

# Metaverses & NFTs: Digital Real Estate of the 21st Century

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*Abstract:*

Blockchain can be traced back to originating from the ideologies of anarcho-capitalists and minarchists, and the adoption of the decentralized systems have turned the global citizens of the internet into digital-realtors. By definition, a realtor is a real estate broker, real estate agent or realtor is a person who represents sellers or buyers of real estate or real property. A digital-realtor follows the same definition, except instead of creating, buying, or selling property that you can construct a house or building on, they deal in virtual real estate, whether they know it or not. Every time you play a game, visit the doctor, or call the police to report a crime, these digital-realtors from around the globe are enhancing the value of hundreds, (if not thousands), of pieces of virtual real estate through something called the metaverse.

*"Anarcho-capitalism might seem fringe and unfamiliar to most people, but at least it helps explain the rationale behind cryptocurrency and blockchain. Unfortunately, those topics become even more confusing when Bitcoin and its kin get used in ways incompatible with their original inspiration—which turns out to be most of the time."*

## **Anarcho-Capitalism: A Primer on the Theory of Private Property Rights and Markets**

First of all, one must understand what the phrase anarcho-capitalism really means, and what it truly stands for in regards to different aspects of everyday life - only then will one be able to truly grasp the true potential of blockchain technology.

### **The 30-thousand-foot Overview / Summary**

Anarcho-capitalism is a phrase used by advocates of minarchism, and refers to a minimal state with no areas of government oversight. And who are minarchists? Minarchists are best identified and described as individuals or groups that argue that the state has no authority to use its monopoly on force to interfere with free transactions between people, and see the state / government's sole responsibility as ensuring that contracts between private individuals and property are protected, through a system of law courts and enforcement. Minarchists generally believe a laissez-faire approach to the economy is most likely to lead to economic prosperity.

A phrase used by advocates of minarchism and refers to a minimal state with no areas of government oversight. Anarcho-capitalism is a philosophy that advocates the voluntary association of free individuals under the rule of law. While it is usually associated with right wing ideologies, most anarcho-capitalists would not describe themselves as right wing as they believe that capitalism has become co-opted by corporate interests.

According to anarcho-capitalists, the purpose of markets is to provide means through which people can better the quality and quantity of their lives. If society were perfect, then markets would not be necessary. However, capitalism has reached a point where people are positively harmed by its operation as corporate interests increasingly become the driving force in both political and economic decision-making. An anarcho-capitalist would say that it is up to individuals to decide how they wish to order their own lives by engaging in voluntary exchange with others.

### **Common Beliefs**

Anarcho-capitalism is a philosophy that advocates the voluntary association of free individuals under the rule of law (see Declaration of Individual sovereignty). It is often associated with libertarianism but is not synonymous with it. Anarcho-capitalists also believe that a human being has the right to exercise dominion over their own body and property necessarily included in such rights of ownership, and that all forms of domination (including exploitation) are necessarily immoral.

**Property Rights:** Since all individuals have rights to life, liberty and property, it should come as no surprise that anarcho-capitalists take a strong stance against illegitimate expropriation. That means theft by groups or governments is not only immoral but illegal as well. In contrast, legitimate collection of taxes is permitted within an anarcho-capitalist society as long as they are proportionally distributed among those who pay them. This proportional distribution comes from the realization that no individual has a natural right to ownership of other people's property.

**Government:** Anarcho-capitalists generally agree with the philosophical construct known as minarchism, which holds that all legitimate government power should be maintained at the lowest level possible and localized as much as possible. This means that anarcho-capitalists generally do not value democracy or direct democracy (however, some anarcho-capitalists may favor some forms of democratized government). They also generally oppose what is known as tyranny of the majority, which is essentially a form of large scale democracy where decisions made by the public may be detrimental to individual liberty. Anarcho-capitalists also have little regard for the idea of popular sovereignty as they believe that individual self-ownership is far more important than majority rule.

Anarcho-capitalists also generally oppose a form of government known as the welfare state in which people are given money or other forms of aid from a large volunteer organization. They believe that this government should not exist since it allows for involuntary servitude on the basis of financial need, and that society should be responsible for helping those in need.

**Contract Law:** Contract law is central to anarcho-capitalist theory. In an anarcho-capitalist society, all contracts would be enforced by private entities known as arbitration agencies. This would mean that the decision of which contract to enforce would be based on factors such as the contract's enforceability, torts committed by each party, and comparable contracts.

