Project Vesper

**(Standard) NFT Art Design Notes**

REASEARCH NOTES:

From https://ethereum.org/en/nft/

**How do NFTs work?**

NFTs requirement:

* unique identifier.
* not directly interchangeable with other tokens 1:1 (“non-fungible”)
* an owner\* (multiple-ownership of assets – as with Art also)
* owner is (easily) verifiable.
* live on chain (e.g. Ethereum, Avalanche)
* buyable on any Ethereum-based\* NFT market
* sellable on any Ethereum-based\* NFT market.
* (\*or other chain. Q? Does Avalanche have such a market or does that need building also?)

So NFT can be split into

*Owner(s):*

* You can easily prove you own it.
* No one can manipulate it the token.
* You can sell it.
* You can keep it forever \* (within bounds of contract)

*Creator(s)*: \* (not thought about this but may be worth exploring, if only in theory):

* You can easily prove you're the creator.
* You determine the scarcity (of token … remember)
* You can earn royalties every time it's sold\* (within bound of contract)
* You can sell it on any NFT market or peer-to-peer. You're not locked in to any platform and you don't need anyone to intermediate.

TOKEN STANDARDS:

ERC-721:

* <https://eips.ethereum.org/EIPS/eip-721>
* standard provides basic functionality to track and transfer NFTs.

Propose new “standard”:

* Base on ERC-721?
* NFT (art specific) standard
* Possibly only vialble on some chains e.g. Avalanche due to transactional limitations of Etheruem(-type) chains.
* If limited, as above, standard to allow for a multiple transaction process (no doubt of-chain but still recognised on-chain i.e. “I am a partial protocol”)

Collectibles (slightly different but similar):

* Crypto-Kitties
* <https://cryptozombies.io/en/course/>

Art Work

* Upload image(s)
* Embed direct into NFT (i.e. NFT is art – albeit small!)
* Possibly art on-off chain requires multiple transactions to complete!
* Makes it difficult but therefore gives it some uniqueness

NFT Register

* Build registry (into) smart contract

Bid/Sell Process

* Ownership and transfer of ownership

Other (Ethereum) Available Token standards (non-fungible or otherwise)

* ERC-20 (generally used for coins/token esp. in early days)
* ERC-165 Standard Interface Detection (related/required by ERC-721)
* ERC777 Token Standard
* ERC-1155 Multi Token Standard
* ERC-1167 Minimal Proxy Contract (note: this is more for system design – see also Ali Assam’s proxy design)
* ERC-1363 Payable Token
* ERC-2309 (ERC-721 Consecutive Transfer Extension)
* ERC-3156 Flash Loans (a side consideration – may not be relevant here)

Registration ideas (may keep simple initially, but still a consideration):

* ERC-137 Ethereum Domain Name Service – Specification
* ERC-162 Initial ENS Hash Registrar