



Bachelor's degree in Economics and Business

Blockchain and Cryptocurrencies

# Navigating NFT Ownership and Privacy: An Analysis of Current and Future Approaches

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# Index

|  |           |
|--|-----------|
| <b>Introduction</b>  | <b>3</b>  |
| <b>1. Overview of NFTs</b>                                       | <b>4</b>  |
| 1.1. NFT ownership and transfer issues                           |           |
| 1.2. NFT privacy and security challenges                         |           |
| 1.3. Legal and ethical concerns related to NFTs                  |           |
| <b>2. Analysis of the Possible Solutions</b>                     | <b>9</b>  |
| 2.1. Existing solutions to NFT ownership                         |           |
| Marketplaces   |           |
| Crypto Loans   |           |
| Cross-chain Ownership  |           |
| 2.2. Technical solutions to NFT privacy and security challenges  |           |
| Privacy Focused Blockchain and protocols                         |           |
| Hardware wallets   |           |
| Off-chain transactions   |           |
| 2.3. Legal and regulatory frameworks for NFTs                    |           |
| 2.3.1. Potential Legal and Regulatory challenges related to NFTs |           |
| 2.3.2. Case Study  |           |
| 2.4. Ethical considerations in NFT ownership and transfer        |           |
| Fairness and equity  |           |
| Illegal activities   |           |
| Energy consumption   |           |
| <b>3. My Perspective</b>   | <b>21</b> |
| 3.1. Proposed solutions  |           |
| 3.1.1. Zero Knowledge Proof                                      |           |
| 3.1.2. Creation of a New Protocol                                |           |
| <b>Conclusion</b>  | <b>27</b> |

## **Introduction**

Non fungible tokens, also known as NFTs are a form of token within a blockchain. These tokens serve the purpose of resembling a unique and non-replicable asset within the blockchain. NFTs can represent various forms of art, from music to paintings and can also be used to create unique certificates or items for the real and digital world.

The potential uses of NFTs are endless, leaving room to innovators and entrepreneurs to create forms of these digital assets that can provide a value within society.

In 2021 a surge started in the crypto market, giving these assets a huge traction in the world of investment and speculations. During this market surge, more and more people started buying NFTs and on the other side, more and more projects were created, injecting more assets in the market. The basic economic principle of supply and demand, the demand increased in the first place, bringing supply to increase as well. This hype around NFTs generated a “fear of missing out” within people, bringing them to start investing without knowing much about these assets in the hopes of making a fast profit out of the investment.

The surge lasted roughly less than 2 years, ending with the beginning of the crypto bear market. By the end of the market trend, a lot of people lost money and several people were charged with felonies, mostly fraud related.

In 2023, the current market doesn't handle the same volume of transactions as it did. NFTs that could innovate our lives are still under development and the rise of new technologies such as artificial intelligence is putting a shadow over NFTs. All new technologies go through a deep process of testing in order to comprehend if the technology could impact society in a positive way, without too room for error or misuse. Testing is not the only factor that comes up when handling the adoption of a new technology, regulators play another crucial role in the adoption of a technology. Regulators contribute by creating rules to set boundaries that go beyond the errors that a technology may have, the scope of regulators is to set rules that prevent illegal and unfair behaviors in society. The work of regulators becomes harder in the case of something that is born with the idea of being decentralized and not controlled by anyone, such as the blockchain.

NFTs are a new technology and as any other technology that has been discovered and adopted, there are pros and cons. This thesis aims to addressing these issues, in particular the issues that arise in the fields of privacy and security. The blockchain technology provides security, trust and transparency within its transactions and activities performed on the chain, but in some cases excessive transparency can lead to other problems and comprise security. Besides addressing all the risks of lack of privacy and security, this thesis will also provide possible solutions to these problems, all by providing a critical approach to the subject and giving a complete overview of the situation in this moment in time.

## **1. Overview of NFTs**

NFT stands for Non-Fungible Token, that we can define assets that are present on the blockchain and are created through the use of smart contracts in the chain. They are Non-Fungible because they don't have an objective value to them, making those assets extremely volatile and in some cases illiquid.

The first NFT to ever be minted was ‘‘Quantum’’ made by Kevin McCoy and dates to 2014. The word ‘‘minted’’ is a term used in the blockchain jargon to represent the process of a new asset or coin being created and placed in the chain. In 2015 the first ever gaming NFT was created, giving life to a new perspective on these tokens. After 2015 people realized that the possibilities of what an NFT could do where actually endless, and gaming was just one of them. For gaming NFT we mean a token that is also an asset in a game. The year 2017 was a great year for the crypto space because of the launch of 2 projects that really made history. The projects were Crypto Punks and CryptoKittens, both of which were art-based, meaning that each element any of the collections just served the purpose of art and had no other utility for the owner. The majority of NFT projects during that period were Art-Based, this until the year 2020 when the release of Decentraland brought the NFT space to a new beginning. Decentraland represented the birth of a new world in the virtual space where people could have ownership over things such as: land, buildings, houses and gadgets; this is referred nowadays as the ‘‘Metaverse’’. One year later the release of ‘‘Bored Ape Yacht Club’’ brought the whole NFT space to gain a lot of traction and trend all around the world. 2021 and 2022 where the best times for the NFT space, because their fame brought millions of people to invest money in these assets creating a huge bubble that popped with the downfall of the prices of cryptocurrencies. In those years over 41 billion dollars were spent on NFT platforms. The market collapse in 2022, brought down the prices of many projects to zero, but the biggest projects remained stable in value, projects like: Crypto Punks or BAYC (Bored Ape Yacht Club). Although all the challenges that the NFT and the crypto industry

having been facing, there are still millions of users in the NFT space, with a number that is projected to increase to 64 million users by 2027.

NFT projects can be made up of any number of NFTs, some share similar traits and some are rarer than others. For example, in 2021 a Crypto Punk had an average floor price (lowest price) of 300 thousand dollars, although the rarest ones were being sold for millions of dollars. Projects can simply regard the world of art, with drawings or designs made by artists, enthusiasts, or companies. The digital art world gained a lot of traction during the COVID 19 pandemic because of the closure of auction houses. On top of art and digital assets, also collectibles and music have gained popularity in the NFT space. This technology can be seen as a potential gateway in transforming elements from our centralized real world to decentralized digital counterparts.

## **1.1. NFT ownership and transfer issues**

Although NFTs are non-fungible, they are still seen from investors as potential assets to add into their portfolio, in particular for those that are risk orientated when making their investment decisions.

