



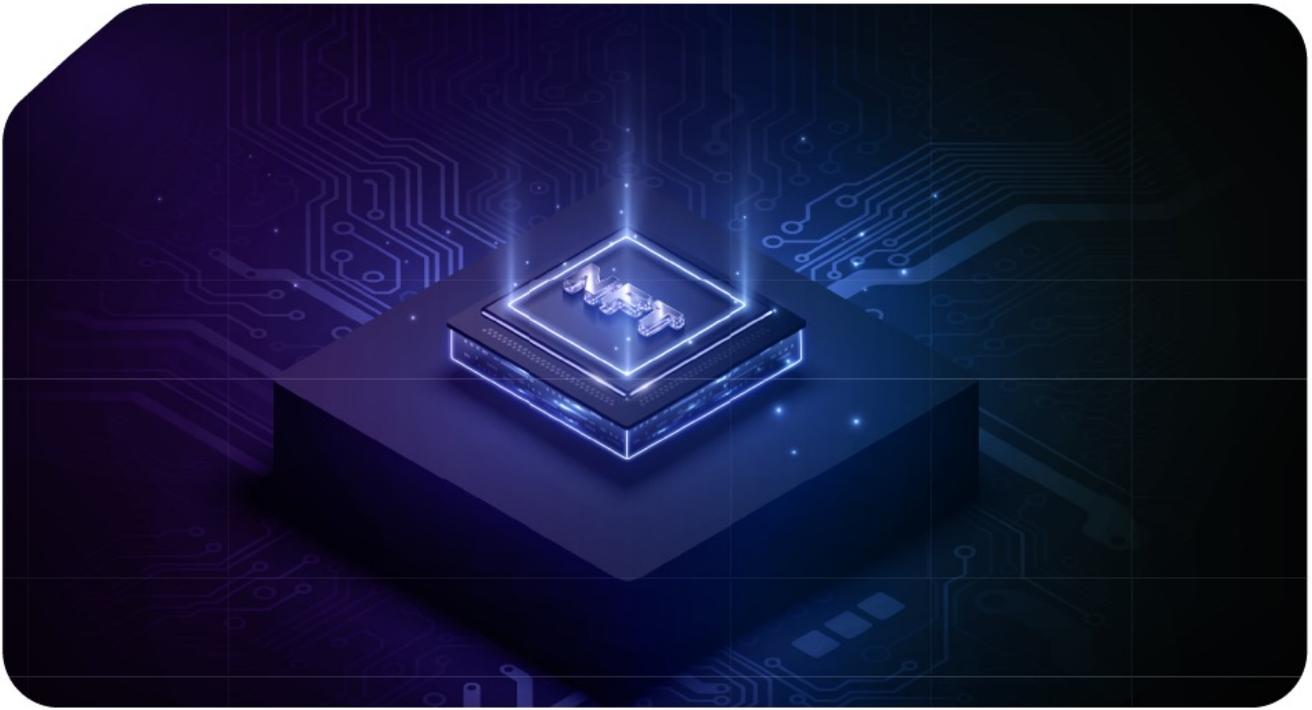
NFT

# The Rise of NFTs in Governmental Innovations

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The concept of Non-Fungible Tokens (NFTs) has revolutionized various fields such as art, entertainment, finance, and games. However, the potential of NFTs goes beyond these sectors, and governments around the world have begun to realize their value in the public sector. NFTs offer various benefits that support government services and products. These include enhanced authentication and verification of official documents, secure digital identities, streamlined property ownership records, effective management of fees and taxes, and cultural heritage preservation. By adopting NFT technology, governments can get into a new era of transparency, security, and efficiency in their operations, significantly affecting the efficiency of services and the quality of life for citizens, residents, and visitors. Therefore, there was a need to present a brief report to review the opportunities for adopting this technology in supporting government services and products, and highlighting modern technologies that can be invested in by government sectors.

