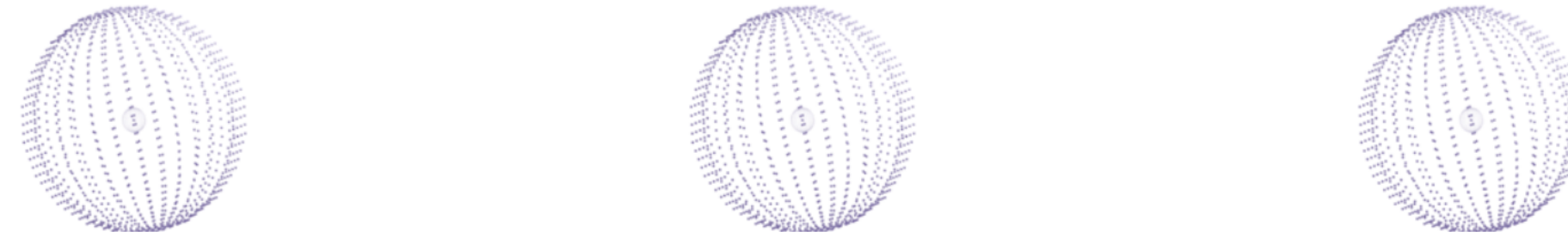


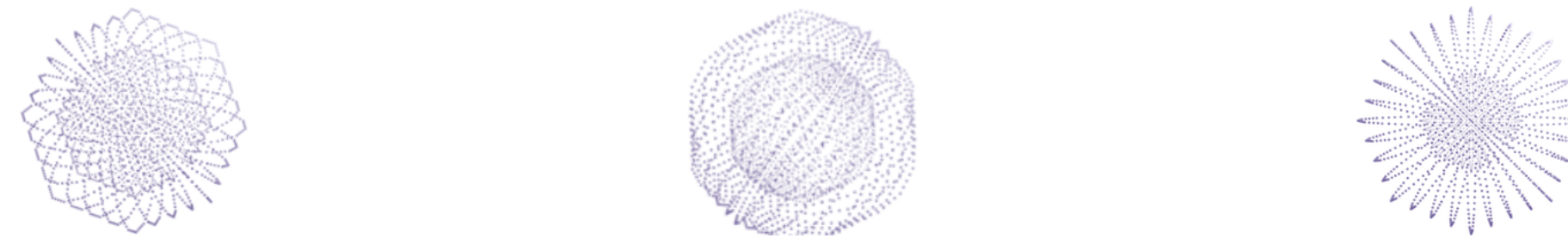
EXPRESSIVE NFT METADATA
BUILDING THE NEXT GENERATION

ERC721 Non-Fungible Token

ERC - 20 : A CLASS OF
IDENTICAL TOKENS



ERC - 721 : A CLASS OF UNIQUE
TOKENS



ERC721

Non-Fungible Token

ERC-721 defines a minimum interface a smart contract must implement to allow unique tokens to be managed, owned, and traded. It does not mandate a standard for token metadata or restrict adding supplemental functions.

Supported Operations:

1. Transfer (token, from, to)
2. Approval (token, actor)
3. Balance (actor)
4. ownerOf (token)
5. onERC721Received (on sent token)

ERC721 Core

ERC721 only tracks ownership

Token Zora ⓘ

Buy ▼

Exchange ▼

Earn ▼

Gaming ▼

Overview

TokenID: **3366** ⓘ

Transfers: **3**

Profile Summary [Edit] 🔗 🟡 More ▼

Contract: [0xabEFBc9fD2F806065b4f3C237d4b59D9A...](#)

Social Profiles: Not Available, [Update ?](#)

Transfers
Inventory
Info
Contract
Comments

TokenID: 3366
✕
🔍


A total of 3 transactions found First < Page 1 of 1 > Last

Txn Hash	Method ⓘ	Age	From		To	TokenID
👁 0x8668bb338f7cf9896db...	End Auction	30 days 4 hrs ago	0xe468ce99444174bd3b...	→	0xf5c27c6fe782cbb5c85...	3366
👁 0x951f722724032a4f114...	Create Auction	40 days 21 hrs ago	0x337071a7e907f5a599...	→	0xe468ce99444174bd3b...	3366
👁 0xe7577a360d884cf8be...	0x2cca3237	40 days 22 hrs ago	0x0000...0000	→	0x337071a7e907f5a599...	3366

ERC721 Metadata

Metadata describes
the token owned

This allows for portable
display of media and
human description of content.