NFTs present a lower trading volume and an overall increased volatility to them, the volatility increases exponentially the more a project is less renown. Famous projects like BAYC or Crypto Punks can be considered more liquid than the rest. For this reason the term “Blue Chip NFT” has been coined. Just like in the stock market any asset that is considered “Blue Chip” is known to be more solid capital wise and present an overall lower volatility and risk compared to other assets in the industry. In the article “What are blue chip NFTs?” by Mike Grossman, the following is stated: “In the traditional stock world a “blue chip” refers to a company that’s considered a reliable investment.”. In the article, Mike states the definition of what is a “Blue Chip” asset and why they are distinguishable from other assets. He considers blue chip assets to be more stable in value due to their higher market cap and stability within time. For NFTs the term blue chip is more addressed to those projects that “retain a high value well into the future.” In the article the author also states the requisites that a project must fulfill for it to be considered less risky as an asset. The requisites are: The Art, The Artist, Developers, Utility, Floor Price, Sales Volume, Community and Celebrity Endorsements. The most Important ones are Floor Price and Volume because these are the indicators that show how liquid can the NFT be, more liquid means less risky.

The process of owning an NFT is linear to those who already have previous experiences in owning crypto currency. A user interested in purchasing an NFT must first own a sufficient balance of the currency of blockchain in which the NFT is available. This happens because NFTs can be found among different blockchains, meaning a different ecosystem and different market movements. The following step is to purchase the NFT through a marketplace, just like in the real world with websites like eBay or Craigslist. NFT Marketplaces represent the core of NFT transactions because all transactions are delt through these platforms. The most famous and largest marketplace is Open Sea. NFT marketplaces offer a wide variety of services such as: direct purchase, offer placement, auction bidding, NFT minting and data on the trends in the market; similarly, to what happens in the stock market with graphs and charts that express market conditions and help investors make choices in their investments. Once the purchase is complete the NFT will be visible in the wallet of the holder together with any other Currency or Tokens that are present in the same wallet. During a transaction there are costs that need to be sustained from both parties, the buyer, and the seller. The buyer on top of paying the price of the NFT, he or she will also need to pay possible gas and/or transaction fees to the blockchain. The seller on the other hand will receive the amount of the price that is paid, this doesn't happen in most cases because a fee will be deducted from the seller as a "royalty" towards the original creators of the project. Royalties in the NFT space consist in a small percentage that is deducted from the seller during every transaction,

Royalties are usually no more than 15% of NFT selling price. The use of the royalties is purposely made to introduce cashflow within the project, so that the original creators can proceed in expanding the project. Expanding can be done by following what is called a "roadmap" which is essentially the "business plan" of an NFT project during its launch, this is what captures investors into purchasing the NFT. Roadmaps can contain numerous types of objectives that the creators set to the project, ranging from new software to different forms of perks and utilities that are given to the holders of these NFTs. In some rare cases royalties are non-existent or the percentage of the royalty goes exclusively in the pockets of the original creator, providing no further utility to the owners.

Issues may also arise while deciding to transfer NFTs. This happens at a rare frequency because the process of transferring is linear. Issues arise when there are problems or shortages within the blockchain, for example an excessive number of users may cause the blockchain network to stall temporarily making transactions practically impossible. Another issue arises, in specific with the Ethereum blockchain where each transaction requires the payment of a gas fee to perform the desired action on the blockchain. The issue isn't with the concept of having a "transaction fee", but with the cost of the fee itself and in the case of Ethereum the fee strictly depends on the number of users that want to perform actions on the chain. The problem arises when these gas fees are a significant

percentage of the value of the NFT or of any transaction. For example, if I were to buy an NFT for 100\$ and gas fees are 40\$, I am already losing 40% on my investment in the moment I make the purchase. This problem is of course less evident with NFTs that go for high prices, where the 40\$ of the example may just represent a smaller percentage of the value of the token.

Although issues regarding the transferability of these tokens may be present, they only represent a rare event which is either makes transactions impossible or not convenient.

## **1.2. NFT privacy and Security Challenges**

Crypto currencies are currencies within a blockchain, essentially these specific currencies make you perform actions within the blockchain, actions such as: transactions or creation of contracts and assets. Tokens are also an element of the blockchain, and they can play multiple roles ranging from currency to a representation of an asset within the blockchain.

Before going in depth with these concepts, I want to place the attention on the definition of Blockchain. A Blockchain is a distributed ledger, but most importantly it's decentralized and public. All the transactions are gathered into blocks and the sum of all blocks makes up the blockchain, thus the reason for the name. Its characteristic of being public and decentralized makes it impossible for it to be tampered with, meaning that no central authority or other user can modify elements of the chain. Although these traits may put the blockchain in a good light, making it seem as a gateway to a safe haven where the actions we make are not dominated by authorities superior to us, the blockchain brings new problems with itself, mostly regarding the privacy and security of the users that make actions using this technology. The fact that the ledger is public, makes the blockchain visible to anyone who wishes to inform themselves on what is happening in the chain. This can be from transactions to most importantly wallet balances. This means that anyone can visualize transactions and the contents of anyone's wallet. People can easily see another person's currency balance and what assets that person owns.

Publicity and transparency are positive elements to have when it comes to interfacing with an audience of users, especially because the people using a platform or technology always wants to be informed and feel that the platform isn't hiding anything from them. Although what has been stated above is correct as a concept, there are some limitations and exceptions; the exception comes up when the transparency is excessive, making privacy scares for the user.

The challenges of the ownership of these assets in the areas of privacy and security mainly regard potential risks for the owners of NFTs. The risks that the owners face range from potential harassments to simple information of other user's possessions. A user could be targeted in the real world if a person with a malicious intent comes to knowledge of the NFT owner's possessions.

The goal of this thesis will be to address this specific issue and possibly offer a solution to the problem, taking advantage of the tools that are available to us at the present moment and the tools that could be generated in the future.

### **1.3. Legal and ethical concerns related to NFTs**

NFTs raised a lot of legal concerns during their sudden growth in popularity. This new technology generated grey areas within the law and made regulators confused on how it functioned and what risks it could bring. Regulators have later analyzed NFTs and started identifying them through the eyes of the law, by understanding and comparing them to other assets and technologies.

