

EGDF DISCUSSION PAPER

PLAY TO €ARN



European
Games Developer
Federation

1.4.2022



metaverse



community



crypto + NFT



market



This discussion paper is compiled by Neogames Finland in co-operation with EGDF. We wish to thank everyone who has contributed to the process.

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1. INTRODUCTION

Now, in early 2022, play-to-earn is among the hottest buzzwords in the games industry. Play-to-earn (P2E) is predicted by some to be the long awaited disruption of game business after free-to-play (F2P) and pay-to-play (premium). This EGDF discussion paper aims to provide a general overview of this sometimes overhyped phenomena and explore key challenges this emerging games industry sector is likely to face before becoming established.

P2E business model is based on non-fungible tokens (NFTs) that are the beginning of the transition from games licensed to players to games partly, or even fully, owned by players. Significant regulatory uncertainty and valid and not valid scepticism from players, game developers, and platforms alike made the uptake of blockchain-based content (e.g. NFTs and cryptocurrencies) as in-game assets slower than expected in late 2010s. Now, in 2022, a rapid investment boom in NFT based games is pushing play-to-earn business models rapidly towards major market adoption. The rising popularity of play-to-earn business models is also leading to major changes in game design and completely new regulatory challenges.

P2E is general term referring number of **business models** ¹

- **Simple NFTs** that can be sold/traded outside of the game
- **Play-to-earn:** players can earn game rewards, that can be exchanged outside of the game for real money (cash out), by secondary platforms/markets
- **Play-to-collect:** the collections of NFT items can support the player engagement with game IP and support organic user acquisition. Limited editions of NFT items attracts new players, support players engagement and gives visibility for the game.

It is important to keep in mind that only those applications that combine P2E business model with interactive cultural artistic content and gameplay are games. Mere digital currency or NFT collectibles alone should not be considered P2E games. P2E applications that constitute gambling are not P2E games.

The European Games Developer Federation e.f. (EGDF)²

unites national trade associations representing game developer studios based in 19 European countries: Austria (PGDA), Belgium (FLEGA), Czechia (GDACZ), Denmark (Producentforeningen), Finland (Suomen pelinkehittäjät), France (SNJV), Germany (GAME), Italy (IIDEA), Lithuania (LZKA), Netherlands (DGA), Norway (Produsentforeningen), Poland (PGA), Romania (RGDA), Serbia (SGA), Spain (DEV), Sweden (Spelplan-ASGD), Slovakia (SGDA), Turkey (TOGED) and the United Kingdom (TIGA). Through its members, EGDF represents more than 2 500 game developer studios, most of them SMEs, employing more than 35 000 people.

The games industry represents one of Europe's most compelling economic success stories, relying on a strong IP framework, and is a rapidly growing segment of the creative industries. The European digital single market area is the third-largest market for video games globally. In 2019, Europe's video games market was worth €21bn, and the industry has registered a growth rate of 55% over the past five years in key European markets.³ All in all, there are around 5000 game developer studios and publishers in Europe, employing closer to 80 000 people.⁴

¹) Newzoo; Introduction to the Metaverse Report: <https://newzoo.com/insights/trend-reports/newzoo-intro-to-the-metaverse-report-2021-free-version>

²) For more information, please visit: www.egdf.eu

³) Sebastian ISFE Key Facts 2021 from GameTrack Data by Ipsos MORI and commissioned by ISFE: www.isfe.eu/data-key-facts/

⁴) 2019 European Games Industry Insights report: www.egdf.eu/wp-content/uploads/2021/08/EGDF_report2021.pdf



2. EXECUTIVE SUMMARY: STATE OF PAY-TO-EARN

STRENGTHS	WEAKNESSES
<p>Technological independence and decentralization</p> <ul style="list-style-type: none"> ✦ Pay-to-earn, NFT and cryptocurrencies are technology neutral so ongoing global hardware and chip shortage is not going to block the growth, only hinder it. ✦ NFTs might provide a technological means to bypass current gatekeepers in the game industry ecosystem and create a more decentralized model. <p>Enables artificial scarcity in open digital markets</p> <ul style="list-style-type: none"> ✦ At the moment the games industry creates artificial scarcity rough gated ecosystems, NFTs might enable limited editions in an open ecosystem. <p>Engagement through social interaction</p> <ul style="list-style-type: none"> ✦ Enabling new deeper forms of social interaction between people that are not able to meet in reality due to distance or/ and Covid 19. Especially user generated/ purchased content strengthens player engagement. <p>Transition of playing games from entertainment to a field profession</p> <ul style="list-style-type: none"> ✦ eSports were just the beginning. We are moving towards a world of parallel digital universes. More and more people can afford to play games professionally, as they can actually earn money by playing games. In the future, we will live in games. 	<p>Overhype</p> <ul style="list-style-type: none"> ✦ Most of the fuzz around metaverse and NFTs is hype. In general, P2E is nothing new in the games industry. Beside decentralization, most of the solutions it provides could be solved in other ways. ✦ Investment boom does not mean that there would be a solid market and scalable business opportunities behind the hype. Sometimes investments are just creating a bubble of unrealistic expectations. ✦ Expectations are high, and the timeframe of development is unknown. In the end, the technology might not do what it is supposed to do or does not solve the problems it is supposed to solve. ✦ The hype places the focus on monetisation while the key challenges in the games industry are more linked with issues like discoverability and player retention. <p>Lack of industry talent</p> <ul style="list-style-type: none"> ✦ As a new games industry sector, P2E struggles with an extreme talent shortage

OPPORTUNITIES

Funding

- ✦ There is a huge investment boom on metaverse and NFTs creates a significant business opportunities for game developers
- ✦ Commissions from the trade of NFTs between players might be more stable income streams for game developers than hit-driven business models.

Disruption of games industry value chain

- ✦ Cryptocurrency and NFTs have potential to end the monopoly of application stores, credit card based payment systems and centralized distribution systems in general
- ✦ NFT is likely to boost organic user acquisition (UA), which might decrease the importance (and earnings) of ad networks in the value chain.

New frontier

- ✦ Lack of or unclarity of rules enables rapid and radical innovation
- ✦ P2E is to reach new types of players and grow the game markets significantly.
- ✦ As P2E has potential to become the first game industry market driven by game developers and player communities based in developing countries.

THREATS

Bubble, crash and major economic crash

- ✦ Speculation around crypto and NFT might lead to a significant economic bubble similar to dot.com bubble in early 2000s
- ✦ Business model relies heavily on big spenders (whales)

Community risks:

- ✦ Expectations on game experience might fragment the player community to the entertainment and earning focused segments fighting with each other
- ✦ Player and developer community might turn against the play-to-earn business model due to fraud (e.g. fraudulent promises on earning possibilities), piracy (e.g. stolen game art) and market manipulation. Especially minors and other vulnerable players must be protected.
- ✦ Game mechanics might lead to exploitation of players located in developing countries trying to make a living as bots (like gold farming in WoW)
- ✦ Value of NFT, purchased by the player, might drop unexpectedly, which can cause anger and dissatisfaction.
- ✦ P2E game as a game sector might lose its artistic status or be seen as scammers. This creates a risk of collateral damage for the whole industry through regulatory intervention.

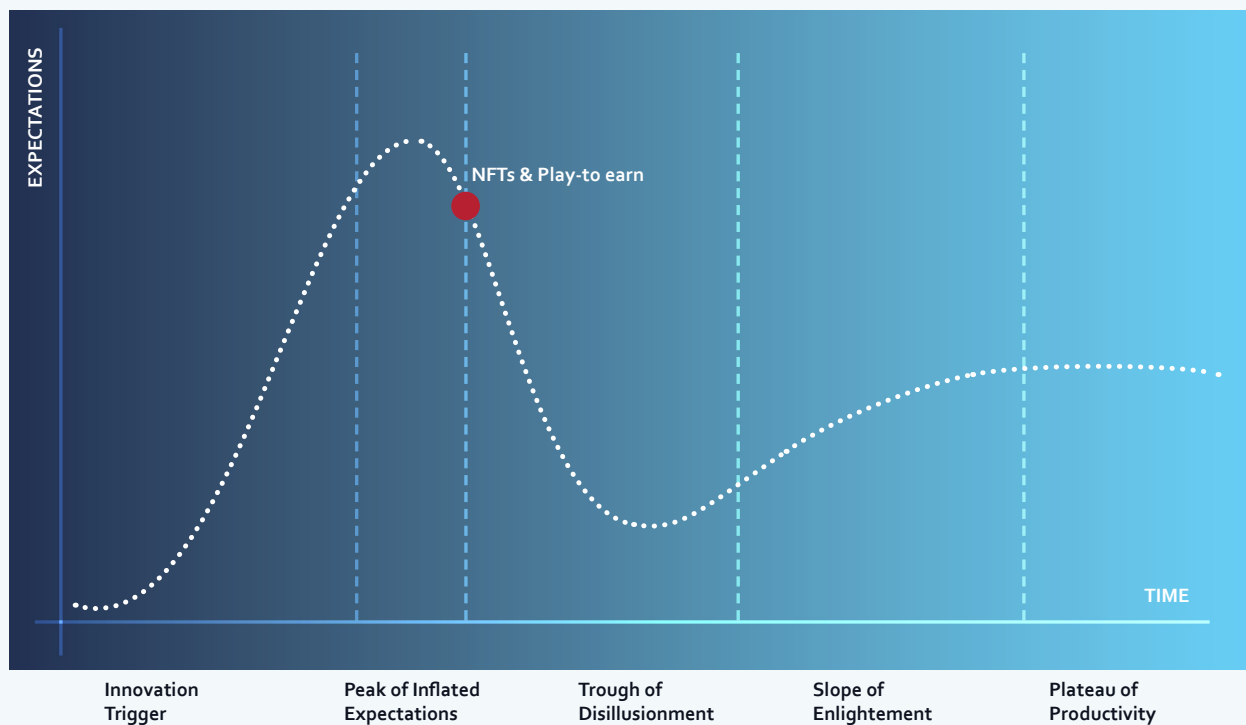
System and regulatory risks:

- ✦ Digital distribution platforms might ban crypto/NFT/play-to-earn games
- ✦ Banks might ban financial transactions related to crypto/NFT/play-to-earn games
- ✦ Countries might ban crypto/NFT/play-to-earn games or a build an inconsistent and fragmented regulatory framework that makes development and implementation of P2E business model practically impossible (e.g. money laundering, anti-fraud, gambling and taxation regulation)
- ✦ If crypto/NFTs are widely used to bypass economic sanctions and trade embargos (e.g. set against Russia), they might become a subject of extensive enforcement actions from public authorities.

Environmental risks

- ✦ Poor technical design combined with popularity of crypto games can lead to significant CO2 emissions and, in extreme cases, electricity shortages

3. 101 ON P2E, METAVERSE, CRYPTOCURRENCES, NFTs AND EVERYTHING



4. WHAT IS A METAVERSE?

Metaverse is a Social Digital Space. Metaverse is a myriad of social, creative, immersive digital spaces, accessed through an avatar representing players identity. The identity of the avatar can be transported and used across multiple metaverses.

Visions of the metaverse can be seen in 80-90's era science fiction books (ie. *Sailing To Byzantium* by Robert Silverberg, *Neuromancer* by William Gibson, *Snow Crash* by Neal Stephenson). One of the first Western executions of actual digital virtual worlds was implemented in 2000 by Finnish Sulake, who launched Habbo Hotel. Years later, in 2003, Second Life was released and gave lots of hope for what would be the future of social virtual worlds.⁵ Since then there have been successful endeavors that have been able to provide better and deeper solutions for the virtual worlds like Minecraft, Fortnite, Animal Crossing, etc.

Centralized virtual worlds as a digital space should not be confused with Web 3.0, which is an idea for a new iteration of the World Wide Web (www) based on the blockchain, and which incorporates concepts including decentralization and token-based economics. Web 3.0 using token-based economics is emerging now, but it is unclear whether or not we will see open decentralized platforms:

- 1) **Open platforms**, i.e. Axie Infinity, where purchased NFT items can be transferred to other platforms
- 2) **Walled gardens**, closed ecosystem, i.e. open ss in which all the operations are controlled by ecosystem operators. Purchased or user generated NFT items can be utilized only in that certain platform

Now, in the early 2020s, the investment boom is taking the development cycle to the next level. Facebook announced their plan towards the metaverse, by changing its name to Meta in fall 2021. Facebook's Meta includes virtual dimensions with VR headsets. VR and AR (in addition to NFTs) seem to be crucial features of the upcoming metaverse solution.

We are moving from closed, walled gardens of virtual worlds like Minecraft, Roblox, Fortnite or Second Life to something new. In the most hyped visions metaverse might provide an alternative to the Internet itself. The exact definition of metaverse is still unclear. The notion of ownership and interoperability and transferability of the identity is key in the rise of metaverse

The games industry is paving the way to alternative synthetic realities as a service by building and maintaining interactive virtual worlds. In other words, in the long run, games industry is building an universum of Matrixes. However, it will take decades before we are able to move from augmented, virtual and mixed reality to even extended reality and transreality⁶.

To sum it up, it is important to remember that despite the bold visions we have, over 20 years later, we're still much closer to the Habbo Hotel than the Matrix. Behind all the metaverse hype, the potential games market disruption is currently happening through play-to-earn (P2E) business model.

⁵) Digiday; Before Meta, there was Habbo: How social games laid the framework for the metaverse: <https://digiday.com/marketing/before-meta-there-was-habbo-how-social-games-laid-the-framework-for-the-metaverse/> and BBC News; Zuckerberg's metaverse: Lessons from Second Life: www.bbc.com/news/technology-59180273

⁶) For more information, please visit the summary of the EGDF technology roadmap: www.egdf.eu/wp-content/uploads/2021/10/201911-GameOn-Games-as-the-Driver-of-Change-and-Innovation-in-Our-Society-small.pdf

5. PLAY-TO-EARN (P2E) BUSINESS MODEL?

Both play-to-earn (P2E), and play&earn (P&E) terms are used. However, P2E is more established. The advocates of P&E underline that P2E stresses earning (working) by playing, while P&E is focused more on leisure, enjoyment of playing games and earning income at the same time. The similar transition happened with free-to-play term that was later replaced with free-to-download.

The Habbo Hotel was launched in the early 2000s and included virtual goods that could be purchased and traded by players with in-game currency Furni, that can be earned by playing or with real money. In late 2010s, a number of game developers developed cryptocurrency mining games, but they were banned, for example, by Apple⁷ and Google⁸.

It took until the early 2020s before P2E really took off on PC and online game markets. However, in some Asian countries all cryptocurrency based games remain banned⁹ and it is unclear how leading mobile platforms will approach it. At the same time, Philippine gamers made headlines in May 2021, by playing and earning actual incomes in Axie Infinity. Players were able to earn through non-fungible tokens, or NFTs, and cryptocurrencies by breeding, battling and trading digital pets called Axies.¹⁰

P2E games are becoming a major trend with low transaction fees and high scalability. P2E games are creating microeconomies of their own (ie. [Axie Infinity](#) and Ember Sword).¹¹

In P2E games, game content is no longer **licensed** to players. Instead, it is **owned** and traded, even created by players. In P2E game design players are first encouraged (by other players) to level up their assets, properties and characters to and earn rare items. These items are represented as tradable NFTs. The games themselves then provide the tools to sell and trade these NFTs in exchange for a cryptocurrency via in-game or 3rd party marketplaces, or on decentralized exchanges outside of the original creator's realm of influence, where the NFTs, depending on type of NFT, can still generate royalties for the original creator.

By engaging with the game, the players receive unique game elements represented as NFTs on the underlying blockchain. These NFTs prove ownership and properties like rarity or utility within the game, generating an inherent value for creators, players and collectors. The novelty of game elements as NFTs is their potential to be used across multiple games and outside of the original game itself.