So scare

doge

The original image that started it all. This photo of the Shiba Inu "Kabosu" was taken by her owner Atsuko Sato on February 13th, 2010.

CREATOR @kabosumama

SOLD FOR
1,696.9 ETH \$3,676,962
WINNER
@pleasrdao

ERC-721 Metadata Extension

eips.ethereum.org/EIPS/eip-721

The metadata extension is **OPTIONAL** for ERC-721 smart contracts [...]

This allows your smart contract to be interrogated for its name and for details about the assets which your NFTs represent.

`name()` returns string => "1000x Pixelart"

`symbol()` returns string => "PXLART"

`tokenURI(tokenId)` returns string => "ipfs://SHA"

** Any URI defined by RFC3986
Pointing to a defined JSON file

URI Content Data

The URI **may** point to a JSON file that conforms to the ERC721 Metadata JSON Schema

name => string describing the NFT

description => string describing the NFT

image => uri pointing to an image

`** Points to image/* content-type`

URI Content Data

GOOD

Simple

Easy to parse

BAD

No video support

No link to “platform”

What is “media”?

Images

Videos

Dynamic Content

3D models

Audio

What do we need from NFT media?

Display

Information (metadata)

Durability (works well with IPFS/Arweave)

IPFS & Arweave

Decentralized data providers

Allow for immutable, multi-provider data storage.

“Arweave enables you to store documents and applications forever.”

IPFS allows for distributed content-hash based file storage and distribution

<https://ipfs.fleek.co/ipfs/>

<https://ipfs.cloudflare.com/ipfs/>

<https://ipfs.io/ipfs/>

bafybeiejv7o3zqcizio3jpcc5geucdvc73klmf7kazyzpvyp5qn64ny4a

<https://arweave.net/Og-C3Vqzbj7IFj1fs5T9S-EDrACdm59CleYgzbfg4JA>

returns the doge NFT as long as it exists in the network from any provider, at exactly this version.

ERC1155 Metadata Standard

ADDITIONS

Gas optimizations

Allows “lazy minting”

User collections

Locationlization

ISSUES

Not durable / unique

Only images

JSON FORMAT

name string

decimals number of decimal bits

description string

image string uri to image/

properties arbitrary properties object

localization alternative translated URIs

Opensea Multimedia Metadata Standard

ADDITIONS TO ENJIN 1155 RECOMMENDATIONS

external_url	URI for external media
image_data	Raw SVG Image data
background_color	Background color in hex format without #
animation_url	URL to multi-media (html, glb, mp3, oga... many more)
youtube_url	URL to a youtube video

Foundation Metadata

PUBLIC METADATA

name	Name for NFT
description	Description for NFT
image	URL to video/image

PRIVATE (OPENSEA) METADATA

name "++"

description ""

image "http://d2ybmb80bbm9ts.cloudfront.net/8q/zF//nft.gif"

animation_url "ipfs://QmbQqjKSWUYy5Zzu7Ju8DqsmAnvAgKBYGraxR7xt628qzF/nft.mp4"

external_url "https://foundation.app/annevieux/-23"

Zora Metadata

CONTENT URI IS FROM CONTRACT

name	Name of NFT
description	Description of NFT
contentType	mime-type of content (image/png)
version	zora-2020-03-02 Matching standard schema

Superrare Metadata

name	Irrelevant
createdBy	Michael Jordan
yearCreated	2021
description	After losing this election...
image	https://ipfs.pixura.io/ipfs/blaoh/gif-maker.gif
media	{uri, dimensions, size, mimeType}
tags	“Trump”

