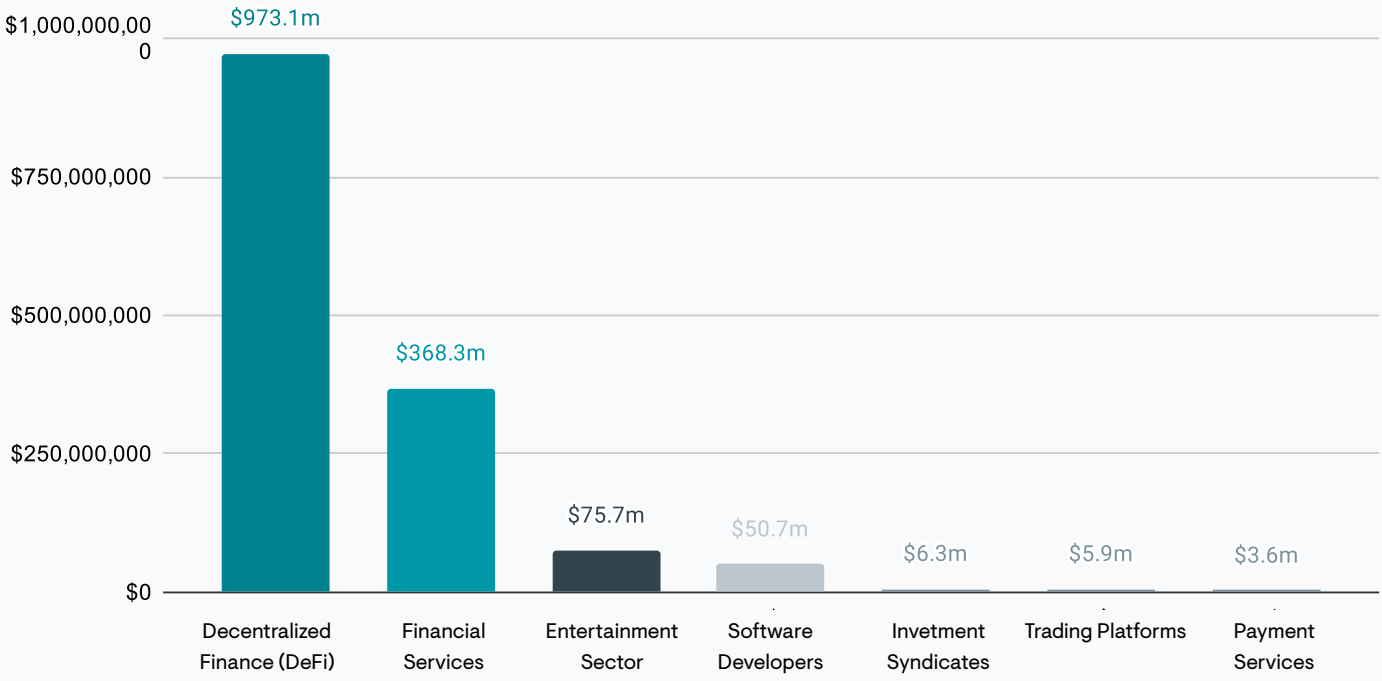
ELLIPTIC NFT REPORT 2022 EDITION

NFTs and Financial Crime

Money Laundering, Market Manipulation, Scams & Sanctions Risks in Non-Fungible Tokens

ELLIPTIC

ETH investments into NFTs originating from different sectors (Q4 2017-Q2 2022)



Executive Summary

Our data-driven analysis into the prevalence of money laundering, terrorist financing, scams and sanctioned entities finds that these financial crimes represent a small portion of overall non-fungible token (NFT)-related trading activity.

Our key findings include:

