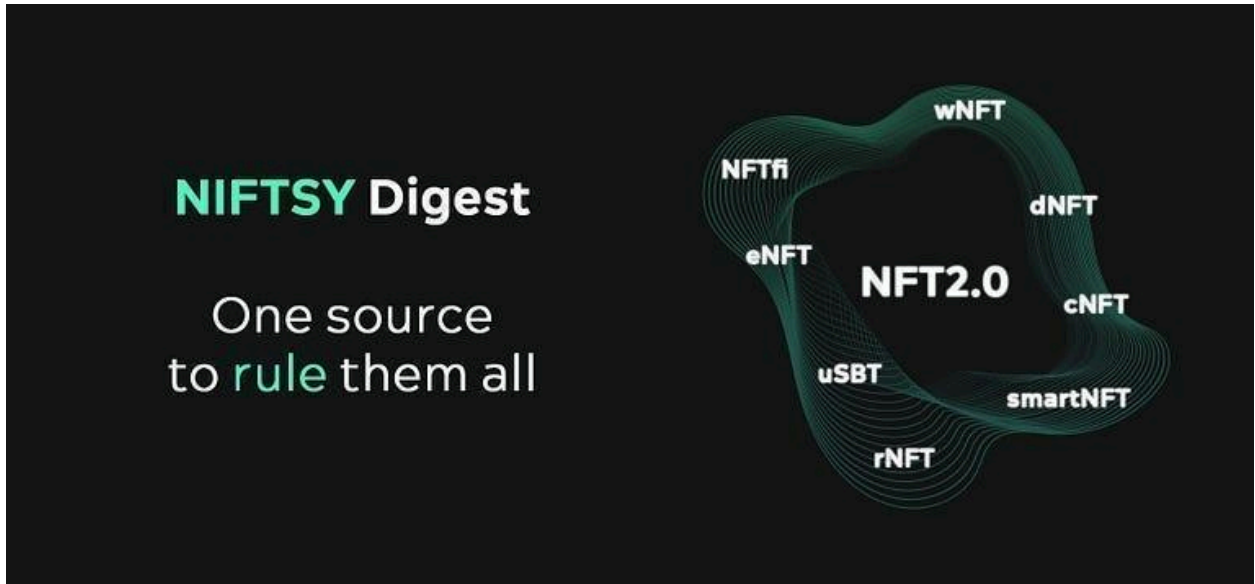# NIFTSY NFT Digest vol. 32 (February)

Main study. ERC404. Hype or trend?

ERC20 (token), ERC721 (NFT)... Simple.

ERC404, however, is a hybrid between the two.

NFT collection Pandora collection for the month was the leader in sales volume. Let's try to understand how strong this trend is.

#	Collection		Sales	Transactions	Buyers	Sellers
1	Pandora	Ethereum	$148,426,616 — 0.00%	9,051 — 0.00%	2,299 — 0.00%	820 — 0.00%
2	Uncategorized Ordi...	Bitcoin	$66,653,687 ↗ 38.65%	109,185 ↗ 15.76%	36,579 ↗ 13.44%	32,925 ↗ 22.17%
3	NodeMonkes	Bitcoin	$36,767,671 ↘ 13.21%	2,370 ↘ 55.80%	1,309 ↘ 36.05%	1,222 ↘ 29.08%
4	DMarket	Mythos	$27,963,940 ↗ 37.44%	1,337,292 ↗ 24.64%	60,935 ↗ 22.31%	50,496 ↗ 20.67%
5	CryptoPunks	Ethereum	$23,267,203 ↘ 26.75%	116 ↘ 38.95%	56 ↘ 16.42%	66 ↘ 34.65%
6	Mad Lads	Solana	$22,559,230 ↗ 94.37%	1,174 ↗ 69.16%	639 ↗ 70.40%	588 ↗ 43.41%
7	Transdimensional ...	Solana	$21,572,803 ↗ 799.70%	38,601 ↗ 522.30%	3,459 ↗ 186.10%	4,919 ↗ 156.60%
8	Gods Unchained C...	ImmutableX	$21,382,323 ↗ 9.05%	299,277 ↘ 6.60%	12,063 ↗ 1.97%	11,312 ↗ 1.82%
9	Bored Ape Yacht Cl...	Ethereum	$21,372,888 ↗ 28.17%	326 ↗ 9.03%	159 ↗ 20.45%	201 ↗ 10.44%
10	Pudgy Penguins	Ethereum	$20,276,687 ↗ 19.27%	398 ↘ 16.21%	264 ↗ 5.60%	250 ↘ 19.87%
11	Froganas	Solana	$19,519,502 ↘ 5.83%	41,362 ↗ 60.04%	5,328 ↗ 23.99%	5,647 ↗ 1.75%
12	Nobody	Ethereum	$19,130,580 — 0.00%	12,393 — 0.00%	3,086 — 0.00%	6,344 — 0.00%
13	$LIGO BRC-20 NFTs	Bitcoin	$16,287,629 ↘ 16.62%	3,433 ↘ 71.13%	1,333 ↘ 74.57%	1,657 ↘ 71.59%
14	Dokyo	Avalanche	$15,748,453 ↘ 47.30%	10,455 ↘ 39.40%	699 ↘ 50.57%	643 ↘ 55.47%
15	Parcl HOA	Solana	$14,906,648 ↗ 416.36%	7,975 ↗ 179.24%	1,681 ↗ 57.25%	2,093 ↗ 59.77%

Why is ERC-404 unofficial?

Not vetted: ERC-404 is an unofficial standard whose connection to "ERC" status is in name only. In other words, it hasn't been developed through the traditional Ethereum Improvement Proposal (EIP) and Ethereum Request for Comments (ERC)

processes, which ensure any changes to Ethereum or new features undergo thorough discussion and community vetting.

In contrast: Official ERCs, like ERC-20 and ERC-721, *have* been extensively vetted for security, utility, and compatibility within the Ethereum ecosystem. This formal intro system helps mitigate risks associated with implementing new standards. Despite ERC-404's innovations, its lack of formal vetting means potential vulnerabilities and inefficiencies may not have been adequately addressed.

Raised risks: Innovation is important, but the risks of integrating unaudited and potentially flawed systems into projects can compromise security around the Ethereum ecosystem. Many unofficial standards floating around would provide many low-hanging exploit targets for blackhats. Adopting ERC-404 without official recognition raises concerns about the precedent it sets for other experimental standards.

The Pandora 101

The basics: Pandora, the first project built on the ERC-404 standard, offers 10,000 ERC-20 tokens and 10,000 associated "Replicant" NFTs. If you buy one full PANDORA token on an exchange, 1 Replicant NFT will be minted to your wallet. If you sell 1 PANDORA token, its connected NFT gets burned.

How rarity works: Every time a Replicant NFT is minted to your wallet, it will appear with a unique rarity. The most common Replicants are green, while the rarest are red.

Accordingly, it's possible to trade PANDORA tokens to "reroll" the rarities of the Replicants you receive. Since the collection's name is Pandora and Replicants are currently represented as boxes, it's safe to say they will "open" to reveal something later.

Supporting platforms: Since ERC-404 is experimental, many platforms won't automatically be able to support the standard. However, PANDORA is already trading on decentralized exchanges like Uniswap, and Replicants are trading on NFT marketplaces like Blur and OpenSea.

To the moon: In less than a week since launching, PANDORA and Replicants have seen their value boom as excited traders have piled in. PANDORA has risen +440% in that span to its current price of ~$8,385 (~3.52 ETH), while the floor of Replicants is presently ~3.7 ETH on Blur.

What happens when you buy a PANDORA token on Uniswap?

For argument's sake, you buy 1 PANDORA on Uniswap. Once you hit confirm in your wallet and complete the transaction, you will part ways with your ETH and, in return, receive the 1 PANDORA token *plus* 1 Pandora NFT.

When you receive the NFT, it is generated from a mint contract, thus wholly random, and can be of any rarity, much like a regular NFT mint.

If you decide you want to sell your 1 PANDORA token, you resell it on Uniswap, and in doing so, the NFT in your wallet is burnt.

The Pandora NFTs do have some rarities attached to them (in their current form), and if you are hoping to scoop a rare item, you could opt to either trade in and out of the liquidity pool or transfer some tokens back and forth between your wallets.

Transferring **NFTs** to a new wallet does not affect the NFT. Only transferring the token results in a burn and minting of the new NFT.

Just as you can sell your PANDORA tokens on Uniswap, you can also sell your Pandora NFTs on OpenSea and Blur. B[lur recently announced a Pandora integration](), which is kinda unheard of given this concept is few days old.

Given the different rarities of the NFTs, there could be some interesting arbitrage here in that the PANDORA price kinda represents the floor price of the NFTs as there are 10,000 tokens and 10,000 NFTs.

Green boxes: approximately 39.45%
Blue boxes: approximately 23.44%
Purple boxes: approximately 19.53%
Orange boxes: approximately 11.72%
Red boxes: approximately 5.86%

If you managed to scoop a rare item from the LP or from a transfer, you could list this NFT higher than the floor/token price on OpenSea or Blur, sell it to a willing buyer, and then use the proceeds to buy more PANDORA… good ponzinomics.

Pandora FAQs

1. ***What happens if you buy 0.9 PANDORA?***
   You **WILL** receive the tokens, but you **WILL NOT** receive the NFT.

2. ***What happens if I buy 0.9 PANDORA and then 0.1, totalling 1 PANDORA?***
   Once your wallet owns 1 PANDORA token, an NFT will be automatically minted into your wallet.

3. ***If I own 3 PANDORA tokens, how do I know which NFT I will sell if I were to sell 1 PANDORA token on Uniswap?***
   The best move here would be to sell the Pandora NFT on Blur or OpenSea that you don't mind getting rid of, and then the token will automatically be sold along with that. This way, you don't sell your rare Pandora NFT.

4. ***What happens if I transfer the NFT and not the token?***
   Transferring the NFTs will not affect anything. So if you have, say, one rare and one common, move the rare to a separate wallet and then transfer/sell/buy the token in the original wallet to try to get a higher rarity NFT.

Source: https://github.com/Pandora-Labs-Org

Many in the market have started to support this trend:

[Floor Protocol has expressed its interest in implementing ERC404 and Pandora](#).
[Wasabi has listed Pandora NFT perps](#).
[Vector has agreed on a partnership with Pandora](#).
[CFW has announced he will be launching a collection on the Pandora ERC404 standard](#).
[Peapods Finance just announced wrapped PANDORA](#).
[The Binance Web3 Wallet now supports ERC404 tokens.](#)
[SyncSwap 404 Wrapper introduces a new technology to wrap existing ERC721 NFTs into fungible wrapped tokens on zkSync.](#)

DN404, another hybrid NFT standard

Another team of developers claims to have done it better with DN404. The "Divisible NFT" standard, [like its ERC-404 rival](#), "aims to be a hybrid ERC-20/721 token." The proposed standard essentially allows NFT holders to trade fractionalized portions of their NFT with others, [according](#) to pseudonymous developer "[cygaar" in a Feb. 12 X post.](#)

"Our end goal was to create a token standard that could act as an NFT with native fractionalization built in," cygaar added. They claimed while [ERC-404 has been popular](#), "it doesn't follow existing standards, is inefficient, and breaks at certain edge cases."

While ERC-404 can interact with ERC-20 tokens and ERC-721 NFT contracts, it still requires protocols to implement ERC-404 to ensure its tokens function as designed.

Cygaar, however, explained that DN404's approach uses two contacts: "A 'base' ERC-20 with a 'mirror' ERC-721" and claims they're "fully compliant" with protocols "out of the box." This is because the bulk of trading happens on the ERC-20 token contract — described as "fractions of the NFTs," explained Cygaar. When base ERC-20 tokens are transferred, the mirrored NFTs are burned and minted automatically.

A wallet with a token amount equal to at least one base unit will receive an NFT on the mirrored contract, and NFTs are conversely burned when the wallet holds below the minimum base unit amount.

Cygaar said the ultimate goal was to allow users to trade portions of NFTs without any intermediaries and allow NFTs to trade on both NFT exchanges and decentralized exchanges.

The developer, however, warned that **the code "has not been formally audited, so you are using it at your own risk."**

ERC404 sought to merge ERC20 and ERC721 into a unified token standard. While it successfully integrates functionalities from both, issues arise in functions that are shared between the two standards, like *transferFrom*, which has been redesigned to behave differently based on parameter values.

This redesign birthed several critical vulnerabilities. *transferFrom* requires 3 parameters: a source address, a destination address, and a number. In ERC721, that number is a token ID. In ERC20 it's a count of tokens (in wei).