Regarding the ethical concerns, a lot of illegal activities emerged during the NFT boom. The main illegal activities are the following: Money Laundering, Impersonations and Rug Pulling. Money Laundering consists in the activity of introducing money coming from illegal activities in the legal system. This is done by using companies or business activities and tampering with the accounting documents to raise profits higher than what they really are, leaving room for the illegal money to be used as a replacement of the missing balance between what is real and what is declared in the accounting books. As the article "What is money Laundering?" from The Economic Times states: **"Money laundering is the process of hiding the source of money obtained from illegal sources and converting it to a clean source, thereby avoiding prosecution, conviction, and confiscation of the criminal funds. It is an illegal exercise that converts black money into white money."** In the NFT space this can be done by creating an NFT and then purchasing in from us with our illegal money. The result of this is not only to have money that now can be considered "clean" or "white", but to also own an asset that has been purchased for a very high price, giving the money-launderer the possibility of also selling a worthless asset for a high price and scamming a potential buyer with a worthless asset. Thankfully a lot of these activities have been put to an end thanks to the help of authorities which have used the public ledger to trace back each movement and find the people responsible for this crime. The second illegal activity consists in malicious users impersonating NFT



artists, Marketplace or counterfeiting the NFT directly. All these activities are done to take money from clueless investors that may not be fully able to notice what is wrong and understand the scam. The final way in which criminals exploit NFTs is by “Rug Pulling”. A Rug Pull is essentially a process in which the criminal creates a new NFT project, promoting and treating it like any other project to the eyes of potential investors and in some cases also over-promising things in their roadmap; making people think that the utility that they could get could really be endless. The only difference between a real project and a Rug Pull is that in Rug Pulls the scammer will eventually run away with all the money generated from the launch of the project, leaving all the investors with a worthless asset. On top of that, the criminal won’t only earn from the sale of these NFTs, but also from the royalties of all the transactions that the investors will be making, especially during a panic sellout. Also in this case, the law is now more present compared to the years 2021 and 2022, making it now harder for these malicious users to commit fraud.

## **2. Analysis of the Possible Solutions**

### **2.1. Existing solutions to NFT ownership**

#### **Marketplaces**

The current spectrum as of April 2023 shows us that the biggest NFT marketplaces in the world are: OpenSea, Magic Eden and Rarible. Opensea is currently the largest among the three. It was founded in 2017 by Devin Finzer and Alex Atallah. The two founders were intrigued by the release of CryptoKitties in the same year (2017). Mainly these marketplaces serve the role as platforms where people interested in buying and/or selling their NFT can gather and link with other individuals to complete the transactions that they wish. These NFT marketplaces host all forms of NFT, from gaming to the NFTs related to art, music, and collectibles. In the past year, these marketplaces have also offered the chance to mint new projects directly on the marketplace website, without needing to go on other websites. Before this innovation, the standard minting process for a project would consist in coding the “minting machine” directly on the project’s website. In other blockchains it is also referred as “candy machine” (due to the ability of randomizing what the minter gets). Giving users the chance to mint directly on to a reputable and well-established marketplace provides new minters a sense of safety towards the transaction that they are performing, all of this compared to handing your funds to a website that may have been seen just once in their lives. On top of that, minting directly in a marketplace also gives minters and investors the freedom of selling their NFT directly on that same marketplace, while before this new feature was discovered, users would first mint on a project’s website to then hope that the project would sell enough units of its collection to be traded on a

marketplace. Projects that didn't sell enough units would not only cause harm to their investors due to the devaluation of the overall project, thus also the NFT, but also make the NFT a non-liquid asset. When an NFT project is launched and minted for the first time, on top of choosing the number of pieces that make up the project another feature that is chosen upon the project's discretion is the percentage of royalties for every transaction. Royalties play a crucial role in the NFT space because every NFT transaction brings various costs with them such as: gas fees, marketplace commission and royalties. Royalties are a percentage that are taken from each transaction regarding a specific project. They are deducted from the currency (or tokens) that someone receives for selling his/her NFT and credited to a predefined wallet chosen by the project. The average percentage royalty is 6%, this means that a project not only earns funds from the first sale of the NFTs, but also from all the secondary sales following the original one. Royalties represent a form of cashflow that the project can receive to pursue all the objectives that they set on their roadmap. Projects that invest their earnings from royalties are more inclined to gain loyalty among their investors.

Another solution that has been first presented to the market during the NFT surge of 2022 is the possibility of purchasing fractional shares of an NFT. This is a common feature of NFTs that bring high prices to them, especially because most investors are only willing to spend on average a few hundred dollars for 1 NFT, thus making the "Blue Chips" out of reach. Projects like Crypto Punks or BAYC can cost up to 100.000\$ nowadays, while in the past their prices were even higher. The idea behind fractional shares is to make the ownership of NFTs easier by lifting the main barrier to entry, which is the price. Fractional shares of an NFT work exactly like fractional shares of stocks, where dedicated platforms such as Etoro can make an investor trade 0.2 of an Apple (AAPL) share just as if it was one. Although there are similarities among how fractional shares operate, a major difference between NFTs and stocks is the sale or liquidation of the asset. The liquidation of an NFT that is owned by various users is dealt using smart contract and in specific by the creation of a DAO, Decentralized Autonomous Organization. A DAO is essentially a "Shareholder's meeting" for the owners of the fractional shares. DAOs are made for all kinds of scopes, but in this case, for fractional shares, a DAO helps fraction owners make decisions regarding sale price or other investment decisions. Of course, just like in the real world, people who own more shares will have more deciding power over the actions that need to be taken. Investors that intend to invest in fractional shares of NFTs can also invest in what are called "vaults", which are a very simplified version of an investment fund. Vaults are essentially more assets put together and then sold in fractions, rather than owning the fraction for only 1 NFT, the ownership will regard a whole basket of assets. A famous platform in the NFT space for buying and selling fractional NFT shares is fractional.art, this platform offers its users

a variety of NFTs and Vaults to invest in, leaving *carte blanche* to any investor that wants to invest and possibly even diversify his/her own investment.

### **Crypto loans**

Lending and borrowing money are activities that go back to 3000BC in ancient Mesopotamia. [article] In the crypto and NFT space assets can be used as collateral to get short-term loans, of course this only works with projects that are chosen by the platform. Just like with real life loans, NFT loans bring the same if not higher risks than standard bank loans. The risks are all in the hands of the lenders and a volatile space such as the NFT one it may not be rare that an NFT may drop in value. For this reason lending Dapps such as Solvent, Honey Finance, PWN and many others have a low ratio between the money that has been lent and the value of the NFT, meaning that only a fraction of the value of the NFTs given as collateral is dispensed for the loan. For example a loan that has an NFT worth 100.000\$ as collateral will dispense 50.000\$ in liquidity.

### **Cross-chain ownership**

In most cases ownership of assets in a blockchain are operable only in that blockchain, meaning that transactions or other actions can't be performed outside of the blockchain. Although this inability in operating between blockchains, there are still some cases in which a blockchain may possess the capabilities of operating between blockchains. Cross-chain in the NFT space from a practical viewpoint means being able to buy/sell and NFT from one blockchain and bring it to another.

## **2.2. Technical solutions to NFT privacy and security challenges**

In this section we are placing our focus on more technical solutions that include the protection of privacy and security instead of only the ownership.