This is important because it means that two people will not be able to take advantage of an existing system by making a contract they know will not be enforced by the courts. This would ensure two things: first, that both parties involved in a contract are fully aware of its terms and second, that both parties involved in a contract intend for it to be enforceable. In other words, what is important is what the parties agree to so long as both sides are clear about their agreement.

**Personhood:** An anarcho-capitalist society has no need for the concept of personhood and would not include it in any form of law. In other words, there is no such thing as "human rights" that can be enforced against individuals or groups of people under an anarcho-capitalist system.

**Non-Aggression Principle:** The NAP states that it is immoral to initiate coercion against others unless they initiate coercion against you first (i.e., the NAP doesn't allow for self defense but only allows for defense against aggression). That means that an individual cannot initiate aggression against another individual or group of individuals without a legitimate reason. In

short, non-aggression is the liberty to interact peacefully with others while avoiding the initiation of aggression.

**Prisoner's Dilemma:** I don't have to explain this to many of you if you are already this far into my article, but as a refresher, this is the classic moral dilemma involving two prisoners who are willing to cooperate but cannot because they are not sure if their cooperation will be reciprocated. The dilemma asks what each prisoner ought to do in order to maximize his or her own happiness given that both prisoners know the other will play a certain strategy and that it might not be reciprocated. The answer is that each prisoner ought to choose their own strategy in an effort to maximize expected utility, but may not know what strategy the other prisoner will choose, making this a situation of pure uncertainty.

However, one of the more interesting aspects of this thought experiment is that, even with pure uncertainty about what the other prisoner will do, both prisoners can still cooperate. This is because there are rules of behavior that allow for the possibility that a well-intentioned individual may act in a way that is not in his or her self-interest. Unfortunately, some individuals may take advantage of these rules and use them as excuses to violate contracts or break agreements regarding property ownership.

#### **Proponents: Critics:**

Libertarians argue that anarcho-capitalism and minarchism are synonymous in more ways than one. Anarcho-capitalists argue that the best form of government is a minimal state with as few rules and regulations as possible. Minarchists argue that a smaller government is only the first step in achieving anarchist ideals as such a state may have to grow into a larger state. The difference between minarchism and libertarianism are important to note because both are forms of anarchism, the former being a minimalist form where rights are defined via natural law while the latter is a maximalist form where rights are defined via positive law.

Libertarians argue that minarchists are more likely to achieve their goals because a smaller government is more likely to win elections than a larger government and is therefore less prone to abuses of power. Anarcho-capitalists argue that the elimination of the state is the only way for a society to be free. Minarchists argue that under anarcho-capitalism, large corporations can abuse their power and dominate small companies. Anarcho-capitalists would counter this argument by saying that corporate dominance is only possible in large governments and could never happen in a deregulated free market as these companies would be forced out of business by the competition. Minarchist argue that government is necessary to provide aid to those who are in need of assistance. Anarcho-capitalists would counter this by stating that private charities can do the job of government without requiring the initiation of force onto the rest of society. In other words, society should not be forced to use government aid when private charities can do the job of government without interfering with the rights of others.

Libertarians will argue that a libertarian society would have a much shorter lifespan than a statist one simply because it is less resistant to corruption. A statist system is more resistant to

corruption due to the power of the state and its ability to arrest, jail, and persecute people who control it. A libertarian society lacks this ability and therefore is more prone to abuses. Minarchists will argue that they are in favor of human rights and would not want to deny anyone basic human needs, such as food, shelter, and medical care. Libertarians will argue that the minarchist approach is much easier to circumvent than the libertarian approach as most people can live in a statist society without really knowing any better while few minarchists are willing to give up their lifestyle for the benefit of others.

Blockchain is a product of anarcho-capitalist ideology. A network of computers are distributing the data of the transactions on the blockchain. Since they aren't able to track it back to real people, this allows for complete anonymity. Minarchism is just as essential. The miners that operate these computers are doing it with electricity which is paid for by someone. For them to do that, there must be a governing body or group of people regulating the use of electricity and how much is used. If there were no restrictions on how much could be used, no one would be responsible for paying for all this power and no one would have any control over the blockchain.

Because of the size and scope of the blockchain, there has to be a governing body in place that can regulate it accordingly. In other words, this technology requires a government for it to function the way that it was intended. Without any oversight, a cryptocurrency like Bitcoin would just become untraceable money for drug dealers or terrorists. It's not even feasible to have an open source network like the blockchain without any regulation behind it as people will abuse the system in some way or another.