The "standard" differentiates between which token path to use (ERC20 or ERC721) based on how large the number is, **but protocols can't know that.** I outlined an exploit in which a user is effectively able to trick a contract into trading token dust (a tiny fraction of a penny) for an arbitrary number of 404 NFTs. This was a basic and contrived proof of concept, but the reality is that very many protocols currently live on mainnet that work **in exactly this way**. In fact, I found and reported the bug in the wild to more than one affected protocol, and they were thankfully able to disable the collection before it was exploited.

Perhaps an even simpler example is to consider a Seaport collection offer. You can accept a collection offer for any ID in the collection. ERC721 contracts with revert safely if attempting to accept an offer using a nonexistent ID, but in specific circumstances, a malicious user could accept a collection offer for `(minted + 1)` tokens, and again they are able to trade dust for multiple ether.

The crux of the issue lies in an attacker's ability to maliciously craft calldata to coerce a contract into conflating an NFT with ERC20 tokens given the arbitrary logic switch based on that singular numerical input.

CellMates' ERC20721 attempts to solve this issue by having a set range of ERC20 token supply (0–256), followed by an equal number of NFT IDs. Each token type has it's own namespace, and tokens are not divisible (1 token = 1 NFT). This eliminates the attack vectors above, but opens up a new one, which I discussed with the Cellmates team earlier today (it was a very productive conversation, shout out to them for being so receptive).

Imagine User A has NFT #257, and User B has NFT #258. User B asks the vault to deposit 1 token, the ERC20 flow is correctly followed and User B properly receives 1 credit within the vault. User A asks the vault to deposit 257 ERC20 tokens. *transferFrom* is called and ERC20721 routes it through the ERC721 logic, pulling token #257 to the vault. The call was successful, so the vault provides User A with 257 credits (after all, it asked for an ERC20 transfer). Now, User A requests a withdrawal for 2 tokens. This is far lower than their allotted credits, so the vault proceeds with his withdrawal and sends not only his own token back, **but User B's token as well**. After this, User A *still* has 298 more credits to use. This is the issue with overloaded functions — either every protocol needs to be rebuilt to account for the new behavior defined by these hybrid tokens, or we accept catastrophic loss on a regular basis. This means there are two ways we can go:

1. Ask protocols to build around this new standard, in which case we can remove unpredictable branching altogether by coming up with new function signatures unique to 404…a true new standard.

2. Just…use two contracts?

We chose the latter. DN404 was built from the ground up using a novel approach that separates ERC721 and ERC20 functionalities into distinct contracts, linked from

inception. DN404 handles all the logic, storage, and permissions, but only exposes an ERC20 interface. DN404Mirror serves as a passthrough — an ERC721 interface that defers all logic to DN404, but emits its own events. The result is that everything returns to the way it should be. The ERC721 and ERC20 contracts both exist, and both function as standalone products, but under the hood they run on shared 404 rails. Protocols always know exactly what you're transferring, because each contract address follows just one standard.

I want to be clear — while I had a ton of fun building this, I still see 404 as more of a gimmick than anything else. However, the space has shown a desire to continue using it, and so we decided it was worth making an implementation that was efficient and safe to use.

DN404 (Solidity contract): hybrid ERC20 & ERC721, mints/burns NFTs based on ERC20 balance

ERC-404's safety questioned

One of DN404's developers, known by the pseudonym "quit," claimed there was a possible ERC-404 vulnerability, which could see ERC-404 tokenholders steal NFTs deposited into lending protocols incorrectly configured for ERC-404.

ERC-404 developer known as "ctrl" brushed off the concerns when speaking to Cointelegraph last week and argued that "quit" made a contract that improperly uses the standard, causing a vulnerability. He said Pandora, the project impending ERC-404, was auditing a "more mature iteration of the standard which addresses integration."

Pandora is an interesting experimental implementation. Its code isn't as gas-efficient as it could be, but it has innovated fractionalization at the level of an NFT's smart contract, and this pioneering will pave the way for more experiments to come. On the flip side, though, it may inspire other unofficial standards to go to market without undergoing the EIP and ERC processes, which would raise the prospects of losses of funds via unvetted vulnerabilities.
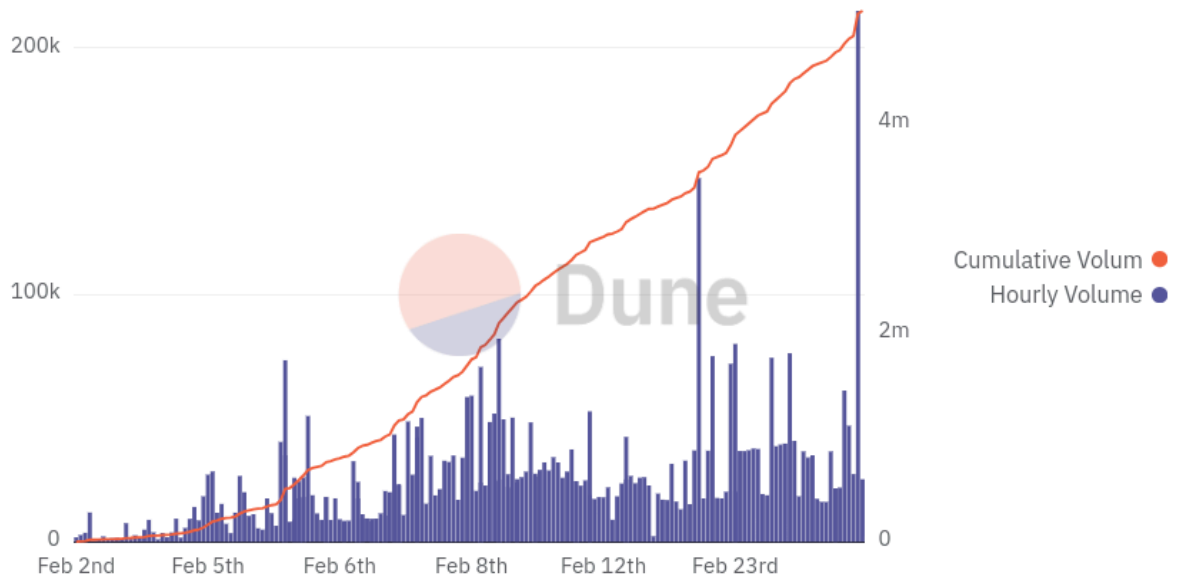
Onchain Data:

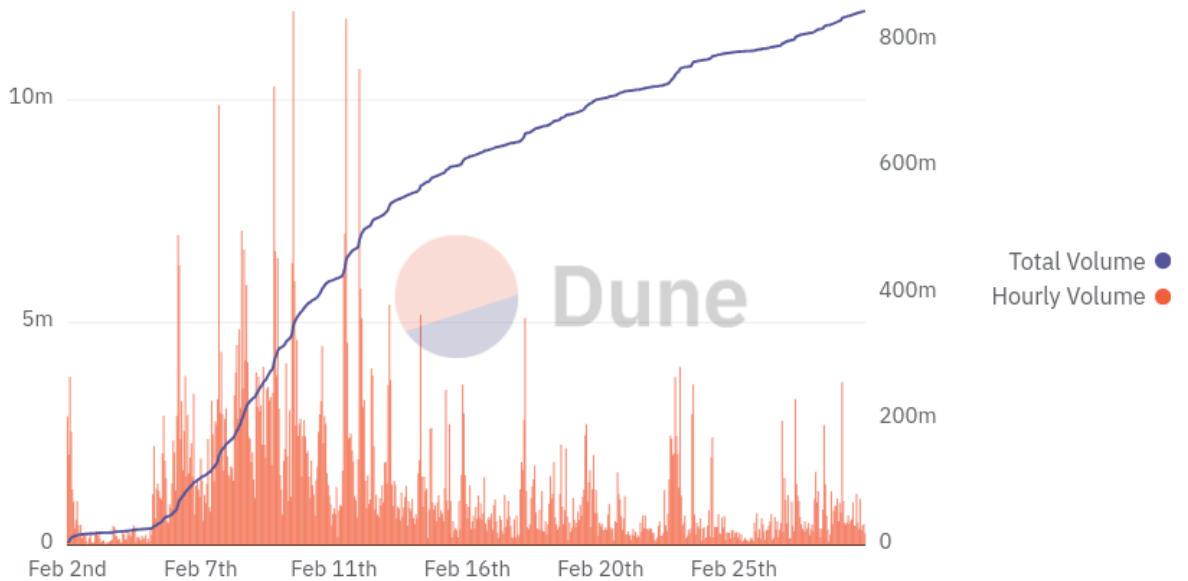### Pandora NFT in Circulation   Pandora NFT in Circulation
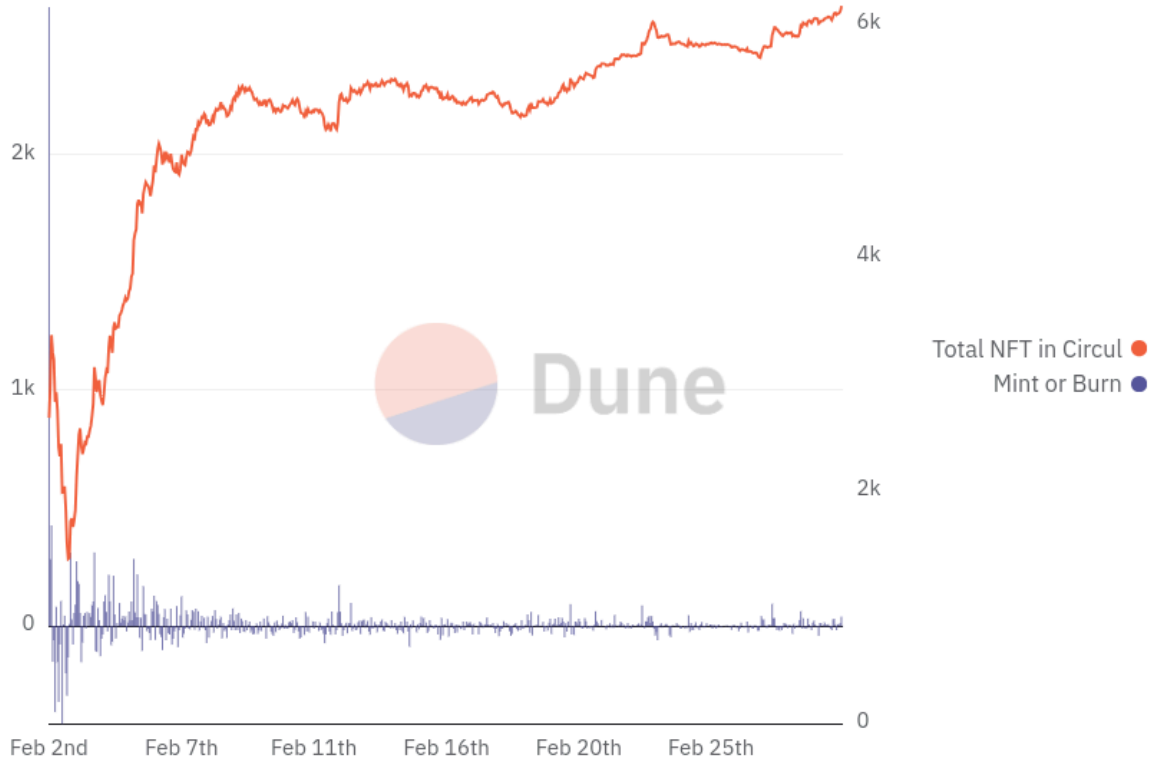
Total NFT Holders   NFT Holders
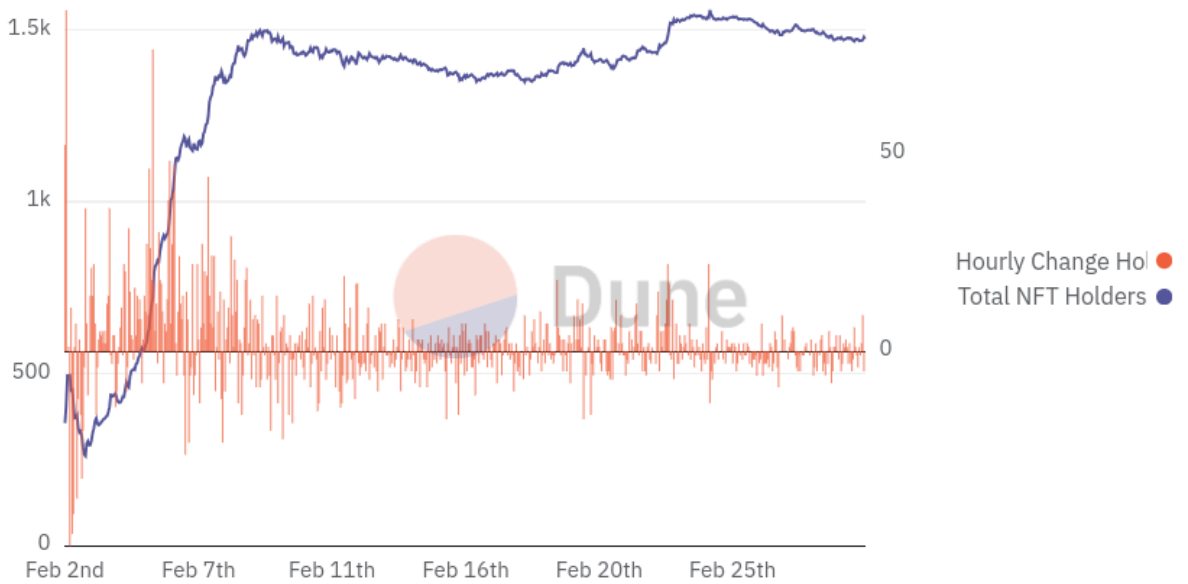
NFT Volume on Secondary Market   NFT Secondary Market

Pandora Token Volume on DEXs   Volume on Dexs

https://dune.com/novaresearch/pandora-erc404

Other dashboard: https://dune.com/hashed_official/pandora

ERC404/SPL20 watchlist. Solana's version of ERC404 — (SPL22, leveraging token2022 tech)

ERC-404 Tools:

First Telegram deployment bot based on the experimental ERC-404 token standard.
ERC404PAD, a groundbreaking no-code platform for deploying ERC-404 tokens effortlessly.
Bakeyour404, Deploy ERC-404 tokens in minutes.