### **Privacy focused blockchains and protocols**

Privacy focused blockchains are ledgers that follow the same concepts of Bitcoin when it comes to their functionality and feature, the only difference stands in the transparency of the transactions. The difference is represented by the capability to hide the details of transactions to third parties, making a transaction private between the users who took part in it. The fact of being able to conceal certain information gives users an additional reason to move to a fully private blockchain and not solely

decentralized. The biggest currency by market cap for this typology of blockchain is Monero. Monero is an “Opt-Out” privacy blockchain founded in 2014 with the idea of protecting its own users by providing them a fully private blockchain by default, meaning that Monero’s users could perform actions without the worry of being supervised by third parties. The Opt-Out feature of Monero means that users will have all of their transactions and information obscured by default, making them visible to third parties only to their discretion, this is done by sharing a specific key of that transaction to whom the user may wish to share it with. Although these privacy blockchains may generate problems with the law and its regulators, it is necessary to consider the fact that these blockchains present themselves as safe havens for users that intend to keep their information private. An example of the use of privacy blockchains can be in the business world, where companies may want to keep specific transactions with their suppliers private so that they can keep their competitive advantage. The main issues that may motivate regulators in taking action against these blockchains is the risk that users may want to launder money earned from illegal activities, but from this perspective the only risk consists in what could be done with the funds on the blockchain, as converting the privacy crypto coin into fiat currency will make traceability possible again. This means that malicious users could keep using their crypto for illegal activities, but could keep on doing this only if the funds or assets stay on the blockchain, making it practically impossible to be untraced if the money were to be converted back into fiat currency. Privacy blockchains also increase their utility with the use of smart contracts because assets such as NFTs can be generated and traded in a fully private and untraceable way solving most privacy and security related issues that we previously addressed.

### **Privacy focused protocols**

Privacy protocols share similar features and objectives to privacy focused blockchain, the main difference being that they can be created through the use of smart contracts even on blockchains that aren’t natively a privacy-preserving blockchain. These protocols could exist with the scope of giving privacy to a specific asset or a type of transaction on the blockchain. While privacy blockchain are harder to shut down and make inactive by regulations, protocols are easier to be closed down by regulators. A practical example is what happened in August 2022 when Tornado cash has been made illegal by the American authorities. Tornado cash is a protocol in the Ethereum blockchain that uses its technology to mix transactions and make funds untraceable, giving users the option of hiding permanently the true origin of their funds. Privacy protocols can serve their use also in fighting privacy and security problems for NFT owners, providing them with a possible place to store their assets in a place where third parties will not be up to date with what are a user’s possessions.

## **Hardware wallets**

Hardware wallets are used in the world of crypto to store funds and assets in a safe place that is outside of the Internet, making all of the funds and assets inaccessible to hackers that work on exploiting weaknesses on the Internet. Although a user's wallet may be protected by a private key, the wallet is still on the Internet, making it not 100% secure. Hardware wallets offer a full 100% security on the funds that they contain, leaving only risk the physical theft of the hardware wallet. These wallets come in different forms, from USB keys to whole hard disks. On top of all of the security that these wallets offer, there are also a way to keep private funds and assets.

## **Off-chain transactions**

Off-chain transactions represent an exchange that does not take place on the blockchain. This can happen when users physically meet up or synchronize to perform a transaction. A possible transaction could be the exchange of funds for a wallet of a respective value. In this case one user will receive the funds by handing out his/her wallet private key and the other user will give his/her funds in order to receive the private key. Certainly after the exchange, it is in the best interest of the new owner of the wallet to shift all funds and assets to a new wallet, as there could still be the risk of unwanted access by the people who are also in knowledge of the private key.

## **2.3. Legal and regulatory frameworks for NFTs**

Regulatory frameworks represent essential tools used by regulators in order to create new laws and perform legal actions in the best interest of the country and of its citizens.

Although some of rules need to be completely defined in order to consider NFTs as a fully regulated subject, there are currently laws that pose limits to what could be done with NFTs, all of the following is done with the sole goal of protecting users and the market.

### **Intellectual Property Laws**

#### **Copyright**

Original works of authorship, such as literary, artistic, and musical works, are safeguarded by copyright laws. Copyright law can be applied to NFTs to safeguard the ownership and reproduction rights of those who create digital artworks like pictures, movies, and music. An artist can claim full control and ownership of their digital work on the blockchain by building an NFT that reflects it. This enables them to keep track of who owns their work as it is bought and sold and makes sure they are paid fairly for its use.

NFTs can also be used to represent other kinds of digital content, like computer software, e-books, and digital photos, that may be covered by copyright protection. The usage of NFTs can aid in establishing ownership and control over these kinds of digital assets, as well as make sure that authors are fairly compensated for their labor.

### **Patents**

New procedures, devices, and goods are all protected by patent law. While the underlying technologies that support the production, sale, and ownership of NFTs might not be eligible for patent protection, NFTs themselves might. For instance, the blockchain technology that powers many NFT platforms might be covered by patent protection, and businesses that create novel NFT-related technologies may be able to use patents to safeguard their intellectual property.

### **Trade secrets**

Customer lists, production techniques, and product formulations are just a few examples of the proprietary company knowledge that is protected by trade secret law. NFTs can be used to represent digital assets that have private keys or access codes that are trade secrets, and trade secret law can be used to safeguard the owners' rights. The owner can demonstrate ownership and control over a digital asset that contains trade secret information by utilizing an NFT to represent it. This also prevents anyone from exploiting or releasing the information without authorization.

### **Contract Laws**

Contract law primarily regulates the interactions between creators, purchasers, and platforms in the context of NFTs. An NFT's creator effectively enters into a contract with the person who buys it when they make it. The platform may define the terms of this agreement, including the payment amount

and the rights provided to the buyer. However, in some circumstances, creators might also be able to alter the contract's conditions. The problem of ownership in the context of contract law in the NFT industry is crucial. An NFT is essentially a digital certificate of ownership for a particular digital asset. The underlying copyright or other intellectual property rights connected to the item may not, however, be owned by them. Even if they sell an NFT that represents the asset, creators may still be in possession of these rights. NFT platforms may demand that authors explicitly transfer ownership of their intellectual property rights when they sell an NFT in order to address these problems. Smart contracts, which are self-executing contracts built into the blockchain that may be used to automatically execute transactions based on specific criteria, can be used to accomplish this. In addition to ownership, contract law also affects the rights and obligations of producers and consumers in the NFT sector. For instance, the conditions of NFT contracts may outline the buyer's rights to use and duplicate the digital asset the NFT represents. Depending on the kind of asset being represented and the creator's preferences, these phrases may change. The obligations of the creator with regard to the upkeep and maintenance of the digital asset may also be specified in NFT contracts. If the digital asset is a piece of software or a video game, for instance, the creator can be obligated to offer regular updates and support to make sure the product stays useful. Additionally, the relationship between NFT platforms and their users is governed by contract law. NFT platforms might need to give users certain guarantees and warranties on the legitimacy and ownership of the NFTs listed on their platforms. Additionally, they might be responsible for any dishonest or deceptive actions taken by their users and might be forced to take precautions to stop them from happening in the first place.