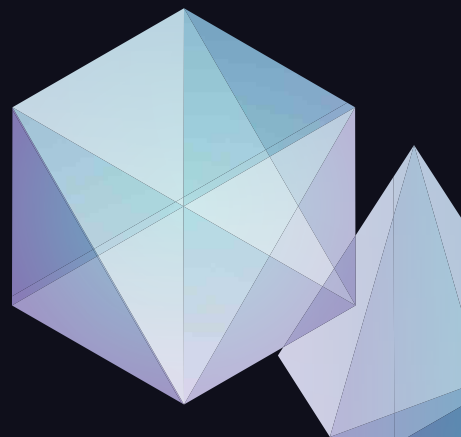
⁷) The Verge; Apple's App Store bans on-device cryptocurrency mining on iOS and macOS: www.theverge.com/2018/6/11/17449178/apple-app-store-cryptocurrency-mining-ban-ios-macos

⁸) The Verge; Google bans cryptocurrency mining apps from the Play Store: www.theverge.com/2018/7/26/17619566/google-play-ban-apps-mine-cryptocurrency

⁹) Forkast; Popular NFT games made in South Korea, and banned in South Korea: <https://forkast.news/south-korea-nft-play-to-earn-games-still-banned/> and BBC News; China declares all crypto-currency transactions illegal: www.bbc.com/news/technology-58678907

¹⁰) Venture Beat; Sky Mavis raises \$152M at nearly \$3B valuation for Axie Infinity play-to-earn NFT game: <https://venturebeat.com/2021/10/06/sky-mavis-raises-152m-at-nearly-3b-valuation-for-axie-infinity-play-to-earn-nft-game/> CNBC; People in the Philippines are earning cryptocurrency during the pandemic by playing a video game: www.cnbc.com/2021/05/14/people-in-philippines-earn-cryptocurrency-playing-nft-video-game-axie-infinity.html

¹¹) DappRadar; Dapp Industry Overview: July 2021: <https://dappradar.com/blog/dapp-industry-overview-july-2021> and Newzoo; Introduction to the Metaverse Report: <https://newzoo.com/insights/trend-reports/newzoo-intro-to-the-metaverse-report-2021-free-version/>



NFTs can be also designed to earn its owner other NFTs or cryptocurrencies. NFTs can also be destroyed by “burning” them in a blockchain transaction, e.g. to use up multiple NFTs in a process to create another, new NFT, similar to a finite resource. In practice there are several ways to integrate NFTs in a game:

- ✦ Some of the NFT games are defined as **buy-in games**, which means that no matter what the price point is, it makes this game far from accessible to everyone.¹² NFT game developers are currently mapping ways to lower or remove barriers of entry (e.g. through scholarship models).
- ⇒ **Game for players** means that players proceed by collecting in-game assets that hold monetary value. Some NFT games have tokenized in-game assets, allowing players to collect them as NFTs. Games let players collect and trade in-game assets that can be utilized in many ways. The rules for each such game vary. Regarding this, players can either gather their NFTs until they pay back crypto rewards or sell their NFTs for profits.¹³
- ⇒ **Free-to-play (NFT) Game** means that no upfront cost is required and players are allowed to play and earn without any investment. However, typically there are also pay-to-win features included, where the most desired assets are behind the paywalls.¹⁴

Since the F2P model has faced strong opposition among players and developers, especially at the beginning, it is quite natural that NFT is also facing prejudices. However, NFT can be received as a new business model where players can earn, or play and earn but also get concrete counter-performance to their financial investments (vs. money invested in IAP at traditional F2P games). It is very important to monitor player community reactions while considering NFT implementations, as we have witnessed strong resist against big developers (i.e. Ubisoft) trial on NFT.

NFT can also be implemented to existing games as seen in Sulake Case, but in addition to player reaction, there are many things to be taken into consideration when doing so.¹⁵

It is currently difficult to get reliable data on NFT games markets. Estimates on the market size range from USD 710M¹⁶ up to USD 41B¹⁷. However all sources agree that the market is currently booming. NFTs as game collectibles represents about 22% of the total NFT trading volume¹⁸.

¹²⁾ KrASIA; What does Axie Infinity’s meteoric rise tell us about the play-to-earn game industry?: <https://kr-asia.com/what-does-axie-infinitys-meteoric-rise-tell-us-about-the-play-to-earn-game-industry/>

¹³⁾ The European Business Review; Top 10 Best NFT Games To Play & Earn CryptoCurrency In 2021: www.europeanbusinessreview.com/top-10-best-nft-games-to-play-earn-cryptocurrency-in-2021/

¹⁴⁾ The European Business Review; Top 10 Best NFT Games To Play & Earn CryptoCurrency In 2021: www.europeanbusinessreview.com/top-10-best-nft-games-to-play-earn-cryptocurrency-in-2021/

¹⁵⁾ Newzoo: Introduction to the Metaverse Report: <https://newzoo.com/insights/trend-reports/newzoo-intro-to-the-metaverse-report-2021-free-version/>

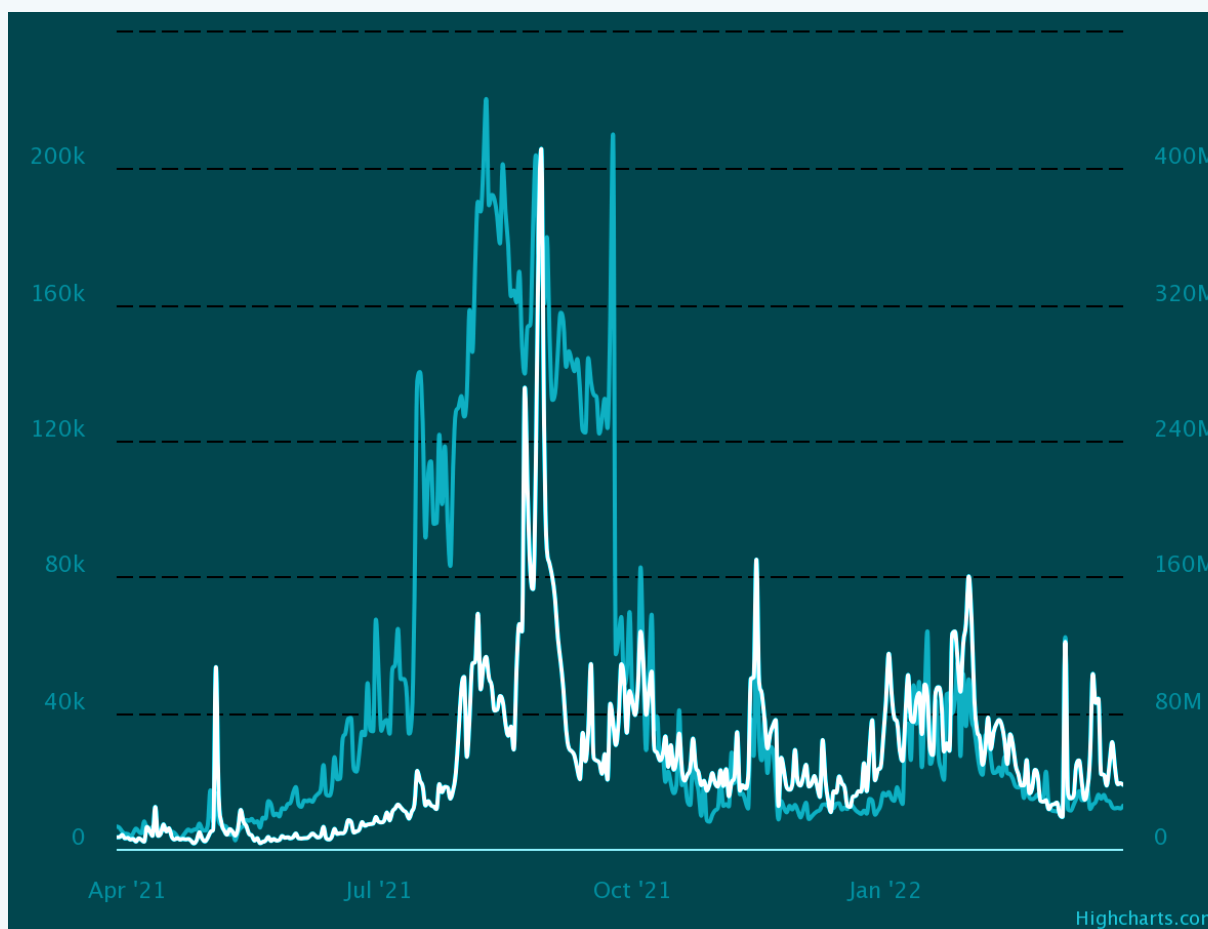
¹⁶⁾ Asia Business Law Journal; NFT regulations in Indonesia: <https://law.asia/nft-regulations-indonesia/>

¹⁷⁾ Market Insider; NFTs ballooned to a \$41 billion market in 2021 and are catching up to the total size of the global fine art market: <https://markets.businessinsider.com/news/currencies/nft-market-41-billion-nearing-fine-art-market-size-2022-1>

¹⁸⁾ DappRadar; BGA Blockchain Game Report Q3 2021: <https://dappradar.com/blog/bga-blockchain-game-report-q3-2021>

6. IS THE NFT BUBBLE BURSTING?

At least it's very volatile. According the latest NFT Yearly Report 2021¹⁹ from NFT data company Nonfungible.com, sales of all NFTs has jumped to more than \$17 billion in 2021.²⁰



(White is sales in UDS, blue is number of sales)²¹

¹⁹) NonFungible; Yearly NFT Market Report 2021: <https://nonfungible.com/reports/2021/en/yearly-nft-market-report-free/form>

²⁰) Business Insider India; NFT sales drop again to \$168 million over the past week. These were the 5 best-selling digital collections: www.businessinsider.in/cryptocurrency/news/nft-sales-drop-again-to-168-million-over-the-past-week-these-were-the-5-best-selling-digital-collections-/articleshow/90108665.cms

²¹) NonFungible; Market Tracker: <https://nonfungible.com/market-tracker>

7. WHAT IS BLOCKCHAIN?

NFTs are created in a **blockchain**.

- **Block:** A blockchain is a growing list of data blocks that are linked together. Each block contains a cryptographic hash of the previous block, a timestamp, and the transaction data. The data stored inside each block depends on the type of blockchain. For instance, in the Bitcoin blockchain structure, the block maintains data about the receiver, sender, and the amount of coins.
- **Chain:** As each block contains information about the previous block, they form a chain, where each additional block is reinforcing the ones before it. Blockchains are resistant to data modification, because when the data in a block has been recorded, the data in any block in that blockchain cannot be altered retroactively without altering all other blocks.
- **Distributed ledger:** Blockchains are in most cases managed by a peer-to-peer network as a publicly distributed ledger, where **nodes** (computers) adhere to a blockchain protocol to communicate and validate new blocks. Blockchains are widely used by thousands of cryptocurrencies and for different kinds of tokens.
- **Node** in the blockchain is a computer that runs necessary software in order to process transactions and communicate with other nodes in the same blockchain. All nodes store identical copies of the information in the blockchain. Each new user (node) joining the peer-to-peer network of blockchain receives a full copy of the system. When a new block is created, it is broadcasted automatically to each node within the blockchain system. Then, each node verifies the block according to the blockchain consensus algorithm and checks whether the information stated there is correct. If everything is alright, the block is added to the local blockchain in each node.²²
- **A consensus algorithm** is a procedure in which all the nodes of the blockchain network reach a common agreement about the present state of the distributed data. The consensus protocol makes sure that every new block that is added to the blockchain is the one and only version of the data that is agreed upon by all the nodes in the blockchain. The most famous consensus algorithms include proof-of-work (PoW), proof-of-stake (PoS), proof-of-authority (PoA), proof-of-burn (PoB), Practical Byzantine Fault Tolerance (PBFT), proof-of-capacity (PoC) and proof-of-elapsed-time (PoET).²³
- **Smart contracts** in a blockchain network are pieces of codes stored in the network. When smart contracts are adopted they self-execute automatically. Smart contracts increase speed, accuracy, and integrity in payment and performance.
- **A wallet** is a string of numbers and letters, an address that will appear in various blocks within the blockchain where transactions take place. There are no visible records of who did what transaction with whom, only the number of the wallet. The address of each particular wallet is also a public key.²⁴

²²) MLS Dev; Blockchain Architecture Basics: Components, Structure, Benefits & Creation: <https://mlsdev.com/blog/156-how-to-build-your-own-blockchain-architecture>

²³) Ture, Tsegaye: GDPR, Blockchain and the Right to be Forgotten. September 7, 2021: <https://helda.helsinki.fi/handle/10138/335279>

²⁴) Sphere Gen; Blockchain technology basis: www.spheregen.com/blockchain-technology-basics/

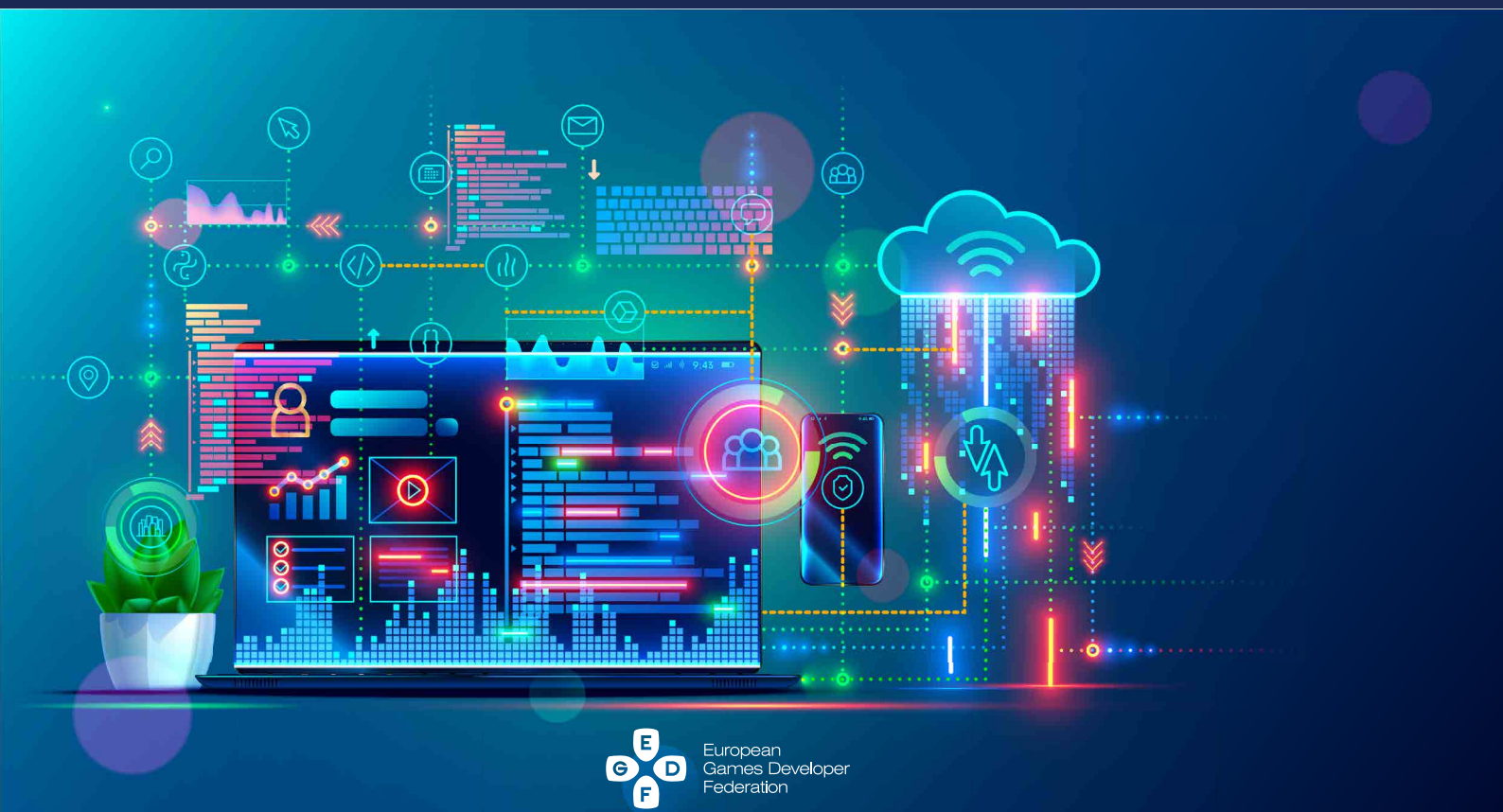
Blockchain structures fall into three categories:

- A **public blockchain** means that the data and access to the system is available to anyone who is willing to participate (for example Bitcoin, Ethereum, and Litecoin). When a blockchain is public, it is almost impossible to hack and falsify transactions. On the other hand, it may not be GDPR compliant either when data cannot be removed and no-one actually has control over personal data. Solution to this might be a private blockchain.
- A **private blockchain** is controlled only by users from a specific organization or authorized users who have an invitation for participation.
- A **Consortium blockchain** can consist of a few organizations, procedures in the blockchain are set up and controlled by the preliminary assigned users.²⁵

Different types of blockchains have different characteristics:

PROPERTY	PUBLIC BLOCKCHAIN	CONSORTIUM BLOCKCHAIN	PRIVATE BLOCKCHAIN
CONSENSUS DETERMINATION	All miners	Selected set of nodes	Within one organization
READ PERMISSION	Public	Public or restricted	Public or restricted
IMMUTABILITY LEVEL	Almost impossible to tamper	Could be tampered	Could be tampered
EFFICIENCY (USE OF RESOURCES)	Low	High	High
CENTRALIZATION	No	Partial	Yes
CONSENSUS PROCESS	Permissionless	Needs permission	Needs permission

²⁵ MLS Dev; Blockchain Architecture Basics: Components, Structure, Benefits & Creation:
<https://mlsdev.com/blog/156-how-to-build-your-own-blockchain-architecture>



8. WHAT IS A FUNGIBLE TOKEN (E.G. CRYPTOCURRENCY)?

NFTs and cryptocurrencies rely on the same underlying blockchain technology. NFT marketplaces may also require people to purchase NFTs with a cryptocurrency. However, cryptocurrencies and NFTs are created and used for different purposes.