Are there alternatives?

1. Similar to ERC-404, another project has also been targeting the same problem from a different angle. Enter ERC-20721, another experimental token standard devised by the NFT project, Cellmates. ERC-20721 attempts to adhere more strictly to the token standards on which it is based, that is, ERC-20 and ERC-721, as opposed to ERC-404, which makes several tradeoffs on either token standard.

   As opposed to direct fractionalization of the NFT, ERC-20721 only allows for trades of full tokens (i.e., 1 full NFT). This token is still tradable on a decentralized exchange (DEX), but in a whole number of tokens only. To achieve a similar effect to ERC-404s, they enable a fractionalized token version to trade alongside the NFTs, which enable smaller players to gain exposure to the token. Using Cellmates as an example, the full token is CELL and the fractionalized token is wCELL, which is obtained from fractionalizing a pool of CELL tokens.

   This implementation keeps the NFT collection unchanged through trades and transfers, which preserves the rarity of specific traits in the collection as it removes the issue of re-rolls. Additionally, due to its implementation, ERC-20721 transfers cost less gas than ERC-404s as it removes the need to check for NFT mint and burns during transfers.

2. ERC-7628: ERC-721 Balance Extension adds balance functionalities to ERC-721 tokens, enabling functions and events for balance querying, transfer, and approval akin to ERC-20 tokens.

3. ERC-7629, known as the Unified Token, introduces a comprehensive protocol unifying the characteristics of ERC-721 and ERC-20 tokens within the Ethereum ecosystem. This standard seamlessly integrates the liquidity features of ERC-20 with the non-fungible nature of ERC-721 enabling frictionless conversion between these asset types. ERC-7629 offers a multifunctional solution, providing developers and users with the flexibility to leverage both liquidity and non-fungibility in a unified token framework.

4. ERC-7631: Dual Nature Token Pair. The ERC-20 fungible and ERC-721 non-fungible token standards offer sufficient flexibility for a co-joined, dual nature token pair. Transfers on the ERC-20 token can automatically trigger transfers on the ERC-721 token, and vice-versa. This enables applications such as native ERC-721 fractionalization, wherein purchasing ERC-20 tokens leads to the automatic issuance of ERC-721 tokens, proportional to the ERC-20 holdings. Dual nature token pairs maintain full compliance with both ERC-20 and ERC-721 token

standards. This proposal aims to enhance the functionality of dual nature token pairs. To facilitate querying the relationship between the tokens, extension interfaces are proposed for the ERC-20 and ERC-721 tokens respectively. This enables various quality of life improvements such as allowing decentralized exchanges and NFT marketplaces to display the relationship between the tokens. Additionally, users can configure if they want to skip ERC-721 mints and transfers during ERC-20 to ERC-721 synchronization.

Behind EVM

Injective, a Layer 1 blockchain built on Cosmos, has [unveiled the CW-404 standard](#), revolutionizing tokenization by combining CW-20 and CW-721 functionalities. The Sushi Fighter NFT collection pioneered CW-404, showcasing its potential for innovative projects.

News & Updates

1. **[Emblem Vault](#)** [unveiled its crosschain launchpad.](#)

2. [Solana Network Unveils Token Extensions](#). The Solana Foundation, a non-profit organization dedicated to the Solana network's decentralization, adoption, and security, announced the launch of token extensions — the next generation of the SPL Token standard. Token extensions were designed specifically to cater to builders across various industries, including stablecoins, real-world assets (RWA), and payments. The extensions include:

- Transfer hooks, which give token issuers control over how tokens and users interact, allowing a flexible design that empowers developers to build elaborate token interactions.

- Transfer fees, which add the ability to charge a fee every time a token is transferred, providing sustainable revenue models for any type of token built using token extensions.

- Confidential transfers, which publicly share the source, destination, and token type, but use zero-knowledge proofs to encrypt the amount of the transfer while still providing the issuer of the token certain audit rights necessary for compliance.

- Permanent delegate authority, which gives the token issuer absolute authority over tokens they issue, specifically those that require some sort of revocation ability, like licenses or credentials.

- Non-transferability, which only permits the issuer to transfer tokens to another wallet. This feature can be used for credentialing and unique user identification.

3. Magic Eden Introduced the Magic Eden Wallet: the only wallet you'll need for all your multi-chain NFT needs.

- Instant cross-chain swaps
- NFT portfolio management
- Native Ordinals & BRC20 support
- End to end rare sats management

4. [GoDaddy](#) integrated with ENS, users can associate an address with their domain name

5. You can now [buy any Stargaze NFT in just one click, using any token on any EVM or Cosmos chain.](#)

6. **[Mirror](#)** [rolled out support for Farcaster frames.](#)

7. [Magic Eden, Yuga Labs, Animoca Brands and other NFT projects started the Creator's Alliance](#) — a coalition of the top NFT projects in web3, , who are focused on promoting a sustainable royalty framework to empower creators and grow the NFT ecosystem.

8.**[nftperp](#)** [introduced Concentrated Liquidity for NFTs](#).

9. Bored Ape Yacht Club creator [Yuga Labs announced it has acquired Proof, which created the Moonbirds](#) non-fungible token collection. Yuga Labs said it will fold Moonbirds into its gamefied, metaverse play dubbed Otherside.

Development

1. [EIP-7611: Sovereign Bridged NFTs.](#) This standard liberates the creators and holders of NFTs from the confines of a single domain — expanding their opportunity to embrace the plethora of innovation and experimentation happening across rollups in the Ethereum ecosystem. There has been both prior discussion and proposals around solving this problem:
   - In September of 2021 Vitalik posted "Cross-rollup NFT wrapper and migration ideas" in the Ethereum Research forum. The concept of a "Wrapper NFT" that enables NFTs to expand to rollups was proposed that leverage "Wrapper Manager Contracts." In many ways, you can see that the token interfaces proposed below are directionally aligned with his proposal, but give the transport level greater liberties to minimize the complexity resulting from the receipt chaining concept he discusses.
   - Later in September Pavel Sinelnikov similarly created a post in the Ethereum Research forum titled "Bridging NFTs across layers" iterating upon Vitalik's initial proposal. The core differentiator between the below proposal and these concepts proposed in 2021 are that we have made substantial improvements in both ZK rollups alongside fast finality mechanisms that empower us to define more abstract interfaces which do not overfit for the 7 day withdrawal delay that manifests from optimistic rollups.
   - Most recently and importantly in 2023, the Connext team proposed xERC20 which strongly inspired the proposal below. xERC20 established the concept of "Sovereign Bridged Tokens." We agree strongly with the

design decisions that were made in this EIP proposal, to the degree that we adhered directly to the bridge authorization interfaces that were utilized in this EIP.

2. The ERC4626 Tokenized Vault standard has exploded in popularity. However, as with any new technology, there are dangers that are not immediately apparent. Shortly after its release, it was identified that naive ERC4626 vaults are vulnerable to first deposit attacks, just as many other contracts like AMM pools are.
   A number of mechanisms were developed to protect Tokenized Vaults against this attack vector. But the recent Wise Finance attack, and the realization that most vaults don't explicitly implement safe oracle functions, led us to research how to build ERC4626 vaults that would be safe against exchange rate manipulation.
   In the article, we explore [the attack methods that can be used to manipulate the exchange rate in a Tokenized Vault](), the scenarios in which these attacks could become a problem, and the mitigations that can be implemented to help make vaults safe. As with so many things in smart contract development, there is no single solution that fits all purposes. In many cases more than one mitigation will be needed, but each case needs to be considered on its own merits.

3. [ERC-7616: Hybrid Fungible Token](). This proposal outlines a standard for hybrid fungible tokens, integrating smart contract interfaces that are compatible with the ERC-20 token standard. It synthesizes concepts from ERC-721 with influences from the Semi-Fungible Token model of ERC-3525, introducing a novel approach to balance management and the differentiation between ERC-20 token quantities and ERC-721 token identifiers. Drawing inspiration from ERC-3525, this standard incorporates a value attribute for tokens, analogous to the balance attribute in ERC-20 tokens, to signify the token's quantitative aspect. However, it moves away from the notion of distinct 'slots' for each ERC-721 token, opting instead to maintain ERC-721 tokens consistently within a single slot. While ERC-3525 made strides towards addressing these issues, it did not fully resolve the liquidity challenges, tending to resemble an NFT more than a fungible token, which limits its tradeability on decentralized exchanges. A more effective solution lies in the development of a hybrid fungible token that combines the quantitative advantages of ERC-20 with the qualitative uniqueness of ERC-721. The backward compatibility with ERC-20 offered by such hybrid tokens would leverage existing infrastructures, promoting quicker adoption.

4. [ERC-7621: Basket Token.]() This standard provides basic functionality for anyone to deploy unique, non-fungible BTS tokens that can contain an unlimited number of underlying ERC-20 tokens. The deployer receives a BTS token representative of their ownership of the fund, as well as LP tokens representative of their percentage share of the fund (100% at time of deployment but changing as other wallets contribute/withdraw). Whenever a contribution is made to a BTS, BTS LP tokens are minted and distributed to the contributor's wallet (representative of their share of

the fund); when a withdrawal is made from a BTS, the BTS LP tokens are burned and funds returned to the withdrawer's wallet. The BTS has a rebalance function which allows for a BTS owner to change the percentage share of the fund that each underlying token makes up. Tokens can be removed entirely or added through this function after a BTS has already been minted. By leveraging the ERC-721 standard as a representative token of ownership when minting the BTS, the tokenized fund can also be fully manageable and transferable on-chain. The motivation is to provide infrastructure that will enable the on-chain creation and management of asset-backed tokenized investment funds.

5. [ERC-7624: Dynamic Identity Binding Soulbound Tokens](#). The existing Soulbound token system lacks the flexibility to adapt to compromised wallet scenarios, leaving users with no on-chain means to seamlessly transition to a new wallet address without losing their unique identity. Despite the availability of Account Abstraction (AA) — ERC-4337 for social recovery, residual risks persist, prompting the need for a more comprehensive solution that ensures the continuity of a user's identity. The proposed solution allows users to re-identify themselves with a new wallet address while preserving the integrity of their Soulbound identity.

6. [ERC-7634: Limited Transferrable NFT.](#) This standard extends ERC-721 to allow minters to customize the transferability of NFTs by setting parameters via TransferCount. The standard introduces an interface with internal functions to facilitate this functionality. Current NFTs, once sold, sever ties with their minters and can be transferred infinitely upon subsequent sales. However, various scenarios necessitate precise control over NFT issuance. For instance, an NFT may need to be limited in its number of bids to maintain its value, or a patent may only be sold a certain number of times before being released for free. Imposing restrictions on the number of times an NFT can be sold or traded becomes crucial.

