

NFT METAVERSE STARTUPS AND A POSSIBILITY OF FUNDRAISING THROUGH TOKEN ISSUANCE

STARTUPY NFT METAVERSE I MOŻLIWOŚĆ POZYSKANIA FINANSOWANIA POPRZEZ EMISJĘ TOKENA

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Abstract: Blockchain has been one of the leading technology breakthroughs in recent years. It has enabled the creation of multiple cryptocurrencies and tokens which, amongst others, financed the activities of various startup projects. The last few years have seen the emergence of another blockchain-enabled product – Non Fungible Tokens (NFT) which are a digital certificate of ownership. Both NFTs and tokens are wider part of the creation of a metaverse – a new digital, online environment. This article analyses theoretical aspects of cryptocurrencies, tokens, NFTs and metaverse. The fundraising and token issuance aspects are analysed here based on examples of startups Metahero, Ultiarena and Bloktopia.

Keywords: nft, token, fundraising, metaverse, startups

Streszczenie: Blockchain to jeden z wiodących przełomów technologicznych ostatnich lat. Umożliwił on stworzenie wielu kryptowalut i tokenów, które m.in. pozwoliły sfinansować działalność różnych projektów startupowych. Ostatnie lata zaowocowały pojawieniem się kolejnego produktu bazującego na blockchain – Non Fungible Tokens (NFT), które są cyfrowym certyfikatem własności. Zarówno NFT, jak i tokeny są szerszą częścią tworzenia metaverse – nowego cyfrowego świata. Artykuł analizuje teoretyczne aspekty kryptowalut, tokenów, NFT i metaverse. Aspekty fundraisingu i emisji tokenów zostały opracowane na przykładach startupów Metahero, Ultiarena i Bloktopia.

Słowa kluczowe: nft, token, finansowanie, metaverse, startupy

Introduction

It is hard to imagine that anyone who is following tech trends has not heard of blockchain, cryptocurrencies or bitcoin. It doesn't mean however that the phenomenon has been fully examined, let alone understood. The less obvious phenomenon of 2021 was NFTs and the possibilities they create for the broad range of industries. NFTs and tokenization allowed for the creation of several successful startup projects in 2021 with the aim of making a small step towards a metaverse – a mixture of virtual and real world. It is still unclear if NFTs or metaverse are an ephemeral speculation or a substantial change in the way the tangibility of items and value is perceived in the long-term. Nevertheless, it is interesting to look at the impact they have on the way crypto startups approach raising funds and the choice of initial financing method.

Blockchain

Blockchain is a technology used to store and distribute information about transactions concluded on the network. This data is stored in data blocks - when one block is full, subsequently the next one forms. Filled blocks form a kind of chain in which information about various types of data is sent, e.g. commercial transactions, cryptocurrencies, contracts, etc. (Ciupa, 2019).

Blockchain technology is based on a peer-to-peer network without central computers and transaction verification systems, using an encryption method called cryptography. Each computer connected to the network can participate in the transmission and authentication of transactions (Widawski et al., 2021). Due to the decentralization and dispersion of information, the data is not stored in one place, but is shared and authorized by all users belonging to this blockchain (Zile, Strazdina, 2018). The consequence of the

fact that the information does not have a single owner makes it impossible to exert any political and economic pressure on the same. Thanks to its simple assumptions, consisting in the setting up of blocks of data connected in chains, it is impossible to lose this information, as well as unauthorized access and change of data that has already been saved (Cai et al., 2018). The usage of complex cryptographic tools makes this ledger fully secured against unauthorized access, and at the same time open to everyone. The user can view and verify the entire history of transactions from the very beginning of the blockchain's existence up to the present day (Wharton Blockchain and Digital Asset Project, 2021).

