

Botond BRESZKOVICS*
Faculty of Law, University of Pécs, Hungary

NFTs UNDER THE FRAMEWORK OF MiCA**

In the European Union (EU), there are two distinct periods regarding the regulation of crypto assets, related services and crypto assets service providers. The distinction is based on the existence or lack of specific regulation of crypto assets. From a different perspective, a distinction can also be made between the regulatory environment before and after the implementation of the Markets in Crypto Assets regulation (MiCA/MiCAR). The former period can be characterized as the EU regulatory wild west of crypto assets, where the crypto sector was regulated, but only partially, by amending existing legislation. The second era of crypto-relevant EU regulation is the development of a specific regulatory framework striving for consistent legal cover of the whole crypto sector. In this paper, without aiming to be exhaustive, the MiCA's specific regulatory framework applying to the crypto asset market is described. The aim of this paper is to provide a summary overview of the state or lack of provisions in the MiCA regarding non-fungible tokens.

Keywords: EU, MiCA, DLT, crypto, NFT.

1. INTRODUCTION

It is not unfamiliar in the world of law that an examination begins with a clear definition of the relevant terms, and this case is no different. The present paper is fundamentally determined by one highly relevant term, namely the non-fungible token (NFT). Hence, in the following, I present a short review of the different academic approaches aimed to define NFT, following my own definition. Next, I will present the state of the NFT market between 2021 and 2023, based on the findings of market research companies. Finally, I will outline the evolving legal situation of non-fungible tokens in the European Union (EU), especially taking into account relevant legal provisions of the Markets in Crypto-Assets Regulation (MiCA/MiCAR).

* PhD student, ORCID: 0009-0005-9399-9005, e-mail: breszkovics.botond@pte.ajk.hu

** This paper was supported by „A Kulturális és Innovációs Minisztérium ÚNKP-23-3-II kódszámú új Nemzeti Kiválóság Programjának a Nemzeti Kutatási, Fejlesztési és Innovációs Alapból finanszírozott szakmai támogatásával készült”

2. THE DEFINITION OF NFT

The clear definition of non-fungible tokens greatly aids in their regulation. Nevertheless, the definition of NFTs has not yet been defined by the legislature. Fortunately, the academic literature has developed a wide range of conceptual approaches, which are presented below (Király, 2020, p. 45):

- The non-fungible token is a crypto asset on the blockchain that has unique data content that allows it to be identified, thereby distinguishing it from other crypto assets (Peres *et al.*, 2023, p. 5).
- The NFT is a digitally created token that is a digital replica of a (virtual) asset without infringing intellectual property rights (Kraizberg, 2023).
- It is a digital asset that displays an object that exists in the material world, such as artwork, music, or a video game (Edelman, 2022, p. 35).
- An NFT is a unique collectable digital asset that exists on the blockchain, which identifies the ownership of a physical or virtual asset. According to this approach there are no two identical NFTs and the value of NFTs can be influenced by both demand or uniqueness and also by individual factors such as public interest in having NFTs (Hokianto, 2023, p. 9).
- It is a unique digital identifier that is stored safely on a public blockchain ensuring that tokens are not interchangeable and cannot be sub-divided (Laurence & Kim, 2021, p. 55). Note here that this approach excludes so-called fractional non-fungible tokens from its definition.
- The NFT is a means of authenticating the ownership and tracking the transaction of an individual physical or virtual object (Mazur, 2021, p. 20).
- NFTs are blockchain-based, non-fungible digital representations (tokens) of real or virtual content that, using structured metadata, enable the sale of these tokens and, rarely the content behind them, for alternative (cryptocurrency-based) compensation, without the need for third parties as intermediaries (Mezei, 2022, p. 9).