Blockchain is exactly what it is because of minarchism. Minarchism is what keeps transactions safe while not being able to see who's involved with them by using blockchain technology. Without government coverage, it would be impossible to have a safe and secure cryptocurrency like blockchain technology. Since Bitcoin is in effect anarchy, we can see how minarchism is the base of this ideology. The technology is very important to have with the potential that it provides. It's no wonder that there are so many industries that are trying to get involved and they're not all that willing to listen to criticisms from those who don't want this kind of change.

Minarchism isn't just a good idea for blockchain, but it's essential for the whole world. It's the base of blockchain technology, thus in turn being the founding ideology behind NFTs and Metaverses.

### **A Deeper Look at NFTs and Metaverses**

NFTs and Metaverses are a significant part of the future of the global decentralized networks, powered by blockchain technology and cryptocurrencies. The utilization of NFTs and cryptocurrencies in both the medical / biotech / pharmaceutical industries and the gaming world are each multi-trillion-dollar industries only getting stronger as they explore and experiment with deep tech. If you're anything like me, I needed a full refresher (more like a crash-course) on what these terms even mean before you can truly understand the full potential and implications of this technology and why this is not a fad, but a fashion.

## **Blockchain in the Medical, BioTech, and Pharmaceutical Industry is Booming.**

NFTs (non-fungible tokens) is a blockchain technology that allows each asset on the blockchain to have its own unique identification system. This is achieved with the use of non-fungible tokens (NFTs), which are unique and different from their counterparts, namely, fungible tokens. A fungible token can be used by all users or consumers alike, but each one of these tokens has identical properties and features. The ownership of these assets is recorded on a public ledger, and once they are purchased by a user, they cannot be destroyed or duplicated.

NFTs were first introduced on the Ethereum blockchain and have become a very popular concept in the cryptosphere. The use cases of NFTs are abundant, with new ones being introduced daily. As mentioned earlier, NFTs are multifaceted and include digital art, in-game items, collectibles, and even property or records (keep in mind medical records for an example I go into later). NFTs are displacing the traditional concept of ownership and redefining how we view, share, and trade our goods. Effectively, this new system is transforming the ways in which we engage in business transactions.

### **Introduction of Metaverses**

You'll see me mention a lot about metaverses throughout this paper. A metaverse is an open platform that allows individuals to create and share their virtual reality online. The metaverse can be easily explored with lightweight client applications called viewers. Users can create virtual worlds within the metaverse: as an example, a user creates their own city in the virtual world. They can then use NFTs to give a unique appearance to this city and incentivize users to visit it by utilizing blockchain technology and cryptocurrencies for rewards-based systems for players visiting their city. But the first step is to understand what the differences between NFTs and Metaverses are.

A metaverse is a virtual world on the blockchain where users can create their own worlds – cities, polities, nature reserves – etc. that they then make unique with non-fungible tokens, which are used as rewards for players visiting their world.

The difference between the two definitions (Metaverse vs NFTs) is that NFTs can be used to create any virtual world on the blockchain, and each thing on that virtual world will have its own uniqueness, whereas a metaverse is a virtual world where players can create their own worlds and make them unique with NFTs.

The VR/AR Metaverse promises to unite these technologies for a one-of-a-kind immersive experience that will change how people interact with their surroundings. It's because of this that Ethereum blockchain projects are becoming increasingly common in spaces where VR/AR technology is being utilized: medical science and pharmacology.

### **NFTs & VR/AR for Medical Science and Pharmacology**

There are three main industries that have been heavily influenced by the emerging wave of blockchain projects focusing on NFT technology: medical science, pharmacology, and pharma. Most projects in these fields use NFTs as a way of marking ownership over medical data. Typically, the goal is to find ways to make the exchange of valuable data between researchers easy and secure. Increasingly, these initiatives are also looking towards VR/AR integration as a means of solving some critical issues in the medical domain.

For example, many argue that blockchain technology, combined with VR/AR, is the perfect match for medical research. In particular, this would allow researchers to show and share their work effortlessly. It's critical that this method of sharing is simple and streamlined to help patients understand the ins and outs of diseases more easily. In addition, it would be convenient for both doctors and patients to have access to updated, relevant information at all times without the need for third party services.