## **Securities Laws**

Securities are financial instruments that indicate ownership in a corporation or other entity. Securities laws are a set of rules that control the issuing, sale, and trading of securities. Securities rules may apply to NFTs in specific situations where they are employed as investment vehicles or when they are sold as components of investment schemes. The idea that NFTs might be regarded as securities if they satisfy specific requirements is one potential problem with securities regulations in the NFT industry. According to the Securities and Exchange Commission (SEC) of the United States, each case's unique facts and circumstances will determine whether an NFT qualifies as a security. If an NFT reflects an investment contract, the buyer is relying on the efforts of others for profit, or the NFT is being marketed as part of a broader investment scheme, those factors may be important in assessing whether an NFT is a security. The requirements of the securities legislation would apply to the selling and trading of an NFT if it were to be classified as a security. This can entail filing paperwork with

the SEC, making disclosures, and abiding by other legal requirements. Creators and platforms should carefully analyze the nature of the NFT being offered and the way it is being presented to avoid breaking securities laws. An NFT may be more likely to be regarded as a security if it is being offered as an investment opportunity. However, it might be less likely to be regarded as a safeguard if the NFT is sold largely as a digital collection. To make sure they are adhering to all pertinent securities rules and regulations, it is crucial for creators and platforms to get legal advice. If they don't, there might be serious financial and legal consequences.

### **Anti-money laundering Laws**

Anti-money laundering (AML) regulations require financial institutions to put in place systems that detect and prevent suspicious actions to stop illicit activities including money laundering and terrorism funding. AML requirements are applicable to cryptocurrency exchanges and NFT platforms when it comes to NFTs, especially when NFTs are bought using cryptocurrencies or sold on a platform that also supports cryptocurrency transactions. NFT platforms may need to put in place specific safeguards, such as know-your-customer (KYC) protocols, transaction monitoring, record keeping, and a thorough compliance program, to abide by AML requirements. Platforms must collect user data and conduct KYC procedures to confirm the users' identities. Platforms analyze transactions for suspicious activity and report it to the appropriate authorities as part of transaction monitoring. Platforms must keep track of transactions and retain them for a set amount of time to comply with record keeping. Platforms adopting written policies and procedures, employee training, and regular audits are all components of an extensive compliance program. AML laws violations may have legal and financial repercussions, including penalties and reputational harm. NFT platforms must therefore seek legal advice and guarantee that they are abiding with AML rules and regulations. Both buyers and sellers of NFTs should be aware of the AML risks involved with NFT transactions and take safeguards including using reputable platforms with robust AML compliance mechanisms when transacting.

#### **2.3.1. Potential Legal and Regulatory Challenges Related to NFTs**

Challenges may arise when regulating something new, this happens because new technologies and platforms may share common traits with other existing ones creating problems in the individuation of the correct approach to take when dealing with cases and creating new laws.



## **Difficulty in defining ownership and provenance of NFTs**

Given the distinctive characteristics of NFTs and the absence of well-established legal precedents in this field, defining ownership and origin of NFTs is difficult for regulators. Unique digital assets known as NFTs are frequently produced by artists and offered for sale to collectors on NFT platforms. These assets cannot be swapped for other assets with equivalent value because they are non-fungible. The fact that NFTs only exist in digital form and have no physical counterpart makes determining ownership and origin of these assets difficult. Furthermore, NFTs are frequently connected to a decentralized blockchain network, which might make it challenging to determine who owns an NFT. The problem of provenance, which refers to the history of ownership and transfer of an NFT, is another difficulty. Since provenance establishes the ownership history of the asset, it is crucial in determining the legitimacy and value of an NFT. However, given the decentralized and frequently anonymous nature of transactions on blockchain networks, tracing the provenance of NFTs can be also challenging. Regulators continue to struggle with how to identify NFT ownership and provenance, especially when it comes to enforcing legal rights and safeguards. It could be difficult to find and hold accountable the person(s) responsible for a theft or fraud, for example, involving an NFT. The regulatory environment may also be further complicated by NFTs' potential exposure to several legal frameworks, such as intellectual property law, contract law, and securities law. Regulators may need to consider new legal frameworks and standards for NFT ownership and provenance to overcome these issues. This could entail developing best practices for tracking and confirming the ownership history of NFTs in collaboration with stakeholders and experts within the industry. Regulators may also need to create new enforcement strategies tailored specifically for blockchain networks and digital asset markets.

## **Lack of clarity around the legal status of NFTs**

The legal standing of NFTs is a murky topic that is currently undergoing change and complexity. NFTs are a brand-new class of digital assets that aren't specifically covered by the laws that are currently in place. The fact that NFTs are frequently connected to a decentralized blockchain network represents one of the difficulties in defining their legal status. Due to this decentralization, traditional financial institutions or regulatory organizations are not in charge of overseeing NFT transactions, and as a result, there are no established legal regulations for these transactions.

## **Possibility of fraud, scams, and other illicit activities.**

Additionally, NFTs could be governed by a number of legal systems, such as securities law, contract law, and intellectual property law. For instance, NFTs used in investment schemes may be governed by securities laws, but NFTs used to represent digital art may be subject to copyright law. For market players, this lack of agreement on how these regulatory frameworks apply to NFTs can cause confusion and uncertainty. NFTs could also fall under the purview of many legal frameworks, including securities law, contract law, and intellectual property law. NFTs used in investment schemes, for instance, may be subject to securities rules, whereas NFTs used to represent digital art may be covered by copyright laws. This lack of consensus about how these regulatory frameworks apply to NFTs may be confusing and ambiguous for market participants. Regulators may need to take a proactive stance in creating legal frameworks and regulatory guidelines for NFTs in order to overcome the uncertainty surrounding the legal status of NFTs. To create best practices and standards for NFT transactions, this may entail collaborating closely with industry players like NFT platforms and creators. Regulators may also need to create new legal frameworks that are especially suited to the special features of NFTs, such as their decentralized nature and the difficulties in tracing ownership and origin.

### **2.3.2. Case study**

The goal of this section is to cover practical cases of illegal activities that have been performed with the use of NFTs and how regulators discovered and dealt with the situation by taking the correct measures. The case study chosen is an example of a criminal activity that can be performed in the NFT space. This case is also a demonstration of how authorities take action towards these criminal behaviors in order to prevent future illicit activities.