The technological definition of NFT is no less relevant, as the structure of a non-fungible token is framed by different technical standards. In terms of technical standards, 2018 is a notable year as the so-called ERC-721 technical standard was released in the Ethereum system, allowing the creation of NFTs (see erc721.org). Until today, the ERC-721 technical standard represents the typical NFT structure, but only on the Ethereum network. Beyond this, the ERC-1155 technical standard (see enjin.io) is also relevant which allows the bundled transfer of several fungible tokens and non-fungible tokens in a single transaction (Harmath, 2022).

Beyond the main definitions of NFTs, it is also useful to briefly discuss the classification of NFTs, which can be based on different factors. Most often the distinction is based on the existence or lack of utility associated with the non-fungible token. In this approach, a distinction can be made between simple or traditional NFTs and the utility NFT category (uNFT). Whereas a traditional NFT does not have any associated utility, the uNFT always has some linked utility (Bujtár, 2018, p. 150).

A further classification possibility is based on the applicability of the NFT. In this classification, NFT categories can be distinguished between art, gaming, collectables, domain names, membership, music, profile picture (PPF) and photography. An NFT may fall into one of the above categories, whether or not it has any advantage.

The previously presented academic and technical definitions show that, although there is no universally accepted definition of NFT, the relevant key elements can be clearly identified. The key characteristics defining NFT are the digital nature of the token as well as the uniqueness of the identifying data of the token ensuring that there is no possibility of fungibility. In addition, it is essential that the token provides a certificate of authority and is also based on any blockchain technology. In my view, the non-fungibility of a certain token should be examined on a case-by-case basis and should be classified on the basis of its actual scope of application. The reason for the *ad hoc* assessment is that the typical NFT technical standard used (like ERC-721) does not exclude initial NFT offerings (INOs), which process may cause the loss of uniqueness of the NFT. The reason is that a large volume of NFT offerings will basically cause the technically non-fungible tokens to act like fungible tokens.

In my own approach, based on the above, a non-fungible token (NFT) is a unique set of data that is fully or partially recorded on the blockchain. The NFT, as a virtual asset, can represent either physical or digital objects and other items.

The definition is supported by a comment which helps to make a distinction between the different NFTs. Depending on the localisation of the NFT data, a distinction can be made between on-chain and off-chain NFTs. In the case of on-chain NFTs, all data, such as metadata and the image, video or any other media file that visually represents the NFT, are located on the blockchain. By contrast, in the case of off-chain NFT, all or part of the data does not exist on the blockchain but is stored on an external storage. This external storage can be for example a centralized web server or a decentralized server such as IPFS (Inter Planetary File System) (see Cointelegraph, 2024). Off-chain NFTs basically use hyperlinks within the metadata referring to a file that visually represents the NFT and which is stored on external storage (Harmath & Breszkovics, 2022). Whether the NFT is on-chain or off-chain, the ability of the NFT as a virtual asset to authenticate rights or obligations, such as authenticating ownership on the blockchain, is the subject of another *ad hoc* test (Gebreab *et al.* 2022, p. 10).

3. THE NFT MARKET'S STATE

The trading volume of non-fungible tokens hit US\$25.1 billion in 2021, although it fell slightly back to US\$24.7 billion in 2022 (Hayward, 2023). The shades of the NFT market in 2021 and 2023 are represented by statistical reports by market research companies NonFungible.com and NFT18.com.

The comprehensive NFT market report, published by NonFungible in 2021 (Non-Fungible, 2021), takes into account both primary and secondary market operations and analyses them together. According to the report, the market capitalisation of non-fungible tokens exceeded US\$16 billion in 2021. Trading on the NFT market involved 1

million sellers and more than 2 million buyers. The number of active wallets with at least one transaction was estimated at 2.5 million. The average number of transactions per wallet was 1.8. The average NFT sales price was 807 US USD. The average number of days an NFT item was on hold in a wallet was 48 days.