7. [ERC-8000: Multi-Fungible Token](#) (MFT). The essence of tokenization is how assets are encapsulated. Traditionally, there have been two methods used: fungible tokens (ERC-20) and non-fungible tokens (ERC-721). These correspond to homogeneous assets and unique assets, respectively. The former is similar to stocks or currencies, while the latter is similar to art collections or game items. However, there is an increasing need for encapsulating a wide variety of complex assets. The existing protocol standards do not fully meet the requirements for encapsulating such assets. For example, an account may hold multiple fungible assets such as USD, GBP, JPY, along with a credit account, insurance or investment contracts, and loyalty points（KEY）from a bank. Alternatively, a game character may possess fungible tokens within the game, various equipment items, and convertible game-specific loyalty point（KEY）assets that cannot be directly traded but can be exchanged for corresponding game value. To address similar requirements as mentioned above, protocols like ERC-20, ERC-721, ERC-1155], and ERC-3525 are not sufficient. The most effective approach is to create a

multi-fungible token that combines the non-fungible characteristics of ERC-721 with the ability to store and manage various custom assets such as ERC-20, ERC-721, and loyalty points. It maintains an NFT's overall structure and can leverage existing NFT infrastructure.

MFT tokens include an [ERC-721](./eip-721.md) equivalent ID property to identify themselves as unique entities, enabling MFT tokens to be transferred between addresses and operated upon in an ERC-721 compatible manner. MFT implements multiple slots to configure assets of types such as ERC-721, ERC-20, KEY, etc. Its core features include:

- MFT Management,
- Flexible configuration of MFT transfer permissions, MFT types, and levels.
- Slot Management,
- Flexible configuration of slot asset types, asset contract addresses, and transfer permissions,
- Asset Management,
- Through slots, support storage and configuration of ERC-721, ERC-20 and KEY assets,
- Enable asset transfer between MFTs,
- Enable asset transfer between MFTs and EOA wallets
- Flexible deposit and withdrawal of tokens in MFT.

MFT is fully compatible with the ERC-721 protocol, allowing free trading on decentralized exchanges. This EIP introduces a new token model to achieve token multi-dimensionality, including the ability for the same MFT to configure storage for multiple types of token assets, as well as value transfers between two assets within the same slot and value transfers from tokens to addresses.

NFT Analytics

1. **Vaporware** is launching Ships, a cloud computing system facilitated by NFTs.

Vaporware is a program that runs on a new kind of internet computer, called a *ship*. Ships are built on a novel virtual machine, called a solid-state interpreter. Ships combine the functionality of wallets, large file storage, encrypted p2p networking, and full stack web applications into a single framework. They are designed to run in the cloud, but are owned cryptographically by people. Ships are *internet appliances*.

The system. The Vaporware ship is composed of three closely related systems:

- a purely functional virtual machine

- a tokenized application and package registry

- an app store and package management program

Vaporware is developed as *Free and Open Source Software* and respects the four essential freedoms.

The device. Like the EVM, the virtual machine used by Vaporware has been designed as infrastructure for a decentralized internet. It is a [purely functional system](#) and is ultra-minimal. Unlike the EVM, it supports fast parallel computation and can store large amounts of data, cheaply. It does not provide global consensus. Vaporware uses the VM to replace developer-hosted web services with [non-custodial web apps](#) — web apps owned by users.

The registry. Every ship has a unique *identity*. NFTs can be registered with the protocol and used as a network handle. Ships encrypt and sign all of their messages by default. The owner of a ship can register the ship's content onchain and share it with others. Identities are used to control access to registered content. Vaporware is a [decentralized file storage](#) network, but can also be used to distribute and run full stack software applications. Registration binds content to an NFT, so users can trustlessly monetize their data and apps.

The agora. The agora is the economic bootloader for the Vaporware network. It is the default protocol, owned by every user, providing unfiltered access to purchasable content and software. Vaporware has no "app store" qua "app store" to host and monetize apps. Instead, users are able to self-host their own access point to a purely p2p, onchain, content distribution system. Tokens provide censorship resistant payment rails and the agora provides censorship resistant distribution.

2. [Navigating the Inscriptions Landscape](#).
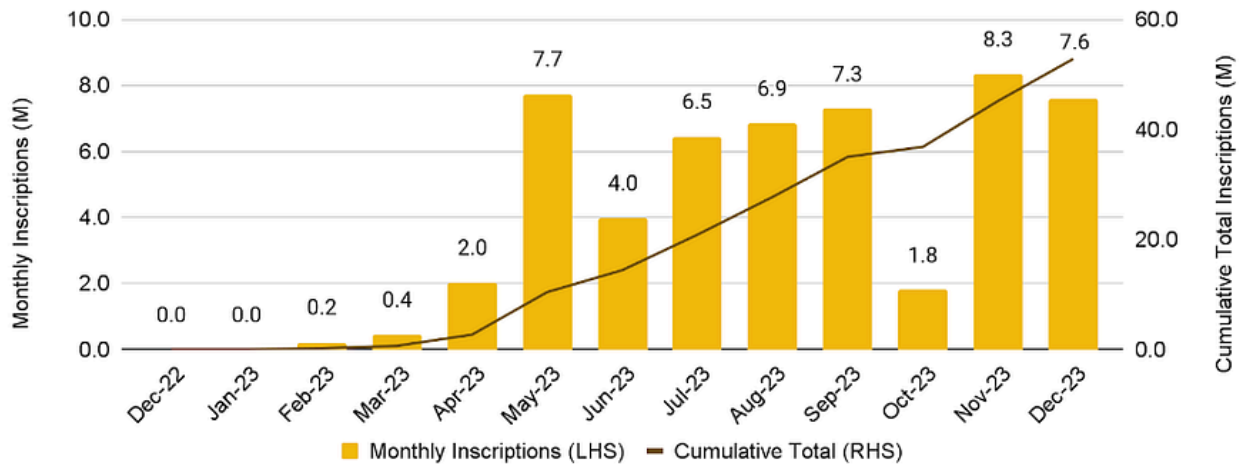
Total Bitcoin inscriptions exceeded the 50M mark after the surge in minting volumes in November and December
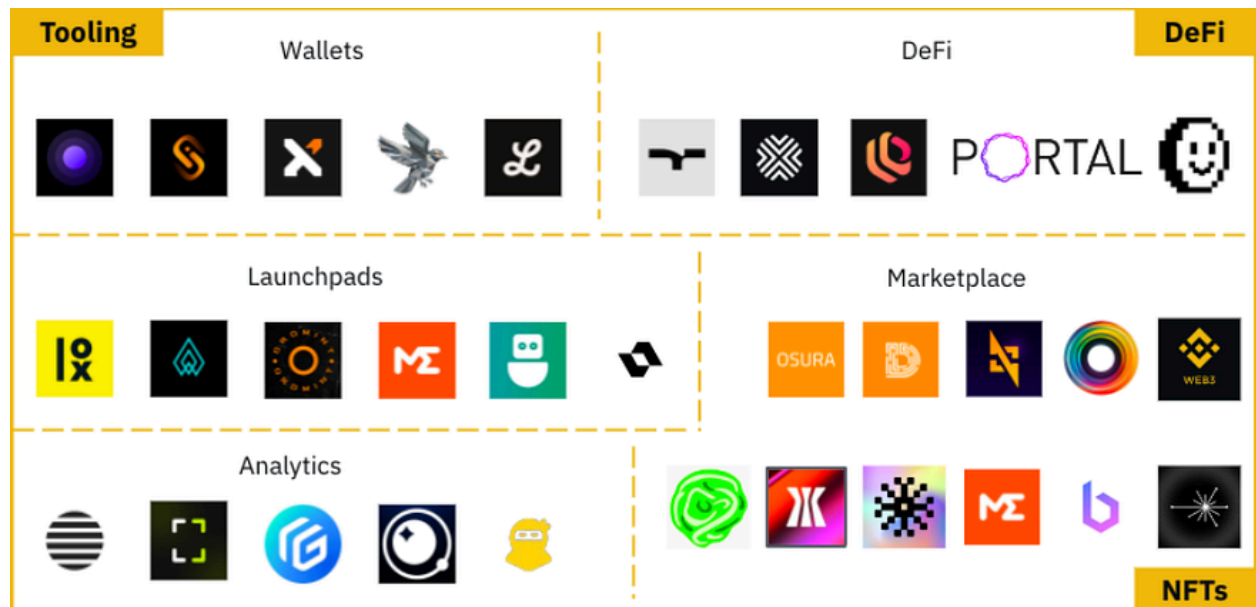
An overview of the Bitcoin ordinals ecosystem

Note that the mention of specific projects cited are used for the purposes of illustrating conceptual use cases.

bitSmiley is a Bitcoin DeFi infrastructure protocol, integrating three critical DeFi domains: stablecoin, lending, and derivatives. Initially, the protocol will launch bitUSD, a BTC-backed stablecoin. bitUSD is based on bitRC-20, an enhanced version of BRC-20, with greater functionality to support the operation of stablecoin.

Liquidium operates as a peer-to-peer Bitcoin lending protocol, enabling Bitcoin-based assets such as inscriptions and BRC-20s as collateral.

Portal is a Bitcoin-centric cross-chain liquidity solution, emphasizing decentralized exchange and wallet services. It enables BRC-20 swaps to other chains.

Inscriptions Outside of Bitcoin. Considering that EVM-compatible blockchains support smart contracts, reduced gas cost has been often cited as the key motivating factor for using inscriptions instead of smart contracts. This is possible as inscriptions on the EVM inscriptions inscribe data in transaction calldata. Calldata is read-only and cost effective, as opposed to interacting with smart contracts. Additionally, calldata is permanently accessible on-chain, allowing users to reconstruct the sequence of events if they so desire. However, while there is the advantage of lower gas cost, EVM inscriptions have several trade-offs relating to the use of off-chain indexers, and lack of composability. Specifically, as the information in calldata is stored in numerous random transactions,
users will need to rely on centralized off-chain indexers to interpret and read an inscription transaction. Additionally, as smart contracts and applications cannot directly access such data, it would also lead to fragmentation, and a lack of composability and interoperability.
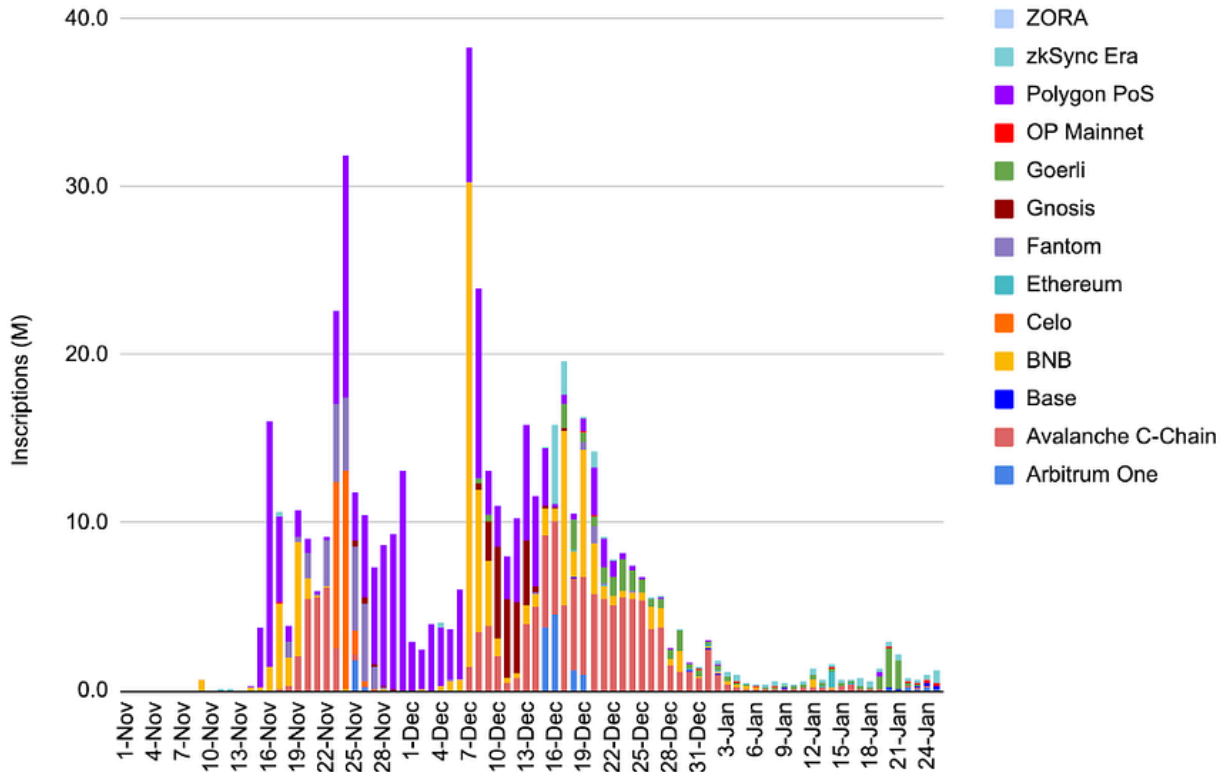
Number of inscriptions on EVM-compatible chains spiked in late-2023

List of ways to interact with inscriptions includes:
◆ Binance Web3 Wallet: The newly launched inscriptions marketplace hosted on the wallet allows users to interact with inscriptions across Bitcoin and other EVM networks.
◆ UniSat: Chrome extension for Bitcoin Ordinals and BRC-20 tokens. Users can store and transfer Ordinals NFTs. They can also store, mint and transfer BRC-20 tokens.
◆ Ordinals Wallet: Self-custodial wallet and marketplace that supports the Bitcoin, Doge, and Bells network.
◆ Magic Eden: Apart from supporting trading and minting of Bitcoin Ordinals and BRC-20 tokens, the platform also supports inscriptions on Solana.