#### **Frosties NFT case**

This case regards a “rug pull” that happened on January 2022, where two twenty-year-old individuals committed a fraud for 1 million dollars in crypto currencies. The case is still ongoing, but from what the authorities declare, these two individuals committed a fraud by generating an NFT project that contained false promises. The promises consisted in fake perks and value that the owners of the NFT could earn. The name of the project was “Frosties” and instead of using the funds generated from the sale of the NFTs to perform the promises that they announced to the investors, they cashed out all the cryptocurrency from the project’s wallet to their own. “Rug pull”, is a term that used in the NFT space for fraud schemes that regard liquidity being withdrawn from a project into the malicious user’s wallet. On top of being charged for fraud, the two twenty-year-old individuals have been charged for

money laundering and both crimes have sentences for a maximum of twenty years in jail each, bringing their maximum sentence to forty years in prison. In conclusion, another aggravating factor is that the defendants were also about to commit another fraud using the same form of scheme, another project by the name of “Embers”, which if sold, would’ve brought a further damage of 1.5 million dollars to the potential investors. As stated by U.S. Attorney Damian Williams: “NFTs have been around for several years, but recently mainstream interest has skyrocketed. Where there is money to be made, fraudsters will look for ways to steal it. As we allege, Mr. Nguyen and Mr. Llacuna promised investors the benefits of the Frosties NFTs, but when it sold out, they pulled the rug out from under the victims, almost immediately shutting down the website and transferring the money. Our job as prosecutors and law **enforcement is to protect** investors from swindlers looking for a payday.”

This Law case is an example of how authorities are handling the current rise of NFTs and interpreting them as financial assets as they are. NFTs fully resemble financial assets, similarly to a stock of a company. Currently, NFTs are not as regulated as stocks, but this is up to the authorities in making sure that all financial products are regulated in a correct manner. The similarity that NFTs have compared with other financial products is identifiable also with the words of IRS-CI Special Agent-in-Charge Thomas Fattorusso, agent working on the Frosties case, which stated that: “NFTs represent a new era for financial investments, but the same rules apply to an investment in an NFT or a real estate development. You can’t solicit funds for a business opportunity, abandon that business and abscond with money investors provided you. Our team here at IRS-CI and our partners at HSI closely track cryptocurrency transactions in an effort to uncover alleged schemes like this one.”. On top of being a new form of investment, the fraudulent use of NFTs can also create an unsafe environment to people, and the word of USPIS Inspector-in-Charge Daniel B. Brubaker can help us understand the situation further: “The rise and popularity of various cryptocurrencies have changed the landscape of buying and selling investments, leading to ample opportunities for new fraud schemes. Today’s arrests involved Non-Fungible Tokens (“NFTs”), opening the door to alternative investment options and substantial risk. These assets may seem like a good deal or a way to become wealthy, but in many cases, as in this situation, only lead to the loss of your money. Postal Inspectors will pursue fraudsters with our law enforcement partners in any consumer market and advise consumers to pursue emerging investment trends with diligence and skepticism.”

In conclusion, the material discussed is the proof that there will be more regulations in future, as the law cases that have emerged are just a demonstration of how the authorities have the competence to adapt and keep up with new technologies and provide a safe environment for society.

## **2.4. Ethical considerations in NFT ownership and transfer**

### **Fairness and equity**

The emergence of NFTs has brought up moral questions regarding justice and injustice in the market for digital art. One of the worries is that the high pricing of some NFTs could lead to the development of a niche market that would only serve a select number of collectors and artists. For instance, a few NFT sales have brought in millions of dollars, making it challenging for new artists to enter the market. Additionally, existing disparities in the art world, such as those based on race, gender, and financial status, may be made worse by this exclusivity. Concerns exist over NFTs' effect on the environment as well. NFT production and distribution heavily depend on blockchain technology, which has a sizable carbon impact. Given the rising popularity of NFTs, critics contend that this carbon footprint calls into question the moral issues of sustainability and climate change. In addition, there are ethical issues related to NFT ownership and management. Since NFTs are distinctive digital assets, it can be challenging to trace ownership and provenance, which makes it challenging to confirm the legitimacy and ownership of an NFT. This lack of accountability and transparency may raise ethical questions, particularly when there is a question of ownership or when fraud is involved. NFT platforms and artists may need to use more inclusive and sustainable strategies to overcome these ethical issues. This might entail creating fresh market mechanisms to make sure that up-and-coming artists have access to the market and are not hurt by NFTs' exorbitant costs. There might also be chances to create more environmentally friendly blockchain technology that reduce the carbon footprint of NFT transactions.

### **Illegal activities**

NFTs are susceptible to criminal activities including fraud, money laundering, and copyright infringement just like any other type of digital asset. It is crucial to think about the moral ramifications of these illicit behaviors as the market for NFTs expands. The possibility of fraud is one of the main ethical issues with NFTs. NFTs are distinctive digital assets, and it can be challenging to estimate their value. This may give malicious users the chance to produce phony NFTs or influence the market to drive up prices. In addition to hurting buyers and sellers, this can erode confidence in the NFT market. The potential for money laundering using NFTs is yet another ethical problem. NFT transactions can be used to launder money or finance illicit activities because they are frequently anonymous and challenging to trace. The integrity of the financial system and the rule of law may suffer significantly because of this. The ethical implications of copyright violations and other

violations of intellectual property rights are the final point. Digital art, music, and other forms of creative output are frequently represented by NFTs. However, it may be challenging to establish the legitimacy and ownership of this content, which may result in disagreements over copyright and other intellectual property rights. NFT platforms and creators may need to implement more stringent verification procedures to guarantee the ownership and legitimacy of NFTs in order to solve these ethical problems. Regulators may also need to create new legal frameworks and regulatory rules that meet the difficulties presented by NFTs, such as their decentralized and anonymous character.

## **Energy consumption**

Energy consumption is one of the primary moral issues surrounding the environmental effects of NFTs, which are a major source of worry. Since the blockchain technology used to record NFT transactions is a decentralized digital ledger maintained by a network of computers, it consumes a considerable amount of energy. The verification and addition of transactions to the blockchain require complicated calculations, which leaves a significant carbon footprint. NFT energy requirements, according to critics, go against the moral principles of sustainability and environmental responsibility. While some contend that NFTs use relatively little energy compared to other sectors, like transportation or agriculture, the growing energy requirements of the blockchain technology may have negative long-term effects on the environment. To secure the longevity of the NFT market, it is essential to address the problem of energy consumption. NFT platforms and creators may need to follow more environmentally friendly procedures in order to overcome these ethical issues. For instance, they could power NFT transactions with renewable energy, greatly reducing their carbon footprint. They might also create new blockchain technologies that utilize less energy, including proof-of-stake or sharding, which demand less energy than the blockchain's existing proof-of-work consensus method. The ethical issues surrounding energy usage must be addressed by market actors, including purchasers and sellers. They can develop responsible consuming habits, such as limiting their use of NFTs or assisting creatives who put sustainability first. They can lower the total energy consumption of the NFT market by encouraging ecologically friendly makers and restricting their own consumption of NFTs.