Blockchain is a solution that removes or deprives middlemen in business transactions, thereby increasing the value of existing products, services, and interactions in the following ways (Zile, Strazdina, 2018):

- Securing the user against double payment - blockchain makes it impossible to spend resources for the same purpose twice – confirming the authenticity of each transaction;
- By ensuring consensus - in this model groups of computers work together to reach an agreement. When 51% of machines in such a network agree on an issue, consensus is reached and the transaction is recorded in a digital ledger. Blockchain has an endless list of transactions, and each computer has a complete copy of the entire chain. So if any of the computers tries to add an illegal transaction to the registry, consensus will not be reached (51% of computers will not agree to it) and the operation will not be recorded.

Blockchain technology may play a huge role in the economy. The financial industry was the first to recognize the potential of blockchain with the adoption of cryptocurrencies (Steinmetz et al., 2021). Since 2014, there has been a huge rash of start-ups that develop projects based on blockchain technology. However, most of the attention of researchers and the media itself has been centred towards cryptocurrencies and in particular – bitcoin.

Bitcoin and the beginnings of cryptocurrencies

It is widely believed that bitcoin (BTC) gave rise to cryptocurrencies and blockchain technology. It was created at the beginning of 2009, i.e. right after the outbreak of the global economic crisis, the consequences of which were felt for several years (Wharton Blockchain and Digital Asset Project, 2021).

What is important for the rise of bitcoin is the fact that the crises of our times have severely damaged trust in governments and central banks, which have been responsible, inter alia, for the emergence of a bubble on the real estate market and massive increase in dollar supply (Steinmetz et al., 2021). It is believed that the answer to these actions was the creation of bitcoin, i.e. a currency with a limited supply. Bitcoin has a total of 21 million bitcoins (BTC) in circulation. It enables quick, safe and cheap payments without intermediaries (Takemoto, 2009), at the same time remaining beyond the control of governments and financial institutions.

Interestingly, to this day it is not clear who actually created bitcoin. It is known that it is the responsibility of an outstanding programmer or a group of programmers nicknamed Satoshi Nakamoto. However, we do not know his/her/their true identity, and no one has ever proven that he/she/they were involved in the creation of the first digital currency (Valeonti et al., 2021). Cryptocurrencies that arose after bitcoin are called altcoins from the English words: alternative and coin (Cong, Li, Wang, 2020). The oldest and most important of them are Ethereum and Litecoin. It is worth adding that older altcoins were often based on solutions adopted in bitcoin, but none of them has revolutionized the market. The leading cryptocurrencies by market cap are presented in table 1.

In the case of bitcoin, network users called miners are responsible for handling transactions and storing related information (Nakamoto, 2009). The process by which they verify and add transactions to the public register, as well as the mechanism for putting new cryptocurrency units into circulation, is called mining. Since many miners perform their work at the same time, the operation of the network of a given cryptocurrency can run smoothly and undisturbed (Wharton Blockchain and Digital Asset Project, 2021).

Table 1. Largest cryptocurrencies by market cap

Name	Price (\$)	Market Cap (\$)	Volume (24h)
Bitcoin (BTC)	7,087.76	1,076,552,981,222	36,774,691,359
Ethereum (ETH)	4,773.90	559,928,343,992	30,305,979,674
Binance Coin (BNB)	639.12	106,727,117,918	2,946,874,523
Tether (USDT)	1.00	73,645,287,163	86,447,893,895
Solana (SOL)	221.21	67,296,774,098	3,244,270,397
Cardano (ADA)	1.59	52,998,926,356	1,812,640,312
XRP (XRP)	1.01	47,412,327,970	2,784,570,021
USD Coin (USDC)	1.00	38,744,643,503	5,486,247,495
Polkadot (DOT)	37.63	37,077,494,617	1,531,832,799
Dogecoin (DOGE)	0.2141	28,312,085,507	1,422,773,737

Source: Coinmarketcap.com 01.12.2021.

