DRAFT – WORK IN PROGRESS PLEASE DON'T SHARE

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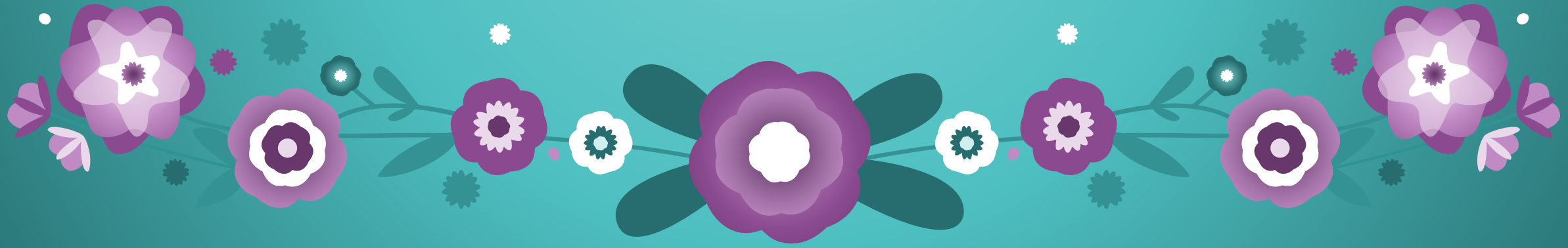
NFT Making

A guide for beginners



Disclaimer

- This is a work in progress and may be very inaccurate.
- Please don't distribute or post.

(I will likely release under Creative Commons one it is completed.)

Non-Fungible Token (NFT)

- A non-fungible token (NFT) is a unique and non-interchangeable unit of data stored on a digital ledger (blockchain).
- NFTs can be associated with reproducible digital files such as photos, videos, and audio.
- NFTs use a digital ledger to provide a public certificate of authenticity or proof of ownership, but it does not restrict the sharing or copying of the underlying digital file.
- The lack of interchangeability (fungibility) distinguishes NFTs from blockchain cryptocurrencies, such as Bitcoin.

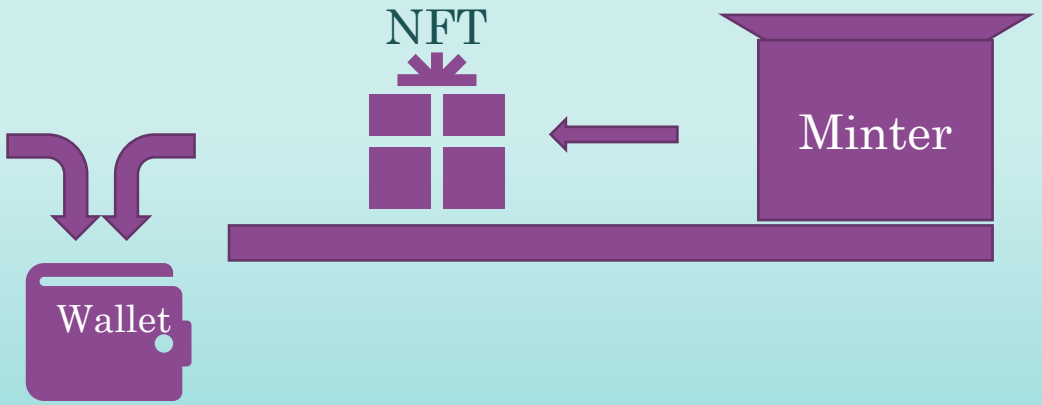
Source: Wikipedia contributors. (2021, December 15). Non-fungible token.
In Wikipedia, The Free Encyclopedia. Retrieved 19:53, December 15, 2021, from https://en.wikipedia.org/w/index.php?title=Non-fungible_token&oldid=1060457068

The NFT terminology

- Digital asset: photo, music, video, game piece, software, etc.
- Minter: process that converters an asset into an NFT
- Wallet – where your assets can be viewed/transferred
- Marketplace – where you can buy and sell NFTs

Digital Asset

Marketplace



Difference between a Digital asset and a NFT?

Digital Asset

+

Certificate of ownership

Built-in transfer, registration and access capabilities

+

Optionally a program to transform or display the asset or deliver a service.

