Disperses. In this case, Creators will be able to set up the fee structure and programmatically charge fees going forward. Otherwise, if any User Collateralizes or Disperses first the fees will be set to the default rate of 0% with no possibility to be increased ever again.

It gets a little bit more interesting since any User can Register, thus beating the Creator herself. In which case, is it that User who will set up the fee structure and programmatically charge fees going forward.

ghostNFT incentivizes Creators to Register to create additional monetization streams. ghostNFT incentivizes Users to Collateralize or Disperse to ensure there are collateral-related fees going forward.

Features & Use Cases

NFT 2.0 is a new concept with a number of features and use cases. The list of features and use cases is ever expanding as NFT 2.0 gets more adoption.

NFT 2.0 Realizes Promises of NFT 1.0

A number of promises of NFT 1.0 are just not feasible given NFT 1.0 limitations. However, NFT 2.0 extends these limitations.

On-chain verifiable price floor

NFT 1.0 attempts to bring 'big data' and statistical methods to estimate the price floor. There are many problems with such approach. First of all, the data is easily manipulated to inflate the prices of NFTs through inside wash sale, which gives very inaccurate picture on the real liquidity deposited into a given NFT collection. Secondly, many NFT marketplaces are powered by off-chain NFT storage and operations resulting in even more obscure datapoints. Finally, there is simply not enough data to make any statistically significant forecasts let alone fair 'big data' predictions.

NFT 2.0 easily solves the problem of on-chain verifiable price floors since every gNFT has an on-chain collateral attached to it.

Sustainable NFT royalties

Since its origination, the concept of NFT staking was always desirable. Many NFT and Play2Earn projects were offering the yield on their NFTs. However, the yield was often in the form of a native token with unlimited supply where inflated supply was not backed appropriately creating all types of busts in bank-run scenario.

Appropriate collateral enables a gNFT to generate sustainable and sometimes consistently sustainable royalties. As it was already mentioned throughout this lightpaper, collateralizing a gNFT with DeFi 2.0 tokens or LP tokens could result in sustainable appreciation of gNFT value.

Further integration with DeFi 2.0 protocols such as ghostDAO enables discounted collateral and additional appreciation of the value of gNFT.

NFT 2.0 Creates Additional Monetization Streams

NFT 2.0 enables additional monetization of NFT collections through the following fees:

- Collateralization Fee
- Uncollateralization Fee
- NFT Transfer Fee

Additional NFT collection gamification can be implemented by utilizing VRFPreset and DynamicPreset described earlier.

NFT 2.0 Powers DAOs

As DAOs are getting more traction in Web 3.0, NFT 2.0 offers novel ways to realize governance mechanisms. NFTs representing DAO decision makers was receiving more and more popularization in 2020-2021. gNFTs can significantly improve governance mechanisms by aligning incentives more appropriately.

For example, the voting power can be correlated to the amount of collateral behind a voting gNFT. Council members with more belief in the protocol will have to provide a larger collateral to achieve a higher voting power. Similarly, all gNFT collection holders can have an equivalent amount of native token distributed behind every gNFT; those holders to redeem gNFT collateral partial or in-full will lose a proportional amount of voting power.

Another way to utilize gNFT for voting is by rewarding Council members who dispersed larger amounts of collateral to other members of the gNFT collection with a higher voting power. All gNFT collateral activities are on-chain verifiable making it easy for DAOs to construct various mechanisms and incentive structures.

NFT 2.0 Powers DeFi

Utility NFTs that the world was expecting for a very long time are somewhat difficult with NFT 1.0 and super achievable with NFT 2.0.

On-chain portfolio management applications can be designed with gNFTs. gNFT can be collateralized by any combinations of underlying tokens.

For example, let's assume that a given gNFT was collateralized by:

- 10 ETH
- 1,000 DAI
- 5,000 eGHST
- 30 LP

The owner of the gNFT has the claim for all 4 tokens: ETH, DAI, eGHST, LP. Transfer of this gNFT to another user would give that user the claim for the 4 tokens. Thus, the gNFT serves as a receipt for the underlying tokens in the collateralized digital asset basket.

NFT 2.0 Powers Crowfunding

NFT 2.0 empowers a new crowdfunding standard of the Initial NFT Offering (INO). The following example will illustrate how INOs work.