- Over $8 million of illicit funds has been laundered through NFT-based platforms since 2017 – representing 0.02% of trading activity originating from known sources.
- However, a further $328.6 million (0.81%) originates from obfuscation services such as crypto mixers. A proportion of this may reflect proceeds from illicit activity.
- Over $100 million worth of NFTs were publicly reported as stolen through scams between July 2021 and July 2022, netting perpetrators $300,000 per scam on average. July 2022 saw over 4,600 NFTs stolen – the highest month on record – indicating that scams have not abated despite the crypto bear market.
- May 2022 saw the highest confirmed value of NFTs stolen through scams, at just under $24 million. However, actual numbers are likely to be higher, as thefts are not always publicly reported.
- Social media compromises – particularly of NFT project Discord servers – have surged in 2022, accounting for 23% of all NFTs (close to 5,000, worth around $20 million) stolen this year. The growing availability of tailored malware that can bypass multi-factor authentication is likely to be partially responsible.
- There is a growing threat to NFT-based services from sanctioned entities and state-sponsored exploits. This has been emphasized by the $540 million heist from Axie Infinity's Ronin Bridge by North Korea's Lazarus Group and the possession of NFTs by the US-sanctioned Chatex cryptoasset exchange. Digital assets worth more than $160,000 originating from sanctioned entities have been used to purchase NFTs.
- Tornado Cash, a US-sanctioned mixer, was the source of $137.6 million of cryptoassets processed by NFT marketplaces and the laundering tool of choice for 52% of NFT scam proceeds before being sanctioned by OFAC in August 2022. Its prolific use by threat actors engaging with NFTs further emphasizes the need for effective sanctions screening by NFT platforms.

Although crime represents a small proportion of overall NFT trading, it has a disproportionate impact on the industry's reputation and undermines the quality of experience of legitimate users. NFT marketplaces must be proactive in risk management to mitigate these repetitional risks and issues. Sanctions screening solutions are also becoming increasingly essential for NFT-based platforms.

This report provides and explains the trends summarized above to understand the nature, origin and scale of these select financial crime risks. Guidance is also provided on regulatory matters concerning NFTs and the utilization of blockchain analytics to detect, investigate and prevent exposure to illicit activity. The report is intended for all stakeholders engaging with NFTs. It provides red flag indicators and recommendations to improve the safety, security and enjoyment of partaking in this rapidly growing industry.

Introduction

By many standards, non-fungible tokens (NFTs) were the buzzword of 2021 – even word of the year, according to the Collins English Dictionary.[1] Google searches for "NFTs" reached new highs in early 2022 – indicating that the phenomenon has no signs of slowing. New investments in metaverse ventures, celebrity involvement and diversifying use cases have continued to drive the expansion of NFTs in both value and popularity. Proponents argue they are an innovative new solution to many problems particularly in artistic industries. Meanwhile, naysayers criticize them as environmentally unfriendly JPEGs that can simply be screenshotted – deriding them of any actual value.

So what are NFTs, where does their value come from and what can they achieve? This introduction provides an explainer into the phenomenon and a structural overview of this report.

What are NFTs?

NFT stands for non-fungible token – a blockchain-based asset that can have specific properties and value. They differ from fungible cryptoassets such as Bitcoin, Ether or Tether, which are interchangeable with any other unit of the same asset (e.g. one Bitcoin has the same value as any other Bitcoin).

Fungible assets can be analogized as a pile of 25 cent coins, which will have the same value regardless of how rusty or shiny they are. NFTs, however, are more akin to Pokémon cards. These have a different retail value depending on the unique characteristics of the Pokémon character. While an ungraded Weedle #69 (Pokémon Base Set) may be worth a few dollars at most, a 1999 First Edition Shadowless Holographic Charizard could fetch well over $100,000.

A Brief History of NFTs

Despite being popularized in 2021 with the growth of NFT collections such as CryptoPunks and Bored Ape Yacht Club[2] – the origins of non-fungible tokens can be traced back to 2012/13. This is due to some early thinking in the Bitcoin community with the idea of "coloring" Bitcoins – or parts thereof – to enable them to represent different values or metadata. A whitepaper with this idea was created by Ethereum Co-founder Vitalik Buterin and an early implementation of this was the Counterparty marketplace, which sold early-NFT versions of trading cards and memes linked to the Bitcoin blockchain.