### **Ethereum Blockchain Projects in Medical Science**

In this regard, there are a number of Ethereum blockchain projects currently active in the medical field. For example, a number of academic institutions are already utilizing Ethereum blockchain to help manage sensitive information. When it comes to VR/AR, a lot of blockchain projects are also looking towards the integration of this emerging technology in meeting these goals.

This can be seen in the projects being pursued by the MIT Digital Currency Initiative (DCI), for example. The DCI is working on "Guardian" and "Seal". Guardian is a protocol that enables patients to directly control and share their medical data as well as allowing researchers to store confidential data at the same time. Seal is an ERC-721 token that lets researchers store important data securely on Seal's blockchain hardware, while allowing patients to validate this data with their seal app.

In addition to the projects undertaken by MIT, other researchers are looking towards medical blockchain projects for initiatives in their respective fields. For instance, Dr. Vijay Chandru, an oncologist at Harvard Medical School, is leading a team that is working on the application of blockchain in the medical domain. The project aims to solve issues like patient data security and payment systems among scientists and doctors worldwide using Ethereum blockchain technology. Chandru also created a new startup called Chronicled Blockchain Research Initiative (BCRI) that's dedicated to exploring how blockchain and VR can be used to improve clinical trials shared with manufacturers of medicines.

Another interesting project is MyClinic, which connects patients with doctors and specialists worldwide. Currently, the platform allows users to watch and share educational videos about different medical conditions. It also lets patients ask questions to experts from all around the world. The platform also uses NFTs to allow users to claim ownership of their health records and store them on Ethereum blockchain. In addition, MyClinic is starting up a separate project called

DeepAR for helping medical professionals create 3D avatars of body parts in order to better demonstrate musculoskeletal and nervous system disorders using augmented reality (AR).

Other projects are focused on creating digital representations of pharmaceutical drugs that can be used in various ways by pharmacologists throughout the world. For example, Receptiv has created a platform that allows doctors to build and customize AR/VR applications using its AR/VR drug library. The pharmacology space is also where a lot of blockchain projects are being aimed at providing solutions for medical records security and the exchange of electronic health records (EHR). These include MedRec, which will provide patients with a HIPAA compliant EHR, and Medipedia, which is developing an open source EHR for doctors worldwide.

MedRec is a research and development project that aims to store patient records on blockchains using non-fungible tokens (NFT's). Specifically, MedRec plans to start by storing medical data on blockchains using the Ethereum blockchain, while investigating other blockchains as well. The primary goal of MedRec is to build a decentralized database that stores patient records in a central location while maintaining the privacy of patients' health information. Another goal is to build a decentralized application that interfaces with the decentralized database.

Similarly, LAToken provides a platform where you can create and trade NFT's used for medical and pharmaceutical supply chains. Specifically, LAToken is creating an ERC-721 token standard that enables the creation of non-fungible tokens (NFT's) for use in supply chains. LAToken also plans to build an application that creates and trades NFTs to manage medical records, which are known as "Medical Metaverses."

### **Medical Metaverses**

The development of medical AIs presents the potential to replicate and scale major innovations in medicine, including pharmaceuticals and new therapies. The business of medicine is rapidly changing, but we haven't yet had a chance to think about the implications it has for healthcare as a whole.

The pharmaceutical industry is struggling to cope with an increasingly stringent regulatory regime. The necessity of testing new therapies and their effects in vivo has slowed the development of medicine.

Even with genetic engineering, it's relatively slow and expensive to test new medications. Some people think this is a good thing, but it's hard to say that this is doing much in the way of scientific progress or discovery.

Cyber Life aims to make medicines safer, more effective, and easier to create. A lot of innovation goes on within the pharmaceutical industry that would be lost without certain



barriers-to-entry being removed (hint hint). Medical Metaverses (MM) are the first step in achieving this goal.

\*\*\*Medical Metaverses are similar to, but not identical to, the more famous Second Life and OpenSim virtual worlds. MM is a persistent world with no external network connectivity. MM is not a Second Life or OpenSim replica, nor does it simulate any real-world environment or entity. Each MM world is created by an individual "Player Biologist" who wishes to use it as part of their research into the medical field(s), and it may contain some other GM-controlled entities that a Player Biologist might wish to use in their research (basic NPCs, for example).\*\*\*

MM's are not a way for patients to visit an in-world doctor. To quote Carl Sagan, "Extraordinary claims require extraordinary evidence." We're not asking anyone to suspend their disbelief regarding the existence of MM's or the ability of in-world doctors to cure real medical conditions. (There are some conditions that can't be cured by In-World Doctors, by the way.)