Physical money and cryptocurrencies are “fungible,” meaning they can be traded or exchanged for one another.²⁶ Cryptocurrencies aim to act as currencies by either storing value or letting you buy or sell goods. This is different to NFTs, that are non-fungible, one-of-a-kind tokens that can show ownership and convey rights over digital goods, but not the value.

A cryptocurrency is a digital or virtual currency, which takes the form of tokens or coins, that are secured by cryptography, which makes it nearly impossible to fabricate or double-spend. Cryptocurrency tokens are fungible tokens, similar to fiat currencies that can be traded, like a Euro for example. But unlike the Euro, there is no central authority that manages and maintains the value of a cryptocurrency.²⁷

Like fiat currencies, a cryptocurrency can be traded to other coins and can be split. NFTs instead create one-of-a-kind tokens that themselves cannot be split to smaller pieces. However NFTs ownership can be split through so called Fractured NFTs to show ownership over digital goods.²⁸

Cryptocurrencies are regulated by the Anti-Money Laundering Directive (AMLD) in the EU. Registration required for cryptocurrency providers, marketers also need to verify registration²⁹ At the moment, non-fungible tokens are not yet directly mentioned in the regulation. It remains to be seen how they will fall under regulation of art, virtual assets, or investment tools, for example. It is possible that NFTs potentially regulated in the future as “other crypto assets”.³⁰

Many blockchains and cryptocurrencies are run as open-source projects and governed by DAOs (Decentralized Autonomous Organizations), a form of governance by the users of the blockchain via transparent rules encoded in computer programs (smart contracts) on the blockchain itself.

²⁶ Forbes Advisor; What Is An NFT? Non-Fungible Tokens Explained: <https://www.forbes.com/uk/advisor/investing/nft-non-fungible-token/>

²⁷ Investopedia; Investing Cryptocurrency: www.investopedia.com/terms/c/cryptocurrency.asp and Forbes Advisor; What Is Cryptocurrency?: www.forbes.com/advisor/investing/what-is-cryptocurrency/

²⁸ Insider; What to know about non-fungible tokens (NFTs) — unique digital assets built on blockchain technology: www.businessinsider.com/nft-meaning?r=US&IR=T

²⁹ Lexia; Virtuaalivaluuttojen markkinoijan on oltava rekisteröitynyt Suomessa – Varmistaminen mainostilan tarjoajan vastuulla: www.lexia.fi/fi/virtuaalivaluuttojen-markkinoijan-pitaa-olla-rekisteröitynyt-suomessa/

³⁰ See MiCA proposal: www.skadden.com/en/insights/publications/2021/06/regulatory-approaches-to-nonfungible-tokens



9. WHAT IS A NON-FUNGIBLE TOKEN (NFT)?

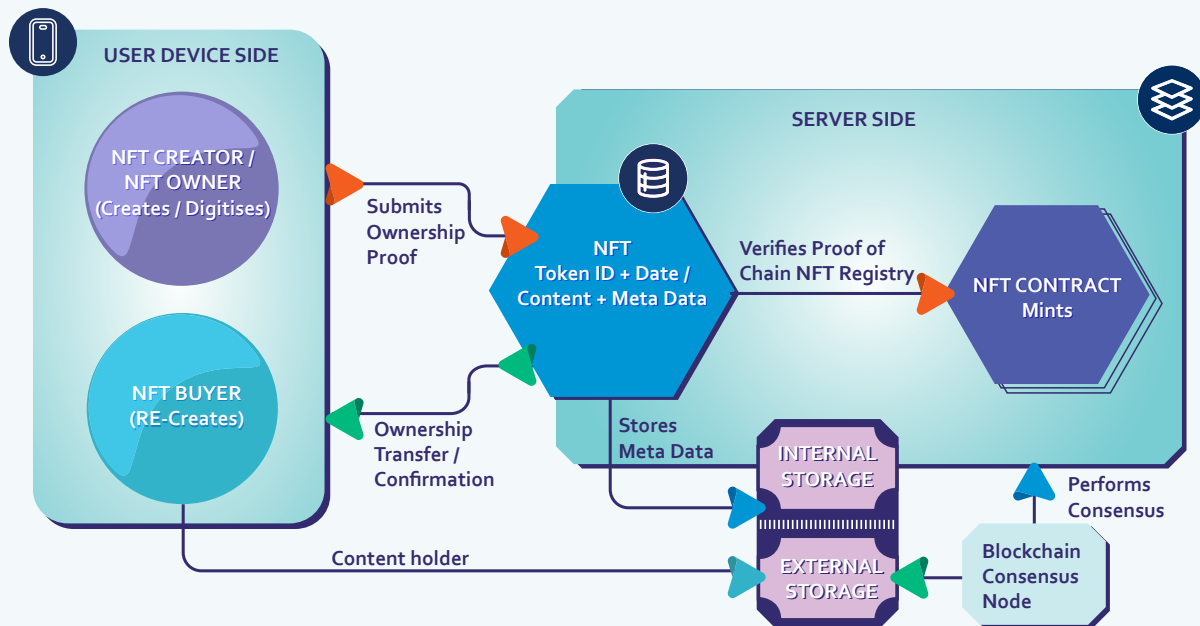


Image 3. NFT participants on the user-side as well as server-side (= blockchain and it's nodes)

NFTs are a technological solution for representing ownership of unique items, like art, collectibles, even real estate, that can be bought and sold. NFTs are analogous to a certificates of authenticity. With NFTs artwork can be “tokenised” to create a digital certificate of ownership secured by the blockchain.

NFT items can only have one official owner at a time and no one can modify the record of ownership or copy/paste a new NFT into existence.³¹ Therefore, NFTs can be used to reflect easily-reproducible items such as photos, videos, audio, and other types of digital files as unique items. **Copies of the original file are not restricted to the owner of the NFT, and can be copied and shared like any file.**

Technically a NFT is a unique and non-interchangeable unit of data stored on a digital ledger (blockchain) which contains ownership information. For example, if you have a virtual piece of art, you can create a NFT to tokenize the artwork and the NFT is stored on the blockchain as your property.³² As NFT items are verifiable assets, they can be easily traded in the blockchain.

Most NFTs are part of the Ethereum blockchain or similar blockchains with smart contract capabilities. Ethereum is a cryptocurrency, like Bitcoin or Dogecoin, but its blockchain technology also supports creation of NFTs, which store extra information that makes them work differently from an ETH(ereum) coin.³³ **ERC-721** is a free, open standard that describes how to build non-fungible or unique tokens on the Ethereum blockchain. ERC-721 is still currently the most popular token standard for NFTs and games such as CryptoKitties use ERC-721 to bestow ownership, distribution rights and access control onto their collectible digital assets.³⁴

³¹) Ethereum; Non-fungible tokens (NFT): <https://ethereum.org/en/nft/> and CNN Business; What is an NFT? Non-fungible tokens explained: <https://edition.cnn.com/2021/03/17/business/what-is-nft-meaning-fe-series/index.html> and BBC News; What are NFTs and why are some worth millions? www.bbc.com/news/technology-56371912

³²) For example: <https://101blockchains.com/non-fungible-tokens-nft/>

³³) The Verge; NFTs, explained: www.theverge.com/22310188/nft-explainer-what-is-blockchain-crypto-art-faq

³⁴) <http://erc721.org/> and NFT's street; What Is ERC 1155? <https://www.nftstreet.com/what-is-the-difference-between-erc-1155-and-erc-721/>

ERC-721 allows tokenized assets to be transferred from wallet to wallet, but this process is slow, costly, and has to be done one at a time. **ERC-1155** standard allows collections of NFTs to fall under a single, smart contract. In addition these batch transfers of NFTs can happen at a much faster speed and be much more cost-efficient than with ERC-721 tokens.

Another way of grouping different NFT solutions is to evaluate if they are independent NFT solutions (layer 1 blockchains) or third-party solutions integrated in the already existing blockchains (layer 2 blockchains):

- **Layer 1 blockchains:** Next-generation, purpose-built NFT blockchains like Efinity and Flow provide faster transaction times for transactions and more developer-friendly solutions.³⁵
- **Layer 2 sidechains and other scalability protocols:** While Layer blockchains refer to blockchains themselves, layer 2 side chains are third party integration that can be used in conjunction with a Layer 1 blockchain. The popularity of Ethereum based blockchain has led many NFT-related projects to migrate to Layer 2 sidechains, like Polygon or Ronin, and other scalability protocols. This has proved an effective way to handle the influx of users and traction the game has, while keeping the fees to the lowest possible.³⁶



³⁵) EU Blockchain observatory and forum; Demystifying NonFungible Tokens (NFTs): https://www.eublockchainforum.eu/sites/default/files/reports/DemystifyingNFTs_November%202021_2.pdf

³⁶) EU Blockchain observatory and forum; Demystifying NonFungible Tokens (NFTs): https://www.eublockchainforum.eu/sites/default/files/reports/DemystifyingN- vember%202021_2.pdf

10. HOW DO NFT TRANSACTIONS WORK?

What is sold? What is sold varies from business models to another and depends on the creator of the item and the agreement in question. **NFT itself is just a token, it does not contain the asset it represents. Usually NFT is linked to the item in question located in a digital storage off-chain (instead of the blockchain).**

How does the transaction process work? A distributed ledger is a special type of database that stores NFT data. Beyond that, an NFT system also consists of another two roles: NFT owner and NFT buyer. The detailed protocol works as follows:

- ✦ **Digitization of the raw data:** An NFT owner checks that the file, title, description are completely accurate. Then, the owner digitizes the raw data into a proper format.
- ✦ **Storing the data.** An NFT owner usually stores the raw data (e.g. an image) into an external database outside the blockchain. They might also be allowed to store the raw data inside a blockchain, but this is burdensome to process. In order to create a NFT seller, in most cases, one needs to have a wallet for cryptocurrency (such as Ether, WAX, Flow) for service fees. For the buyer this is not necessary, credit card payments can be used for purchasing in some of the NFT marketplaces (for example Nifty Gateway).
- ✦ **Signing the transaction.** The NFT owner signs a transaction, including the hash of NFT data, and then invokes a smart contract. NFTs can also have a self-executing smart contract created on the blockchain. In the smart contract the seller can put conditions into the token and when a purchase occurs, the contract automatically self-executes, for example giving royalties to the original creator. Smart contracts are new and will become more popular when they gain more adoption and acceptance by courts and legal systems. They are not necessarily a replacement of traditional contract instruments but can help facilitate the execution of the contractual terms.³⁷ Whenever an NFT is minted or sold, a new transaction is required to invoke the smart contract. After the smart contract receives the transaction with the NFT data, the minting and trading process begins.

³⁷) News@theU; NFTs are a new financial frontier in cyberspace:
<https://news.miami.edu/stories/2021/03/nfts-are-a-new-financial-frontier-in-cyberspace.html>



- ✦ **Minting on a market place:** The seller needs to create an account to a NFT marketplace. Creation of NFTs is called minting. Once the seller has the wallet and the account linked to the marketplace, the actual minting is easy, as easy as it is to upload a photo to social media. Marketplace asks the seller to upload the file and a public description for it. Token can also contain hidden information only the owner can see as a bonus. Minting and sales process costs vary depending on the marketplace, blockchain and token standard that is used.³⁸ Cryptocurrency wallet providers (such as metaMask, Coinbase) and some cryptocurrencies is in most cases (depending on the blockchain) needed for paying the gas fees (payments for nodes for storing the data) for the minting.
- ✦ **Trading on a market place:** Once the NFT has been created, sellers can start selling the token. For example, an OpenSea seller can choose from three options: fixed price, auction or offers. Anyone with an account to the marketplace can buy the token. When the token is bought, new ownership information is updated to the token that is stored in the blockchain. New owner can start selling the token if he wants to, or keep it to himself
- ✦ **Confirmation:** Once the transaction is confirmed, the minting process completes. NFTs will forever link to a unique blockchain block address as their persistence evidence³⁹. After the transaction is confirmed, the NFT metadata and ownership details are added to a new block, thereby ensuring that the history of the NFT remains unchanged and the ownership is preserved.
- ✦ **How transparent is the process?** Anyone can create NFTs and sell them on an open platform (such as OpenSea, Zora, Rarible, SuperRare, Nifty Gateway). In addition, seller/buyer can select their nicknames on NFT marketplaces. Data in the blockchain itself is pseudonymous. Public key, wallet number etc. are just unique identifiers, consisting of digits and letters. Visibility to actual item NFT links to, depends on the off-chain storage that is used for the item and selected settings (for example in-game assets might not be visible to other players, or only to selected players). Data in the blockchain is pseudonymous. Public key, wallet number etc are just unique identifiers, consisting of digits and letters.
 - In public blockchains above information is publicly available (and cannot be removed or altered afterwards).
 - In private or consortium blockchains, visibility depends on the permissions on that blockchain.

Ownership history of a particular coin can be traced (as well as ownership of NFTs) because each transaction involving a particular coin is publicly recorded on the blockchain. Cryptocurrencies are held in virtual wallets which function as the digital address, or identity, of the wallet holder. It is also generally possible to trace the ownership history of a coin to check all of the digital wallets through which it has passed. Despite the fact that the **digital addresses of each wallet are pseudonymous and do not directly identify the actual owner, wallets can be linked to real people by mapping IP addresses and other forms of data analytics for example in criminal investigations.**⁴⁰ However this process is difficult and time consuming.

³⁸) EU Blockchain observatory and forum; Demystifying NonFungible Tokens (NFTs): www.eublockchainforum.eu/sites/default/files/reports/DemystifyingNFTs_November%202021_2.pdf p.39-40

³⁹) Non-Fungible Token (NFT); Overview, Evaluation, Opportunities and Challenges: www.researchgate.net/publication/351656444_Non-Fungible_Token_NFT_Overview_Evaluation_Opportunities_and_Challenges

⁴⁰) King & Spakding; The Anti-Money Laundering Act and Crypto Collide: Non-Fungible Tokens: www.kslaw.com/news-and-insights/the-anti-money-laundering-act-and-crypto-collide-non-fungible-tokens

11. HOW NFT TECHNOLOGY IS USED IN GAMES?

NFTs have both real world and virtual use cases. Potential use cases for NFTs representing something physical/real-life/tangible are: paintings, sculptures, real estate, expensive objects, vehicles, services, product warranties, loans⁴¹, stocks, bonds, other financial documents.

Potential use cases for NFTs representing something virtual/immaterial/intangible/digital are: images, videos, music, other digital content, digital collectibles, online games, content in metaverse, patents, other intellectual property rights, licenses and fractionalized non-fungible tokens

All in all, NFTs can also be categorized into⁴²:

- ✦ **Asset tokens:** represents a specific right over a tangible or intangible asset. The person who creates (mints) the token decides the type of right owned to the person to whom the token is assigned;
- ✦ **Utility tokens:** provides the holders with a right of access to digital goods or services, like in-game items characters, equipments etc., so that they have exclusive access to functionality within a blockchain platform;
- ✦ **Security tokens:** represents ownership of an asset and grants token holders similar or equal rights to those of securities. These tokens include shares, bonds and, in general, financial instruments.

⁴¹) For example 'flash loans': <https://aave.com/flash-loans/>

⁴²) EU Blockchain observatory and forum; Demystifying NonFungible Tokens (NFTs): https://www.eublockchainforum.eu/sites/default/files/reports/DemystifyingNFTs_November%202021_2.pdf



NFTs can also be fractionalized. Fractionalized non-fungible tokens (F-NFTs) are NFTs, whose ownership is divided into smaller fractions by smart contracts. This makes it possible for several people to own a single NFT. NFTs can also be used as fractionalized non-fungible tokens (F-NFTs) that may present more challenging legal issues, especially as financial instruments/security tokens and regarding IP rights.⁴³ Several platforms have emerged to enable the fractionalization of NFTs, for example [Niftex](#), which was one of the first NFT projects to allow users to launch fractionalized NFTs.⁴⁴

NFTs have potential to be a major disruption in the games industry as they enable play-to-earn (P2E) business model in games. Instead of earning in-game rewards and only having the ability to use those rewards within the game — **gamers can now make a living out of playing games.**⁴⁵ In games NFTs can be used to represent in-game assets, such as digital plots of land or items, which are controlled by the user instead of the game developer. NFTs allow assets to be traded on third-party marketplaces without permission from the game developer.