Uniswap v3 NFT

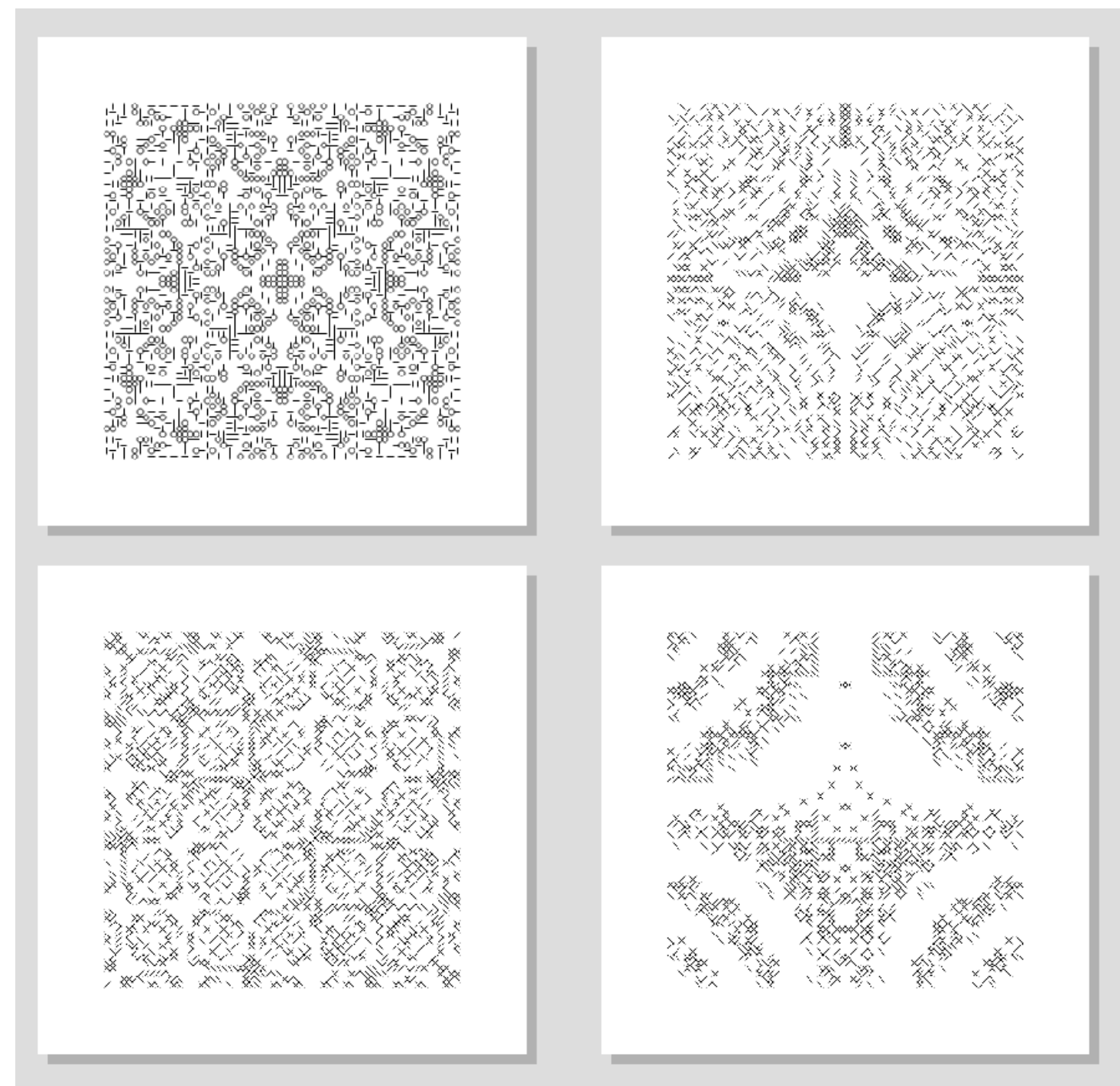
Uniswap is a popular Automated Market Creator that generates dynamic metadata noting information about your given market position.

```
data:application/json;base64
|eyJuYW1lIjoiVW5pc3dhcCAtIDAuMyUgLSBVU0RU
L0Z0SyAtIDY5LjY50Tw+NzEu0DIyIiwgImRlc2Ny
aXB0aW9uIjoiVGhpcyB0RlQgcmVwcmVzZW50cyBh
IGxpcXVpZGl0eSBwb3NpdGlvbiBpbiBhIFVuaXN3
YXAgVjMgVVNEVC1GTksgcG9vbC4gVGhlIG93bmVy
IG9mIHRoaXMgTkZUIGNhbSBtb2RpZnk3b3Igcmlk
ZWVtIHRoZSBwb3NpdGlvbi5cbXUUG9vbCBBZGRy
ZXNz0iAweGEzZWVmMGRiMTU2ZWVlY2ZhNTU2ODJm
YTRiNGFlZTVhMzMzMGRkMTFcbVTRFQgQWRkcmVz
czogMHhkYWxN2Y5NTkMmVlNTIzYTIyMDYyMDY5
OTQ10TdjMTNk0DMxZW53XG5GTksgQWRkcmVz
czogMHhkYWxN2Y5NTkMmVlNTIzYTIyMDYyMDY5
OTQ10TdjMTNk0DMxZW53XG5GTksgQWRkcmVz
```

```
{
  "name": "Uniswap - 0.3% - USDT/FNK - 69.699<>71.822",
  "description": "This NFT represents a liquidity po: 0.3%\nToken ID: 53355\n\n⚠️ DISCLAIMER: Due diligence is imperative when assessing this NFT. Make sure token addresses match the expected tokens, as token symbols may be imitated.",
  "image": "data:image/svg+xml;<svg width=290 height=500 viewBox=0 0 290 500><defs><filter id=f1>..."
}
```