MM's will be used as a combination of field laboratory and virtual training environment for Player Biologists and their research teams. Real-world treatment may or may not be carried out at the same time as work with MM's, depending on local regulatory requirements (which will differ from country to country).

\*\*\*The first MM in this initial release is based on the NFT drug Targin. That said, it will not be a replica of any real-world location, nor will it contain any copies of any real people or characters. It will be designed to allow Player Biologists to design and test clinical trials for new medications before they are tried in the real world.\*\*\*

MM's are not an alternative method of medical treatment- as their name suggests, they exist within the scope of medicine and biology as a scientific discipline. Most MM's will consist of a virtual environment where Player Biologists will conduct preliminary research into a variety of medical conditions, including oncology, mental health, neurodegenerative disorders and infertility treatments, as well as being able to test medications in varying stages of development.

MM's will not be released to the general public until they have undergone rigorous testing by independent doctors and research institutions. This level of quality assurance is essential for ensuring that MM's are safe for their users and their patients. In addition, an entire range of linked applications (see below) will be made available to Player Biologists to help them with managing their MM worlds, including one-click imports of real-world data like patient records.

Cyber Life's Tonic Games team will not be making MM's directly. We plan on licensing the technical and creative aspects to accredited universities and expert research groups for them to use to create, manage, and run MM worlds. They will have complete control over their MM universes, but Cyber Life Tonic Games will continue to provide game engine support (see below).

The software that allows Player Biologists to create medical metaverses is still in development, but early mockups of what it might look like are available at <http://cyberlifetonic.com/mm>.

As we've said, MM's are not an alternative method of treatment for any medical condition. They are designed to allow Player Biologists and research institutions to conduct pre-clinical research on treatments before they are made publicly available.

In addition to these advanced and complex projects in the area of medical research, there are also deep tech projects focused on the rest of the pharmaceutical industry. If any of this has piqued your interest regarding investing in the virtual world of VR and AR blockchain technologies, you should check out VRX, founded by longtime Bitcoin fans Evan Wagner and Alex Bosworth in November 2014. Based in Toronto, they are revolutionizing how supply chains work today and they use cutting-edge blockchain technology to provide solutions for companies in over 50 countries around the globe including Canada, USA, Brazil, Mexico, Russia and China among others. It currently has around 20 employees who are working with its current clients to build decentralized apps on Ethereum blockchain. In order to grow their business as well as innovate at their own pace, they have decided to raise capital through an Initial Coin Offering (ICO). VRX tokens trade on cryptocurrency exchanges after the company issued around 8 billion tokens at a rate of 1 ETH for every 500 tokens.

The platform they are working on is called "Audited for Supply Chain", which allows pharmaceutical companies to track the full and complete supply chain of their products from start to finish, made possible by the Ethereum blockchain's capability to store and secure specific information (such as proof of origin) using its ERC-721 token. The auditing company that does this is called Axios Global. They are based out of Switzerland, and have worked with over 300 pharmaceutical companies around the world.

VRX also works with other technology companies such as SAP, IBM, Microsoft and Oracle – all of which help verify information in the supply chain at certain points in time. VRX has used blockchain technology to develop a smart contract platform that helps companies to trace bulk inventory, certify products during the manufacturing process, and protect data as it flows through the supply chain.

VRX's platform was designed to help authorize, certify, and validate data from pharmaceutical companies' supply chain management system (SCM) throughout the manufacturing process. SCM is basically an information technology system that helps keep track of all the ingredients, components and finished goods in the supply chain. The platform was designed to accept data from several different sources and use smart contracts to trace bulk inventory, certify products during the manufacturing process, and protect data as it flows through the supply chain.

VRX Development Inc's CEO/CTO Evan Wagner told ForkLog: "We're developing a decentralized application for managing pharmaceutical companies' supply chains. This is a market without much competition and there is huge potential for growth, both in the pharmaceutical and blockchain industries. What we're bringing to the market is a system that

can support an entire supply chain, from the packaging of raw materials, to manufacturing of products and finally delivering them into the hands of customers."

The Company was created to fund blockchain incubation. Ivanicic has an extensive background in Blockchain technology, including serving as CTO for one of the most popular Ethereum wallet applications. He has also held senior positions at Deloitte Consulting as Director-of-Technology for Latin America before founding Virtual Reality Xchange Inc (VRX) a two-man start-up based in Toronto. VRX Development Inc raised CAN\$20 million (USD\$14.3 million) through an Initial Coin Offering (ICO), which is the equivalent of USD\$14.3 million in Bitcoins during September of 2015.