Statistics indicate an increasing interest in NFTs technology, as the total trading volume in non-fungible tokens reached 60.9 billion US dollars this year, recording a significant annual increase compared to previous years as shown in the table below. Expectations also indicate an increase in annual trading volume in the coming years and in the long term.

	2020	2021	2022	2023
Annual NFTs Trading Volume of (\$ M)	86	19,600	24,700	14,500
Change (Yearly)		228x	1.3x	0.6x

\* x = Multiplication by last year's numbers



## NFTs Non-Fungible Tokens

NFTs refer to non-fungible tokens, which are cryptographic assets. Like other cryptocurrencies, NFTs are also based on blockchain technologies but are non-fungible. Non-fungible means that assets are 100% unique, have one owner, and are not dividable; thus, NFTs cannot be exchanged or traded equivalently like other cryptographic assets. NFTs can be digital assets representing internet collectibles such as pictures, artwork, music, and videos, or they can also be collectible items to real estate in blockchain games. Each NFT has an authentic certificate created by blockchain technology that underlines cryptocurrency. This means that NFTs cannot be forged or otherwise manipulated, and their exchanges take place with cryptocurrencies such as Bitcoin on specialist sites.

# The Mechanics of NFTs (1/2)

## How does it work?

At their core, NFTs are built on blockchain technology. A blockchain is a decentralized, distributed ledger that records all transactions across a network of computers. Each "block" in the chain contains a number of transactions, and these blocks are chained together in a linear, chronological order. This decentralized nature ensures that every NFT is unique and cannot be replicated. Most digital tokens, like Bitcoin or Ethereum, are fungible, meaning each token is the same as every other token. In contrast, NFTs are non-fungible. This means each token has unique information or attributes that make it distinct.

NFTs represent ownership of a unique item or piece of content. The owner gains ownership of a unique digital item, often accompanied by a certificate of authenticity secured on the blockchain. Each NFT contains metadata that provides information about the asset, such as its origin, ownership history, and any associated attributes. This can be as simple as defining the color of a virtual item, or as complex as identifying copyright permissions for a digital art piece. The process of creating an NFT is known as "minting." When an NFT is minted, a unique digital certificate of authenticity is created on the blockchain. This certificate verifies the item's uniqueness and ownership.