According to the annual report by the NFT18, the market capitalisation of non-fungible tokens in 2023 was US\$4.7 billion (NFT18, 2023). The annual trading on the NFT market had a minimum number of 100,000 sellers and buyers and a maximum number of 350,000 sellers and 450,000 buyers. The number of active wallets with at least one transaction was estimated at 2.03 million. The average NFT sales price was 665 USD. The volume of trading volume in USD in different NFT categories was dominated by collectable NFTs at 78%, followed by the art sector (12%), then metaverse worlds (5%), utility projects (4%) and finally the gaming sector (3%).

In addition to outlining the statistical data on the NFT market, here are two examples of high-value NFT transactions in 2021. Firstly, the first tweet was made by Jack Dorsey, co-founder and ex-CEO of Twitter, which was sold for USD 2.9 million (Locke, 2021). On the other hand, the NFT artwork "Everydays", *Everydays: the First 5000 Days*, sold by Christie's auction house for 69 million USD (Frank, 2021).

I consider that the reports on the two years of high and low numbers cited above provide a good reference point for the volatile nature of the NFT market, as well as an understanding of the awakening legislative interest.

4. THE CONCEPTUAL DEVELOPMENT OF SPECIFIC REGULATION OF CRYPTO-ASSETS IN THE EU

The aim of legal regulatory cover for the crypto-economic system in the European Union dates back to 2018 when the EU legislature examined the potential of FinTech solutions in the legal environment. Financial technology (FinTech) is an umbrella term that covers innovative digital technologies in financial services which have the capability to revolutionise financial services, financial markets and the functioning of financial institutions by developing new business models, applications, processes and products (Rácz, 2018, p. 340).

The wide definition of FinTech solutions also includes blockchain technology, which is the technology behind crypto-assets. Therefore, the Commission in its 2018 FinTech Action Plan (European Commission, 2018) called for a legal examination of the compatibility of the existing EU regulatory framework for ICOs and crypto-assets. The purpose of the assessment was to determine the need or inaction for regulatory intervention at the EU level. The outcome of the assessment was boosted by reports published in 2019 by both the European Securities and Markets Authority (ESMA) and the European Banking Authority (EBA). These reports explained the legal nature of crypto-assets under the existing EU financial legislation at the time.

4.1. Report from the European Securities and Markets Authority

The aforementioned ESMA report noted that crypto assets do not have a single legal definition in the EU capital market while referring to the definition of virtual currencies in the fifth Anti Money Laundering Directive (AMLD5). Due to the lack of a definition, ESMA indicated that it would examine the definition of transferable securities under the MiFID II regimes and the definition of electronic money under the Second Electronic Money Directive (EMD2). According to ESMA, particular crypto assets may fall under the MiFID II definition of a financial instrument (Bujtár, 2023, p. 30), but the classification of particular crypto assets as financial instruments will depend on the competent authority of the Member State and the implementation of EU legislation. Where a crypto asset is considered to be a financial instrument, the relevant EU legislation, in particular the Prospectus Directive, the Transparency Directive, MiFID II, MiFIR, CRD IV, MAR, SFD, CSDR, UCITS V, AIFMD, the Investor Compensation Schemes Directive (ICD), as well as the applicable rules of the AML/CFT, should be applied accordingly.

4.2. Report from the European Banking Authority

The EBA report states that there is no consistent view across the EU that recognises cryptocurrencies as legal tender (Szilovics, 2022a, p. 251) (i.e. fiat money). However, due to the wide range of crypto-assets that exist, certain crypto-assets with specific characteristics may qualify as electronic money under EMD2 or as scriptural money under Payments Services Directive 2 (PSD2), which also covers electronic money under EMD2. In this context, the EBA underlines that the classification of a crypto-asset should be done in a case-by-case manner taking into account that a crypto-asset may have different characteristics during its life cycle and thus the principle of substance over form should be followed. If the *ad hoc* test results in the classification of a certain crypto-asset as electronic money or money, then the relevant EU legislation should be applied, particularly the provisions on the prevention and combating of money laundering and terrorist financing.