3. Guide to Solana NFTs. Just like Ethereum has the ERC-721 and ERC-1155 standards for NFTs, Solana has its own unique NFT standards.

- **Legacy**: Solana's original NFT standard was developed by Metaplex, a creator studio platform, and built as an extension of Solana's SPL standard, which is roughly akin to Ethereum's fungible ERC-20 standard. Example project: Claynosaurz.

- **pNFTs**: Programmable NFTs, also developed by the Metaplex team, is a token standard that introduces enforced royalties, rules, and more for Solana NFTs. Example project: Solana Monkey Business.

- **cNFTs**: Compressed NFTs make use of Solana's state compression upgrade to squeeze down lots of data efficiently into onchain storage. This capability allows projects to save big on mint costs. For example, it currently costs 1 SOL to mint 2 million cNFTs. Example project: Tensorians.

- **xNFTs**: Executable NFTs aren't quite a token standard on their own but do allow projects to attach apps to their collections. For instance, the Backpack team used the xNFT system to offer a Mad Lads staking program within the Backpack wallet.

Solana Token Standards

Solana Token account structures get pretty tricky, you can nest more accounts on top to handle metadata and minting. Below I've covered the five main token types.

Token Standard						Use Case	Example
fungible	spl token mint account	metadata account				Metadata is optional, this is the default for spl tokens.	
NFT (legacy)	spl token mint account	metadata account	master edition account	collection mint		Master edition locks the supply of spl token account to 1.	
programmable (pNFT)	spl token mint account	metadata account	master edition account	collection mint	auth rules account	Auth rules let you use reveal/burn mechanics, enforce royalties, and more	
compressed (cNFT)	bubblegum program	spl account compression program	metadata call data	saved merkle proof	collection mint	Mint 100 million NFTs for just 50 sol. The proof can be re-generated fully from onchain data.	T
executable (xNFT)	xNFT program	existing collection mint account	CreateXnft account	frontend code (ipfs)		Attach an app to any NFT collection using the React framework. Use in the xBackpack app.	MAD LADS

Key: program | account | data

NFT Trends
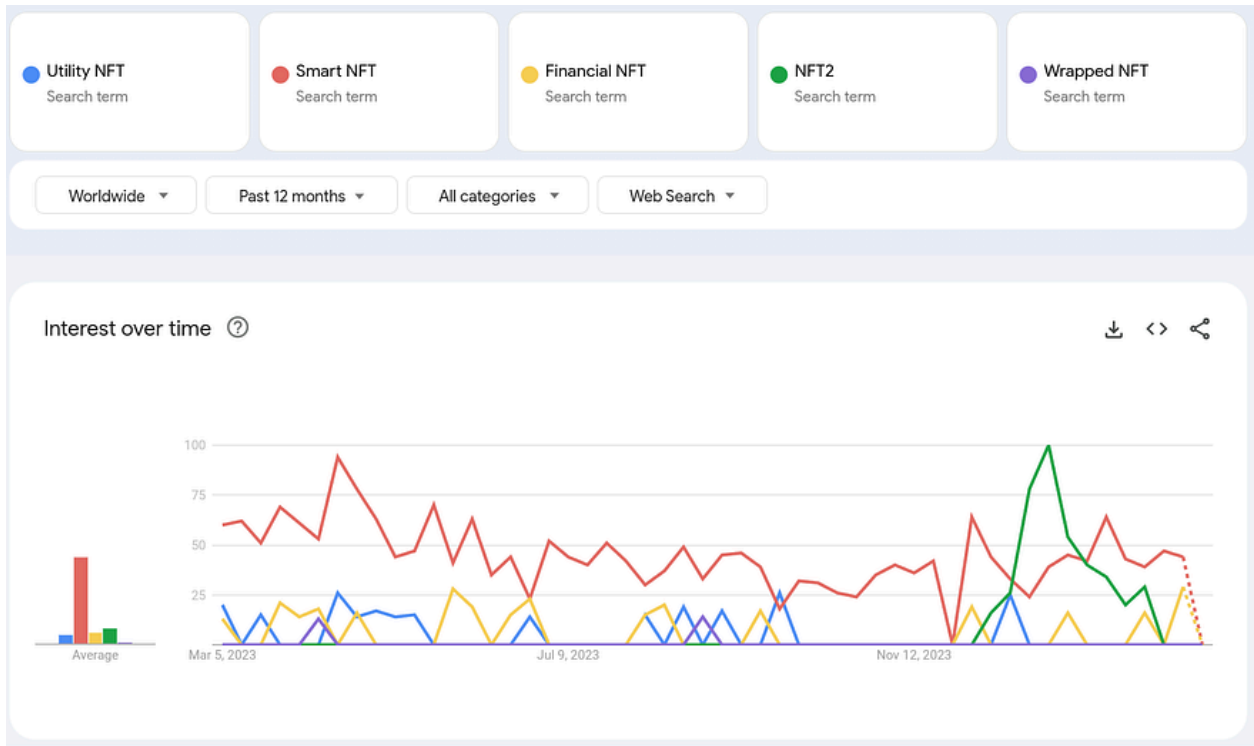
[Utility NFT, Smart NFT, Financial NFT, NFT2, Wrapped NFT Trends](#)
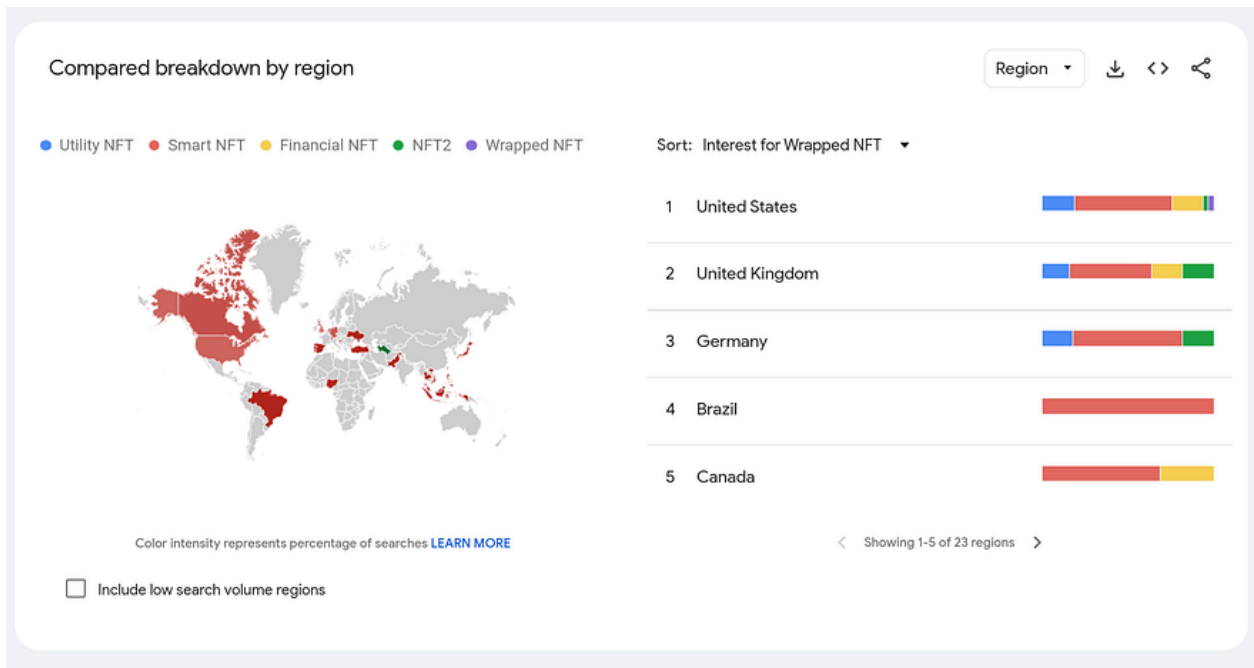
Utility NFT, Smart NFT, Financial NFT, NFT2, Wrapped NFT Trends by region
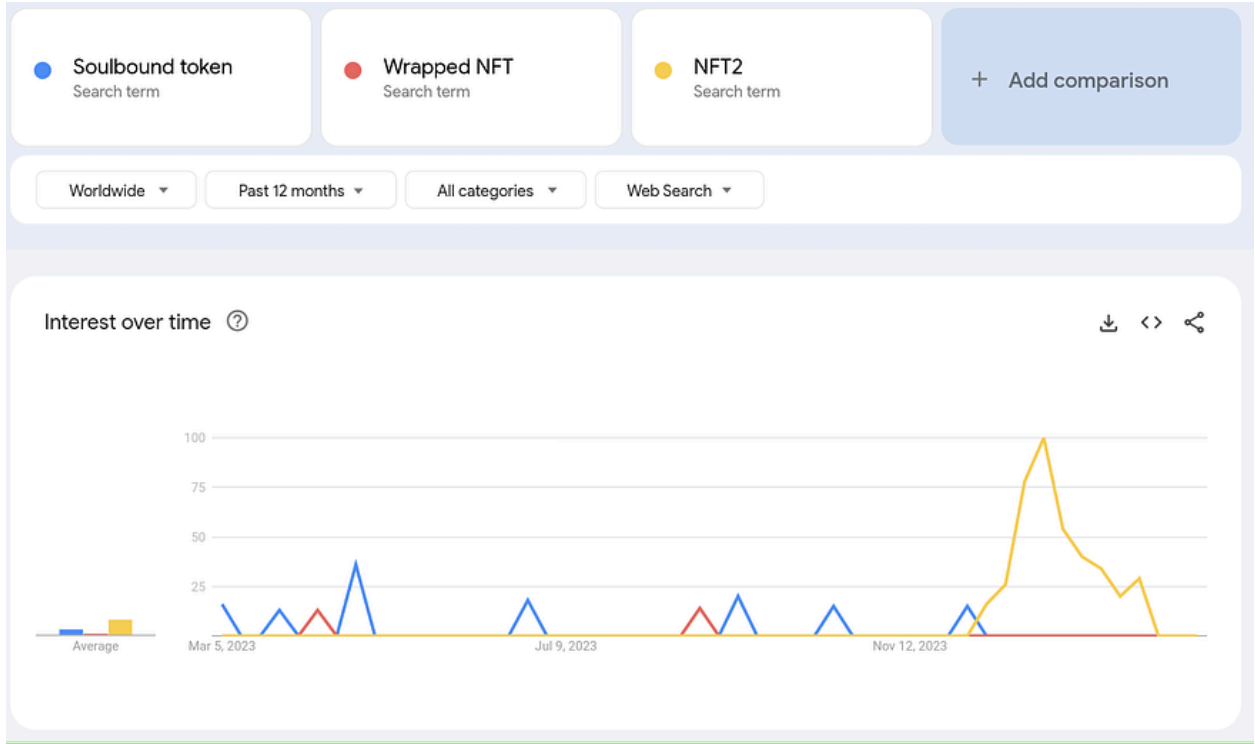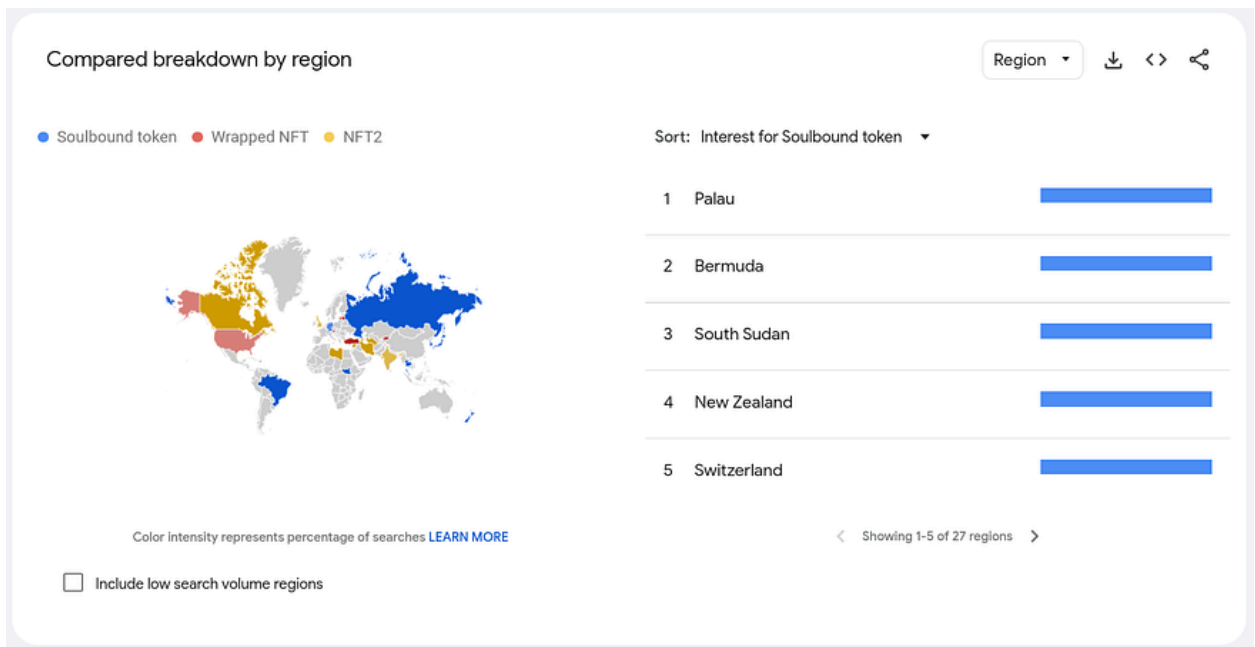
Soulbound token Trends by region

NFT Market

Disclaimer. *To date, analytical tools are still evolving and provide only approximate data that do not cover all chains, DAG systems and other types of distributed ledgers, as well as NFTs or less common types, such as utility or financial.*

[**Statistics of the entire NFT market**](#).