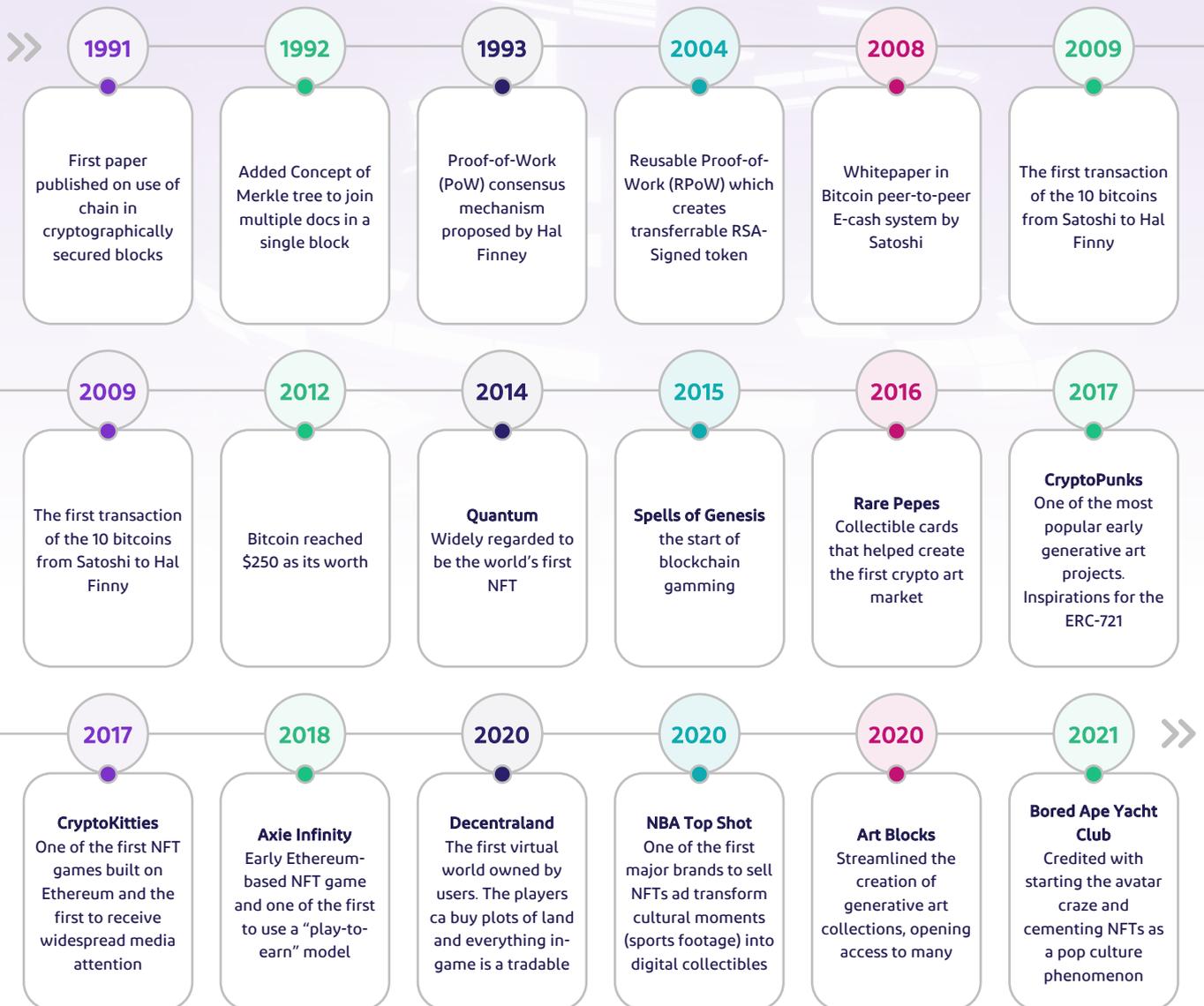
An NFT is a smart contract—a small program signed and written to the blockchain in the same way a transaction is written to the blockchain. It has a data structure and logic that execute based on events, and everyone can see the code and understand the expected outcomes from the smart contract execution.

Each smart contract is unique and capable of storing information and reacting to events. For example, it's possible to generate an NFT token, sell that token to someone else and trace its ownership lineage..

# The Mechanics of NFTs (2/2)

## How NFT got matured:

The following timeline summarizes the main milestones of the NFT's history:



# Types of NFTs (1/2)

Digital assets become more appealing to users since they have many specific features that regular assets do not have. The following are some types of NFTs:



## Art NFTs:

digital tokens that represent ownership of a unique piece of digital art. These tokens are often used to certify that the holder has the original and unique version of a digital art piece.



## Identity NFTs:

digital tokens that represent a person's identity or personal information. These tokens can be used to verify a person's identity or to provide access to certain services or platforms. Identity NFTs have the potential to revolutionize the way we think about identity and authentication, particularly in the digital realm.



## Collectible NFTs:

digital tokens that represent ownership of a unique digital collectible, such as a rare virtual item or a unique trading card. These tokens are often used in online gaming and other virtual environments, where they can be traded or sold like traditional collectibles.



## Ticket NFTs:

digital tokens that represent ownership of a ticket to a live event, such as a concert, sports game, or theater performance. These tokens can be used to verify the authenticity of the ticket and to grant access to the event. Ticket NFTs have the potential to revolutionize the ticketing industry by reducing fraud and increasing transparency.



## Gaming NFTs:

digital tokens that represent ownership of a unique in-game item, such as a weapon or character skin. These tokens can be traded or sold within the game's ecosystem, allowing players to buy, sell, and trade virtual assets.