Regarding the two reports, it is worth mentioning that both the ESMA and EBA reports made references to each other, they complemented each other, and their collective interpretation provided a comprehensive but also compact overview of the EU legislation at that time, which did not have specific provisions on crypto-assets. The reports are essentially based on the relevant EU legislation in force at that time, outlining the possible applications of the regulation, with a particular focus on capital market regulation and investor protection, while maintaining a transparent and sound market operation. At the same time, it became clear to the EU regulator that, although the *ad hoc* test may result in the application of legislation to certain crypto-assets, this only covers a narrow segment of crypto-assets. A significant part of the crypto market remains in the grey area of regulation. This recognition showed the need for specific regulation and provided inspiration for the MiCA.

5. THE SCOPE OF MiCA

In order to avoid regulatory overlaps and duplication of provisions, the MiCA leaves untouched and excludes from its scope those crypto-assets that qualify as financial instruments as defined in Directive 2014/65/EU and are subject to existing EU law. However, this does not apply to all crypto-assets as will be discussed below.

5.1. Broad and Narrow Definitions of Crypto-Assets in MiCA's Terminology

In MiCA's terminology crypto-assets is defined broadly as a digital representation of value or rights which may be transferred and stored electronically, using distributed ledger technology or similar technology. In a narrower sense, the regulation covers three types of crypto-assets by setting different requirements for each type depending on the level of risk they present. The classification is based on whether the crypto-asset is anchored to other assets or otherwise seeks to stabilise its value.

5.2. Specific Named Crypto-Assets

The first, named type of regulatory framework is the asset-referenced token — a type of crypto-asset that is not an electronic money token and that purports to maintain a stable value (Bujtár, 2022, p. 19) by referencing another value or right or a combination thereof, including one or more official currencies. The second is the so-called electronic money token or e-money token which is a type of crypto-asset that purports to maintain a stable value by referencing the value of one of the official currencies. The third is the utility token which is a type of crypto-asset that is only intended to provide access to a good or a service supplied by its issuer. Clearly, lawmakers intended to cover a wide range of crypto-assets when defining the different types of crypto-assets, thus making the legal provisions resilient to additional crypto-assets that may appear in the future.

6. THE SPECIAL STATUS OF NFTs IN THE MiCA'S REGULATORY FRAMEWORK

In MiCA's regulatory regime, the status of NFTs is specific. In general, the MiCA is not applicable to non-fungible tokens. This is expressly stated in its scope provisions and in certain points in the preamble. The preamble states, *inter alia*, that the MiCA does not apply to crypto-assets that are unique and not fungible with other crypto-assets, including digital art and collectables, and NFTs representing services or physical assets such as product guarantees or real estate. The reason for the exemption of non-fungible tokens from the MiCA is the limited financial use (Gáspár, 2022, p. 40) of NFTs and the related limited risk to the token holder and the financial system. Although the MiCA recognizes that NFTs might be traded on the marketplace and be accumulated speculatively. Nevertheless, it also states that NFTs have low liquidity, and relative value of one such crypto-asset in relation to another, each being unique, cannot be ascertained by means of comparison to an existing market or equivalent asset. Regarding the valuation

of NFTs, the MiCA does not specify a standard method to be followed in the market. The MiCA, however, provides an example of an indicator for determining the value of an NFT — the unique characteristics of certain token and their utility to the holder.

As a note here, the MiCA framework might not *expressis verbis* contain, but based on a logical interpretation of the legal text, it recognizes the category of uNFT (Breszkovics, 2022, p. 69). This can be explained by the fact that the MiCA identifies utility as a value-determining factor for NFTs, making a distinction between NFTs with and without utility. The scope of the regulation also excludes uNFTs.

However, in two instances, the MiCA departs from the main rule on the scope of the regulatory framework and provides for the application of its special rules to non-fungible tokens. It says that regulation should apply to crypto-assets that appear to be unique and non-fungible, but whose *de facto* features or whose features are linked to their *de facto* uses, would make them either fungible or not unique. In reality, this covers both fractionated and financial instrument NFT categories.