Let's assume there is a new gNFT collection based on ERC721Envious | DynamicPreset. Let's assume there are 5 levels of gNFTs based on the amount of collateral attached where Level 1 has the lowest amount of collateral and Level 5 is achieved by depositing the largest amount of collateral. The visual associated with gNFT changes dynamically and becomes rarer with larger amount of capital contributed.

Users place respective NFT visuals on their avatars to reflect their status. Users with Level 1 gNFT have common NFT visuals. They would need to acquire the native token and collateralize Level 1 gNFT to get to Level 5 gNFT with more status-rich NFT visuals.

NFT 2.0 Powers Cross-Chain Interoperability

ghostNFT has natural integration with the GHOST protocol, which is responsible for decentralized cross-chain interoperability. GHOST protocol powers cross-chain interoperability of both NFTs and gNFTs. To reiterate, both NFTs and NFTs with attached collateral can move between EVM-compatible blockchains powered by GHOST protocol. Please read the GHOST Lightpaper for a more in-depth explanation.

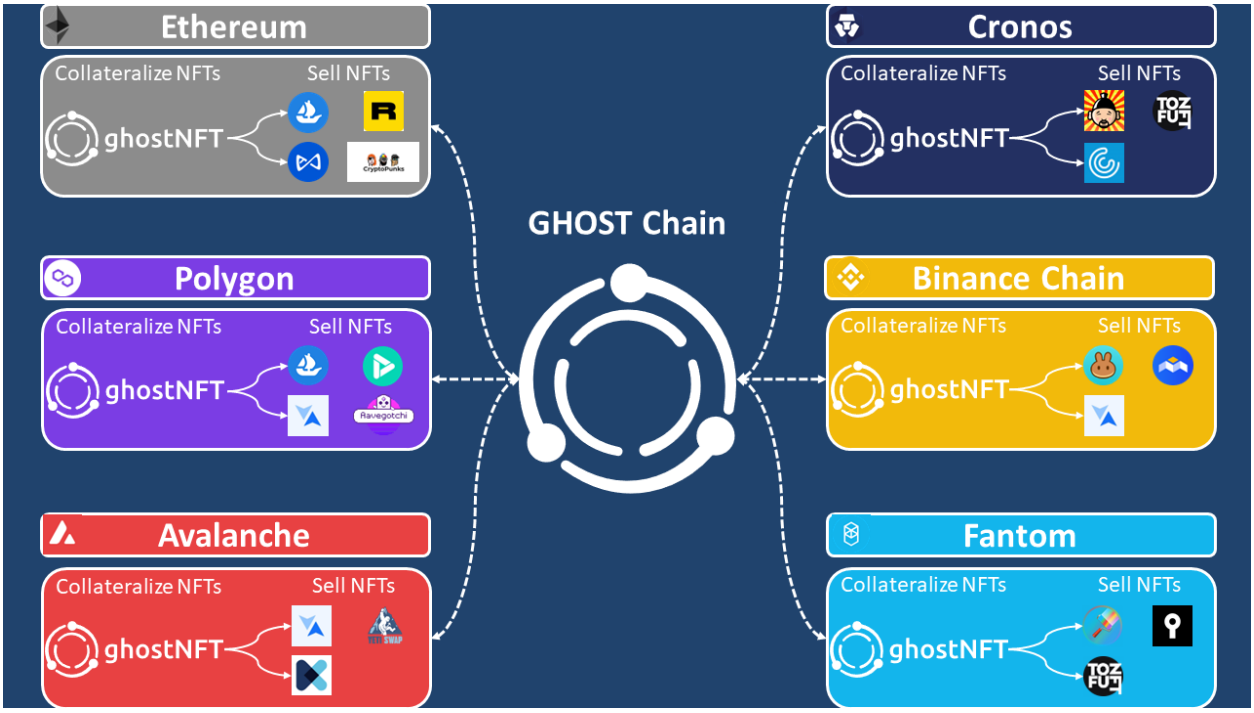


Figure 9. Cross-Chain ghostNFT.

Team

ghostNFT is designed and built by the same anonymous development team who developed ghostDAO protocol and the GHOST network. The DAO of the GHOST network is closely collaborating with the development team to properly incorporate the vision of John McAfee.

We are forever grateful to John McAfee for being our inspiration and motivation.