“Underlying blockchain networks enable the generation and deployment of these NFTs within multiple gaming environments. Because NFTs are unique and can be designed to retain value beyond the game in which they originated, blockchain-built games have the potential to expand gaming economies dramatically, establish new gaming categories, and fuel development of new games.”

NFT supports players’ sense of unique **ownership, possession** (cryptographically proven ownership of land parcels and game items in a digital universe), ability for **trading** and satisfaction (“it’s about the glory, the bragging rights and the exclusivity”) which are empowering **engagement** to brands and applications. Earliest successful applications have come in art and collectibles. Gamers can either:

- 1) sell what they bought when they quit, spending becomes investing
- 2) transfer the cosmetics to the next game they are playing, then they become game-less game pieces.
- 3) NFTs can also serve psychological story needs for the gamer as well and serve a role in fandom.⁴⁶

If players are ready to invest a remarkable amount of money in in-app-purchases at traditional free-to-play games without getting practically no value for the money spent, it seems rational that there would be space for NFT, where players can actually achieve digitally valuable items with the money invested. However there has also been strong resistance against NFT among gamers. One reason for that are environmental concerns, risks of frauds and that NFT makes games feel more exploitative.⁴⁷

⁴³) JD Supra; NFTs Are Interesting but Fractionalized Non-Fungible Tokens (F-NFTs) May Present Even More Challenging Legal Issues: www.jdsupra.com/legalnews/nfts-are-interesting-but-fractionalized-9904209/

⁴⁴) Crypto Vantage; What are Fractionalized NFTs?: www.cryptovantage.com/non-fungible-tokens/what-are-fractionalized-nfts/ and EU Blockchain observatory and forum; Demystifying NonFungible Tokens (NFTs): www.eublockchainforum.eu/sites/default/files/reports/DemystifyingNFTs_November%202021_2.pdf p. 36

⁴⁵) Medium; Axie Infinity: How NFTs Defined The Play-To-Earn Economy: <https://medium.com/coinmonks/axie-infinity-how-nfts-defined-the-play-to-earn-economy-c5733a4b11bf>

⁴⁶) Medium; So, you want to NFT your game?: <https://medium.com/ironsource-levelup/so-you-want-to-nft-your-game-c8759e781a67>
Finish Line; What is NBA Top Shot? How NFT Collectibles Are Changing the Game: <https://blog.finishline.com/2021/04/05/what-is-nba-top-shot/>

⁴⁷) The Economic Times; Gamers up in arms against NFT plans: <https://economictimes.indiatimes.com/markets/cryptocurrency/gamers-up-in-arms-against-nft-plans/articleshow/88556193.cms>
CNBC; Cash grab or innovation? The video game world is divided over NFTs: www.cnbc.com/2021/12/20/cash-grab-or-innovation-the-video-game-world-is-divided-over-nfts.html
PC Gamer; Ubisoft’s NFT announcement video is overwhelmingly disliked: www.pcgamer.com/ubisoft-de-lists-overwhelmingly-disliked-nft-announcement-video/
Axios; Xbox chief wary of “exploitive” NFT gaming projects: www.axios.com/xbox-exploitive-nft-gaming-projects-cb3d885f-694c-462d-bcb1-a24c892db32f.html

11.1. EXAMPLES OF METAVERSES/PLATFORMS

Cryptokitties: *Players purchase, breed and trade virtual cats that have different visual features of varying levels of rarity. Players must purchase Ether cryptocurrency to join the game, and spend it to perform each breeding and trade action within the game. Several traits can be passed down from the parents to the offspring. The virtual cats are static images that can only be purchased, bred and sold.*⁴⁸

The Sandbox: *The Sandbox is a unique virtual world where players can build, own, and monetize their gaming experiences using NFT (non-fungible tokens) and \$SAND, the main utility token of the platform. Players can create NFT via VoxEdit and upload them to the marketplace and integrate them into games through the #no-code Game Maker.*

In Nov 29 - Dec 20, 2021 Sandbox alpha organized an open multi-week Play-to-Earn event in which players had the opportunity to explore The Sandbox Metaverse. The Alpha Pass was an NFT ticket that allowed players to completely explore the 18 experiences of the Alpha Season content and earn up to \$1 000 and three exclusive NFT rewards. Players without an Alpha Pass were only able to access three full experiences and the Alpha HUB (a central multiplayer experience showcasing a range of locations, and quests, and a chance to connect with other players from the community). However, they were not able to earn Play-to-Earn rewards.

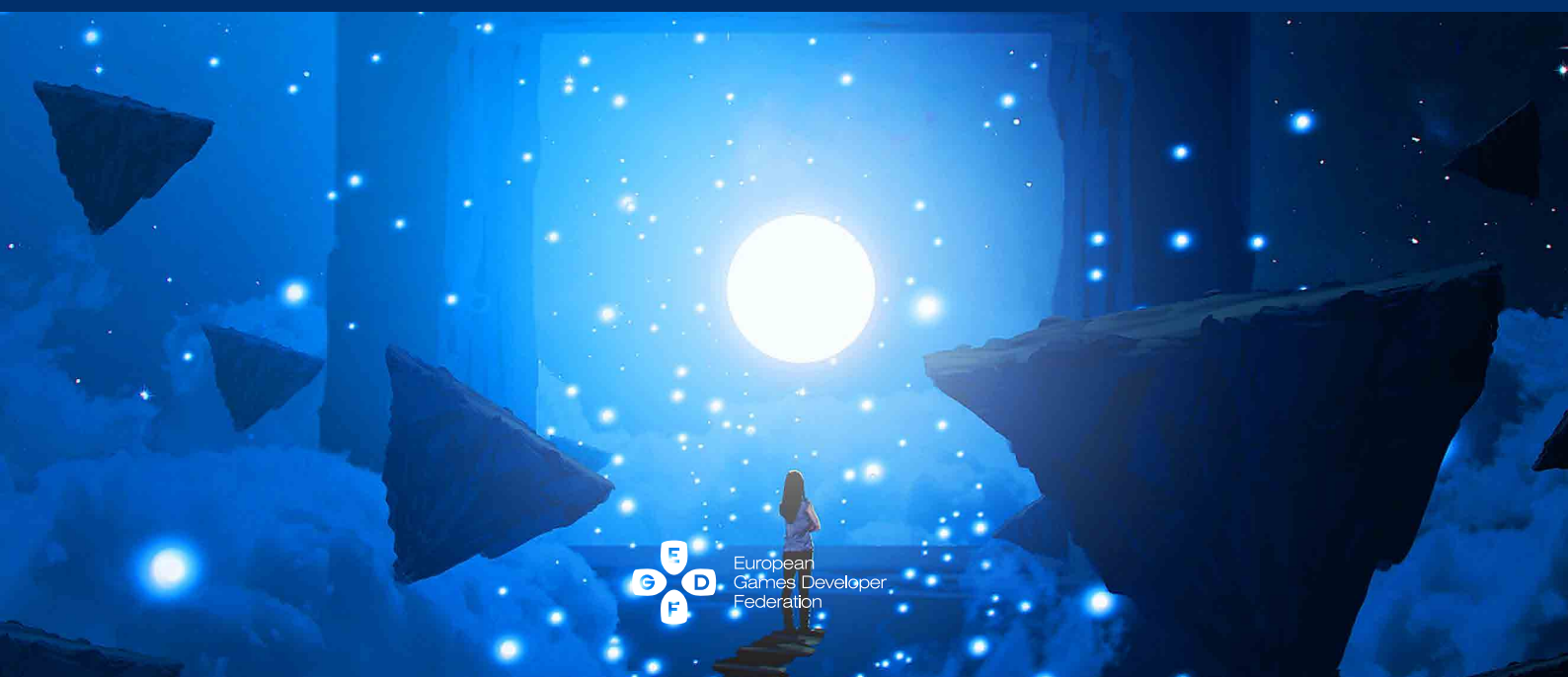
Sulake - Habbo Avatars: collection of 11,600 unique, programmatically generated avatars as ERC-721 tokens. Each avatar was able to be used to mint a brand new randomised portrait NFT to the MetaMask wallet (minting ended in January 4th 2022). Sulake plans to make them usable in-game. Gradual adoption of a play to earn experience in Habbo also in the future.⁴⁹

Axie Infinity: Vietnam based **Axie Infinity** (by Sky Mavis) is without doubt one of the most famous examples of NFT solutions in games. Sky Mavis' first title, Axie Infinity, combines the nostalgia of a digital pet game with the user empowerment of NFTs and blockchain technology. With over 2M DAU, Axie is a community-led digital nation that invites gamers to learn Web3 technology while building a better, decentralized world together. Sky Mavis invented the play-&-earn (P&E) concept, a new business model that embraces the concept of an open economy and provides ownership of assets that can be traded. Sky Mavis has shifted the narrative to "play-and-earn," to encompass all players, not only those earning. Axie's **total trading volume exceeded on October 2021 to \$2.4 billion.**⁵⁰

⁴⁸) Cryptokitties; www.cryptokitties.co/ and Wikipedia: <https://en.wikipedia.org/wiki/CryptoKitties>

⁴⁹) Habbo; <https://nft.habbo.com/>

⁵⁰) Axie Infinity; <https://axieinfinity.com/> and The Verge; How Axie Infinity is turning gaming on its head: www.theverge.com/2021/10/13/22725083/axie-infinity-sky-mavis-blockchain-economy-game-pokemon



Ubisoft Quartz: Ubisoft has introduced **Ubisoft Quartz** NFTs to its AAA project called Ghost Recon: Breakpoint in December 2021. In Quartz players can trade the items with other players and decide the price, as well and all transactions will take place in authorized third-party marketplaces.⁵¹ When Ubisoft announced Quartz they got heavy backlash from the community accusing the company of just milking the Ghost Recon franchise, instead of putting any effort into the game itself.

Epic: Soon after Ubisoft announcement, also **Epic**, which has been procrastinating with NFT, announced that after all they will support NFT and welcome games that do too. Epic clarified that the company won't act as a middleman in the transactions. To confuse this a little more, Epic CEO Tim Sweeney said that Epic isn't using crypto in its own games.⁵²

Gods Unchained: Online strategy-based NFT game where the cards provided in the game are in the form of NFTs. The trading cards that are provided in the game possess real-world value based on a token called the GODS token.⁵³ Since the cards are verifiable property in Ethereum, all players own their assets. The example NFT card, Griffith, The Chosen, sold for \$12k in May 2021. With a recently launched marketplace and more ways than ever to trade your cards, Gods Unchained appears to be the leading provider of trading card games. Gods Unchained will run on Immutable X and will provide gas-free transactions on its marketplace.⁵⁴

Splinterlands: This NFT game is built on the efficiency of a blockchain network called the HIVE. The core of this game is to battle against various monsters and win in-game assets and these NFT-based assets are traded over numerous secondary marketplaces. <https://splinterlands.com/>

⁵¹) Ubisoft Quartz; <https://quartz.ubisoft.com/welcome/> and SportsSkeeda; Fortnite developer Epic Games say they 'support' NFT, and welcome games that do too: www.sportskeeda.com/esports/fortnite-developer-epic-games-say-support-nft-welcome-games

⁵²) SportsSkeeda; Fortnite developer Epic Games say they 'support' NFT, and welcome games that do too: www.sportskeeda.com/esports/fortnite-developer-epic-games-say-support-nft-welcome-games

⁵³) Gods Unchained; <https://godsunchained.com/> and FinExtra; www.finextra.com/blogposting/21479/top-5-play-to-earn-nft-games-2022

⁵⁴) The Island Now; Best NFT Games: Popular NFTs To Earn & Invest In 2022: <https://theislandnow.com/blog-112/best-nft-games/>

Alien Worlds: An NFT-based metaverse game that has the ability to be built on numerous blockchains such as Ethereum, WAX, and Binance Smart Chain. The core of this game is based on the concept of exploration and mining. This leads to the discovery of in-game asset-based NFTs which are traded over secondary marketplaces.⁵⁵

Battle of Guardians: A real-time multiplayer NFT PvP arena developed on the Unreal Engine. This is an advanced fighting game based on the Solana network in which players constantly fight to defeat other opponents for more rewards. It allows users to benefit not only from the blockchain's power but also from its unrivaled graphics. Here, players can engage in fierce multi-realm battles in various areas of the vast SciFi game world.⁵⁶

Idle Cyber: Idle Cyber is a frontier defense game based in 2088, where humans command a squad of mutants, defend the wall, kill cyborgs & conquer giant bosses to defend humanity. Idle Cyber is built on BSC and will have a lot of opportunities for players to earn, stake & trade NFTs to make good money. Investors can buy its token on Pancakeswap.⁵⁷

Illuvium: Open-world RPG adventure game built on the Ethereum Blockchain with a play-to-earn structure wherein users can earn in-game rewards. Thanks to the integration with Immutable X, players can enjoy a new era of NFTs. You gain access to zero gas fees, peer-to-peer minting, and get instant transactions, all while you securely maintain custody of your assets. It combines elements of traditional RPG collection games with fight mechanics seen in the popular Autobattler genre. The Illuvium game is set to launch publicly in 2022.⁵⁸

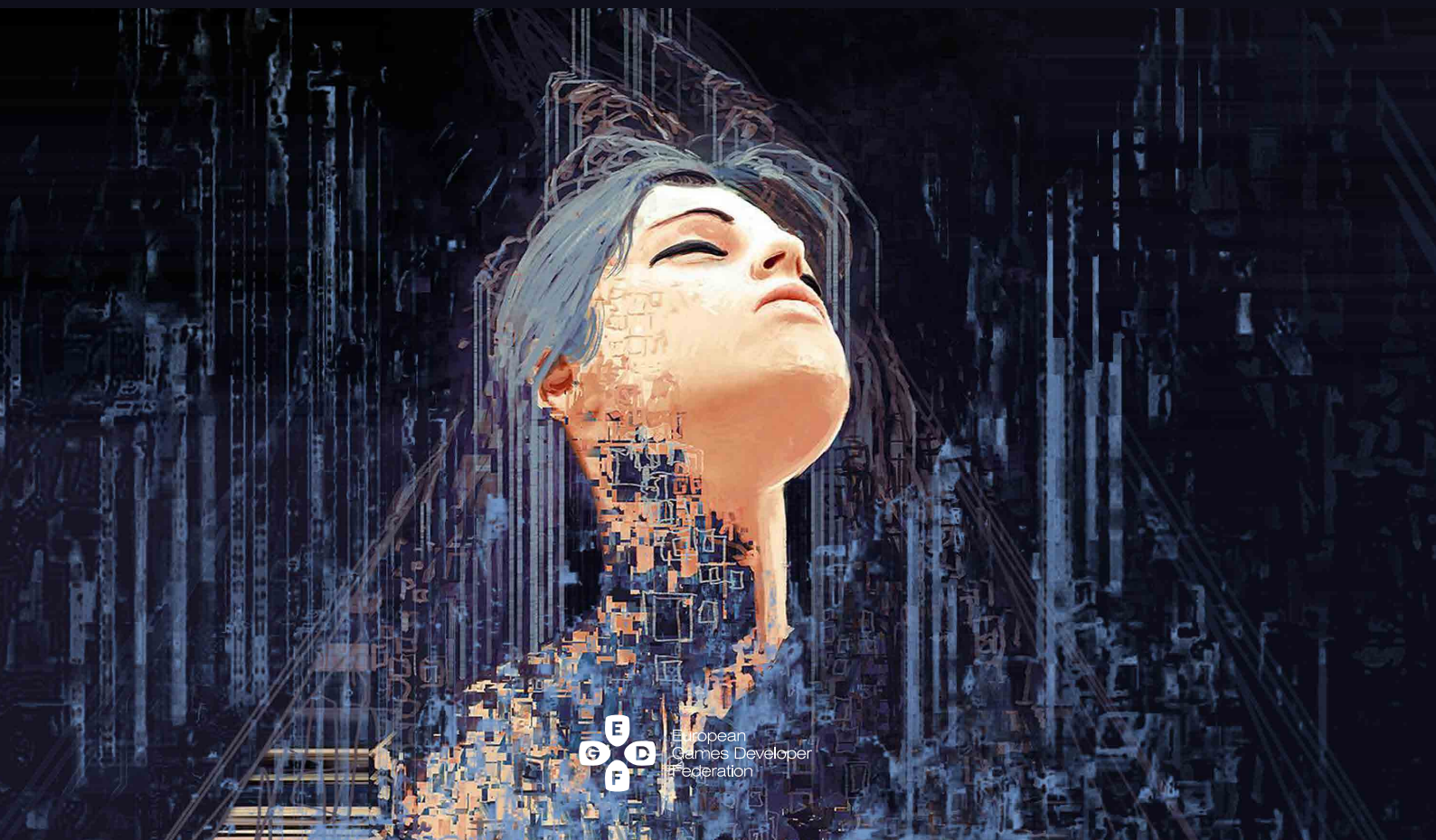
More examples in <https://playtoearn.net/blockchaingames>