However, where the concept of non-fungible cryptoassets really started to grow was in 2017 with the CryptoPunks collection – 10,000 24-bit artworks created by a modification of the ERC20 standard. At the end of 2017, the Ethereum blockchain was brought to a standstill with the introduction of the ERC721 standard, with the CryptoKitties project – digital collectible and breedable cats – being the first to get mainstream attention and adoption. By December 2017, over 25% of transactions on the Ethereum blockchain were related to the buying and selling of these digital cats.[3]

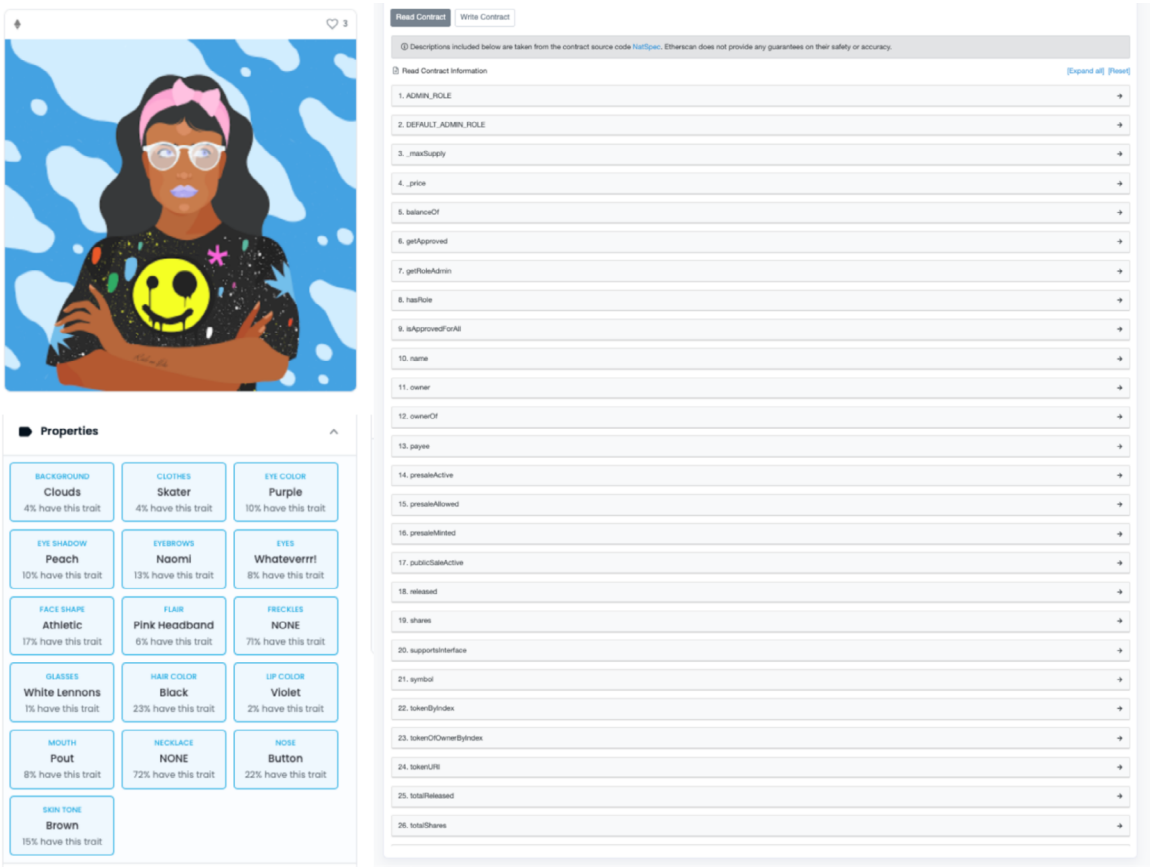
How NFTs work

On a technical level, these cryptoassets are represented on a blockchain by a smart contract that follows a predefined specification. These smart contracts are self-executing code which allows for the creation ("minting"), destruction ("burning") and transfer of the specific cryptoassets, as well as the ability to create metadata about the asset. For the Ethereum blockchain – and other compatible blockchains – non-fungible tokens use the ERC721 standard or a modified version called ERC1155.

ERC stands for Ethereum Request for Comment. They are official specifications and implementation details for a piece of functionality on the Ethereum blockchain. Each ERC starts life as an Ethereum Improvement Proposal (EIP) which is discussed and peer reviewed before it may make its way into an official ERC. The number represents the unique identification number for the proposal.

The ERC721 contract was proposed in January 2018 to provide functionality above and beyond the existing ERC20 standard for fungible cryptoassets – notably the introduction of non-fungible tokens. To create a new NFT, creators deploy a new ERC721 contract and specify collection-level information as well as creating the ability for individual NFTs within the collection to have unique properties through metadata.