Autoglyphs

Autoglyphs are fully on-chain NFTs that utilize contract calls instead of metadata to represent their content



```
data:text/plain;charset=utf-8
.....\.....\X.....\.../...X\.....\.....\X.....
.....X\.....\X.....X\.....\./...../.....\./.....
.....X.\...../X.\...../X.\...../X...../X...../.....
...../...X...X...\...../...X/...X...\...../.....X.....
/./....././.....\...../.....\X.....\X.....X.....X.X.....X.X
.X./...../...../.....\X.\X./...../...X..X.....\X./...
.....XX..X...XX..X.../...X.../...//.../.....\.....\
.X.....\./.....\X.....\./.....\X.X...../.....\X...../
..\.....//\.....XXX.....\.....\.....//.....XX.....
..X.X./\.....\.....X./.....X.X./\.....\.....X././\
.....X/\.....X/\.....X/\.....X/\.....
\./...../...../...../...../.....X..X..X..X.X\X.....\X.....
.....\.....\...../X/.X\./X/X.....
.....\./X.\./.....\X.....\./.....\X...../X.....\
././X.....X\X...../.....\X\.....\./...../X.X.
..X...X.....\./...../X.....\.....\./X...X.....\./\.....
\X...X.....\X...X.../X.../X.../X.../...../...../.....
.....X./.....\.....X.X/.....\.....X...X.../.....\
\X.../.....\...../.....\X.....\X.....\X...X.../
..\XX.....\XX.....\X.....//.....//.....
X...X.....X.X.X.XX././X.X//./...../.....\.....\
.....X/\...../.....X/\.....X.....\X.....X/\.....
...../...../.....X...X...X.../...../.....X...X.\X.\
.....X\.....\...../.....X\.....X\.....\.....
```

Zora V1 Protocol

Add a canonical “contentURI”

Hash the content to ensure validity

Use metadata to only describe contentURI

Issues: Metadata not backwards-compatible

Rich, Durable NFT Fields

Use pre-existing embed standards from oembed and opengraph

Include metadata as a rich rendering standard

Keep contentURI and hashes

Include base keys (image, name, description) for compat

A standard proposal for the future

Provides a rich language for embeddable content

Includes width/height, thumbnail information, embed information

Supports multiple media types (rich/html, audio, image, video, 3d)

Help make this standard!