⁵⁵) Alien Worlds; <https://alienworlds.io/> and FinExtra: <https://www.finextra.com/blogposting/21479/top-5-play-to-earn-nft-games--2022>

⁵⁶) Battle of Guardians; <https://battleofguardians.com/> and The Island Now; Best NFT Games: Popular NFTs To Earn & Invest In 2022: <https://theislandnow.com/blog-112/best-nft-games/>

⁵⁷) Idle Cyber; <https://idlecyber.com/> and The Island Now; Best NFT Games: Popular NFTs To Earn & Invest In 2022: <https://theislandnow.com/blog-112/best-nft-games/>

⁵⁸) Illuvium; <https://www.illuvium.io/> and The Island Now; Best NFT Games: Popular NFTs To Earn & Invest In 2022: <https://theislandnow.com/blog-112/best-nft-games/>



11.2. FASHION & DESIGN ENTERS TO NFT METAVERSE

NFT offers new opportunities for artists and designers to monetize their artwork. In March 2021 digital artist, Mike Winkelmann, known as Beeple sold his NFT/digital artwork for USD69 million.⁵⁹ Also Lucas Zano, co-founder of Finnish game company YATATOY, has made reasonable (six numbers) monthly incomes by selling NFT's of his charming geometric characters.⁶⁰ **However, to be able to earn a living by selling NFT, is an opportunity that is available for a relatively small group of artists, while only 1% of NFTs sell for more than \$1,500 and 75% sell for \$15 or less.**⁶¹ Another interesting point of view (by Lucas Zano) is that art itself does not really play such a big role in NFT art markets, instead it is more about networking and name-dropping. Basically it means that at the beginning an artist needs to raise the interest of wealthy art buyers.⁶² According to a new study, by a team of researchers out of the University of London, the value of NFT art pieces consist of three factors; Visual features, previous prices and market social networks (popularity of the sellers and buyers).⁶³

Valentino and **Marc Jacobs** entered **Animal Crossing: New Horizons** already in 2020, by offering their outfits on the game.⁶⁴ Lately more big fashion brands (ie. Cucci, Burberry, Louis Vuitton) has dipped their toes to metaverse and increasingly piloting their NFT solutions with different strategies in fall 2021. On the next page are a few examples of fashion brands implemented to metaverse.

⁵⁹) The Verge; Beeple sold an NFT for \$69 million:
www.theverge.com/2021/3/11/22325054/beeple-christies-nft-sale-cost-everydays-69-million

⁶⁰) Fast Company; How one artist used NFTs to do what he loved—and made a six-figure salary in the process
www.fastcompany.com/90699600/how-one-artist-used-nfts-to-do-what-he-loved-and-made-a-six-figure-salary-in-the-process

⁶¹) Fast Company; Science proves it: Most NFTs are worthless:
www.fastcompany.com/90695605/science-proves-it-most-nfts-are-worthless

⁶²) Fast Company; How one artist used NFTs to do what he loved—and made a six-figure salary in the process:
www.fastcompany.com/90699600/how-one-artist-used-nfts-to-do-what-he-loved-and-made-a-six-figure-salary-in-the-process

⁶³) The Alan Turing Institute; Non-fungible tokens: can we predict the price they'll sell for?:
www.turing.ac.uk/blog/non-fungible-tokens-can-we-predict-price-theyll-sell

⁶⁴) Nintendo Wire; Valentino and Marc Jacobs have made their way to Animal Crossing: New Horizons:
<https://nintendowire.com/news/2020/05/07/valentino-and-marc-jacobs-have-made-their-way-to-animal-crossing-new-horizons/>

Louis Vuitton launched a partnership with League of Legends⁶⁵ already in 2019 when skin for one of the in-game characters were created in addition for the in-game trophies etc. Later the brand has continued with a collection of 30NFT, that can be collected in its game 200 Anecdotes.⁶⁶ However, Louis Vuitton NFT items are not sellable or exchangeable and exist only in game (walled garden).⁶⁷

Virtual sneaker brand RTFKT created virtual sneakers with collaboration FEWOCiOUS (one of the top selling NFT artists). Over 600 pairs of sneakers were sold out in seven minutes with a total revenue of \$3.2 million.⁶⁸ Physical version of the shoes was given to the buyers.⁶⁹

Despite the lucrateness of NFT, the journey to digital space is long and difficult for many traditional fashion brands. Still NFT enables luxury brands to create priceless and irreplicable experiences for customers, which leads in the best case scenario to better brand awareness, engagement and sales.⁷⁰

65) Louis Vuitton; Louis Vuitton X League of Legends:
<https://uk.louisvuitton.com/eng-gb/magazine/articles/louis-vuitton-x-league-of-legends#>

66) Walpaper; Louis Vuitton marks 200th birthday with art video game:
<https://www.wallpaper.com/art/louis-vuitton-video-game-200th-anniversary>

67) Glossy; How fashion brands are navigating NFTs and what's next for the metaverse:
<https://www.glossy.co/fashion/how-fashion-brands-are-navigating-nfts-and-whats-next-for-the-metaverse/>

68) HypeBeast; A Sale of Virtual Sneakers Raised \$3.1 Million USD in Seven Minutes:
<https://hypebeast.com/2021/3/rtfkt-studios-fewocious-sale-nfts> and
 Utah Business; RTFKT is selling NFT cybersneakers to the metaverse:
<https://www.utahbusiness.com/rtfkt-made-millions-off-of-nft-cybersneakers/>

69) TechTimes; Top 5 Most Explosive Fashion Brand NFTs (2021)--Gucci, Louis Vuitton, and MORE:
<https://www.techtimes.com/articles/264673/20210827/top-5-nft-fashion-brands-interesting-concepts-2021-gucci-louis.htm>

70) Forbes; How The NFT Boom And Luxury Fashion Brands Are Aiming For Success:
<https://www.forbes.com/sites/josephdeacetis/2021/09/20/how-the-nft-boom-and-luxury-fashion-brands-are-aiming-for-success>



11.3. INVESTMENTS ON NFT & METAVERSE AT GAMES

Current heat on NFT & Metaverse games shows also on the investing side. Next generation gaming technology studio pioneering “playable NFTs”, [Mythical Games](#) announced a \$150 million investment (company valuation of \$1.25 billion) November 2021. Blankos Block Party is the company’s first game.⁷¹ Mythical Games latest investors; Andreessen Horowitz, D1 Capital, RedBird Capital, Com2Us, and The Raine Group, as well as crypto exchanges Binance Labs and FTX, are clearly showing their interest towards NFT and play-to-earn mechanics. Andreessen Horowitz was a leading investor also in SkyMavis (developer of Axie Infinity) with 152 million investment.⁷² In addition, Galaxy Interactive, WestCap, O1 Advisors, Javelin Partners, Struck Capital, Alumni Ventures, and Signum Growth were investing in Mythical Games in the previous round.

Enjin has also launched a \$100M Efinity Metaverse Fund for games.⁷³ SoftBank’s VC Fund invested \$90 million with Animoca Brands in NFT-Driven Virtual Metaverse ‘The Sandbox’ in November.⁷⁴ Play Ventures revealed in December 2021 their new \$75 million fund (The Play Future Fund) for blockchain and metaverse gaming investments.⁷⁵ Obviously this is a growing trend and nearly any game developer and VC is having NFT, metaverse and Play-to-earn at least part of their focus and interest.

⁷¹) BusinessWire; Mythical Games Raises \$150M in Series C Funding Led by Andreessen Horowitz at \$1.25B Valuation:

www.businesswire.com/news/home/20211104005468/en/Mythical-Games-Raises-150M-in-Series-C-Funding-Led-by-Andreessen-Horowitz-at-1.25B-Valuation

⁷²) The Block; Axie Infinity creator announces \$152 million in Series B funding led by a16z:

www.theblockcrypto.com/post/119521/axie-infinity-nft-series-b-funding-a16z

⁷³) Enjin; Enjin Forms \$100M Fund to Support Metaverse Projects:

www.coindesk.com/business/2021/11/04/enjin-forms-100m-fund-to-support-metaverse-projects/

⁷⁴) Gadgets 360; SoftBank’s VC Fund Invests Big in NFT-Driven Virtual Metaverse ‘The Sandbox’:

<https://gadgets.ndtv.com/cryptocurrency/news/sandbox-blockchain-metaverse-softbank-investment-usd-93-million-crypto-coin-sand-nft-2599945> and AnimocaBrands; The Sandbox Raises \$93M in Round Led by SoftBank Vision Fund 2 to Grow Its Open NFT Metaverse: www.animocabrands.com/the-sandbox-raises-93m-in-round-led-by-softbank-vision-fund-2-to-grow-its-open-nft-metaverse

⁷⁵) VentureBeat; The Sandbox Raises \$93M in Round Led by SoftBank Vision Fund 2 to Grow Its Open NFT Metaverse:

<https://venturebeat.com/2021/11/30/play-ventures-launches-play-future-fund-with-75m-in-commitments/>



12. ENVIRONMENTAL CONCERNS

NFTs are based on blockchain solutions that currently require computing power and any transaction (change) in the blockchain consumes electricity (often covered by so called gas fees⁷⁶ for the NFT). Consequently, there are significant environmental concerns related to the combined CO2 footprint of the NFTs. At the moment, a single NFT has been estimated to consume electricity as much as an individual EU citizen consumes in more than a month.⁷⁷ Using electricity from unrenovable sources causes greenhouse gas emissions. However, although the first mainstream blockchain based solutions like Bitcoin required significant amount computing power, currently blockchain technology behind NFTs is staking steps towards greener solutions.⁷⁸

At the moment, NFT's are mostly bought and sold in marketplaces, like Nifty Gateway and SuperRare, that use the cryptocurrency Ethereum. Ethereum, like most major cryptocurrencies, is built on a system that is energy hungry.

Every digital process consumes energy, and creating a blockchain (mining) is usually energy intensive by design.⁷⁹ However, there are number of ways to cut emissions caused by NFTs.

Firstly, NFT developers can lower the energy needed by making a switch from proof-of-work to proof-of-stake. Proof-of-work consensus protocol (which is the most used confirmation system in public, decentralized and distributed cryptocurrency systems⁸⁰) in verifying transaction blocks requires more energy than proof-of-stake process.⁸¹ Some NFTs are already traded with proof-of-stake blockchains. Ethereum has so far had proof-of-work process, but they have been working on Ethereum 2.0 upgrade that would replace proof-of-work process with proof-of-stake process. This upgrade is expected to take place sometime in 2022.⁸² At the beginning of 2022, Ethereum said that getting proof-of-stake process right is a big technical challenge and not as straightforward as using proof-of-work to reach consensus across the network.⁸³ Consensus across the network is important to keep the system up.⁸⁴ Ethereum has discussed moving from proof-of-work to proof-of-stake for some years, but the shift remains pending⁸⁵.

Secondly, NFT developers can use renewable energy. To cut down the emissions from energy usage, one solution is using renewable energy with smaller greenhouse gas emissions, where cryptocurrency machines run on clean energy. Some companies are seeking locations with a lot of renewable energy

76) AllThings.how; What are Gas Fees for NFTs?: <https://allthings.how/what-are-gas-fees-for-nfts/>

77) Yle; Miten teoksesta tulee kryptotaidetta – Teimme uutisesta NFT:n: <https://yle.fi/uutiset/3-11847087> & The Verge; Climate Controversy Swirling Around NFTs: www.theverge.com/2021/3/15/22328203/nft-cryptoart-ethereum-blockchain-climate-change

78) Fortune; Offsetting Bitcoin's carbon footprint would require planting 300 million new trees: <https://fortune.com/2021/11/06/offsetting-bitcoins-carbon-footprint-would-require-planting-300-million-new-trees/>

79) Time; Environmental Concerns Have Cast Doubt on NFTs—But That's Changing: <https://time.com/6120237/nfts-environmental-impact/>

80) Osborne & Clarke; Why not all blockchain has a heavy carbon footprint: www.osborneclarke-fintech.com/2021/05/20/not-blockchain-heavy-carbon-footprint/

81) The Verge; Climate Controversy Swirling Around NFTs: www.theverge.com/2021/3/15/22328203/nft-cryptoart-ethereum-blockchain-climate-change

82) MUO; NFTs Hurt the Environment. Here's Why That Might Change: www.makeuseof.com/nfts-hurt-environment-reasons-why/

83) Ethereum; Proof-Of-Stake (POS): <https://ethereum.org/en/developers/docs/consensus-mechanisms/pos/>

84) The Verge; Climate Controversy Swirling Around NFTs: www.theverge.com/2021/3/15/22328203/nft-cryptoart-ethereum-blockchain-climate-change

85) Osborne & Clarke; Why not all blockchain has a heavy carbon footprint: www.osborneclarke-fintech.com/2021/05/20/not-blockchain-heavy-carbon-footprint/

sources to mine the currencies to cut down the carbon footprint.⁸⁶ About 39 % of proof-of-work mining is powered by renewable energy, mainly hydroelectric generation.⁸⁷ However, Hydroelectric generation was the main source of renewable energy, which can be problematic to aquatic ecosystems and biodiversity, and dams without adequate planning might have large carbon footprint. The cryptominers have a high incentive to use the cheapest and most available source of electricity⁸⁸, which brings uncertainty to the development of usage of renewable energy in mining on global level.

Thirdly, NFT developers can move from layer 1 blockchains to layer 2 sidechains. Building another “layer” on top of existing blockchain for saving energy while keeping a decentralized proof-of-work network. When building another layer on top of the blockchain, transactions would happen on that layer “off-chain” and not in an energy-intensive proof-of-work process. Trading NFTs would happen on their own “channel” on the second layer, and when the business is done, they could settle up the net result of the transactions back to the blockchain.⁸⁹ Axie Infinity’s sidechain, Ronin, is much more environmentally friendly than Bitcoin, for example. One Bitcoin transaction uses as much energy as 695,505,316.31 Ronin transactions and one Ethereum transaction uses as much energy as 74,282,272.43 Ronin transactions⁹⁰.

Fourthly, when the emissions cannot be cut by green design, many developers are compensating for the carbon emissions generated by the transactions. Some are donating to charities supporting growing forests, tree planting among other viable long term actions.

In the end, the key question is what would be a reason for a seller to sign up to make use of more climate friendly technologies (such as StarkWare’s) in their NFT launch? A reason to choose a more climate friendly currency? Maybe demand from players? Or built-in need and willingness to be more sustainable?