# Types of NFTs (2/2)



## Real Estate NFTs:

It represents the ownership of a physical property, such as a house or commercial building. These tokens can be used to verify ownership and provide a transparent and secure way to transfer property ownership.



## Domain Name NFTs:

It represents the ownership of a unique internet domain name. These tokens can be traded or sold like traditional domain names but with the added benefits of transparency and authenticity provided by blockchain technology.



## Sports NFTs:

Sports NFTs are digital tokens that represent ownership of a unique sports memorabilia or collectible, such as a trading card or autographed item. These tokens can be traded or sold within the sports industry, providing fans with a new way to engage with their favorite teams and athletes.

# The Potential Opportunities of NFTs in the Public Sector

Potential benefits NFTs can offer the public sector include:



**Decentralization:** The government can set the terms of their NFTs transactions, allowing the government to keep a greater share of the profits and will enable the public to participate in government-driven decentralized transactions.



**Digital economy:** NFT applications improve the efficiency of the digital economy. For example, they could facilitate the processing of records, help businesses attract startup funding, and help match fundraisers with donors.



**Securing the Data:** Simplify the management of trusted information. The government can do so while protecting against unauthorized access and data manipulation.



**Protection Against Fraud:** Real Items are mapped with their respective NFTs to combine anti-counterfeit and other types of fraud. This provides an additional level of guarantee that the goods are real.

# Use of NFTs in the public sector (1/2)

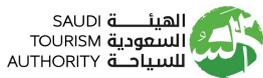
Some government agencies are investing in the NFTs, including:

## Digital economy

### Saudi Tourism Authority

#### NFTs Souvenirs by STA:

The Saudi Ministry of Tourism and the Saudi Tourism Authority has announced the creation of non-fungible tokens (NFTs) souvenirs, described as a first-of-its-kind initiative to the heads of delegations participating in the meetings of the 116th session of the executive council of the United Nations World Tourism Organization (UNWTO), held in Jeddah.



### Riyadh Season

#### Riyadh Season Launches NFT Access Card:

Non-fungible tokens in the form of an access card were issued to enable holders to participate in activities and events, including electronic games, Saudi and Arab festivals and plays, concerts, and local and international exhibitions.



### Dubai Police

#### NFTs by Dubai Police Department:

The Dubai Police department has announced the release of NFTs, its first set of non-fungible tokens, including 150 free digital assets representing innovation, security, and communication.



### Sharjah Government

#### NFT Trophies by Government of Sharjah:

The government of Sharjah, at GITEX Technology Week 2022, gifted the supporting entities non-fungible tokens digital trophies (NFTs) using the Soul Bound Tokens (SBTs) technology. The trophy is an NFT stored in a digital ledger whose identity can be verified via the blockchain system.



# Use of NFTs in the public sector (2/2)

## Securing the Data



### UK Government

#### NFT Pilot by UK Government:

UK government invested in piloting the latest innovations in digital asset management platforms to enable local councils to share data more easily and efficiently and both parties to commercialize those assets simply and agilely.

## Decentralization & Protection Against Fraud



### Republic of San Marino

#### NFTs for Vaccine Passports by the Republic of San Marino:

The Republic of San Marino announced its adoption of NFT COVID-19 vaccination passports. The tokens will help authenticate the documents and reduce counterfeits.

## Securing the Data & Decentralization



### US Government

#### US Government Effort on NFTs' Transaction Visibility:

The US Treasury Financial Crimes Enforcement Network (FinCEN), the US Commodities Futures Trading Commission (CFTC), and the Internal Revenue Service (IRS) have also been exploring ways to keep a watch on NFT transactions.

# The Potential Use Cases of NFTs in the Public Sector

NFT has several potential benefits for the public sector, and there can be many use cases which government can utilize for its benefits. Following are some of the use cases the government can utilize:



## Storing Information:

Storing information on public blockchains can help various governments make their public information visible on such NFTs.



## Land Ownership Record:

The government could use NFTs to create a secure and immutable record of land ownership, potentially reducing the risk of fraud and errors.