One alternative to the ERC721 standard that is growing in popularity is the ERC1155 standard, which allows for efficiencies such as batch transaction processing and the ability to create both fungible and non-fungible tokens from one ERC1155 contract. Both are common across Ethereum and Ethereum-compatible blockchains such as Binance Smart Chain, Polygon and Avalanche. However, there are also NFT standards across other blockchains such as FA2 on Tezos, Tron's TRC-721, Flow's representation as resource objects, Cardano's use of PolicyIDs and metadata for native NFTs, and Metaplex's Solana standard.



An ERC-721 NFT (top left), its unique properties (bottom left) and the ERC-721 contract that contains the metadata allowing for the creation of these properties (right).

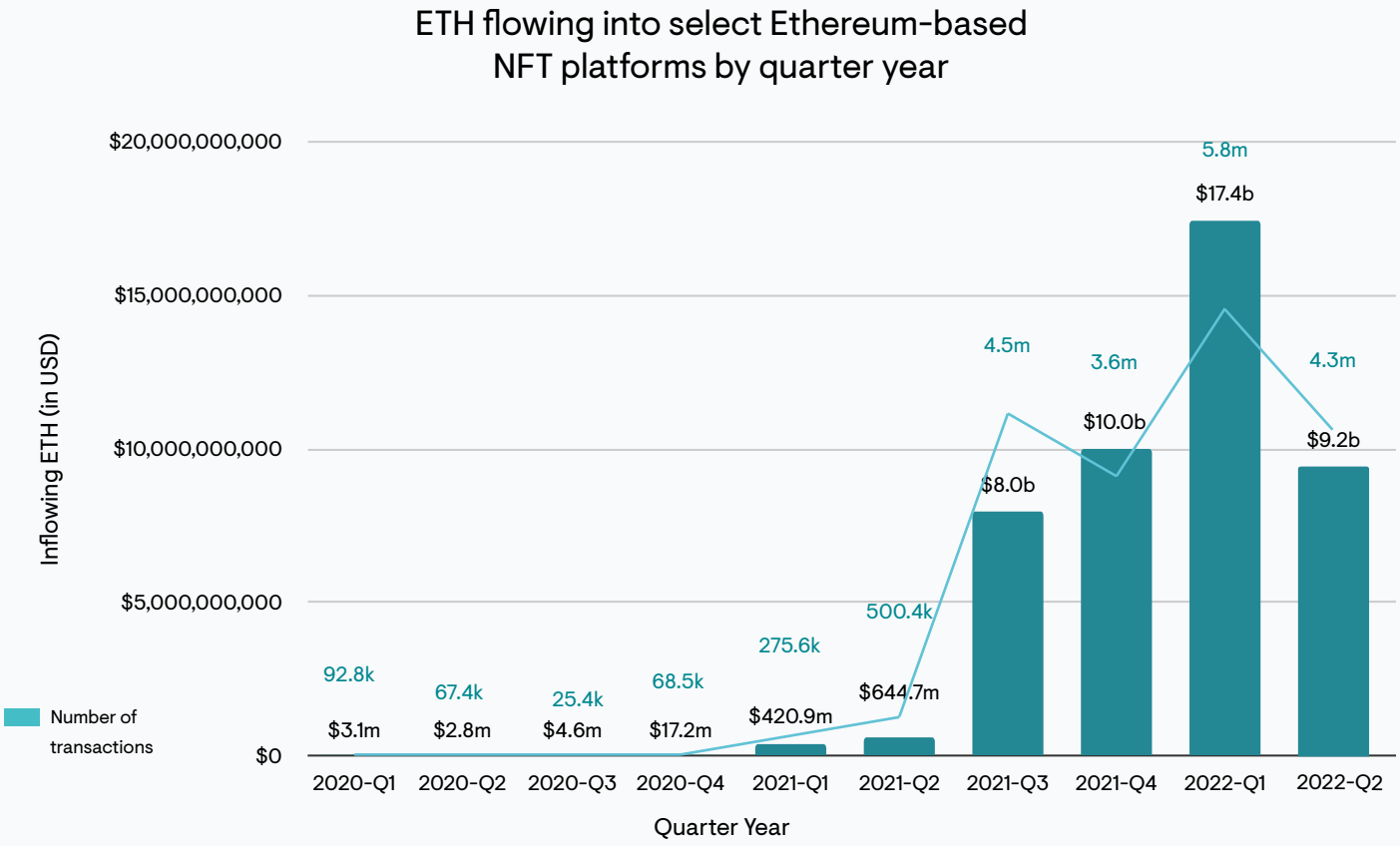
Non-Fungible Volumes Across Blockchains

NFT trading increased notably from summer 2021, with daily average sales of over $50 million and over $17.7 billion in NFTs sold throughout that year – an increase of over 200% from 2020.[4] NFT trading remains primarily on the Ethereum blockchain – despite high fees and congestion. A downturn in the crypto markets since early 2022 has more recently also affected the NFT industry — with sales decreasing in Q2 2022 but still standing at a notable $9 billion. Meanwhile, alternative blockchains such as Solana and Polygon remain behind, despite aggressive marketing campaigns and creator funds to entice people from Ethereum.

The value of an NFT is determined by a number of factors – including but not limited to the popularity of its collection across social media, the involvement of influencers or celebrities, speculative trading, the rarity of individual NFTs based on their unique properties and their utility in crypto-based projects.