⁸⁶) Cambridge Centre for Alternative Finance / University of Cambridge, Judge Business School; 3rd Global Cryptoasset Benchmarking Study: <https://time.com/6120237/nfts-environmental-impact/>

⁸⁷) Cambridge Centre for Alternative Finance / University of Cambridge, Judge Business School; 3rd Global Cryptoasset Benchmarking Study: <https://time.com/6120237/nfts-environmental-impact/>

⁸⁸) Consilience; Cryptocurrency Mining’s High Energy Demand: Can the Benefits of Digital Currencies Overcome their Significant Environmental Impacts?: <https://journals.library.columbia.edu/index.php/consilience/blog/view/349>

⁸⁹) The Verge; Climate Controversy Swirling Around NFTs: www.theverge.com/2021/3/15/22328203/nft-cryptoart-ethereum-blockchain-climate-change

⁹⁰) Cointelegraph; Axie Infinity devs release governance token for Ronin Blockchain to mixed player response: <https://cointelegraph.com/news/axie-infinity-devs-release-governance-token-for-ronin-blockchain-to-mixed-player-response>



13. WALLED GARDENS AS MARKET ACCESS BARRIER

A **(digital) walled garden** is an environment that controls the user's access to network-based content and services. In effect, the walled garden directs the user's navigation within particular areas to enable access to a selection of material or prevent access to other material. Although a walled garden does not always prevent users from navigating outside the walls, it often makes it more difficult than staying within the environment. Walled gardens remain a popular approach for business development for the following reasons⁹¹:

- They require users to remain on social media platforms, rather than being diverted elsewhere, so that the number of marketing and advertising campaigns can reach a maximum.
- They control the type of content users can access.
- They protect users from harmful content or malware-ridden downloads.
- They create an illusion of exclusivity for walled gardens that requires payment prior to being granted access to walled-in content. Other synonyms for walled garden include closed platform or closed ecosystem

Regarding NFT games, existing or potential walled gardens are for example Apple app store⁹², Google Play, Valve's Steam⁹³, Xbox⁹⁴. Platforms and storefronts are blocking and banning games and apps, including NFT games, based on their Terms of services and US legislation (first amendment's freedom of speech for the platforms). In the end this is often a battle between platform's freedom of speech (editorial decision making) and competition/antitrust regulation.⁹⁵

On September 2021 Apple loosened its grip for various sectors across the blockchain industry, particularly as it relates to non-fungible tokens (NFTs)⁹⁶ and settled Appstore, a class-action lawsuit brought by developers in 2019.⁹⁷ However it is worth pointing out that most crypto games and NFT platforms are solely browser-based and not packaged in iOS apps because of Apple's restrictions on small developers. On August 26, 2021, Apple agreed to loosen App Store restrictions on small developers in a legal settlement that could see Apple fork over \$100 million and allow developers to direct consumers to payment rails outside of the store. This potentially means that developers at Apple Appstore are able to directly discuss with customers about alternative payment methods using data gathered, pending customer permission, from inside their apps.⁹⁸

⁹¹) Tech Target; Walled Garden: www.techtarget.com/searchsecurity/definition/walled-garden

⁹²) CoinDesk; What Apple Settling App Store Lawsuit Means for Crypto NFTs: www.coindesk.com/business/2021/09/03/what-apples-settling-app-store-lawsuit-means-for-cryptos-nfts/ and Bitcoin Insider; Apple Blocks NFT Access On Its App Store, Stalls Update On Gnosis Safe: Wallet: www.bitcoininsider.org/article/126896/apple-blocks-nft-access-its-app-store-stalls-update-gnosis-safe-wallet

⁹³) PC Gamer; Steam bans all games with NFTs or cryptocurrency: www.pcgamer.com/steam-bans-nfts-cryptocurrencies-blockchain/

⁹⁴) Axios; Xbox chief wary of "exploitive" NFT gaming projects: www.axios.com/xbox-exploitive-nft-gaming-projects-cb3d885f-694c-462d-bcb1-a24c892db32f.html

⁹⁵) The Verge; Can We Regulate Social Media Without Breaking The First Amendment?: www.theverge.com/22838473/social-media-first-amendment-regulation-section-230-decoder-podcast

⁹⁶) CoinDesk; What Apple Settling App Store Lawsuit Means for Crypto NFTs: www.coindesk.com/business/2021/09/03/what-apples-settling-app-store-lawsuit-means-for-cryptos-nfts/

⁹⁷) Reuters; Apple strikes App Store deal with small developers as it waits for 'Fortnite' ruling: www.reuters.com/technology/apple-will-change-app-store-practices-after-settlement-with-small-developers-2021-08-27

⁹⁸) Reuters; Apple strikes App Store deal with small developers as it waits for 'Fortnite' ruling: www.reuters.com/technology/apple-will-change-app-store-practices-after-settlement-with-small-developers-2021-08-27

An abstract geometric composition featuring several overlapping hexagons and triangles. The shapes are rendered in a palette of muted colors: light purple, pale blue, teal, and a very light grey. The overlapping creates a sense of depth and complexity. The background is a solid dark navy blue. In the bottom left corner, there is a small, faint, light blue geometric shape, possibly a hexagon or a cluster of triangles, which is partially obscured by the main composition.

99) The Verge; Epic says it's 'open' to blockchain games after Steam bans them:
www.theverge.com/2021/10/15/22729050/epic-game-store-open-to-blockchain-cryptocurrency-nft-games

100) The Verge; Valve bans blockchain games and NFTs on Steam, Epic will try to make it work:
www.theverge.com/2021/10/15/22728425/valve-steam-blockchain-nft-crypto-ban-games-age-of-rust



14. COMMUNITY RISKS

14.1. GAME DEVELOPER COMMUNITY

NFT driven P2E is emerging as its own market segment similar to premium and F2P. Like with F2P, at least in the beginning there significant tensions inside (premium) game developer community on how to approach P2E business model¹⁰¹. However, it is clear that just like F2P games also P2E games need core games industry talent to grow as a sector. Furthermore, as a new industry sector there is no formal education to become a P2E game developer and the existing talent base is extremely thin. Consequently, the tensions inside the game developer community are likely to deepen the talent shortage in P2E games and potentially significantly slow its growth as a sector.

14.2. PLAYER COMMUNITY

P2E games are even more community driven than other types of games, as the value of NFTs is always created through the player community. If the community believes in the value of NFTs they keep their value. If the community loses their confidence in the NFTs, they lose their value.

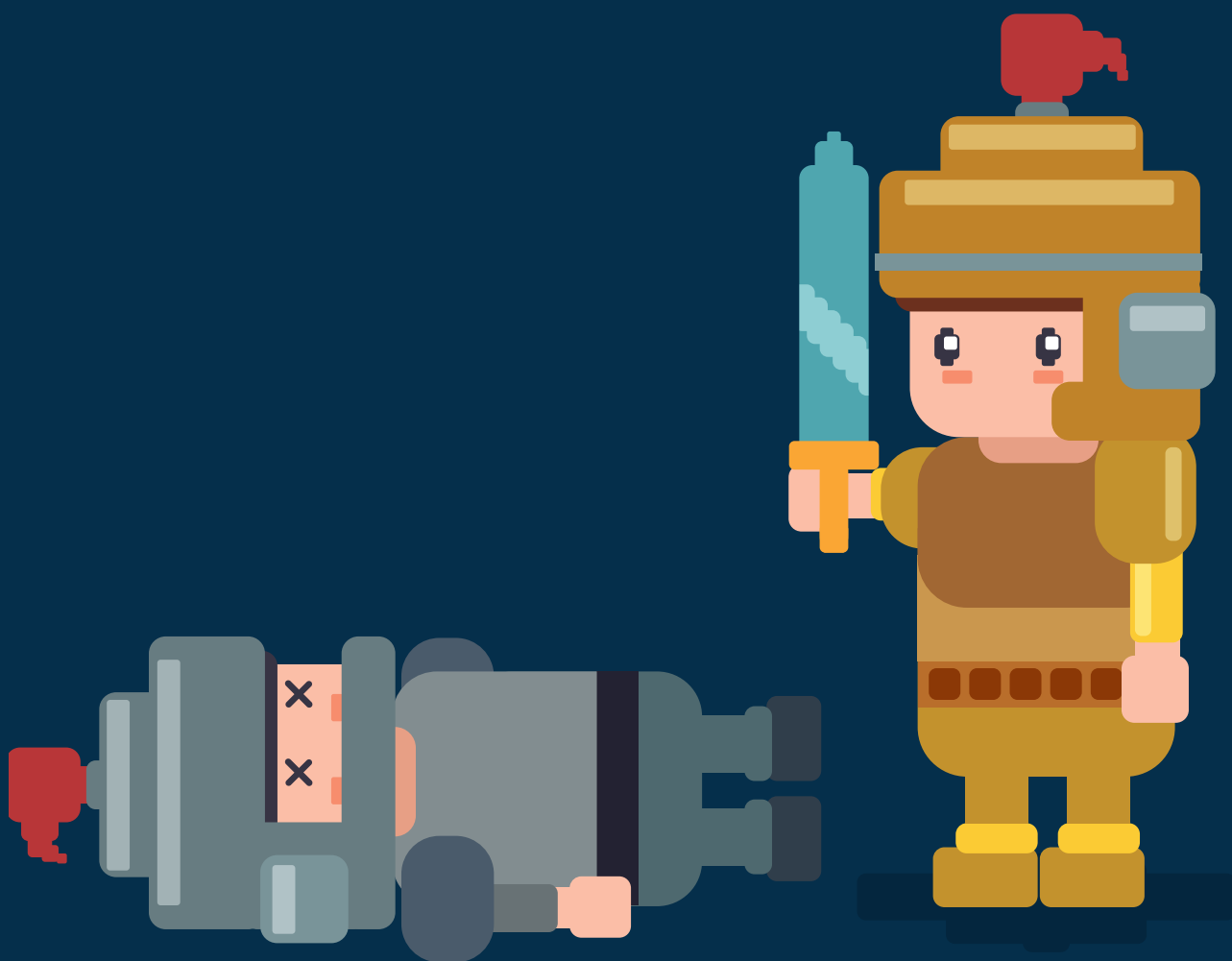
Consequently, it is highly important for a successful NFT developer to:

- ✦ Build a non-toxic and inclusive community around their game that is able to attract widest possible audience.
- ✦ Creating games that provide something for both players playing to earn and players playing to be entertained.
- ✦ Be extremely transparent to and communicate extremely carefully with the community so that the community does not lose their trust to the studio.
- ✦ Make sure that you are fully transparent towards both you players and business partners about how your game works and what are your and your service providers roles and responsibilities?
- ✦ Secure that players are actually achieving something concrete. P2E games are also about possession, not only about playing for entertainment like F2P games.
- ✦ Be sure that players are not exploited. When people feel exploited, the community is likely to turn against you.
- ✦ Investigate the way you are implementing NFTs more environmentally friendly.

¹⁰¹) Game Industry Biz; Aggro Crab condemns Team 17 over NFTs Developer of Going Under says it won't work with the publisher again due to NFT push: www.gamesindustry.biz/articles/2022-01-31-aggro-crab-condemns-team-17-over-nfts

For these reasons it is also unlikely that a game developer studio would be successful in transforming their existing game series to an NFT games. Usually the community around existing game is expecting the status quo to be preserved and they are likely to be very hostile in the attempts to completely change the game mechanics.

As the regulatory chapter below demonstrates, NFTs are not underregulated. There is a lot of regulation that potentially applies to NFTs, the main challenge is that nobody really knows how existing laws and guidelines are applied to NFTs.



15. GEOPOLITICAL RISKS

How recent war in Ukraine potentially effects to NFT and cryptocurrencies?

Wide economic sanctions against Russia after the Russian attack to Ukraine have shaken, not only stocks, but also values of cryptocurrencies. The value of Bitcoin has steadily fallen in weeks after the Russian invasion. Bitcoin prices are down 10% in the past month and Ether has fallen 15%.¹⁰²

Russia has the world's third-largest cryptocurrency mining industry, behind the United States and Kazakhstan (note issues regarding also Kazakhstan¹⁰³). Therefore it is not likely that the country would be blocked for cryptocurrencies entirely.¹⁰⁴

The crypto exchange platforms refused to ban all Russian users arguing that cutting off a whole nation is against Bitcoin's "embodiment of libertarian values". However, several exchange platforms have reacted by banning individual accounts;¹⁰⁵

- ✦ Coinbase blocked 25,000 wallet addresses it said were related to Russian individuals or entities that have engaged in illicit activity.
- ✦ Binance, the world's largest crypto exchange platform (which accounts over 40% of all trades are in roubles) is blocking the accounts of any clients targeted by sanctions.
- ✦ Kraken promised to use Russian trading fees (more than \$10 Million) to donations to Ukraine customers.¹⁰⁶
- ✦ FTX announced that the company gives \$25 to every Ukrainian that uses the company's platform.¹⁰⁷

¹⁰²) New York Times; Bitcoin Was Made for This Moment. So Why Isn't It Booming?:

www.nytimes.com/2022/03/11/technology/bitcoin-ukraine-russia-roose.html

CNN Business; Bitcoin price falls after Russia attacks Ukraine:

<https://edition.cnn.com/2022/02/24/business/bitcoin-price-drops-ukraine-russia-attack/index.html>

Investors Business Daily: Buying Bitcoin Comes Under Fire In Russia-Ukraine Crisis:

www.investors.com/news/buying-bitcoin-comes-under-fire-russia-ukraine-crisis/

¹⁰³) Reuters; Kazakhstan's bitcoin 'paradise' may be losing its lustre:

www.reuters.com/technology/kazakhstans-bitcoin-paradise-may-be-losing-its-lustre-2022-01-14/

¹⁰⁴) Reuters; Russia proposes ban on use and mining of cryptocurrencies:

www.reuters.com/business/finance/russian-cbank-proposes-banning-cryptocurrencies-crypto-mining-2022-01-20/

¹⁰⁵) PCGamer; Crypto exchange Coinbase blocks 25,000 Russian-linked crypto addresses:

www.pcgamer.com/crypto-exchange-coinbase-blocks-25000-russian-linked-crypto-addresses/

BBC News; Ukraine crisis: Crypto exchange boss rejects Russian user ban: www.bbc.com/news/technology-60576373

Reuters; Analysis: Crypto exchanges won't bar Russians, raising fears of sanctions backdoor:

www.reuters.com/markets/europe/crypto-exchanges-wont-bar-russians-raising-fears-sanctions-backdoor-2022-03-02/

¹⁰⁶) Forbes; Crypto Exchange Kraken Will Use Russian Trading Fees To Help Provide More Than \$10 Million In Donations To Ukraine

Customers: www.forbes.com/sites/stevenehrlich/2022/03/09/crypto-exchange-kraken-ties-russian-trading-fees-to-10-million-in-donations-to-ukraine/

¹⁰⁷) Motherboard; Crypto Community Rushes to Ukraine's Defense Armed With NFTs, DAOs:

www.vice.com/en/article/v7dx39/crypto-community-rushes-to-ukraines-defense-armed-with-nfts-daos



Meanwhile, it is important to remember that NFT Community has been showing support to Ukraine by ie. developing art and promising to donate profits to Ukraine.¹⁰⁸

Not all crypto exchanges require confirmation of the identity of the customer, and it's not easy to track the origin of cryptocurrency transactions. If cryptocurrencies are widely used to bypass sanctions against Russia, they might face significant regulatory scrutiny.

The wider consequences of the war is inflation and higher prices in energy and food that impacts customers' purchasing power. Higher prices of energy can impact also on mining of cryptocurrencies (not to mention Russian role, being third largest in crypto mining). Weakening stability and experiencing insecurity at European level can also affect how and to what people are willing to buy. In an uncertain situation, it might not be NFT that brings comfort to its owner.

¹⁰⁸) Motherboard; Crypto Community Rushes to Ukraine's Defense Armed With NFTs, DAOs:
www.vice.com/en/article/v7dx39/crypto-community-rushes-to-ukraines-defense-armed-with-nfts-daos



16. REGULATORY RISKS

Key legal issues include how NFTs can be categorized on following

- **Player and creator rights** including fundamental human rights, data protection and privacy, consumer protection, gambling and copyright and licensing and other intellectual property rights.¹⁰⁹
- **Rights and obligations of a game developer studios** including for example, fundamental human rights, whistleblower rules, criminal law, platform regulation and environmental rules.
- **Regulation of financial transactions** including for example taxation, investment and banking rules, money laundering and terrorist financing rules and trade embargoes.

Governments in many countries have tried tackling NFT regulation directly, by **breaking NFTs down into separate categories of functionality, just like fungible tokens**. For example **Luxembourg categorized NFTs into three distinct types: financial instruments, electronic money, and collective investment instruments**. The landlocked European state offers new possibilities on the potential direction of a communal framework to best define NFTs, it's a step in the right direction. That said, **there are innumerable other functions NFTs can theoretically have, and understanding how to evaluate revenues derived from them can get messy. This is precisely why the frameworks built into NFT marketplaces, the self-regulation efforts, effectively, are essential.**¹¹⁰

Platforms and developers minting NFTs should have a duty to very clearly define the NFTs once they've been minted, which will be critical to building the marketplace frameworks. Delineating that an NFT is a security could easily help distinguish down the road whether it requires oversight from agencies or not. Sports memorabilia NFTs, for example, should be defined differently at the minting stage to avoid being put into the same basket as NFTs with security designations. They would hardly require excessive Know-Your-Customer (KYC) efforts along the lines of what is expected when working with traditional securities, but for NFTs classified as financial instruments, KYC should be a must.¹¹¹

With far too much abstraction in NFTs and their labels, there is plenty of room for misunderstanding and for higher authorities to get it wrong, but either way, the regulators will be coming sooner or later. The community of developers and marketplaces facilitating NFT trades and minting would be best served to prepare for it and differentiate between the different token functionalities, because, as we all know, blanket regulations never work.¹¹²

¹⁰⁹⁾ Jones Day; NFTs: Key U.S. Legal Considerations for an Emerging Asset Class:
www.jonesday.com/en/insights/2021/04/nfts-key-us-legal-considerations-for-an-emerging-asset-class

¹¹⁰⁾ Nasdaq; NFT Regulation Looms Large, So Let's Start With the Proper Framework:
www.nasdaq.com/articles/nft-regulation-looms-large-so-lets-start-with-the-proper-framework

¹¹¹⁾ Nasdaq; NFT Regulation Looms Large, So Let's Start With the Proper Framework:
www.nasdaq.com/articles/nft-regulation-looms-large-so-lets-start-with-the-proper-framework

¹¹²⁾ Nasdaq; NFT Regulation Looms Large, So Let's Start With the Proper Framework:
www.nasdaq.com/articles/nft-regulation-looms-large-so-lets-start-with-the-proper-framework



16.1. DATA PROTECTION AND PRIVACY

In the European General Data Protection Regulation, the idea is that the individuals (known as data subjects) are in control of their personal data. 'Personal data' means any information relating to an identifiable person who can be directly or indirectly identified in particular by reference to an identifier. These personal identifiers include name, social security number SSN or identification number, geographical data or unique online identifier, and including pseudonymized data. Controllers on the other hand, are the ones processing personal data.