## Proving Provenance:

Government can use NFTs to verify the identity of individuals and ensure that identity documents are genuine.



## Heritage:

NFTs can be used to authenticate and protect art and cultural heritage items, potentially increasing their value and helping to preserve them for future generations.



## Fund Museum:

Government can use NFTs to fund the country's museums by creating NFTs for the Museums' artifacts which can be a significant source of funding for museums in the country.



## Municipal Finance:

NFTs can be used for municipal finance by building a collection of historic landmarks, parks, flyovers, etc., and putting those on auction for the public. The digital representation of the landmark and infrastructure project would make into NFTs for the local citizens to bid on. Allowing citizens to buy the digital NFT won't make government lose ownership of the physical artifacts.



## Monetization Opportunity:

Since the blockchain maintains the ownership of every NFT, whenever the NFT of a government-owned asset changes hands, the government can earn from the royalty on the sale value, making it a continuous monetization stream.

# NFTs Standards

It is crucial for the government sector to be aware of NFTs standards in use in the blockchain industry. They ensure that NFTs can be easily created, managed, and traded across different platforms and exchanges. They also provide a level of interoperability and compatibility between different NFTs and blockchains. Here are a few of the most widely recognized NFT standards:

## ERC-721

This is the most widely used NFT standard and was created by the Ethereum community. It defines a set of rules and protocols for creating and managing NFTs on the Ethereum blockchain. ERC-721 NFTs are unique, indivisible, and cannot be exchanged for other tokens on a one-to-one basis.

## ERC-1155

This standard is an extension of ERC-721 and was also created by the Ethereum community. It allows for the creation of both fungible and non-fungible tokens on the same contract. This means that developers can create collections of tokens that are both unique and divisible.

## TRC-721

This is a standard for creating NFTs on the TRON blockchain. It is similar to ERC-721 in its function and usage.

## NEP-11

This is a standard for creating NFTs on the NEO blockchain. It is also similar to ERC-721 in its function and usage.

## ERC-2981

is a newer NFT standard that was proposed in 2021. It is designed to provide a royalty mechanism for NFT creators, allowing them to earn a percentage of the sale price every time their NFT is resold on a secondary market. This standard is intended to help artists and creators monetize their work over the long term, even after the initial sale of the NFT.

# Summary and Recommendations

Government entities intended to utilize NFT technology may face several risks. These risks include financial risks related to price volatility and the lack of awareness among individuals when purchasing NFTs online. The problem is exacerbated by insufficient campaigns that fail to educate the public about these risks. Additionally, fraudulent activities pose cybersecurity risks, such as stealing NFTs or the assets used for their purchase, so, some concerns regarding smart contract security and privacy could arise.

One significant challenge is the lack of expertise among employees, which makes it difficult for government entities to understand how NFTs are being used in different sectors and to address the related legal and regulatory issues effectively.

Moreover, the large amount of data and files associated with NFTs poses challenges in terms of storing them on the blockchain network, potentially leading to processing speed delays.

Additionally, there are risks to intellectual property rights. It is crucial to note that owning an NFT on the blockchain does not automatically guarantee legally enforceable intellectual property rights. This vulnerability opens the door to impersonation and makes it challenging to take legal action against forgeries or identify the true owners.

To mitigate these risks, government entities should develop specific policies and regulations for NFTs. These may include investment guidelines, regulations against fraud and money laundering, as well as the implementation of measures to protect personal and sensitive information. It would also be beneficial for government entities to seek support from cybersecurity experts with knowledge of NFTs and collaborate with specialists in the field to monitor and address legal challenges, as well as develop solutions to protect data.

Addressing intellectual property issues requires collaboration between government entities, artists, and intellectual property lawyers. Together, they can establish legal frameworks that protect the ownership of digital art, prevent impersonation, verify the authenticity of NFT ownership, and prevent forgery.

In conclusion, while there are risks associated with investing in NFTs, these risks can be minimized by developing clear policies and regulations that prioritize the protection of assets.

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