6. 1. Fractionalized Non-Fungible Tokens

The first type includes fractional parts of a unique and non-fungible crypto-asset or, in other words, fractionalized NFTs. These crypto assets should not be considered unique and non-fungible. In the approach of MiCA, the issuance of crypto-assets as NFTs in a large series or collection should be considered an indicator of their fungibility (Szívós, 2023, p. 80).

In the case of fractional NFTs in MiCA's framework, it is not sufficient for a crypto-asset to have a unique identifier in order to be considered unique and non-fungible. The assets or rights represented should also be unique and non-fungible in order for the crypto-asset to be considered unique and non-fungible. The examination and classification of fractionated NFTs is a task of the competent authorities, which need to follow a substance-over-form approach in the examination process. It is the features of the examined crypto-asset, rather than the issuer's designation that will determine its classification.

As a side note here, the MiCA application of fractional NFTs is interesting because it is not a new crypto-asset being issued, but a fractionation of an already existing "traditional" NFT. In the context of fractional NFT, there will be quasi-individual common ownership of a crypto-asset, where the ownership shares will be determined by the fraction of NFT held by the user.

6. 2. The Financial Instrument NFTs

The second category includes NFTs which are considered as financial instruments. This means that the uniqueness of a NFT is diminished and the financial use of the token is expanded, while the risk to the token holder and the financial system is increased. The financial instrument nature of a certain NFT is subject to *ad hoc* examination, but in the first line, it is the responsibility of the offerors or persons seeking admission to trading to correctly classify the crypto-asset. The classification may be challenged by competent authorities both before the date of publication of the offer and at any time thereafter. It

is relevant that in the *ad hoc* examination, the MiCA promotes discussions between the EBA, ESMA and European Insurance and Occupational Pensions Authority (EIOPA) to promote a common approach to the classification of crypto-assets (Szilovics, 2022a, p. 253). It is a safeguard provision that, where the classification of a crypto-asset appears to be inconsistent with the MiCA or other relevant Union legislative acts on financial services, the European Supervisory Authorities (ESAs) should make use of their powers under Regulations (EU) No 1093/2010, (EU) No 1094/2010 and (EU) No 1095/2010 to ensure a consistent and coherent approach to such classification.

7. CLOSING THOUGHTS

In the introduction to this paper, the pre- and post-MiCA regulatory periods are not complementary but interdependent periods. In the regulatory framework, the definition of crypto-assets is flexible and future-proof, making it easy to adapt the rules to upcoming crypto-assets. MiCA recognises the specific nature of NFTs and as a general rule excludes them from the scope of the regulation. However, the MiCA does provide for the application of certain provisions to fractional and financial instrument NFTs. Among other relevant EU legislation affecting the crypto sector, the so-called DORA and the DLT Pilot Regulation do not contain express provisions on NFTs and neither does the EU Travel Rule regulation. However, they do have an impact on the NFT sector due to their indirect regulation of the crypto sector.

In conclusion, my view is that the MiCA and the other crypto-relevant EU legislation mentioned above are *de iure* capable of ensuring a properly regulated and transparent crypto sector where lay users and investors are well-informed and can operate safely. However, the *de facto* effect and effectiveness of crypto regulation will only be truly measured in a few years' time.