## **3. My Perspective**

### **Introduction**

NFTs clearly show how blockchain technology is a cutting-edge innovation when it comes to its functionalities and the characteristics that make it unique among other technologies. Although all the positives, such as decentralization and immutability, there are some problems that arise with the use of this technology. The main two problems that deserved to be addressed were the ones regarding privacy and security behind NFT ownership and overall transactions. The former concerns an issue that is a characteristic of technologies that are excessively transparent. As we know, most blockchains offer any person the chance to visualize transactions made by any user. In the world of NFTs, the ownership of a single asset may bring that owner to situations in which his/her identity is compromised, leaving room for malicious people to target that person and not only know the NFTs under his/her possession, but also all other transactions that the owner made on the blockchain. The latter is a security problem, that is a consequence of excessive transparency or low privacy. Security issues arise when malicious users, either online or in real life have intentions to harm or take advantage of information gathered about a person. Issues that arise with NFTs not only have consequences that regard the digital world, but also consequences related to the real world. Real world consequences happen when actions that have been performed through a digital identity can be connected to a real-life identity. Thus, meaning that legal actions such as a purchase of a digital asset or illegal actions such as a fraud done through the use of a new NFT project can both be connected to the identity of a real person, instead of a digital identity performing all of the previously mentioned actions. All the mentioned points and problems have been the motive behind the making of this thesis, in the hopes in finding a solution to these problems to make the virtual space a safer environment.

## **Importance**

Privacy and security are matters that need to be addressed as they could compromise the future use of the NFT technology and overall of all the blockchain technology. As with any innovation or new technology, drawbacks may arise and the capability in minimizing the negative aspects defines a technology's capability in being broadly adapted. New technologies that have potential in contributing value to society are constantly under the pressure of handling negative traits or issues. The NFT technology is no different, issues of privacy and security are of a scale great enough to possibly make the technology impractical and futile. Impractical and futile because currently the NFT technology leaves a lot of room to malicious users to perform harm not necessarily to the digital identity of someone, but more to their real-life identity. The dangers regarding to the possible scenarios of what could happen if the real-life identity were to be compromised have no comparison with what could happen to the digital identity of a user. While a digital identity could be compromised

by identity theft or hacking, real life impairment can lead to serious damages to all areas of someone's life, not ceasing with damages only concerning the digital world. Fraud, violence, and theft are just a few of the crimes can be committed when harming a NFT user.

Fraud occurs in the cases in which a malicious user tries to deceive another user by using false statements, such as exaggerated promises or by creating something fake in order to trick that user. Fraud has the sole scope of making money from people that have been deceived, this scope is also shared with all other criminal activities. Fake NFT projects, counterfeit tokens and fraudulent schemes are just some of the examples of the various forms of fraud that could occur.

Identity theft is a criminal offense that occurs when a malicious user attempts to impersonate a person or an organization, in the scope of deceiving and collecting money from users, essentially stealing it from them. Malicious users could play the roles of famous people or of CEOs of famous companies on blockchains in the hopes of fooling individuals to get their money.

Out of all criminal activities violence is the one that is most aggravated, mainly because violence does not only cease with the financial damage to an individual, but also extends to physical damage. Thus meaning that a victim will not only be damaged for his belongings, but possibly also for his own life. Violence related crimes are most common in situations where the real life identity has been compromised.

## **Current state**

The current state of the NFT space has seen these digital assets in the spotlight during their boom in 2021, providing a wide adoption and a user base of roughly 29 million users in 2021. In spite of the fact that there was a surge for the NFT technology, the current state in 2023 there has been a big loss in value for these assets mostly due to the decrease in demand. Most of the demand in 2021 came from speculators who intended to make a profit from their NFT transactions rather than from individuals who invested in NFTs because of their belief in the technology. NFTs are still seen as a form of speculation by the majority of people who know about them, the belief that the technology could be part of our lives is only a concept that a small percentage of people believe in. The idea that NFTs could be used in the future is still far, mostly due to the difficulty in adaptation. People should be educated by companies that work with this technology in order to reveal the true potential of what NFTs could do to their lives. On top of increasing education and awareness towards NFTs, the rise of

artificial intelligence with the release of Chat GPT contributed to obscure NFTs as a future technology.

### **3.1. Proposed solutions**

The solutions in addressing the problems of security and privacy for NFTs from my perspective are a few, mainly because of the need of solving the problem from different angles. A single solution at of this present moment is arduous to find, this is because a single solution will leave room to other problems to arise, while the solutions that are now going to be discussed serve the purpose of solving issues from different approaches helps in reducing future problems from rising in the future. The proposed solutions represent ideas and experimental approaches to the solution of problems of privacy and security within the world of NFTs. The proposed solutions leave room also to discussions regarding the effectiveness of the concepts and the possible weak points that the ideas may present.

#### **3.1.1. Zero Knowledge Proof**

One party can demonstrate the veracity of a statement to another party using the Zero Knowledge Proof (ZKP) cryptographic protocol without disclosing any extra information outside the veracity of the statement itself. Due to its potential for providing solutions to the problems of security and privacy, this instrument has attracted considerable attention in the world of NFTs. Ownership verification is one of the main issues in the NFT space. By enabling users to demonstrate ownership of an NFT without divulging personal information or showing the actual NFT, ZKPs provide a potential solution. For instance, a user can show that they possess a particular NFT without revealing their wallet address or any other information that could be used to identify them. This safeguards against identity theft while also maintaining NFT owners' privacy, which is important in the digital world.

#### **Confidentiality**

Another crucial area where ZKPs can offer a solution is confidentiality. Users can demonstrate specific NFT qualities using ZKPs without disclosing private data or the material itself. For instance, someone can demonstrate that their NFT has special qualities or satisfies particular requirements without revealing the specifics. The NFT's value and distinctiveness are preserved thanks to this selective information release, which also protects any sensitive data linked to it.



## **Auditability**

ZKPs also allow for auditability in NFT environments. Accessing underlying data is frequently necessary to confirm the legitimacy, rarity, or provenance of an NFT. ZKPs, on the other hand, make it possible to verify such qualities without the requirement for direct data access. Instead, without jeopardizing the NFT owner's anonymity, mathematical arguments can be employed to confirm the accuracy of these features. This increases market transparency and trust without compromising people's right to privacy.