[5] The argument that NFT JPEGs are worthless due to the ability to easily screenshot and replicate them is rejected by the NFT community, which assigns value and social prestige to holding the original cryptoasset representing that JPEG on chain.

NFT Use Cases

A popular use for non-fungible tokens is developing communities or online prestige through profile picture projects (PFPs). However, there are use cases beyond this social media trend. Some of the popular trends include digital artwork, metaverse functionality, exclusive membership/ticketing and gaming.



(Elliptic's internal analysis)

Digital Artwork

Two challenges that artists who create digital artwork face are proving authenticity of their pieces, and preventing copy-cat creators using their imagery and passing it off as their own. However, by linking their digital artwork to a non-fungible token on an immutable blockchain, the artist can cryptographically prove that the piece comes from their official collection (a contract they have created).

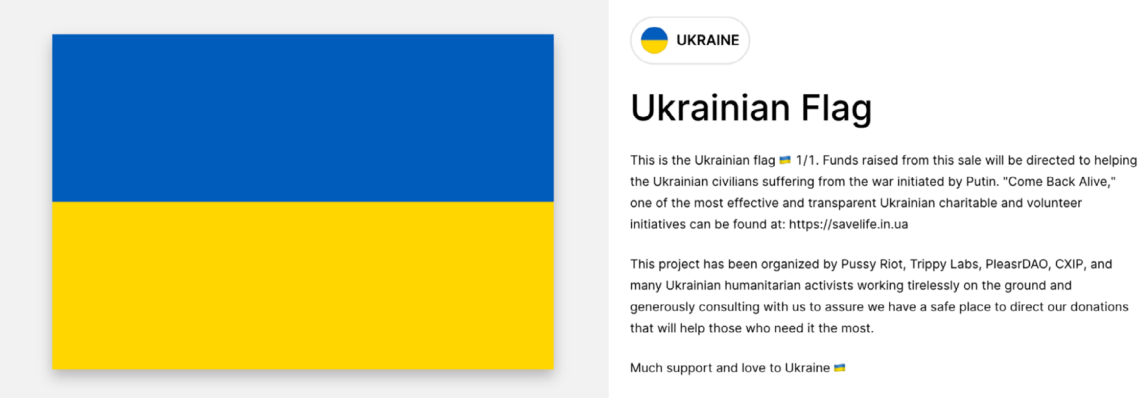
There is a booming digital art space involving non-fungible tokens with over three million pieces traded and a total value of over $2 billion.[6] This market saw a notable increase in 2021, and this is thought to be partly accounted for due to the inability for art collectors to physically purchase pieces during the COVID-19 pandemic.

The record for the most expensive NFT sold was broken most recently on March 11th 2021, when an artwork named Everydays: The First 5000 Days by artist Mike Winkelmann – aka Beeple – sold for $69.3 million. In early December 2021, digital artist Pak sold 312,686 units of his collection The Merge to just under 29,000 collectors for $91.8 million.