### **Additional Ethereum Blockchain Projects for Pharmaceuticals**

Another project that has garnered a lot of attention from investors is the DPresearch.com project. DPresearch will create a user-friendly VR platform where users can share their VR research experiences with each other. The platform's goal is to make VR/AR technology accessible for scientists all over the world while providing them with tools allowing them to easily share their work with each other.

In some cases, projects are focused on the use of the Ethereum blockchain technology for more general VR and AR applications. For example, it's possible to create and upload 3D models into the Ethereum blockchain and register them as a smart contract. Using smart contracts, users can trade digital assets with each other while ensuring that the contracts are automatically executed at a later date without any third parties involved. This is useful for businesses that need to store and manage digital assets that may not yet have been developed by them but want to have them in place prior to full development.

In July 2017, Andreessen Horowitz participated in a \$15M funding round in Decentraland, an Ethereum Blockchain project focused on VR/AR. It was the largest funding of an Ethereum project until that time. The primary focus of Decentraland is to build a virtual "world" in which users can create and exchange digital assets, such as virtual land and buildings.

Andreessen Horowitz has been investing in virtual reality technology for the past few years. In 2015, they invested in Oculus, which went on to make a \$2B acquisition by Facebook last year. More recently, they have been investing in Metaverse, a centralized blockchain project that is focused on building a digital real-estate market.

Metaverse is based in China and the firm is an early investor. Metaverse's founder and CEO Allen Zhang started the project about seven years ago to build more advanced virtual games for the Chinese market. In 2014 he launched Metaverse as a blockchain platform for users to trade and exchange virtual assets across multiple games within the network.

The \$15M funding came after Metaverse staged a digital land auction on the blockchain, to sell 600 virtual lots on December 8th. The company set the opening price at 1.3 ETH per land lot

and while reserve prices weren't disclosed, the company claimed to have received around 10M ETH based on over 2K buyers (matching the current value of \$2B).

The project's main goal is to create a digital real estate market where users can buy virtual land and build homes and businesses in this new world. They are also working on other applications, including a social network similar to Facebook that is connected to people's digital wallets.

The majority of the team is based in China, with the remainder in Russia and the United States. Of course, Chinese users will benefit from this blockchain project as a way to trade and exchange fiat money into digital assets. Metaverse claims that they are following international regulations, including local tax laws and anti-money laundering requirements. They also have a technology partner called ECC (a \$1.7B real estate company) that has held land in Shanghai for over 20 years and operates several similar projects there and in other parts of China.

Metaverse's website states that they have built around 200 full-time employees using free software tools such as HyperDev (a VR/AR framework for building games). The firm's plan is to build our metaverse platform using blockchain technology, enabling users to exchange digital assets.

As a developer of this decentralized platform, users can freely develop games and other applications without the need to go through central authorities. As the use of Metaverse grows, so will the ecosystem of users and assets. This team believes that this peer-to-peer governance drives more value for all participants in the network. Users can also vote for representatives that will run the network. The more "virtue" an elected official has (i.e., experience and reputation) the higher their chances of earning a position in Metaverse's Council of Representatives.

### **What are the use cases of NFTs?**

NFTs are revolutionizing the gaming industry through their secure digital ownership. They can be utilized to create digital real estate and in-game items. They can also be used to represent physical assets; for example, NFTs could be used to represent a house or a car.

NFTs can also be used to represent virtual spaces on the blockchain and incentivize players to visit their city by providing tokens as rewards. They can also be made valuable with Proof of Work (PoW) mining.

For example, NFTs are created in game worlds, then users can use them to create in-game content, such as an avatar costume for a character in-game. Then once the player has acquired all parts of the costume, the creator of the character will set up a functional reward system where players will be incentivized to come to visit their city or game world that they created.

For example, let's say you are creating a city in a crypto-game world, and you want to create an in-game item for sale: when someone buys your digital real estate, you can then use NFTs to

set up a reward system. You could set up a program where people who own land will receive rewards for other players coming and visiting their cities. This would make these lands very valuable on the blockchain itself.

NFTs are also used for digital art and virtual experiences, which are non-commercial. A famous example of this is CryptoKitties.

The possibilities with NFTs are seemingly unlimited – they can be used to represent any kind of digital item on the blockchain, from collectibles to unique real estate on a game world.