GDPR means for example, that the individual has 1) right to rectification of the data, 2) right to limit the processing of the data, and 3) the right to be forgotten (data erasure). However, it is not clear, based on current regulation, who is the 'controller' when data is stored in a distributed ledger, by a peer-to-peer computer network.

By default anyone can review the data in a public blockchain, the token ownership can be easily verified and traced. Data in the blockchain is mostly pseudonymous¹¹³ but it does not solve the problem. Pseudonymity, for example in a format of a hash is not enough in the GDPR.¹¹⁴

Potential open questions:

- ⚡ What blockchain system is used and how does it work regarding personal data?
- ⚡ What personal data is included in the token?
- ⚡ Who are the data controllers and who are the data processors? Where the data is stored geographically?
- ⚡ Who is able to remove or correct any potential false seller/buyer information or other personal data?
- ⚡ What personal data is included in the token?
- ⚡ Who has visibility to the ownership?

¹¹³) Business Insider; Nasdaq; NFT Regulation Looms Large, So Let's Start With the Proper Framework:
www.businessinsider.com/nft-meaning?

¹¹⁴) European Data Protection Supervisor; Pseudonymous data: processing personal data while mitigating risks:
https://edps.europa.eu/press-publications/press-news/blog/pseudonymous-data-processing-personal-data-while-mitigating_en



16.2. CONSUMER PROTECTION

EU consumer protection rules provide players with a number of different rights. Like for example:

- ✓ Right to truthful advertising.
- ✓ Right to contracts without unfair clauses. Contract terms are unfair if they create a significant imbalance between consumer rights and obligations as a consumer and the rights and obligations of the seller or service supplier. In other words, a term can be unfair if it puts a consumer at a disadvantage. If there are any doubts about a contract term, the term should be interpreted in the favor of the consumer.
- ✓ Right to protection from unfair commercial practices. A commercial practice is considered 'unfair' if it is misleading, giving false information or leaving out important information or aggressive, e.g. putting pressure on you to buy.
- ✓ Right to return most of digital content purchased online within 14 days and get a refund.
- ✓ Right to extensive precontractual information in advance of purchase.
- ✓ Right to Transparency on online marketplaces (e.g. are sellers private individuals or professional traders, how ranking criteria works on searches, reviews and personalized pricing).

Potential open questions:

- ❓ Is a NFT/Crypto game a platform or a digital service or digital content?
- ❓ What precontractual should be provided beforehand for the buyers of NFTs? This information may include item metadata inside the NFT, seller's description in the NFT marketplace plus potential additional information on creator's/seller's website.
- ❓ How to write clear and understandable Terms and Conditions for NFTs?
- ❓ When is the trade of NFTs considered to happen between a business and another business (B2B), business and consumer (B2C) and when does it happen between consumers (C2C)?
- ❓ How are the consumer protection responsibilities shared between (business) seller and NTF trading platform?
- ❓ Under what conditions are you allowed to sell NFTs for children and other vulnerable consumers?
- ❓ What are the return/money-back policies? When does a consumer have a right to withdraw from or terminate the contract and return the NFT?
- ❓ Who has visibility to the value of the item? Everyone?
- ❓ Is the consumer able to understand what (s)he is really buying? E.g. where (s)he is able to use the item in question, what rights does (s)he own?



16.3. MONEY LAUNDERING AND TERRORISM FINANCING

NFTs are an attractive medium for money laundering. The 5th Anti-money laundering directive (AMLD5):¹¹⁵

- Increases transparency about who really owns companies and trusts to prevent money laundering and terrorist financing via opaque structures.
- Improves the work of Financial Intelligence Units with better access to information through centralized bank account registers.
- Tackles terrorist financing risks linked to anonymous use of virtual currencies and of pre-paid instruments.
- Broadens the criteria for assessing high-risk third countries and ensures a common high level of safeguards for financial flows from such countries.

Potential open questions:

- 🔗 To what extent local or European money laundering rules apply to NFTs?
- 🔗 Is the crypto currency wallet used by the NFT seller Anti-Money Laundering-compliant?
- 🔗 Is the marketplace that is used for buying or selling in-game assets Anti-Money Laundering-compliant (e.g. monitored - is there buyer/seller vetting, is suspicious activity reported etc.)?¹¹⁶
- 🔗 Potentially in the future: whistleblower-directive's national implementation?¹¹⁷
- 🔗 Can the assets be categorized as works of art?

¹¹⁵) European Commission; Strengthened EU rules to prevent money laundering and terrorism financing: https://ec.europa.eu/info/files/factsheet-main-changes-5th-anti-money-laundering-directive_en

¹¹⁶) Sumsb; Building AML Compliance for NFT Marketplaces: <https://sumsub.com/blog/nft-aml-compliance/>

¹¹⁷) Implementation not yet ready



16.4. TRADE RESTRICTIONS/EMBARGOES

An embargo is a government order (economic sanction) that restricts commerce with a specified country or the exchange of specific goods. Sanctions may include various forms of trade barriers, tariffs, and restrictions on financial transactions. Sanctions can include, but are not limited to bilateral, UN- or EU-based sanctions. App marketplaces might have some embargo limitations in place as well.¹¹⁸ One potential solution is to restrict access to the marketplace based on IP addresses.

Potential open questions:

- 🔗 Has the NFT marketplace excluded trade embargo countries from the distribution?
- 🔗 Are the embargoes mentioned in the conditions of the sale? Example: *“neither we nor the Seller make any representations or warranties as to whether any Lot is subject to export or import restrictions or any embargoes.”*¹¹⁹

16.5. COPYRIGHT & LICENSING

Copyright protection in the EU grants creator the following exclusive rights:

- ✓ economic rights – guaranteeing creator has control over his/her work and remuneration for its use through selling or licensing
- ✓ moral rights – usually protecting creator’s rights to claim authorship (right of attribution) and to refuse a modification of your work (right of integrity)

Depending on the smart contract within the NFT and the terms and conditions of the sale, copyright or licensing rights might not be included in the purchase

Potential open questions:

- 🔗 When are NFTs considered to be artistic content and when computer programmes?
- 🔗 What are the rights given to the buyer with the purchase? Are the rights given to the buyer with the purchase clearly communicated to the buyer?
- 🔗 What are author rights over NFTs and who actually owns the item linked to NFT?
- 🔗 How are the new copyright law reporting obligations implemented with NFTs?
- 🔗 Who is able to take down content in public block chains?
- 🔗 Are there any royalties included in the smart contract?

¹¹⁸) The New York Times; Apple, Citing U.S. Sanctions, Removes Popular Apps in Iran:
www.nytimes.com/2017/08/24/technology/apple-iran.html

¹¹⁹) Sothebys; Natively Digital: A Curated NFT Sale:
<https://www.sothebys.com/en/buy/auction/2021/natively-digital-a-curated-nft-sale-2>



16.6. FUNDAMENTAL RIGHTS

Fundamental human rights include, for example

- ✓ Artistic freedom
- ✓ Freedom expression
- ✓ Right to work and engage in commercial activity: Constitution of Finland, for example, states that: *“Everyone has the right, as provided by an Act, to earn his or her livelihood by the employment, occupation or commercial activity of his or her choice”*
- ✓ Right to privacy
- ✓ Children’s rights

Potential open questions:

- ✚ Artistic freedom: How much can a game developer limit the artistic freedom of their players creating in-game user generated NFTs?
- ✚ Policies for underage players
 - What rights underage users’ have? In Finland, child’s legal guardian has control over child’s assets but also an obligation to report value of assets to authorities when the value exceeds a certain price (in Finland 20 000€) so that authorities can monitor guardian’s use of assets.
 - On the other hand, it might be best to have age restrictions (and/or parental controls) in place in order to protect underage users from potential unwanted behavior (price manipulation, scams etc.) in NFT purchases. On the other hand those restrictions are violating children’s right to access culture.
- ✚ The right to work and the freedom to engage in commercial activity: Can government regulation prevent individuals from buying or selling NFTs)?



16.7. NFTs AND INVESTMENTS

NFTs are not (yet) specifically regulated but situation might be different if the NFT in question is likely to constitute a type of regulated financial instrument, such as a security (a share or a unit in a collective investment scheme) based on the characteristics of the NFT and the rights given to a token buyer. (Most NFTs do not fall into this category).¹²⁰

Potential open questions:

- 🔗 What kind of “insider trading” is this forbidden by the NFT marketplace?¹²¹
- 🔗 Are NFT creator’s employees allowed to purchase the NFTs?
- 🔗 Has the marketplace some sort of policies and activity against price manipulation (e.g. bots) which is harmful to potential buyers?¹²²
- 🔗 Has the developer a contract with the potential external marketplace regarding limited liability in price manipulation/affecting cases 1) by bots, 2) by company personnel (as insider trading)¹²³ or 3) when an individual is artificially inflating price by trading NFTs with himself?¹²⁴
- 🔗 What storage system are you using for the actual assets? E.g. Where are the tokens linking to?
- 🔗 What is the process and liabilities if something goes wrong?¹²⁵

16.8. GAMBLING

In the EU gambling is commonly defined as an activity that fulfills the following three criteria:

- ✓ A consideration (money or item of monetary value) is made to participate in the activity
- ✓ The outcome of the activity is fulfilled fully or partly by chance
- ✓ A participant can win a prize (money or an item with monetary value)

Potential open questions:

- 🔗 When do random elements in a NFT game cross the line to gambling?
- 🔗 By principle where there is a financial transaction, there usually are taxation rules of some kinds applied.

120) The Guardian; NFT trader OpenSea bans insider trading after employee rakes in profit:
<https://www.theguardian.com/technology/2021/sep/16/nft-trader-opensea-bans-insider-trading-after-employee-rakes-in-profit>

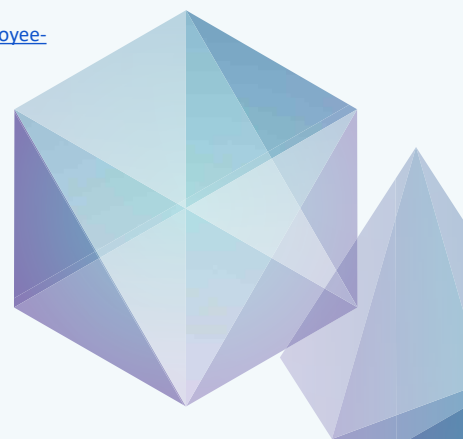
121) See for example <https://www.osborneclarke.com/insights/what-are-legal-issues-around-nfts>

122) Netacea; How Bots Are Being used to Skew NFT Prices For Big Profit:
www.netacea.com/blog/how-bots-skew-nft-prices-for-big-profit/

123) The Guardian; NFT trader OpenSea bans insider trading after employee rakes in profit:
www.theguardian.com/technology/2021/sep/16/nft-trader-opensea-bans-insider-trading-after-employee-rakes-in-profit

124) BNN Bloomberg; Here’s a \$532 Million NFT Trade That Wasn’t What It Appeared:
www.bnnbloomberg.ca/here-s-a-532-million-nft-trade-that-wasn-t-what-it-appeared-1.1673848

125) ARTnews; Can the Weaknesses of NFT Technology Be Fixed:
www.artnews.com/art-news/news/nfts-broken-technology-1234600107/



16.9. TAXATION

NFT game developers might be subject to, for example, corporate taxation and VAT/sales tax where they operate.

Potential open questions:

- 🔗 Who is responsible for collecting and paying the VAT from B2C transactions?
- 🔗 What kind of paper track a game developer has to provide on the transactions?
- 🔗 How to identify where the transaction takes place?
- 🔗 How to bring cryptocurrencies and NFTs in a company's financial books?
- 🔗 How peer-to-peer NFT transactions are taxed?
- 🔗 When does a player earning all their income through a single game move from self-employed person to an employee?

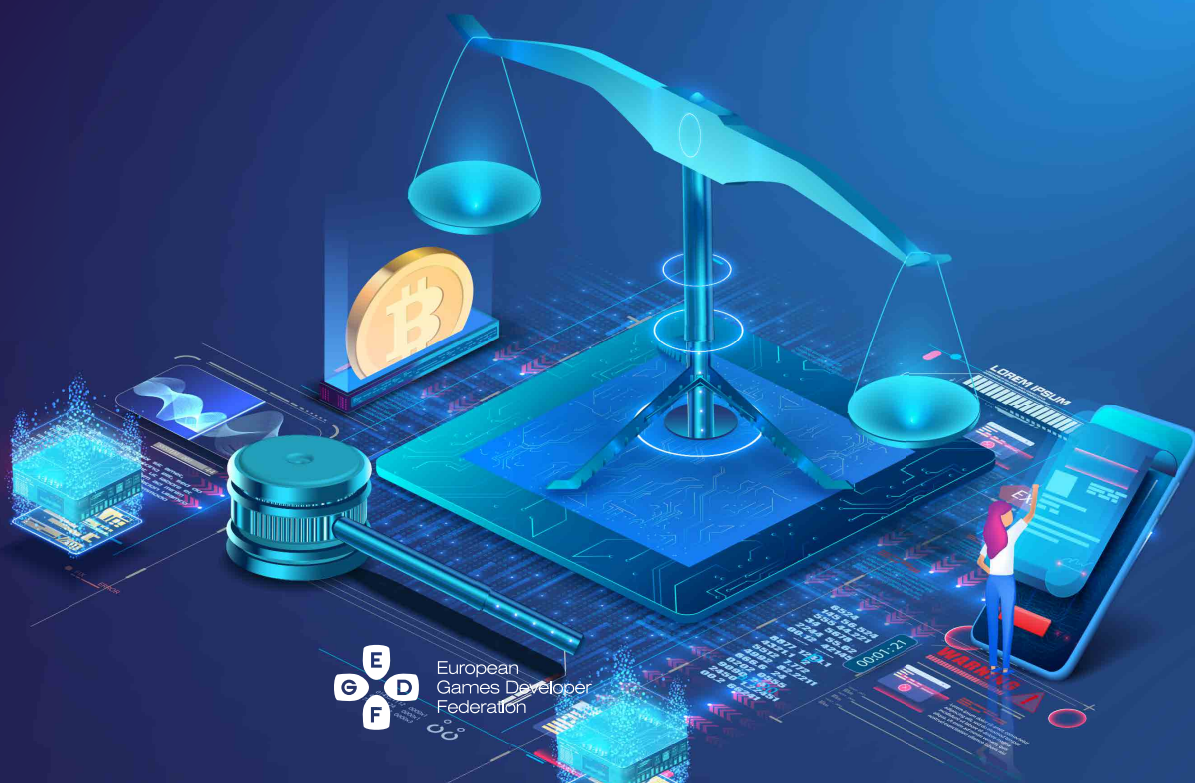
16.10. CRIMINAL LAW

Criminal law is regulated on a national level in the EU. However, people engaged in NFT trades can accidentally or on purpose engage in a number of criminal activities.

Potential open questions:

- 🔗 Who in the value chain is criminally liable for Copyright violations, money laundering, tax evasion or fraud?
- 🔗 Can price manipulation by using bots be seen as an illegal criminal activity?¹²⁶
- 🔗 Who is legally responsible for Distributed Autonomous Organizations?

¹²⁶) Netacea; How Bots Are Being used to Skew NFT Prices For Big Profit: www.netacea.com/blog/how-bots-skew-nft-prices-for-big-profit/



16.11. PLATFORM REGULATION

Countries across the globe are currently building regulatory frameworks for platform economy. In the EU Digital Markets Act (DMA) will determine the role and responsibilities of gatekeeping platforms in the digital value chain.

Potential open questions:

- ✦ Will DMA force platforms like Apple and Google to allow payments through third party cryptocurrency providers on their platforms?
- ✦ Will DMA force platforms like Apple and Google to allow third party application stores / game platforms on their platforms?