Cryptocurrency and token

Many people refer to cryptocurrencies as all virtual assets that can be traded on exchanges. Even the exchanges that enable this trade operate under the name of "cryptocurrency exchanges". In fact, cryptocurrencies such as bitcoin (BTC) or litecoin (LTC), should be distinguished from digital tokens such as binance coin (BNB) or cardano (ADA). The cryptocurrency operates in its own blockchain network (one network is one cryptocurrency), while the token is created on some other blockchain network using the smart contract. Smart contract is defined as an "agreement written in computer code with automated performance" (Clifford Chance, 2021, p. 2). Since a given network allows for the building an unlimited number of smart contracts, many different tokens can exist on the same blockchain. In the case of bitcoin (BTC), there are no such tokens at all, but for example in the ethereum network, apart from the associated ethers (ETH), there are thousands of other tokens (Sunyaev et al., 2021). It is worth adding that there are many more tokens than cryptocurrencies. Both cryptocurrencies and tokens are listed on exchanges and are subject to the same trading rules. However, cryptocurrencies act strictly like money, while tokens can be used to raise funds for project development, reduce stock exchange fees, reward network users (utility tokens) or take on features similar to shares (investment tokens) (Tonnissen, Beinke, Teuteberg, 2020). Some tokens are partially or 100% secured by standard goods, e.g. gold or currency (stable coins), and their exchange rates follow the prices of these goods.

NFT

The abbreviation NFT refers to Non-Fungible Token. NFT tokens are based on blockchain technology, which introduces uniqueness, immutability and the inability to forge content in the digital world. NFT is a digital certificate of originality (Di Bernardino et al., 2021). There may be multiple copies of a given file or item, but only one will be digitally credited as the original (Parham, Breiting, 2021). It is these features that make NFT unique, as the ease of copying, forging and hacking of any content has been one of the most common issues regarding digital assets (Cornelius, 2021). The purchase of an NFT constitutes the acquisition of the property right, but not necessarily the copyrights or proprietary rights attached to the purchased good (Clifford Chance, 2021). In practice, the NFT token can take various forms, but it always contains two characteristics. First, it contains a text, image, audio, video, or other file for which the NFT certifies the originality - certifying that that particular file is the original. Secondly, NFTs are always based on blockchain technology, which guarantees its unique features (Chevet, 2018). Thanks to uniqueness confirmation, it is impossible to forge or hack in such unforgettable NFT registers, and each token is one of a kind (Visa, 2021). NFTs exist as a cryptographic record on blockchain (Kostopoulos et al., 2021). The first NFT itself was created on the Ethereum platform, which is currently the most popular blockchain for minting NFTs – however NFTs can be created also on competing platforms (Parham, Breiting, 2021). NFT tokens are only used to certify the originality of the file they concern - that is why they are called certificates. This means that the token associated

with a specific file does not prevent that file from being copied or reworked (Di Bernardino et al., 2021). NFT generation is primarily done by artists and other creators who can create attractive, unique goods. However, an NFT can be created for a small fee by anyone who believes that they have something that has a unique value and it is worth affixing it with a certificate of originality. Creating tokens, and then selling and buying them, takes place primarily through special online exchanges. The NFT market has seen a tremendous spike in activity in volume in 2021

(Nadini et al., 2021). One of the NFTs that was sold in the first quarter in 2021 was Jack Dorsey's first tweet, which sold for more than \$2.9 million, shown in figure 1.

The NFT market grew considerably in 2021, reflected in the volume traded on the biggest NFT marketplaces as per table 2. It is interesting to note that more than 18% of all-time volume traded on the largest NFT marketplace OpenSea was realized in 30 days – which shows how rapidly the sector is growing.

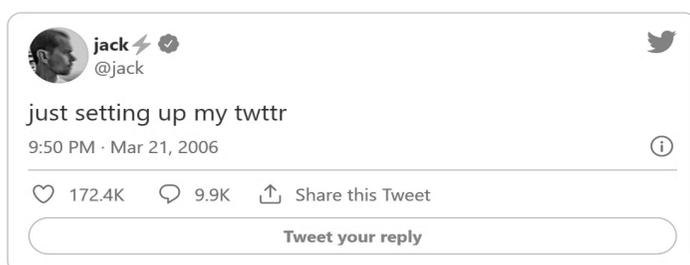


Figure 1. First tweet by Jack Dorsey
 Source: CNBC, 2021.