### **How does Blockchain Technology play into NFTs and eSports Metaverses?**

Blockchain technology decentralizes the gaming experience and makes it more inclusive to people. It allows people to purchase virtual land or assets using cryptocurrencies in a secure fashion without going through the need for third parties like a bank account or Paypal account.

The NFTs that are created will be recorded on the public ledger, so there is no need to look for records in a centralized database like a bank or Paypal.

For the creators of non-fungible assets, it offers an alternative funding solution; investors don't have to invest their funds in a bank. Instead, they can donate their funds directly to the developers of a game world or overall project through livestreaming campaigns and token sales (i.e. ICO).

With blockchain technology and cryptocurrencies like Bitcoin and Ethereum, it is possible to incentivize players by providing them with tokens or other properties as rewards in exchange for playing games or visiting virtual worlds.

### **NFTs as Revenue for Developers**

Almost all NFTs are the types of assets that can be used to make revenue for developers. For example, the price of rare digital assets like CryptoKitties skyrocketed after it was released on the Ethereum network in early December 2017. The one-of-a-kind CryptoKitties took the world by storm. It soon became a highly sought-after collectible asset that could be easily multiplied with other cats in a player's account, creating an incentive for many players to spend money on them to create more rare kitties, and therefore inspiring sales of other virtual assets on the Ethereum network.

Players Buy Crypto-Tokens for One-of-a-Kind Digital Items That Can Be Easily Multiplied or Sold on the Blockchain.

Because NFTs are the types of virtual assets that can be easily multiplied, and because they are the types of assets that players want to invest in and eventually sell, this brings a great benefit for developers too. They have an alternative way to monetize their games or virtual worlds,

which is to sell crypto-tokens to players. These tokens can be used as currency in the game world by players to buy new assets (e.g. avatar costumes) that will increase the value of those tokens. Once the users have acquired all parts of a costume, the creator of that character will set up a reward system where players will be incentivized to come visit their unique city or game world that they created, allowing for P2P (peer-to-peer) monetization.

It is common for game developers to wish that they had a way to make more revenue, but traditional sources of revenue are harder to come by. For example, data providers like Valve Corporation can't charge for access to their games, because if they charge for the service, they will be competing with other services.

Their solutions are to create microtransactions that include features and content in their games like extra items in Counter-Strike: Global Offensive. These are typically small transactions (\$1-\$10) that don't get most users excited or entice them to spend hundreds of dollars on digital assets or virtual goods.

Another alternative to the microtransaction model is running an open market where players can buy and sell virtual goods using accounts that they own and control. The only problem with this is that it can be hard to find trading partners for these goods in some games because there are already so many people using the account, and it's hard to find quality goods on a site like eBay or Craigslist; even when you do, sellers may charge a high commission fee.

Crypto-tokens can be used as currency for buying specific digital assets within a game, but they aren't centralized. There is no need to pay a high transaction fee or search for a trading partner, because the game world is decentralized (i.e. peer-to-peer). Anyone can use it for buying rare digital assets.

The two-sided effect of the usage in-game is incredibly interesting. On one hand, players can use a digital currency to buy in-game assets and resources or even trade these currencies on exchanges for real money. This virtual economy has an intrinsic value that's worth something outside of just playing the game if someone chooses not to spend all their time doing so like me!

There is a double pressure on the price of these coins. They are being earned and burned in games, both simultaneously - like when you buy something with them in-game, they get destroyed. There's also people who want to trade it for what feels like an asset that will go up as well.

There's two pressures pushing down prices: one where players earn their fortune through hard work and dedication; another where gamers can burn these tokens while playing Call of Duty or other competitive first person shooter video game titles because if we destroy our own assets then there isn't enough supply out there! And finally some folks just looking to make money off this hot commodity are buying from exchanges since they figure any investment is worth putting into at this point

## **Value of Crypto-Tokens From NFTs Depends on the Value of the Game World and It's Assets**

The value of crypto-tokens depends on the value of all digital assets in the game world and how easy it is to sell them. For example, CryptoKitties are scarce digital assets that could only be obtained through trading with other players in the same game, but they were able to become highly sought after by players because they could be easily multiplied. If the game world has many rare digital assets, and it isn't easy to trade them with other players, then the value of the crypto-token won't be as high as if it was easy to obtain or buy.