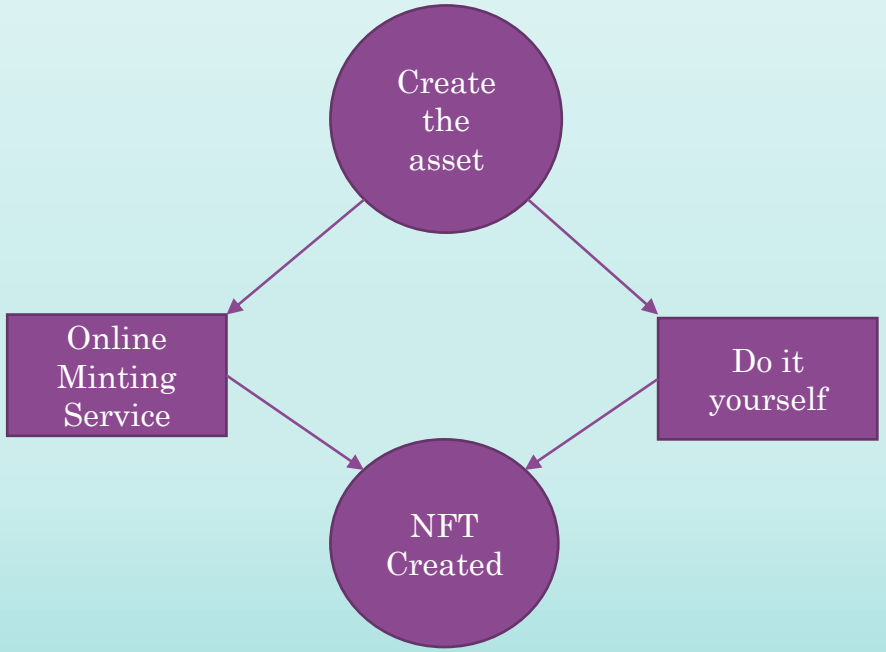
An NFT

Costs of minting an NFT on the IC

- NFTs are stored in canisters.
- Minting a canister costs about $3 USD on the IC:
  - Canister creation costs 2 trillion Cycles.
  - 1 trillion cycles costs 1 Standard Define Rate (SDR), a term defined by the International Monetary Fund or approximately $1.42 USD as at 15 Dec 2021.
- In addition, there is an ongoing fee for storage, transmittal and processing.
- Overtime, the cost of storage and execution will have to be topped up unless it is loaded with more cycles to maintain it. If not, it will be removed from the blockchain when it is depleted.

How do you make an NFT?

- Create an image and save as a .png file. (Any digital asset can be used.)
- Use an online minter to create the NFT or do it yourself.



Online Minting

- DepartureLabs had an experimental minter
- NFT anvil is in development
- Toniqlabs will can collections if deemed of interest into Entrepot

Check if this accurate

Create it yourself

- You will need to have the DFINITY Canister SDK and dependencies installed and running on a computer using :
  - Windows with WSL2 and linux;
  - Linux; or
  - Mac
- Follow the quick start tutorial and deploy the hello example.
- Test to see if you can see the front end that looks like this:

So what did that achieve?

- You created a smart contract that is owned by you that displays an image (the dfinity symbol) stored on the local replica.
- Turning into an NFT means adding the ERC-721 data elements for the certificate of ownership data and the functions to enable transfer and management of the NFT so that it will work with wallets.

ERC-721

- Ethereum established a standard called ERC-721 that defines data elements and methods that must be present when constructing an NFT for trading within the Ethereum eco-system.
- The Internet Computer community has not defined a standard however a variety of ERC-721 inspired implementations have been implemented:
  - Toniq-Labs/extendable-token
  - DepartureLabsIC/non-fungible-token
  - C3-Protocol/NFT-standards
  - rocklabs-io/ic-nft
- These are all available on github.

A word about wallets

- Wallets are a place to view/transfer NFTs. They will accept NFTs in a certain format.
- Popular wallets are:
  - EarthWallet by EarthDAO (not sure if it accepts NFTs).
  - Stoic Wallet by Toniq Labs and
  - Plug Wallet

  Wallet only work with NFTs certain formats. If it is in the wrong format, it may be possible to use a wrapper to transform one NFT format into another NFT format.

Creating an NFT and moving it to a Stoic Wallet

I am working on this page…so these steps are not correct.

- Use the Toniq-Labs/extendable-token ERC-721 structure.
- **Clone the github replica on to your local computer**
- Determine your principal : **dfx identity get-principal**
- **Create the canister: dfx canister create ext_erc721**
- Move the erc721.mo Motoko program into the main.mo
- Move the supporting libraries across as well.
- **Build it: dfx build ext_erc721**
- Install the code into the canister with the command line argument of a principle.
- dfx canister install ext_erc721 --argument="(principal \"sensj-ihxp6-tyvl7-7zwvj-fr42h-7ojjp-n7kxk-z6tvo-vxykp-umhfk-wqe\")“
- Then …

Add the minting steps

- Add the meta data and write to the ledger.

Now moving to the real world

- Doing it on chain in production would involve:
  - creating a canister (incurs a cost of 2 x SDR) using the NNS.
  - Noting the canister ID.
  - Replacing the Dfinity logo image file with your digital asset.
  - Installing the code into the canister on the IC with the correct principle and meta data by using the –ic option.
    - Using dfx –ic install with arguments used before.
    - Then running the minter command…

Moving into a wallet:

- Install a wallet that supports NFTs (e.g. Stoic wallet)
- Go to the NFT option
- Add NFTs
- Enter the canister ID
- Boom! Done

Unverified