Table 2. Largest NFT marketplaces by all-time traded volume

Marketplace	Volume (30 days)	Volume (all time)	% of all time volume in last 30 days
OpenSea	2,200,000,000	12,180,000,000	18.06%
Axie Infinity	784,560,000	3,620,000,000	21.67%
CryptoPunks	140,480,000	2,230,000,000	6.30%
NBA Top Shot	22,000,000	743,080,000	2.96%
Solanart	58,470,000	563,630,000	10.37%
AtomicMarket	139,800,000	301,110,000	46.43%
Rarible	15,990,000	275,540,000	5.80%
SuperRare.co	18,650,000	186,750,000	9.99%
Magic Eden	80,740,000	185,510,000	43.52%
Foundation	8,540,000	112,620,000	7.58%

Source: own elaboration based on <https://dappradar.com/nft/marketplaces> 01.12.2021.

Metaverse

Despite the emergence of many innovative solutions on the market, the Internet remains a one-dimensional experience. It is used to check e-mail, browse social networking sites, watch videos, streaming, use applications and e-commerce websites or chat via instant messaging (Forever Creative Company, 2021). The way to achieve a three-dimensional and immersive internet, called metaverse, is to use augmented and virtual reality

technology (Huggett, 2020). Instead of "watching the Internet", users will be able to be in it and create it at the same time. Currently VR and AR technologies are associated more with simple games or tools for learning and training, where the user is basically alone with the program. However these technologies allow contact with other network users in a more tangible and multidimensional way (Lee, 2021). At the heart of the metaverse idea is creating a greater sense of 'virtual presence', so that online interaction can

come much closer to the experience of personal interaction (Nevelsteen, 2016).

In 2020, the term metaverse appeared to describe phenomena that partially already existed – to describe the environment of computer games such as Fortnite, Roblox and Minecraft (Lee, 2021). Fortnite has hosted rapper Travis Scott's concerts, or Ariana Grande. These games also have their own virtual economies, where the currency available in the game can be spent on products and services available there.

According to the report "Into the Metaverse", signs of the new phenomenon are visible today. We can distinguish 4 categories: MetaLives, MetaSpaces, MetaBusiness and MetaSocieties (Wunderman Thompson Intelligence, 2021).

- MetaSocieties – a new, advanced type of social media, in the form of avatars and hyper-realistic digital characters that are created on Metahuman or Nvidia Omniverse engines. Avatars will become more realistic and reflect our appearance;
- MetaLives – this category includes all the trends and changes that confirm that we are transferring our life activities to the virtual world i.e. virtual fashion or buying digital goods. MetaLives also includes NFT. The famous Polish singer Doda has recently scanned her body to sell it in the form of an NFT, and the influencer Marti Renti has similarly decided to put up for sale such an abstract thing as feeling. NFT has also entered the world of gastronomy - on the occasion of the 40th anniversary of the appearance of the McRib sandwich in McDonald's offer, a "digital version" of this item has been prepared;
- MetaSpaces – it is an area focused on creating virtual spaces. This is where concerts, events, exhibitions and fairs of intangible products will take place in metaversum. An interesting step towards the development of fashion marketing are virtual games with designer collections, such a production created by Balenciaga, who already presented the game "Afterworld: The Age of Tomorrow" in 2020;
- MetaBusiness – the business could also move to the metaversum; virtual coworking spaces, or the use of VR and AR in sales. An example is brands that offer an experience similar to visiting a brick-and-mortar store. In such an online store, it is possible to enter the interior created in 3D technology and view the assortment almost physically. Another important branch of MetaBusiness will be the so-called gamevertising, i.e. the possibility of using the games themselves as a sales medium. This form of advertising was chosen by Hala Koszyki

in Warsaw, which has become a fierce arena of e-sport in the final of the Counter-Strike "Fight for Koszyki" tournament.