16.12. WHISTLEBLOWER RULES

New EU whistleblower covers all companies providing financial services (or private and public entities with 50+ employees who are operating in the EU). For example, financial services and prevention of money laundering and terrorist financing, consumer protection, data protection and protection of environment fall under the scope of the directive.

Potential open questions:

- ✦ Should all P2E game developers provide a whistleblower system? Who should have access to it?



16.13. REGULATORY THREATS IN OTHER MAJOR GAMES MARKETS BEYOND EU

USA

Despite growing interest and attention towards NFT, as in many other markets, the US existing regulatory and legal environment was not designed to accommodate digital assets, including NFTs. For now, it's not entirely clear what constitutes a legal NFT drop.¹²⁷ However, (as other markets) developers should put attention in the US at least for following keypoints; security concerns, IP-rights & royalties and anti-money laundering.

China

CCTV (China Central Television - a Chinese state-owned broadcaster controlled by the Chinese Communist Party) has warned its citizens against taking part in blockchain-based, play-to-earn online games such as Farmers World, implying the government large bans to crypto-related transactions.¹²⁸

Despite the regulatory scrutiny, Chinese tech giants (i.e. Alibaba, Tencent, Baidu, NetEase) can't afford to be left behind and they are eagerly investing in Metaverse and NFT. Due to regulatory reasons firms have replaced the term NFT with "digital collectibles". They have also placed limits on secondary trading, and such items that are traded on private blockchain networks, unlike those that are usually traded on Ethereum (ETH) and other well-known protocols.¹²⁹

However, it is needed to mention that the Chinese Communist Party (CCP) is committed to rolling out a digital yuan early 2022 and that will most likely affect everything in the digital space that threatens to upstage its new token. Even though Chinese authorities haven't yet labeled NFTs illegal, those are clearly in a gray area where every operator has to be careful to avoid unwanted scrutiny, since policy makers in Beijing have already largely banned on 2021 all crypto activity. Tightening regulation regarding NFT is expected to happen and there are likely going to be guidelines to regulate the sector differently from the rest of the world.¹³⁰

¹²⁷) CoinDesk; Some NFTs Are Probably Illegal. Does the SEC Care?:

www.coindesk.com/policy/2021/10/20/some-nfts-are-probably-illegal-does-the-sec-care/

Jones Day; NFTs: Key U.S. Legal Considerations for an Emerging Asset Class:

www.jonesday.com/en/insights/2021/04/nfts-key-us-legal-considerations-for-an-emerging-asset-class

¹²⁸) South China Morning Post; Chinese state television warns against blockchain-based, play-to-earn games as popularity surges:

www.scmp.com/tech/policy/article/3159843/chinese-state-television-warns-against-blockchain-based-play-earn-games

Bloomberg Wealth; China's State Media Xinhua to Issue NFTs Amid Crypto Crackdown:

www.bloomberg.com/news/articles/2021-12-22/china-s-state-media-xinhua-to-issue-nfts-amid-crypto-crackdown

¹²⁹) South China Morning Post; NFTs heat up in China as 'digital collectibles' despite tough regulatory environment banning profits;

www.scmp.com/tech/tech-trends/article/3162980/nfts-heat-china-digital-collectibles-despite-tough-regulatory

¹³⁰) CryptoNews; Chinese Tech Giants Ready Metaverse, NFT Moves Despite Regulatory Scrutiny:

<https://cryptonews.com/news/chinese-tech-giants-ready-metaverse-nft-moves-despite-regulatory-scrutiny.htm>

Business Insider India; China's state-run news agency will issue NFTs as the government cracks down on crypto:

www.businessinsider.in/cryptocurrency/news/chinas-state-run-news-agency-will-issue-nfts-as-the-government-cracks-down-on-crypto-to/articleshow/88438043.cms

Bloomberg Wealth; China's State Media Xinhua to Issue NFTs Amid Crypto Crackdown:

www.bloomberg.com/news/articles/2021-12-22/china-s-state-media-xinhua-to-issue-nfts-amid-crypto-crackdown

Business Insider India; Alibaba, Tencent, and other Chinese players are betting big on the metaverse — but the government is yet to buy into the hype:

www.businessinsider.in/investment/news/alibaba-tencent-and-other-chinese-players-are-betting-big-on-the-metaverse-but-the-government-is-yet-to-buy-into-the-hype/articleshow/88062372.cms

NFTs run on public protocols like Ethereum and are traded freely outside of China, while Xinhua's (State-run Xinhua News Agency, the biggest media organization in China) released "digital news collectibles" that will have unique identification and ownership information on a blockchain from Tencent Cloud, and are of "special commemorative significance and collection value".¹³¹

South-Korea

The first game based NFT exchange was announced to take place in December 2021 made in WeMade. Another Korean game companies ie. Com2uS, Kakao Games Corp. and NCSoft were also revealing plans regarding NFT exchange in near future.¹³² In January 2022 Com2uS revealed a first-look at their in-development all-encompassing metaverse platform.¹³³

There are several existing rules regarding games ie. age ratings and price limits (games that offer prizes worth more than 10,000 Korean won (\$8.42) are banned throughout the country).¹³⁴

Confusing contrast to many Korean game developers' plans regarding metaverse and NFT is that according to several sources, the South Korean government has told Apple and Google they must remove their play-to-earn games from their app stores.¹³⁵ In Korea all games should be rated by GRC to be legally operated in Korea and currently rating is not permitted to NFT or Blockchain games. South Korea's stance towards P2E can cause negative consequences for many games, but especially for the most popular ones like Axie Infinity and Splinterlands, since South Korea is one of the most lucrative markets in mobile games.

Japan

Currently NFT is not directly regulated by any law in Japan.¹³⁶ Some good practicalities concerning NFT in Japan market can be found here: <https://law.asia/nft-regulations-japan/>

Taiwan

Currently, there are no regulations specifically addressing the rise and development of NFTs¹³⁷

¹³¹) South China Morning Post; China's Xinhua jumps on NFT bandwagon with thousands of news photos to be issued as 'digital collectibles': www.scmp.com/tech/trends/article/3160703/chinas-xinhua-jumps-nft-bandwagon-thousands-news-photos-be-issued

¹³²) The Korea Economic Daily; Korea's first game NFT exchange to open next month: www.kedglobal.com/newsView/ked202111290012

¹³³) The Glyfe; Com2verse Metaverse First Look: <https://gaminglyfe.com/com2verse-metaverse-first-look/>

¹³⁴) TheGamer; South Korea Is Blocking Play-To-Earn Mobile Games: www.thegamer.com/south-korea-blocking-play-to-earn-mobile-games/

¹³⁵) TheGamer; TheGamer; South Korea Is Blocking Play-To-Earn Mobile Games: www.thegamer.com/south-korea-blocking-play-to-earn-mobile-games/
Screenrant; South Korea Demands Apple, Google Pull Play-To-Earn Games From App Stores: <https://screenrant.com/p2e-play-to-earn-nft-games/>

¹³⁶) Asia Business Law Journal; NFT regulations in Japan: <https://law.asia/nft-regulations-japan/>

¹³⁷) Asia Business Law Journal; NFT regulations in Taiwan: <https://law.asia/nft-regulations-taiwan/>



Philippines

While the NFT market continues to spread domestically, the legal and regulatory treatment surrounding this specific technology remains in a wait-and-see stasis. Nevertheless, NFTs may still fall under Philippine regulations depending on the nature of the business model or process where the NFT project is embedded, which may be subject to regulatory oversight or scrutiny.¹³⁸

Indonesia

The legal infrastructure in the country seems to want to encompass the unique non-fungible characteristics of NFTs, and the trend will only continue to rapidly progress. Indonesian authorities have taken a measured approach in examining the existence of blockchain technology, leaning more towards embracing the new technology rather than banning it altogether. This can be seen by the approach currently taken for cryptocurrencies and blockchain in general. It will be interesting to see whether NFTs will be managed cautiously, or governed in a sterner manner.¹³⁹

India

At this time, India does not have any law or regulation to govern NFTs.

¹³⁸) Asia Business Law Journal; NFT regulations in Philippines: <https://law.asia/nft-regulations-philippines/>

¹³⁹) Asia Business Law Journal; NFT regulations in Indonesia: <https://law.asia/nft-regulations-indonesia/>



17. QUESTIONS

Play-to-earn (or play-and-earn) model is estimated to have potential to be the next major disruption of the games market, after digital distribution channels and app stores become widespread. What comes to development of business models, first there was pay to play (premium business model) then later free-to-play became mainstream especially on mobile platforms and play-to-earn is expected to be a new phase. However, play-to-earn and NFT's is not just a next step on business models, but it can possibly, not only shake the dominance of app stores and effect their monopoly on transactions in games in their stores, but also change the relations between game developers and players.

In addition, the growing trend towards cloud gaming is also a potential threat to established stores like Steam, not to mention that Steam has already forbidden NFTs on its platform, but even mobile app stores might be affected by cloud gaming. It is also interesting to see how world wide shortage of micro ships and other materials can challenge console gaming/manufacturers and boost cloud gaming, which enables NFT's better.

There are quite a lot of (hyper)optimistic estimates of how exponentially NFT and metaverse market size is growing in the near future. It is evident that financially the growth curve is going to be (or at least look like) steep since there is a significant amount of investment/VC money available for developers, and a great number of customers (whales) willing to spend irrational amounts of money on digital goods/NFTs.

However, the crucial question is: ***does the urge and rush towards NFT and metaverse, prove that there is actually (going to be) a solid market and scalable business when invested VC money has been used after two-three years?*** From a developer point of view, it needs to be defined where and how (much) money comes from the actual market. It seems that obviously there will be money spent in games or metaverse, but who will get the money from the sold item, feature or NFT. Naturally platform fees from NFT items can bring revenue for the developers. New players of the game will increase both, demand of new items and values of sold/owned items. However, infinite growth is not likely to take place in this case either, so how will players react when the value of purchased items drops while the game/metaverse is turning to sunset. It might be worth pondering as well, are these markets on metaverse going to be wild, or is it needed to have control to close the operations if trading breaks loose.

For the developer, the good news on moneywise is, that while user acquisition is most likely turning more organic, mouth-to-mouth between players at metaverse, it means saved money on UA costs. Further, if appstore monopolies break down, there are more options for (developer) to make earnings in games. It is also interesting to see how ad revenue models will be affected by this and in which amount those will be merged with brand NFTs. But the question is, are all these means enough to replace incomes that used to come from the free-to-play model?

In addition to environmental/ecological costs of blockchain, it is advisable to consider issues regarding the electricity market. Europe is currently suffering an energy shortage and prices of electricity are skyrocketing.¹⁴⁰

Limiting the amount of desirable NFT items for the first players is increasing the demand and price. Like in Blankos Block Party where some of the first NFT were designed by top artists and were available only for the first 5000 players. At Mythical Marketplace (connected to Plankos Block Party) players can reap monetary rewards, not only by selling rare characters but also by selling characters that they've leveled up trough gameplay.¹⁴¹

¹⁴⁰⁾ Reuters; EU countries struggle to unify response to energy price spike:
www.reuters.com/markets/commodities/eu-countries-struggle-find-joint-response-energy-price-spike-2021-12-02/

¹⁴¹⁾ Input; Players of 'Blankos Block Party' will be able to sell their characters as NFTs:
www.inputmag.com/gaming/blankos-block-party-introduces-nft-characters-that-players-can-buy-sell

18. CONCLUSIONS

Some key questions for game developers and publishers

EGDF encourages game developers and publishers to pay attention on the following key questions while introducing the play-to-earn business model:

⇒ **Understanding what you are doing:** Is the game you are running from a regulatory perspective a platform, digital payment service, investment instrument, another kind of digital service, selling digital content or a combination of these? Game developers should in particular pay attention to:

- ✦ **Regulatory/Legal risks**
- ✦ **Environmental concerns**
- ✦ **Concerns from player community**

- ✓ Building a non-toxic and inclusive community around their game that is able to attract widest possible audience.
- ✓ Creating games that provide something for both players playing to earn and players playing to be entertained.
- ✓ Being extremely transparent to and communicate extremely carefully with they community.
- ✓ Securing that players are actually achieving something concrete.
- ✓ Being sure that players are not exploited.

⇒ **Market access risks** caused by platform policies

⇒ **Business disruption (opportunity):** Potentially the next disruption after F2P and digital distribution



ANNEX: SUMMARY OF POTENTIAL LEGAL QUESTIONS IN THE EU

PLAYER RIGHTS				
FUNDAMENTAL RIGHTS	DATA PROTECTION AND PRIVACY	CONSUMER PROTECTION	GAMBLING	COPYRIGHT AND LICENSING
<ul style="list-style-type: none"> ✦ How to balance children's right to access culture against their right for protection from business practices that are potentially harmful for them? ✦ How much can banks or digital distribution platforms like Appstore limit the right to work? 	<ul style="list-style-type: none"> ✦ What blockchain system is used and how does it work regarding personal data? ✦ What personal data is included in the token? ✦ Who are the data controllers and who are the data processors? Where the data is stored geographically? ✦ Who is able to remove or correct any potential false seller/buyer information or other personal data? ✦ What personal data is included in the token? ✦ Who has visibility to the ownership? 	<ul style="list-style-type: none"> ✦ Is a NFT/Crypto game a platform or a digital service or digital content? ✦ What precontractual should be provided beforehand for the buyers of NFTs? ✦ How to write clear and understandable Terms and Conditions? ✦ When is the trade of NFTs considered to happen between a business and another business (B2B), business and consumer (B2C) and when does it happen between consumers (C2C)? ✦ How are the consumer protection responsibilities shared between (business) seller and NTF trading platform? ✦ Under what conditions are you allowed to sell NFTs for children and other vulnerable consumers? ✦ What are the return/money-back policies? When does a consumer have a right to withdraw from or terminate the contract and return the NFT? ✦ Who has visibility to the value of the item? Everyone? ✦ Is the consumer able to understand what (s)he is really buying? E.g. where (s)he is able to use the item in question, what rights does (s)he own? 	<ul style="list-style-type: none"> ✦ When do random elements in a NFT game cross the line to gambling? 	<ul style="list-style-type: none"> ✦ When are NFTs considered to be artistic content and when computer programmes? ✦ Who actually owns the item linked to NFT? ✦ Who is able to take down content in public blockchains? ✦ What are the copyrights given to the buyer with the purchase? Are the rights given clearly communicated to the buyer? ✦ What are author rights over NFTs? ✦ How are the new copyright law reporting obligations implemented with NFTs? ✦ Are there royalties in the smart contracts?



GAME DEVELOPER RIGHTS AND OBLIGATIONS			
WHISTLEBLOWER RULES	CRIMINAL LAW	PLATFORM REGULATION	ENVIRONMENTAL RULES
<ul style="list-style-type: none"> ✦ Should a game developer provide a whistleblower system? Who should have access to it? 	<ul style="list-style-type: none"> ✦ Who is responsible for frauds? ✦ Who is responsible for copyright violations? ✦ Who is responsible for money laundering? ✦ Who is responsible for tax evasion? ✦ Who is legally responsible for Distributed Autonomous Organisations? 	<ul style="list-style-type: none"> ✦ Will DMA force Apple and Google to allow payments through third party cryptocurrency providers on their platforms? ✦ Will DMA force Apple and Google to allow third party application stores / game platforms on their platforms? 	<ul style="list-style-type: none"> ✦ Upcoming field of regulation

REGULATION OF FINANCIAL TRANSITIONS			
INVESTMENT AND BANKING RULES	MONEY LAUNDERING & TERRORISM FINANCING RULES	TRADE EMBARGOES	TAXATION
<ul style="list-style-type: none"> ✦ Is the NFT in question likely to constitute a type of regulated financial instrument, such as a security (a share or a unit in a collective investment scheme) based on the characteristics of the NFT and the rights given to a token buyer? 	<ul style="list-style-type: none"> ✦ To what extent local or European money laundering rules apply to NFTs? ✦ Is the cryptocurrency wallet used by the NFT seller Anti-Money Laundering-compliant? ✦ Is the marketplace that is used for buying or selling NFTs Anti-Money Laundering-compliant? ✦ Can the assets be categorized as works of art? 	<ul style="list-style-type: none"> ✦ Has the NFT marketplace excluded embargo countries from the distribution, or in the sale conditions? 	<ul style="list-style-type: none"> ✦ Who is responsible for collecting and paying the VAT from B2C transactions? ✦ What kind of paper track a game developer has to provide on the transactions and how to identify where the transaction takes place? ✦ When does a player earning all their income through a single game move from self-employed person to an employee?





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