[**Global Markets (30D)**](#)

- NFT Marketcap is **$3,363,944,070 Down**

- NFT Sales Volume **$1,124,134,479 Up**

- Total Sales **1,659,093 Up**

NFTs Total Sales Volume, $bln
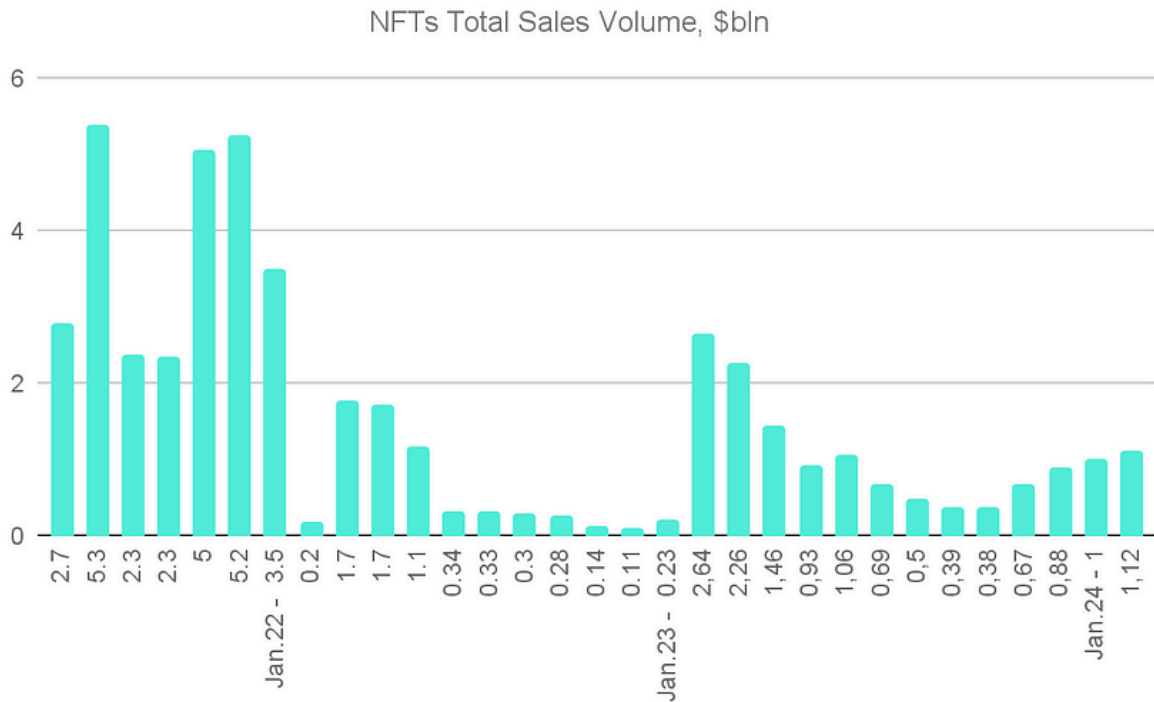
NFTs Total Sales, millions
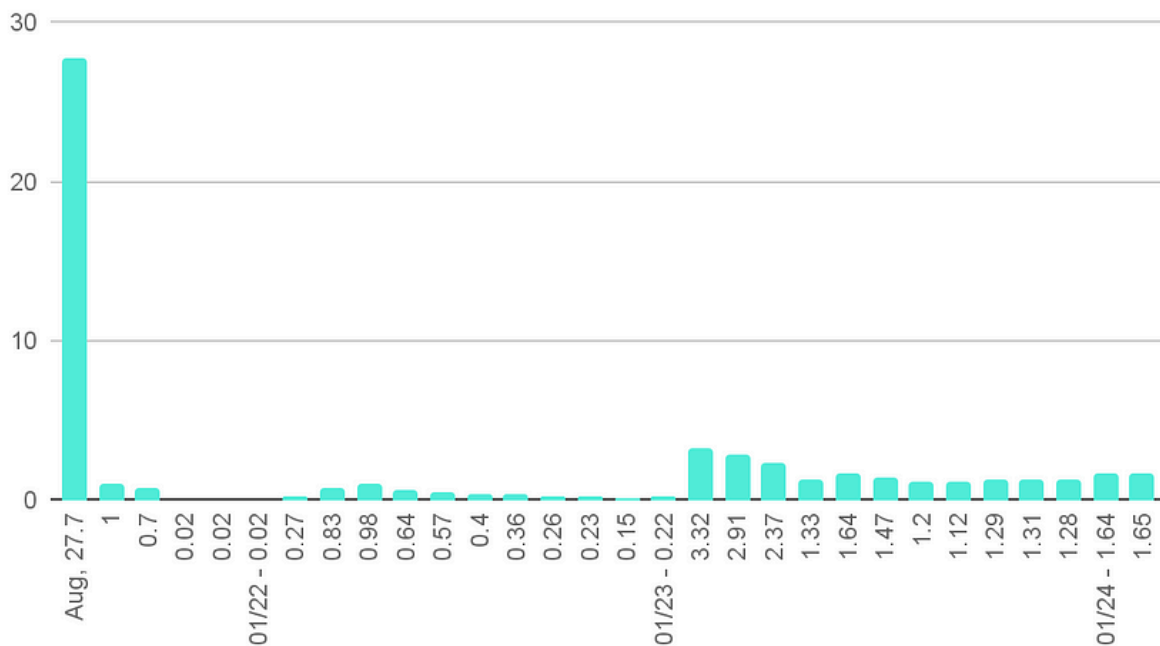
Look at the Ethereum NFT Ecosystem

Note the decrease in NFT collection liquidity in January.

Category Liquidity ⓘ

Market Cap | Volume | **Liquidity** | 30D ▼

Game, Collectibles, PFP, Art, Metaverse, DeFi, IP, Social, Music, Utility, Land, Domain Name, Sports, Photography
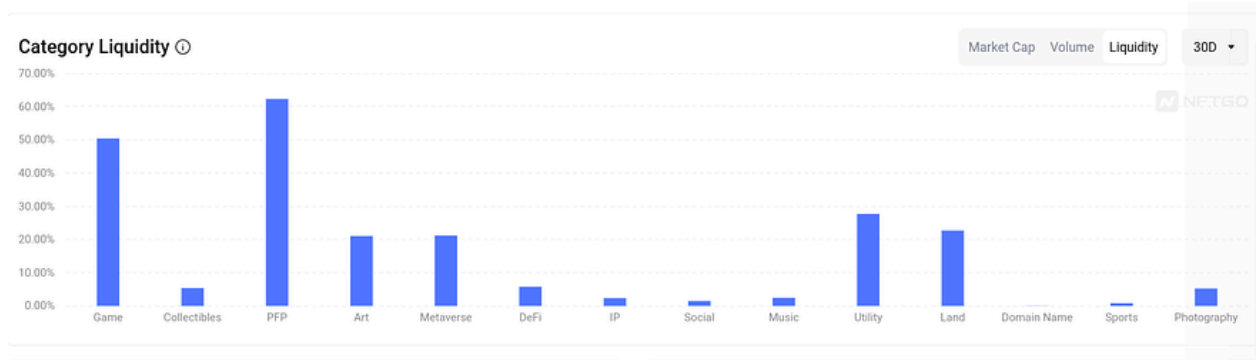
NFT volume on bitcoin seems to be decreasing

NFT Trade Volume by Chain

● Ethereum ● Bitcoin ● Solana ● BNB Chain ● Polygon ● 9 Others

$600m

$400m

$200m

$0

4. Dec   18. Dec   1. Jan   15. Jan   29. Jan   12. Feb   26. Feb

SOURCE: CRYPTOSLAM
UPDATED: FEB 29, 2024

ZOOM | ALL | YTD | 12M | **3M** |

Ethereum NFT Mints

10k

8k

6k

4k

2k

0

11. Dec   25. Dec   8. Jan   22. Jan   5. Feb   19. Feb

ZOOM   ALL   YTD   12M   3M   1M

Solana NFT Mints

SOURCE: HELLOMOON
UPDATED: FEB 29, 2024
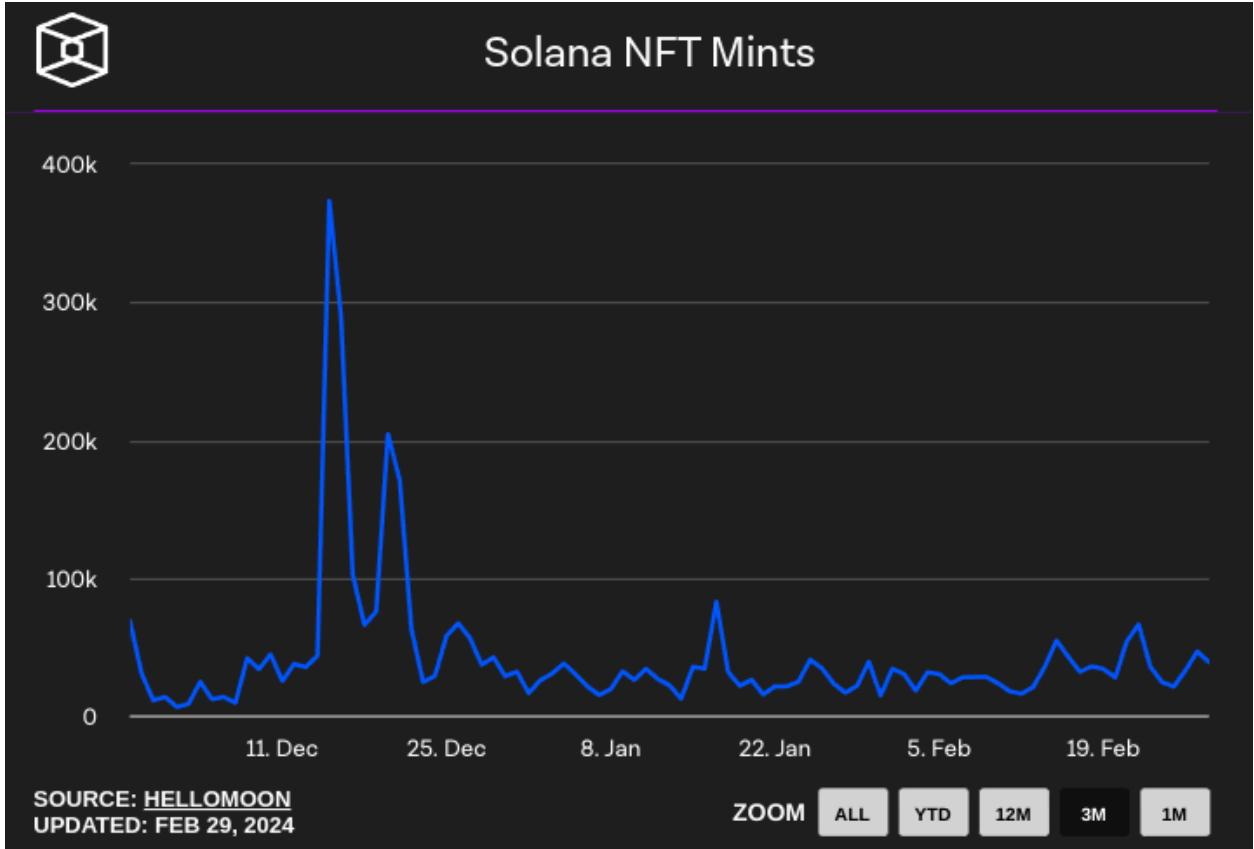
Looks like there are no bluechip collections in Ethereum