Tokenization

Tokenomics are often discussed in project whitepapers or lightpapers. It includes the functionality of a token, its objective, allocation policy and more information about the project pipeline and roadmap. Tokens can be pre-mined or distributed during a fair launch. In fair launch there is no early access or private sales – bitcoin is an example here – and token is mined, earned, owned and governed by the community (Sunyaev et al., 2021). The distribution of pre-mined tokens is common, however, a significant percentage of circulating tokens creates a risk of the price of the token dropping during initial exchange offering. Projects define also the supply of the token, with regards to (Cai et al., 2018):

- circulating supply, which is the amount of tokens that is in circulation,
- total supply, which is the amount of tokens that exist,
- max supply, which is the maximum amount of tokens that can be generated in the future.

Startups see the opportunities associated with issuing their own tokens, mainly thanks to its liquidity, transparency and network effects. Startups have several possible strategies for token distribution, such as Initial Coin Offering (ICO), Initial Exchange Offering (IEO) and Simple Agreement for Future Tokens (SAFTS) (Bruschi et al., 2021). It is worth noting that bitcoin token distribution mechanism does not include a fundraising component, such as it is the case with NFT and tokens. It is focused on distributing tokens to users that are mining and providing value to the network. Fundraising through tokens is very similar to crowdfunding, which is a way of financing project through small donations from large amount of investors (Hervé, Schwiendbacher, 2018). However, in the case of tokenization, investors acquire native project tokens instead of equity. Speaking purely in terms of approach, crowdfunding and tokenization share more similarities than differences and prove to be efficient way of fuelling growth for startups.

Token allocation in NFT metaverse startups

Three projects from the broad metaverse ecosystem were chosen, all of them using or planning to use NFTs: Ultiarena, Metahero and Bloktopia. It is worth noting that Ultiarena and Metahero are predominantly Polish startups and Bloktopia is American. However, due to more

favourable cryptocurrency laws, according to their respective websites Ultiarena is registered in Singapore, Metahero in UAE and Bloktopia in Isle of Man. Token allocation was analysed based on whitepapers/lightpapers published by startups on their websites. Ultiarena is a community and NFT marketplace destined for gamers, artists and developers. NFTs can be exchanged on Ultiarena, giving artists possibility to showcase their portfolio and sell NFTs. On top of that, Ultiarena opted for Proof-of-Gaming consensus, which means that the more one plays in the Ultiarena ecosystem, the more tokens he can get. It also has a ULTI Metaverse, which is game engine which enables creators to make their own games and share with the community. Metahero is a project started by Polish millionaire, Robert Gryn, who already built and sold successfully one startup. Metahero is creating a 3D scanning and modelling technology that will generate realistic 3D avatars and virtual items in form of NFTs. These NFTs will be available in games, VR, social media and online fashion, which will close the gap between the real world and virtual world. Bloktopia is a self-called “decentralized metaverse”. It is a Skyscraper made up of 21 levels, which is a homage to 21 million bitcoins in circulation. Token holders will be called Bloktopians. Bloktopia will use 3D creation engine in order to create realistic visualisations and enhance user experience. VR goggles will be necessary to profit from the immersive and engaging environment. Members of the community will be able to earn revenue by virtual

real estate ownership, advertising, playing games or building networks.