Many NFT marketplaces have introduced verified collection functionality – similar to the blue checkmark on Twitter – to prove collection authenticity. Digital art impersonation is, however, becoming an increasingly prevalent issue for NFTs. The largest NFT marketplace OpenSea said in January 2022 that over 80% of NFTs minted using its tool were "plagiarized works, fake collections and spam".[7]

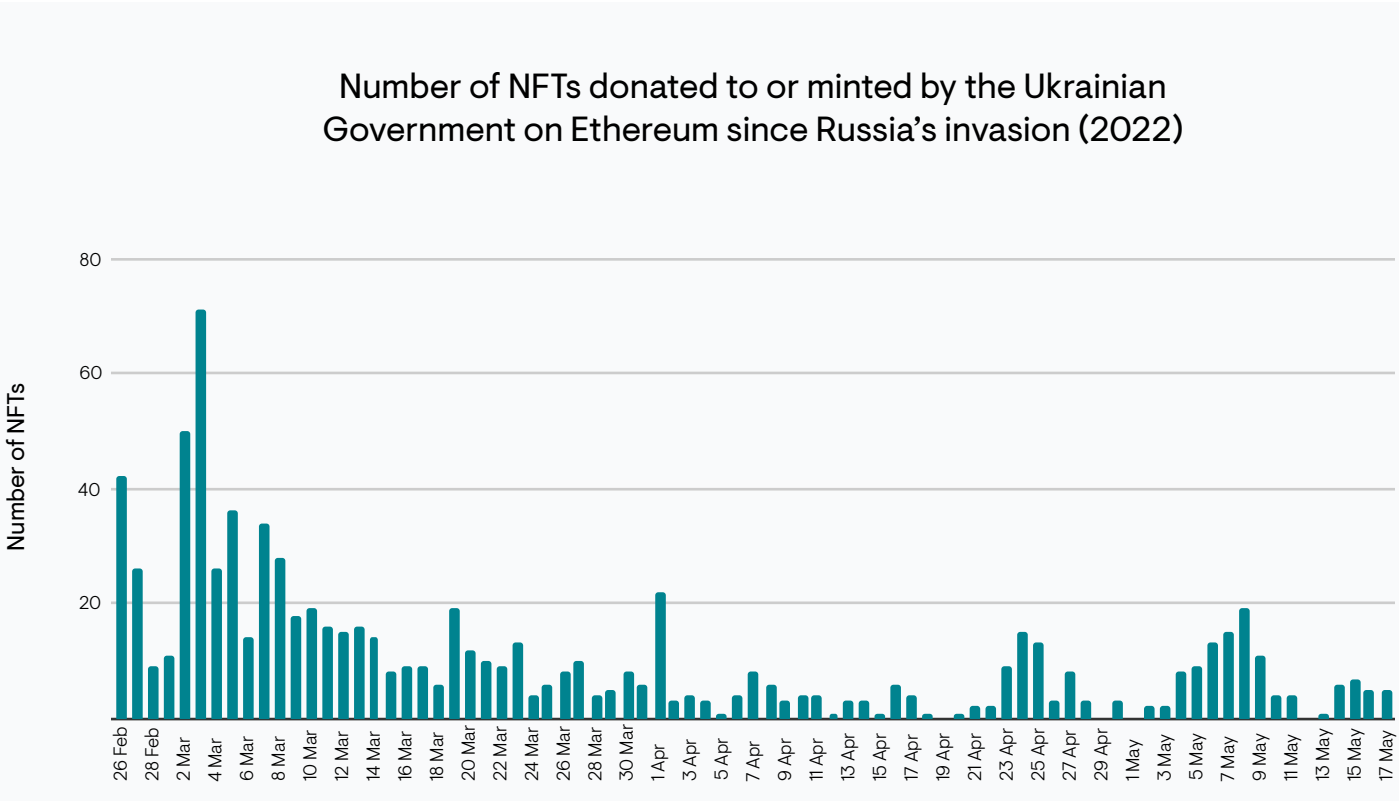
Fundraising

NFTs have featured prominently in the Ukrainian government's cryptoasset financing efforts to counter the Russian invasion beginning on February 24th 2022. Crypto fundraising campaign UkraineDAO sold an NFT of the Ukrainian flag for $6.75 million – becoming the 10th most expensive NFT sale at the time. The proceeds were then donated to the government and numerous other charities.



UkraineDAO's NFT on Zora marketplace – the 10th most expensive NFT ever sold at the time

Over 840 NFTs – mostly worthless but including a Cryptopunk and numerous other prominent projects – were donated to the government as of May 17th 2022. These were then auctioned through a dedicated site run by the Ukrainian Ministry of Digital Transformation.[8] The Ukrainian Cyber Police also began minting NFTs to finance resistance efforts. NFT donations stopped after May 18th and did not resume throughout June and July 2022.