Ethereum Art and Collectibles NFT Trade Volume

SOURCE: THE BLOCK
UPDATED: FEB 29, 2024

Non-Ethereum Art and Collectibles NFT Trade Volume

SOURCE: CRYPTOSLAM
UPDATED: FEB 29, 2024
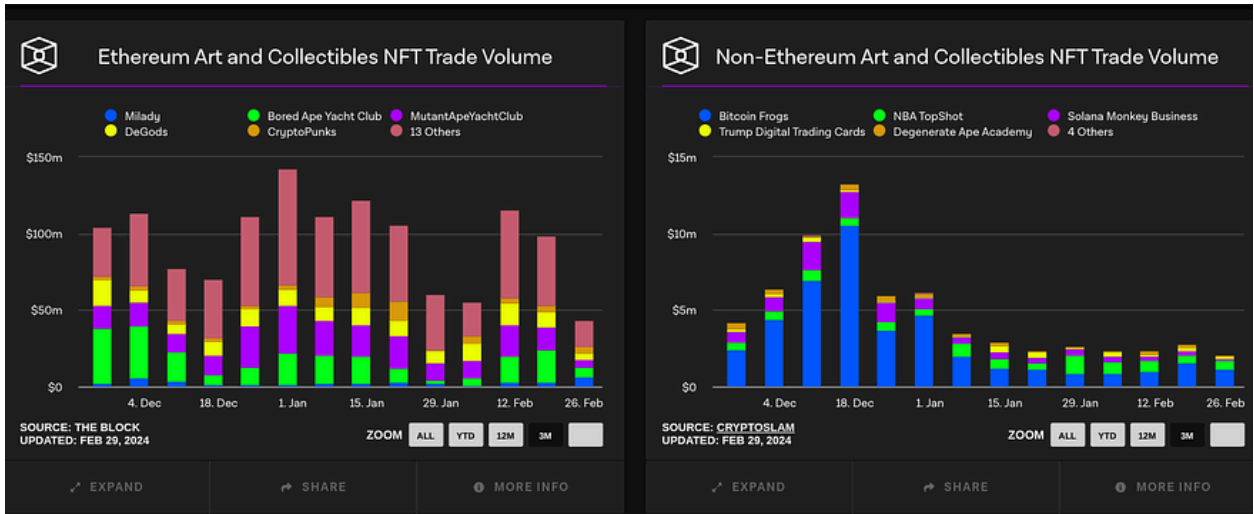
NBA TopShot still has no competitors on non-Ethereum blockchains.
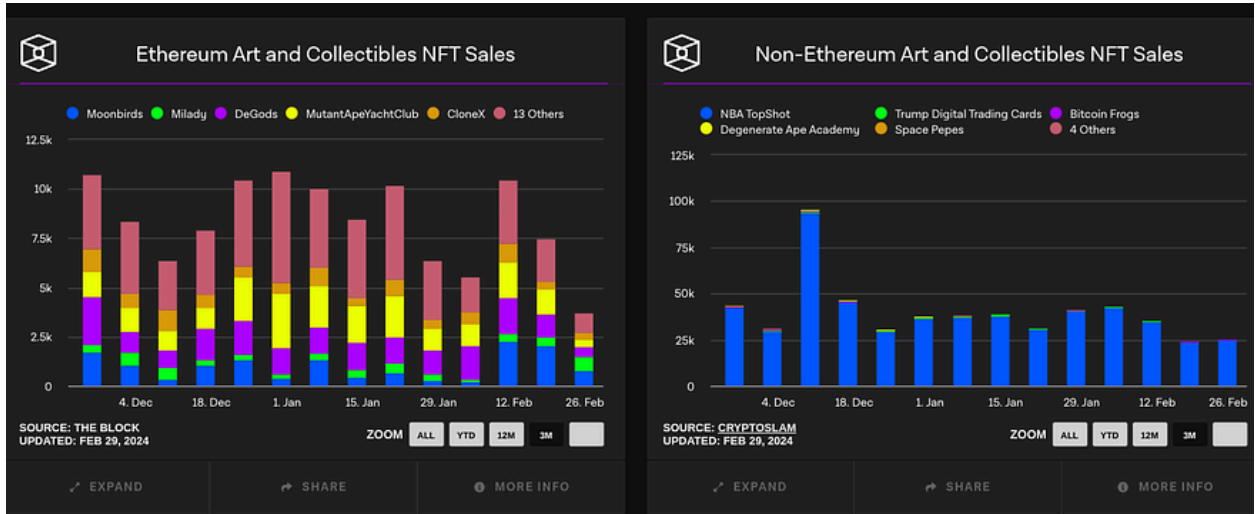
Total domination of Otherdeed and Gods Unchained in Gaming NFT Trade Volume.
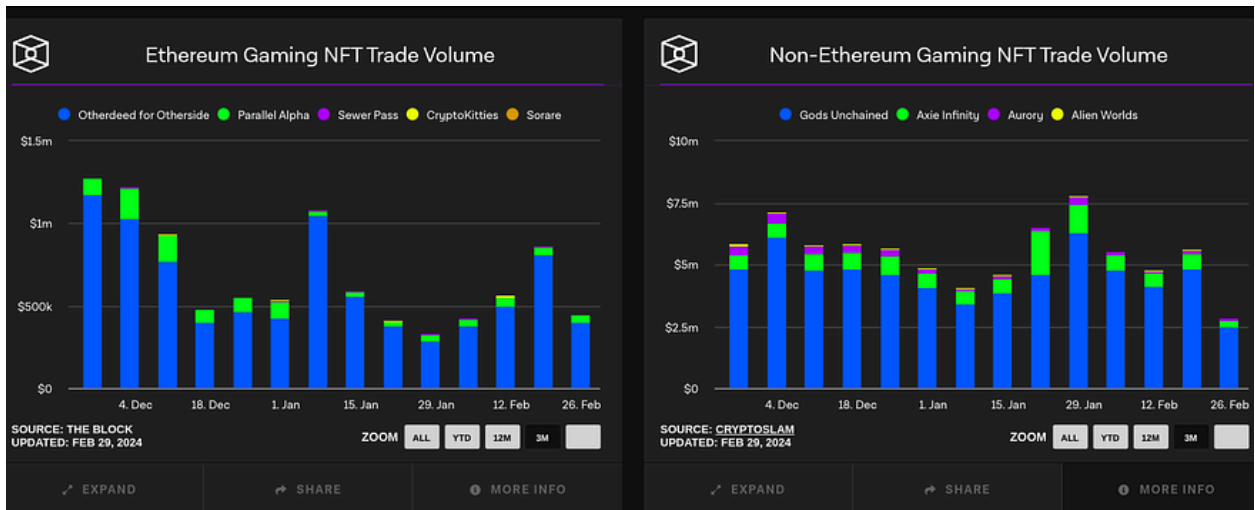
In sales, however, their lead is not as overwhelming.

Ethereum Gaming NFT Sales

Legend: Otherdeed for Otherside · Parallel Alpha · CryptoKitties · Sewer Pass · Sorare

Non-Ethereum Gaming NFT Sales

Legend: Gods Unchained · Axie Infinity · Alien Worlds · Aurory

Monthly NFT Marketplace Revenue

Legend: OpenSea · X2Y2 · LooksRare

Monthly NFT Marketplace Fees

Legend: OpenSea · Blur · X2Y2 · LooksRare
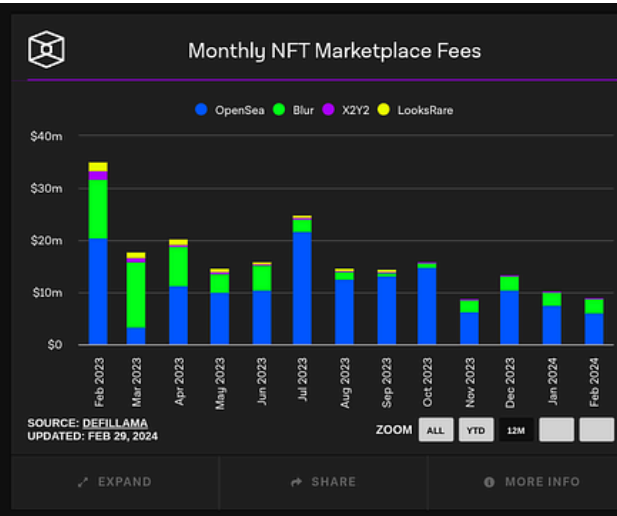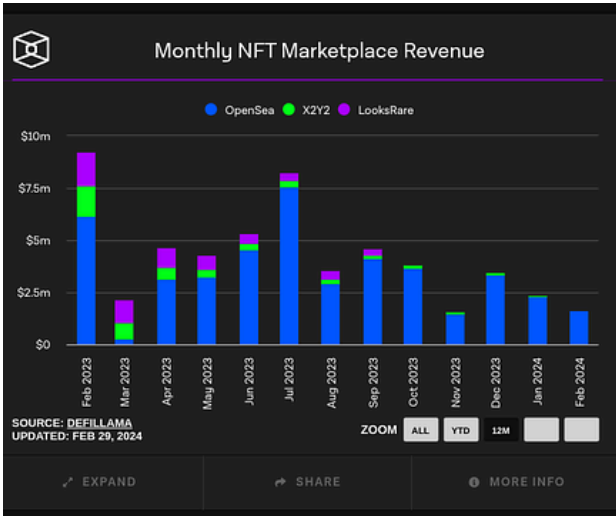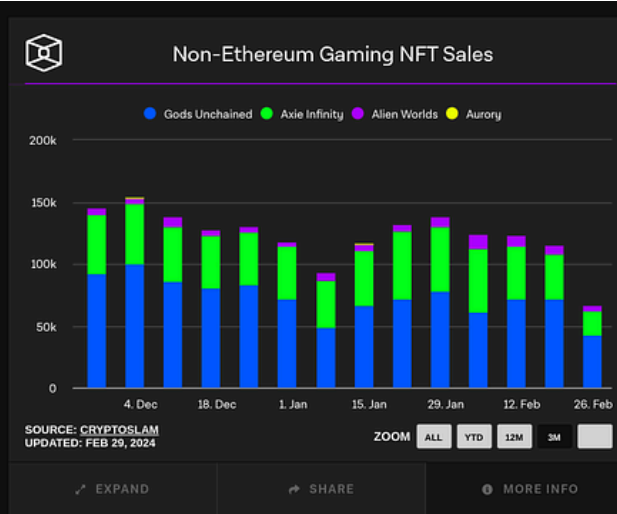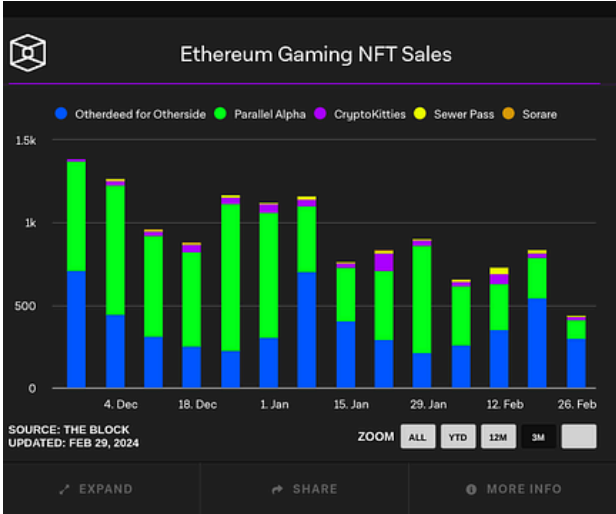
Magic Eden increases its advantage in February and moves into the lead among the Ordinals marketplace Volumes.