LIST OF REFERENCES

Literature

- Breszkovics, B. 2022. NFTk-k jogi aspektusai. *Debrecen, Pro Futuro*, 12(2), pp. 69-70. <https://doi.org/10.26521/profuturo/2022/2/12402>
- Bujtár, Z. 2021. *Az értékpapírosítás*. Pécs: Pécsi Tudományegyetem, Állam- és Jogtudományi Kar.
- Bujtár, Z. 2022. A decentralizált pénzügyek (DeFi) árnyékbanki jellege. *JURA*, 28(4), pp. 18-20.
- Bujtár, Z. 2023. Bankválság 2023-ban – megismétlődhet a 2007-2009-es nagy pénzügyi válság? In: Bujtár, Z. *et al.* (eds.), *A válságkezelés, gazdasági és jogi eszközei : Konferenciakötet – válogatott tanulmányok*. Pécs: Pécsi Tudományegyetem Állam- és Jogtudományi Kar, pp. 29-31.
- Edelman, R. 2022: *The Truth About Crypto: A Practical, Easy to Understand Guide to Bitcoin, Blockchain, NFTs and Other Digital Assets*. New York: Simon & Schuster.

- Kraizberg, E. 2023. Non-fungible tokens: a bubble or the end of an era of intellectual property rights. *Financial Innovation*, 9(32). <https://doi.org/10.1186/s40854-022-00428-4>
- Gáspár, Z. 2022. Az el salvadori Bitcoin-törvény gazdasági és jogi aspektusai. In: Bujtár, Z. et al. (eds.), *Fenntartható növekedés (ESG) jogi és gazdasági aspektusai*. Pécs: Pécsi Tudományegyetem Állam- és Jogtudományi Kar, pp. 39-51.
- Hokianto, H. F. 2023. Non-Fungible Tokens: A Literature Review. *SaNa: Journal of Blockchain, NFTs and Metaverse Technology*, 1(1), pp. 1-9. <https://doi.org/10.58905/sana.v1i1.32>
- Király, P. B. 2020. A kriptovaluták pénzügyi fogyasztóvédelmi aspektusai. *Iustum Aequum Salutare*, 4, pp. 45-58.
- Mezei, P. 2022. NFT-k a szerzői jog világában. *Iparjogvédelmi és Szerzői Jogi Szemle*, 127(3), pp. 7-23.
- Rácz, D. 2018. Szabályozási kérdések a pénzügyi innováció területén. In: Fazekas, M. (ed.) *Jogi Tanulmányok. Jogtudományi Előadások az Eötvös Loránd Tudományegyetem Állam- és Jogtudományi Kar Doktori Iskoláinak Konferenciáján*. Budapest: ELTE Állam- és Jogtudományi Kar Állam- és Jogtudományi Doktori Iskola, pp. 342-254.
- Peres, R. et al. 2023. Blockchain meets marketing: Opportunities, threats, and avenues for future research. *International Journal of Research in Marketing*, 40(1), pp. 1-11. <https://doi.org/10.1016/j.ijresmar.2022.08.001>
- Gebreab, S. A. et al. 2022. NFT-Based Traceability and Ownership Management of Medical Devices. *IEEE Access PP*, 99(1), pp. 126394-126411. <https://doi.org/10.1109/ACCESS.2022.3226128>
- Szilovics, C. 2022a. A kriptovaluták pénzfunkciójáról és gazdasági, társadalmi jelentőségéről. In: Bujtár, Z. et al. (eds.) *Kriptoeszközök világa a jog és a gazdaság szemszögéből : konferenciakötet : válogatott tanulmányok*. Pécs: Pécsi Tudományegyetem Állam- és Jogtudományi Kar, pp. 250-252.
- Szívós, A. 2023. The Taxation of Cryptocurrency. In: Frankel, D. A. (eds.) *A Current Anthology of Law*. Athens: Athens Institute for Education and Research, pp. 79-83.
- Laurence, T., & Kim, S. 2021. *NFTs for Dummies*. New Jersey: John Wiley & Sons Inc.