Metaverse Assets

NFTs are a foundational building block for ownership within metaverses – digital worlds which foster social interaction through new digital technologies. While many use fungible ERC20 tokens for their native cryptoassets, the digital land which metaverse participants can own and build on – along with the digital wearables used to dress up avatars – are NFTs.

Technology consulting firm Gartner has predicted that by 2026, 30% of organizations from the real world will be ready to offer metaverse related goods and services, while 25% of people will spend at least one hour a day immersed in it.[9] This is, therefore, likely to be a growing use case for NFTs. To understand more about illicit trends in the metaverse, you can read our "Financial Crime in the Metaverse" report.

Exclusive Membership/Tickets

A growing trend is using NFTs to provide access to exclusive Discord channels, online private members clubs or real-life events. These include exclusive travel clubs where NFTs act as passes to private jets, exclusive hotel booking and private yachts. Other examples include NFTs granting membership to exclusive restaurants, cocktail/cigar lounges and private meeting/dining spaces.

Gaming

The Gaming Market was valued at over $198 billion in 2021, and is expected to reach a value of $340 billion by 2027.[10] There are now several popular blockchain based games such as Axie Infinity and Aavegotchi, which utilize NFTs for playing characters. Furthermore, traditional gaming houses – such as Ubisoft – have integrated NFTs within their more traditional gaming concepts.[11]

However, the traditional gaming community hasn't unilaterally embraced the introduction of NFTs with open arms. EA Games[12] and Team17 are just some gaming companies that have backpedalled on introducing NFTs into their games after a strong user pushback.[13] The chart below shows the growth of Axie Infinity, one of the most popular blockchain-based NFT games, by amount of ETH invested by players over time.

NFT Use in Malicious Activity

Perception of NFTs, their value, how that value is derived and other such questions have proven unique compared to other emerging technologies. These considerations have also motivated concerns of how susceptible NFTs are to financial crimes. The potential of NFTs to be used for money laundering, tax evasion, price manipulation and other such illicit activities has been widely discussed by critics of the technology – often without many concrete examples or data to justify these assertions.

This report uses Elliptic's deep industry knowledge and proprietary internal data to discover how – and to what extent – NFTs are being used for scams, money laundering, terrorist financing and by sanctioned entities. While it also considers rug pulls, market manipulation and tax evasion, their prevalence is not quantitatively evaluated by this report.

Sections one to four consider some mainstream financial crime typologies and trends often associated with NFTs, while section five considers the ever-recurring question of NFTs and money laundering. Each section seeks to provide relevant stakeholders a data-driven idea into the risks and their prevalence – accompanied by case studies. Section six explores the regulatory outlook for NFTs across different regions, including an overview of how different regulators have approached NFTs and financial crime risks.

This report aims to be a resource for policymakers, regulators, law enforcement, NFT-based services – such as cryptoasset exchanges and marketplaces – and traders. It contains blockchain analytics tips, risk management guidance, red-flag indicators and recommendations for how to make NFTs safer, sustainable and a more secure technology for the benefit of everyone.

Look out for these indicators for the different types of information contained in the report.

Red Flags & Warning Signs

Warnings describe significant issues and trends in criminal behavior that are worth highlighting and can indicate suspicious activity, while red flags are indicators of risk that might not clearly pinpoint illicit activity as a standalone.

Diagrams and Flowcharts

Illustrations, diagrams, graphs and charts are included throughout to help you visualize a typology and, where possible, give a relative view.

Case Studies

Wherever possible, real-life examples of how criminals are exploiting the typologies Elliptic has examined are included to evidence how the typology is played out.

Key Controls

These summarize solutions that compliance officers in Elliiptic's network have devised to manage exposure to certain risks to demonstrate mitigating actions that have been effective.

Elliptic Analytics

A spotlight into the analytics tools we use to detect, study, and prevent financial crime.

This is an excerpt from the report: NFTs and Financial Crime.

To get the full report, with sections on:

NFT Scams and Thefts

Rug Pulls

Exploits on DeFi Protocols and Sanctions Risks

Market Manipulation and Wash Trading

Money Laundering

Global Regulations and Policy Outlook

Compliance Recommendations

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