## **Trust**

ZKPs enable trustless interactions between parties in decentralized NFT markets. Users can demonstrate ownership and validity during the transfer process by utilizing ZKPs without disclosing sensitive information. This reduces the requirement to have blind faith in the counterparty and improves the transaction's overall security and privacy. ZKPs enable users to engage in peer-to-peer transactions with confidence while protecting their privacy at all times and guaranteeing the legitimacy of NFT ownership.

Zero Knowledge Proofs offer potential solutions to the security and privacy issues that the NFT industry is now facing. NFT ecosystems can improve security by confirming ownership, preserve privacy by selectively exposing information, guarantee auditability while safeguarding sensitive data, and enable trustless interactions in decentralized marketplaces by leveraging ZKPs. ZKPs give users the ability to communicate with NFTs in a verifiable and private way, building trust and confidence in the NFT ecosystem.

### **3.1.2. Creation of a New Protocol**

In recent years, NFTs have drawn a lot of attention to symbolize ownership of digital assets. Although the NFT ecosystem has great prospects for producers and collectors, worries regarding security and privacy have emerged. A potential solution to these issues is the idea of developing a protocol that enables users to deposit their NFTs anonymously, hiding ownership information from public wallets. NFTs' rising popularity has given rise to concerns about privacy and security. Because many NFTs are linked to significant value, hackers and other malicious users may find them to be appealing

targets. Furthermore, because blockchain technology is public, anyone may trace NFT ownership and transactions, possibly jeopardizing owner privacy. Therefore, it is crucial to find a solution that puts security and privacy first without sacrificing NFTs' fundamental functioning.

## **Functioning**

Users will be able to deposit their NFTs anonymously thanks to the proposed anonymity protocol. The protocol would allow NFT owners to temporarily move their tokens to an anonymous address that hides ownership information by utilizing cryptographic techniques and smart contract functionalities. The temporary obscuring of the NFTs' ownership history would protect the owners' privacy. The anonymity protocol has numerous benefits. It improves security in the first place by reducing the possibility of targeted attacks or unauthorized access to NFTs. The ability of hackers and cybercriminals to pinpoint and attack particular NFT owners would be substantially more difficult, lowering the ecosystem's overall security vulnerability. Second, by hiding the identities of NFT owners, the protocol enhances privacy. Users are given the freedom to conduct NFT transactions or display their collections without worrying about unwanted attention or privacy violations because to this increased privacy. The anonymity protocol further guarantees that NFT owners maintain exclusive control over their tokens. The owner has complete discretion over whether to deposit an NFT anonymously, and they are free to change their mind at any time. This adaptability gives people the freedom to use their ownership rights and keep their discretion as they see fit.

## **Issues**

However, putting in place an anonymity protocol calls for addressing several issues and difficulties. The authenticity of deposited NFTs and their future retrieval must be guaranteed through trust and verification methods. To increase process confidence, this can entail implementing decentralized verification systems or external auditing services. Additionally, it is essential to ensure that the protocol complies with all applicable laws and regulations. The protocol's long-term success and adoption within the larger NFT ecosystem will depend on finding the right balance between privacy and conformity to legal constraints. Education of users is also crucial. Users should be given clear rules and instructions to assist them in making decisions about their ownership of NFTs and the use of the anonymity protocol. Users will be more likely to utilize the protocol responsibly and help to secure its widespread adoption if they are informed about its advantages, consequences, and potential risks.

The development of an anonymity protocol for NFTs is represents a potential way to address security and privacy issues inside the NFT ecosystem. This protocol can improve security, protect privacy, and give users more control over their digital assets by enabling anonymous NFT deposits. To achieve its successful implementation and wide adoption, rigorous consideration of trust, verification, legal compliance, and user education is important. An anonymity protocol can help create a more robust and user-focused NFT environment with the correct safeguards in place.

## **Conclusion**

NFT technology currently represents a under-estimated way in handling our day to day issues in life. Although NFT technology may be innovative, it also brings problems and complications with it. Difficulties and complications are not always null in order for a technology to be implemented, as it is sufficient that the utility provided by the technology overcomes its limitations and problems. In the case of NFTs, the problems that arise with their use are in the sphere of privacy and security. Users are in some cases placed in situations where their assets and personal information may be put to risk, making them vulnerable to the attacks of malicious users. The risk of not having sufficient protection over our own personal data when owing such an asset, may discourage us to invest in those assets in the first place, leaving room for a general distrust for the technology. Fraud, violence and other related crimes are the key objectives of the new regulations that are being discussed by the authorities. Criminal behaviors are not the only issues to be addressed, but also ethical and environmental issues require the attention of the creators of new protocols, blockchains and projects; on top of the creators, ethical and environmental issues are also to be addressed by regulators, as criminal activities are only one segment of the possible new laws that could be made in order to regulate NFTs. NFTs are also being considered as financial assets by most regulators and it is important to classify them as such to ensure public safety and fairness in the financial markets.

The surge of NFTs brought millions of people in a journey in a world where the majority of the people did not know what these assets were or what they could do. The surge of NFTs created incredible losses of money from wrong investments, all done with no research and no fundamentals behind them. The illusion of making money created a bubble of speculation within the market, making even the most worthless of assets seem as valuable just for their increasing price. This rush brought the majority of investors to invest in particular NFT projects without knowing what utility was proposed and without any proof that what was promised by the project creators would actually be implemented. The NFTs that received less decrease in value compared to their counterparts were the projects

defined as “Blue Chip”, just like with stocks, this term was attributed to those projects that were to be considered as more stable and established within the market, making their value have a solid base just for their fame or past successes. Although most projects have been proven to be speculations, scams or unreachable promises, it is important to acknowledge that this technology hasn’t been created with the scope of being considered as a highly speculative investment opportunity, but as a technology that could provide value to society.

NFTs could represent the future and possibly they would possibly be able to substitute some items or technologies that we are currently adopting. An example of the practical day to day use of NFTs comes in the world of contract law, where future contracts could be made in the form of NFTs instead of physical paper, making them not modifiable and making forgery impossible, as the contract cannot be replicated. The immutability of these assets can also make them suited to resemble titles and certificates, such as degrees or language certificates. On top of that, NFTs can also serve their use in the world of jobs, where NFTs can resemble past working experiences in a CV, making information truthful and leaving no room for false statements or experiences.

The issues surrounding privacy and security may discourage most users, for this reason it is important to provide proper information to people, in order to prevent fraud or other damages. Providing further information on the topic may help people in truly understanding the functionalities behind these assets and not fall for a simple scheme or trend that can happen at any given moment. Solutions such as Zero Knowledge Proof or Anonymity protocols can possibly be the protection that NFT owners require in order to feel safe within the NFT space.

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