Ordinals Marketplace Volumes

● Magic Eden ● OKX ● Unisat ● Ordinals Wallet ● Gamma ● 4 Others
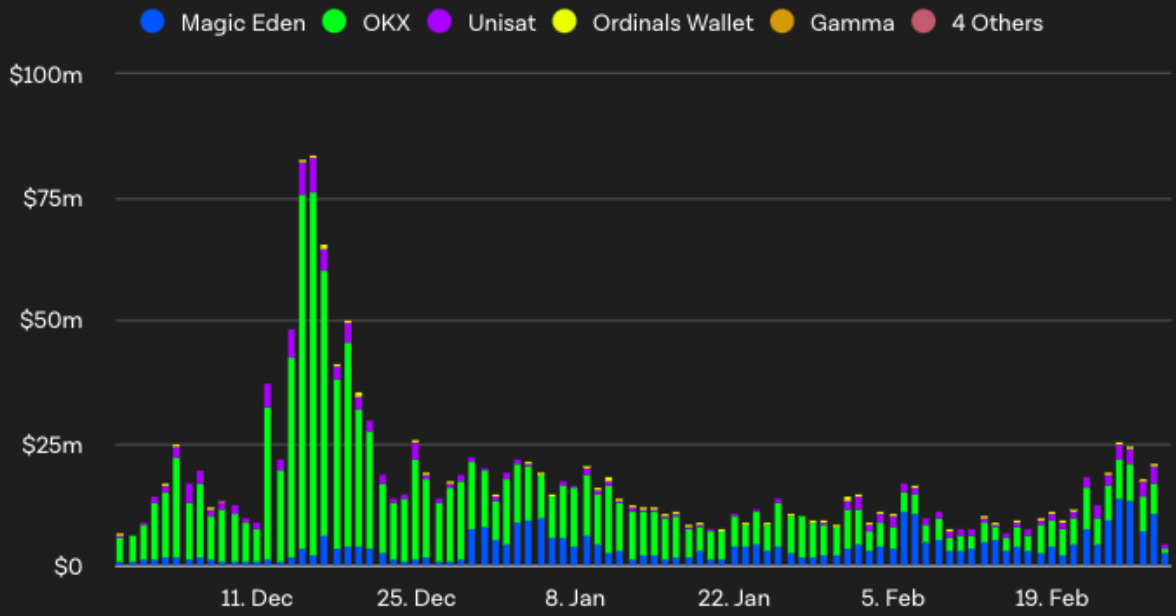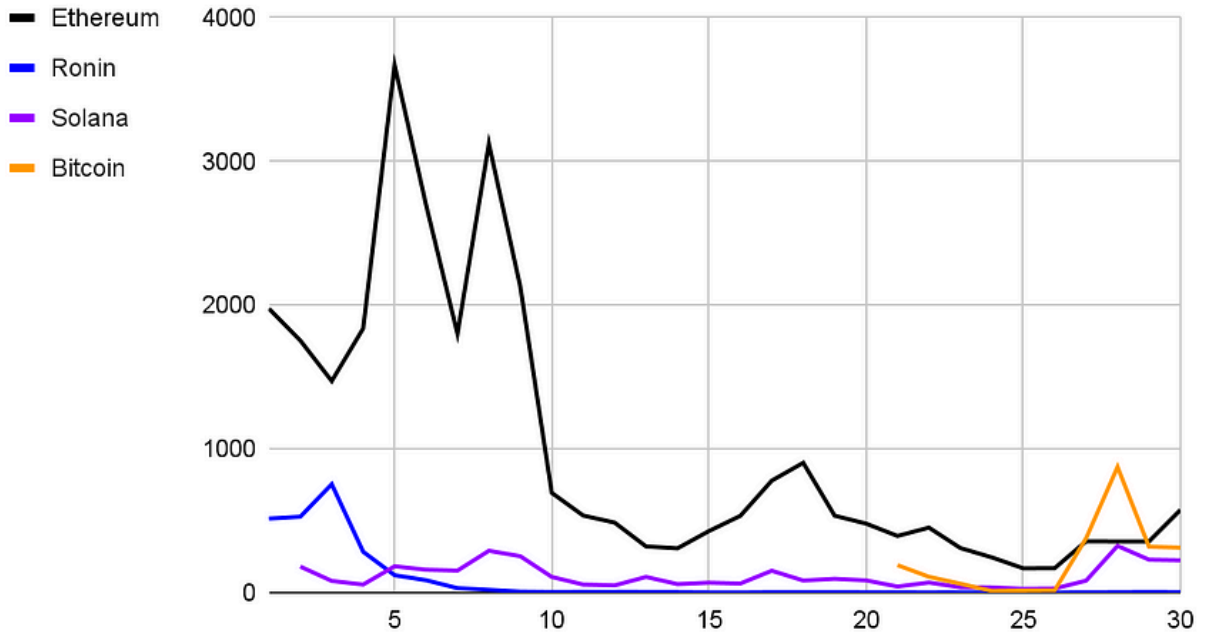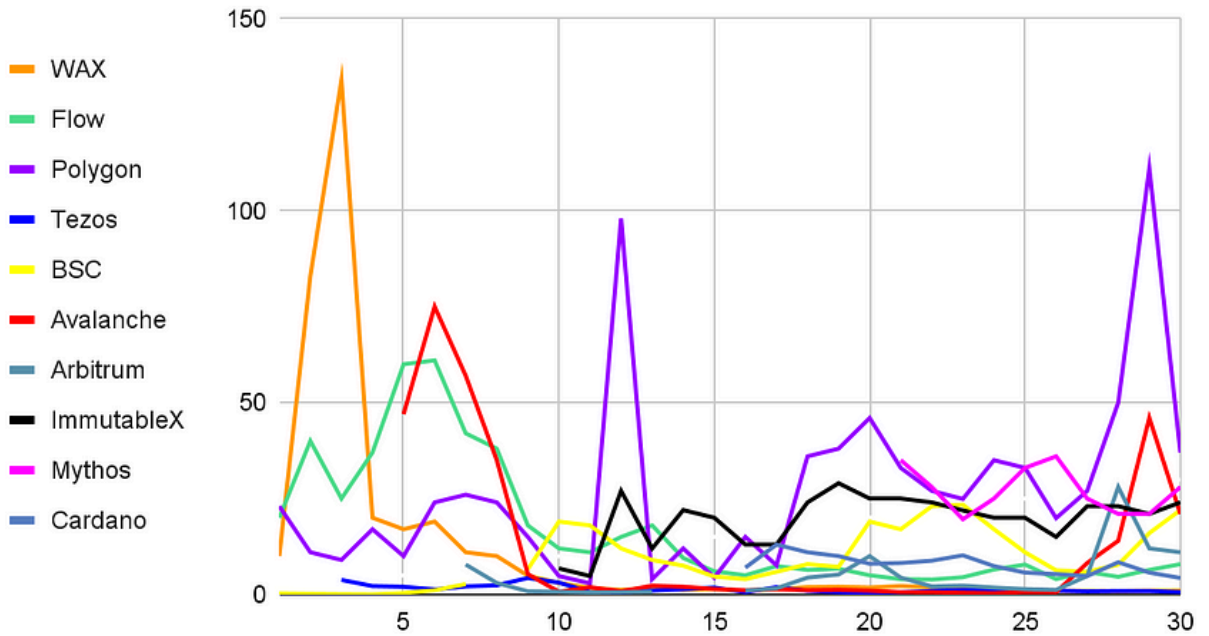
Blockchains by NFT Sales Volume. Ethereum is leading. Stargaze is growing stronger than the market.

#	Blockchain	Sales (USD)	Wash (USD) *	Total (USD)	Buyers
1	Ethereum	$575,210,933 ↗ 38.16%	$291,436,824 ↘ 29.28%	$866,647,757 ↗ 4.61%	137,741 ↗ 237.69%
2	Bitcoin	$313,536,943 ↘ 17.94%	$1,102,269 ↗ 430.44%	$314,639,212 ↘ 17.70%	78,204 — 0.00%
3	Solana	$225,057,245 ↘ 3.81%	$48,058,131 ↗ 106.19%	$273,115,377 ↗ 6.14%	263,330 — 0.00%
4	Polygon	$37,255,559 ↘ 72.32%	$16,015,682 ↘ 63.45%	$53,271,241 ↘ 70.14%	216,699 — 0.00%
5	Mythos Ch...	$28,675,566 ↗ 36.86%	$177,697 ↘ 18.34%	$28,853,264 ↗ 36.30%	56,642 — 0.00%
6	Immutable	$24,377,430 ↗ 14.07%	$0 ↘ 55.00%	$24,377,430 ↗ 14.07%	16,021 ↗ 2.80%
7	BNB Chain	$22,794,117 ↘ 22.35%	$96,519 ↘ 92.73%	$22,890,636 ↘ 25.40%	94,892 — 0.00%
8	Avalanche	$21,252,921 ↘ 54.18%	$11,374,055 ↘ 46.22%	$32,626,976 ↘ 51.69%	36,530 — 0.00%
9	Arbitrum	$11,863,251 ↘ 41.26%	$31,102 ↘ 78.20%	$11,894,353 ↘ 41.52%	73,135 — 0.00%
10	Flow	$7,936,867 ↗ 14.34%	—	$7,936,867 ↗ 14.34%	13,726 — 0.00%
11	Stargaze	$5,965,376 ↗ 138.52%	$1,167 ↗ 935.28%	$5,966,543 ↗ 138.55%	5,771 — 0.00%
12	Cardano	$4,315,828 ↘ 36.94%	$167,333 ↗ 158.35%	$4,483,160 ↘ 35.11%	14,617 — 0.00%
13	Ronin	$2,927,626 ↘ 20.89%	—	$2,927,626 ↘ 20.89%	23,030 ↘ 12.29%
14	WAX	$994,109 ↗ 61.59%	—	$994,109 ↗ 61.59%	11,548 ↗ 12.06%
15	Tezos	$627,961 ↘ 42.74%	$46,427 ↗ 5.03%	$674,389 ↘ 40.89%	4,780 — 0.00%

Blockchains by NFT Sales Volume (30 days), mln $/month from 09/21

Legend:
- Ethereum (black)
- Ronin (blue)
- Solana (purple)
- Bitcoin (orange)

Blockchains by NFT Sales Volume (30 days), mln $/month from 09/21

Legend:
- WAX (orange)
- Flow (green)
- Polygon (purple)
- Tezos (blue)
- BSC (yellow)
- Avalanche (red)
- Arbitrum (teal)
- ImmutableX (black)
- Mythos (magenta)
- Cardano (grey-blue)

Let's look at the marketplaces. Blur is the undisputed leader in trading volume, Opensea is the leader in the number of traders.

#	Market	Avg. price	Traders	% Traders	Sales	Volume	% Volume
1	OpenSea ⬧ ⬡ ⬢ ⬟ ≡ ⬣ OP +2	$186.08 ⌃ +48.07%	209.38k	-6.98%	619.36k ⌄ -17.51%	$113.26M	+8.73%
2	Element Market ⬧ ⬡ ⬢ ⬟ ⬥ ↔	$124.14 ⌃ +108.6%	161.27k	-10.66%	345.87k ⌄ -13.72%	$21.33M	+32.78%
3	Magic Eden ⬧ Ethereum · ≡ Solana · ₿ Bitcoin	$251.81 ⌃ +40.48%	140.69k	+7.86%	506.48k ⌃ +10.55%	$138.29M	+30.78%
4	Blur ⬧ Ethereum	$2.58k ⌄ -20.15%	59.68k	+12.44%	237.17k ⌃ +2.82%	$622.06M	-15.95%
5	OKX NFT Marketplace ⬧ ⬡ ⬢ ⬟ ⬥ ≡ ⬣ +6	$1.46k ⌄ -10%	56.23k	-10.61%	78.23k ⌄ -20.27%	$112.13M	-43.58%
6	Sorare Starkware	$22.83 ⌃ +4.39%	44.9k	+6.3%	300.06k ⌃ +7.96%	$6.91M	+12.71%
7	Axie Marketplace ⬧ Ethereum · Ⓡ Ronin	$13.88 ⌄ -17.05%	32.78k	-9.49%	226.04k ⌄ -4.99%	$3.07M	-28.06%
8	Immutable X Marketplace ◉ Immutable X	$62.93 ⌃ +12.8%	21.26k	-5.84%	347.02k ⌄ -17.72%	$22.39M	-4.21%
9	AtomicHub ⬧ EOS · ∿ WAX	$5.05 ⌃ +7.39%	18.56k	+11.98%	191.2k ⌃ +13.71%	$677.14k	+7.45%
10	NBA Top Shot ⬧ Flow	$18.96 ⌃ +18.68%	9.12k	+5.85%	66.65k ⌄ -10.37%	$1.21M	+8.38%

***

Envelop is a collateral-backed and price discovery cross-chain protocol to provide NFT with inner value and liquidity.

🌍 **Website** | 🐦 **Twitter** | ⬚ **Telegram**-chat | 🐱 **Github** | 📢 **TG channel** |

🌍 **NFT2.0 aggregator**

📩 Wrapper dApp | 🌾 Farming dApp | 🗂 SAFT wNFT | ⛏ Mint