The Ultiarena token is called ULTI, the Metahero token is HERO, whereas the Bloktopia token is BLOK. On cryptocurrency exchanges, market cap is the total market value of a token's circulating supply, which is same to the free-float capitalization in the stock market. Fully diluted market cap is a hypothetical market cap if the max supply of the token was in circulation. Hence, when the market cap is a small percentage of the fully diluted market cap, it means that the circulating supply of the token is relatively small. Comparison of tokens of Ultiarena, Metahero and Bloktopia in table 3 shows that the projects differ massively in percentage of circulating supply and market cap. Although Metahero has largest market cap of almost 720 million dollars, it has a circulating supply of almost 50%. On other hand, Bloktopia has a more modest market cap of almost 541 million dollars, but its circulating supply is only slightly higher than 4%. Meanwhile Ultiarena has the smallest market cap of around 12 million dollars with almost 9% circulating supply. Looking at the market cap of Metahero and Bloktopia, it shows a unique possibility of fundraising through tokens for startup projects. It is rare to see projects at such an early stage to raise that amount capital, let alone reach valuations higher than 1 billion dollars.

The table 4 shows different token allocation strategies by projects. It is worth noting that the analysis concerns the initial part of the token allocation, that is – before the projects are live.

Table 3. Token characteristics of Ultiarena, Metahero, Bloktopia

As of 14.12.2021	ULTIARENA (ULTI)	METAHERO (HERO)	BLOKTOPIA (BLOK)
Market Cap (\$)	12,147,096	719,521,482	540,794,945
Fully diluted Market Cap (\$)	136,237,563	1,449,836,922	12,960,121,298
Circulating supply	8.92%	49.63%	4.17%
Token price (\$)	0.0006671	0.145	0.0648

Source: own analysis.

Table 4. Token allocation of Ultiarena, Metahero, Bloktopia

ROUND/GOAL	ULTIARENA	METAHERO	BLOKTOPIA
Team and advisors allocation	8.8%	20%	22%
Private/institutional rounds	5.2%	10%	14.31%
Public presale	18.55%	10%	1.4%
Marketing	8.8%	10%	0%
Liquidity	8%	20%	1%
Other	50.65%	30%	61.29%
Max supply	250,000,000,000	10,000,000,000	200,000,000,000

Source: own analysis.

Unlike Venture Capital rounds, where stakes and equity of founders dilute, the founders of crypto projects have a fixed amount of shares – although in case of crypto it is not in form of an equity, but in form of tokens. In classical startup environment, founders and core team members of startups start from 100% shares in the equity, and get diluted by roughly 15-30% with each financing round. On the contrary, in the crypto world, in three analysed NFT metaverse startups the amount of tokens allocated for the team and advisors was situated between 8.8% and 22%. It is consistent with other works, where on average 11.2% of token were allocated to team and advisors (Wandmacher, 2019). Founders rely on the value of the token increasing in time (Cong, Li, Wang, 2021). The percentage of tokens allocated to a team is also important from the public image perception (Juntgen, Au, Zureck, 2021). Decentralization of power and wealth is one of the main reasons why people invest in crypto projects, and allocating too much tokens for the founders could seriously affect projects' reputation. Token allocation and the strategic repartition of rounds is crucial in assuring startup survival, healthy economics within the project ecosystem and funds for further grow – fuelled by marketing expenditures (Heines et al., 2021). It is also important to reserve a part of the tokens for presales and airdrops - they allow early adopters and early backers to buy tokens at a very low and attractive price. These are quite often people who deeply believe in the project and subsequently play an important unofficial role as project ambassadors. The gaming aspect in metaverse projects is very important, because it creates incentivization to play more and stay longer in their native ecosystem. Earn by playing is indeed an interesting approach in terms of rewarding community members for playing games, which creates a circle in which it is enticing for a user to stay more in the ecosystem, creating value for the project and driving up the price of its token.

Conclusion

NFTs, tokens and the metaverse seem like a perfect marriage. Creating a new universe (metaverse) requires attributes others than technological advances. This requires means and tools to navigate in the metaverse in the same way as in the real world. NFTs allow for the creation of one-off avatars and objects, which could reflect one's individuality in an easy-to-copy digital world. Tokens allow for the creation of internal currency, which can be stored, used to buy NFTs or earn by contributing to the community. Moreover, tokenization allows NFT metaverse startups to

raise funds in a more flexible and inclusive way than venture capital, being quite close in its mechanism to crowdfunding.

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