Similarly, if there are many rare digital assets in a game that can only be purchased using a crypto-token, but you have to spend hundreds or thousands of dollars on them, then they won't be very valuable. On the other hand, if there are many common digital assets (e.g. avatar costumes) that are available for free, but you can create a crypto-token for them that creates revenue for the game developers and increases in value over time, then the value of that token will still be worth something to players and investors. While the applications for gaming and the eSports industry is massive, there's yet another huge and untapped sphere that is still being navigated and innovated in: crime.

## **Metaverses and Crime: A Benefit or a Hindrance to bringing down Organized Crime?**

When in the real world, we are bound by space and time, but in the virtual world these constraints are removed - people can be anywhere at any time, doing anything they want. Of course, there is a lot of excitement around newer technologies being leapfrogged by new disruptive players. However, the premise that this is a favorable development for society as a whole is just not supported by the data. Existing technologies have been used by criminals to avoid detection and it has been shown to play a very important role in the maintenance of organized crime.

There has been some debate on whether or not a blockchain-based virtual criminal metaverse would have beneficial effects on preventing crime and terrorism in society as a whole. A metaverse could provide for public anonymity while simultaneously controlling transactions through decentralized, digital identities. This idea has been proposed by several crypto enthusiasts and has shown promise to significantly reduce rates of both online and offline criminality according to many experts in the cryptosphere (such as Vitalik Buterin).

In fact, a blockchain-powered criminal metaverse is closer than you might imagine.

The U.S. Central Intelligence Agency (CIA), the National Security Agency (NSA), and the Federal Bureau of Investigation (FBI) have been especially influential in monitoring and trying to control human communication, whether through physical microphones or electronic surveillance that can reach anywhere around the globe. But as technology has advanced over decades, and devices are made smaller and take up less space in our pockets, it has become harder for these agencies to know what we're doing at any given moment. This is where blockchain has gained

momentum—through cryptocurrency like Bitcoin—as a way to allow for direct monetary transactions without the need for any third party financial institution or government entity at all.

Both in the US and the rest of the world, Governments are eager to use this new sphere of technology as a way to track the crypto-criminals who use them for illicit purposes. Many government agencies are looking to blockchain technology as a way to handle these problems. Now, the Department of Homeland Security (DHS) is testing something called “Narrative” that they describe as “a blockchain-based platform which acts as both a content aggregation portal and social network” in order to fight terrorism. This will allow users to create an alias, which they can control by posting text and links, allowing users to choose their own level of privacy on all posts.

Currently, the anonymity provided on the dark web is allowing for a lot of online criminal activity that would not have been possible had there been more control over transactions. If these criminals also had access to their own private metaverse where they could commit crimes in virtual reality without the threat of government intervention, I believe that this would cause many of them to commit even more heinous acts against citizens in "real" life.

I have read some concerns about how real-life criminals could use crypto wallets and assets as part of planning or committing crimes on a larger scale than ever before. It has been suggested that most crime will still be committed in the "real" world, but that there will be more opportunities for crypto-enabled criminality online.

In my opinion, this is not necessarily a problem with blockchain technologies. The problem would be solved better by establishing a short-term period where virtual crimes could be committed and punished through the use of NFTs and metaverses. In this way, there could be a long-term benefit for both citizens and the government through reduction of real life crime without any significant impact to the overall economy or government budget.

In order to allow for this, a metaverse or dark web should be established where people can be free to commit virtual crimes without the threat of being arrested in real life. NFTs and Metaverses could then be implemented to afford these avatars the protection of privacy that they deserve. This could also have positive effects for children who might want to create their own avatars in a virtual space without being watched by adults who might otherwise try to protect them. Of course there would need to be some kind of measure in place so that these minors cannot access adult content either.

Overall, I believe that a metaverse and NFTs can help reduce crime rates without having any significant impact on the real economy or government budget. This could be a beneficial solution to a serious problem for the future of the world, but it will not solve these issues with the dark web as quickly as many resources would like. A long-term solution is needed in order to allow this crime wave to subside without destroying society as we know it.



But are all these advancements, whether it be in the prevention of crime, medicine, gaming, and more, actually contributing to developing a clear path to Authoritarianism?

### **What does the future of NFTs look like?**

But are all these advancements, whether it be in the prevention of crime, medicine, gaming, and more, actually contributing to developing a clear path to Authoritarianism? The short answer is - no one knows. The popularity of NFTs has been growing since they were first used on the Ethereum network in 2017. According to many research reports, as people become more familiar with how valuable NFTs can be as an asset class, there is no limit as to what it can become or do.

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### **Unnat Bak**

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