Legal sources

- European Commission. 2018. FinTech Action Plan: For a more competitive and innovative European financial sector. COM(2018) 109 final. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018DC0109> (18. 5. 2024).
- Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 Text with EEA relevance. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011L0061> (18. 5. 2024).
- Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing

- Directives 2006/48/EC and 2006/49/EC Text with EEA relevance. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013L0036> (18. 5. 2024).
- Directive 2014/91/EU of the European Parliament and of the Council of 23 July 2014 amending Directive 2009/65/EC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) as regards depositary functions, remuneration policies and sanctions Text with EEA relevance. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0091> (18. 5. 2024).
- Directive 97/9/EC of the European Parliament and of the Council of 3 March 1997 on investor-compensation schemes. Available at: <https://eur-lex.europa.eu/eli/dir/1997/9/oj> (18. 5. 2024)
- Proposal for a Regulation of the European Parliament and of the Council on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing. COM/2021/420 final. Available at: <https://eur-lex.europa.eu/legal-content/HU/TXT/?uri=CELEX%3A52021PC0420> (18. 5. 2024).
- Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector (Text with EEA relevance). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R2088> (18. 5. 2024).
- DORA. Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014, (EU) No 909/2014 and (EU) 2016/1011 (Text with EEA relevance). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022R2554> (18. 5. 2024).
- Regulation (EU) 2022/858 of the European Parliament and of the Council of 30 May 2022 on a pilot regime for market infrastructures based on distributed ledger technology, and amending Regulations (EU) No 600/2014 and (EU) No 909/2014 and Directive 2014/65/EU (Text with EEA relevance). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022R0858> (18. 5. 2024).
- Regulation (EU) 2023/1113 of the European Parliament and of the Council of 31 May 2023 on information accompanying transfers of funds and certain crypto-assets and amending Directive (EU) 2015/849 (Text with EEA relevance). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R1113> (18. 5. 2024).
- Regulation (EU) No 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse (market abuse regulation) and repealing Directive 2003/6/EC of the European Parliament and of the Council and Commission Directives 2003/124/EC, 2003/125/EC and 2004/72/EC Text with EEA relevance. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014R0596> (18. 5. 2024).
- Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012 Text with EEA relevance. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R0600> (18. 5. 2024).

CSDR. Regulation (EU) No 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories and amending Directives 98/26/EC and 2014/65/EU and Regulation (EU) No 236/2012 Text with EEA relevance. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R0909> (18. 5. 2024).

Internet sources

Clifford chance. 2021. Non-fungible tokens: The global impact. Available at: <https://www.cliffordchance.com/content/dam/cliffordchance/briefings/2021/06/non-fungible-tokens-the-global-legal-impact.pdf> (18. 5. 2024).

Cointelegraph. 2024. What is the InterPlanetary File System (IPFS), and how does it work? Available at: <https://cointelegraph.com/learn/what-is-the-interplanetary-file-system-ipfs-how-does-it-work> (18. 5. 2024).

NFT18. 2023. 2023 NFT annual report. Available at: <https://nft18.com/reports/2023-nft-annual-report/> (18. 5. 2024).

enjin.io. ERC-1155. Available at: <https://enjin.io/about/erc-1155> (18. 5. 2024).

erc721.org. ERC-721. Available at: <https://erc721.org/> (18. 5. 2024).

European Banking Authority (EBA). 2019. Report with advice for the European Commission on crypto-assets. Available at: <https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2545547/67493daa-85a8-4429-aa91-e9a5ed880684/EBA%20Report%20on%20crypto%20assets.pdf> (18. 5. 2024).

European Council. 2022. Digital finance: agreement reached on European crypto-assets regulation (MiCA). Available at: <https://www.consilium.europa.eu/en/press/press-releases/2022/06/30/digital-finance-agreement-reached-on-european-crypto-to-assets-regulation-mica/> (18. 5. 2024).

European Securities and Markets Authority (ESMA). 2019. Advice on Initial Coin Offerings and Crypto-Assets. ESMA50-157-1391. Available at: https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391_crypto_advice.pdf (18. 5. 2024).

Frank, R. 2021. Bepple NFT becomes the most expensive ever sold at auction after fetching over \$60 million. CNBC. Available at: <https://www.cnn.com/2021/03/11/most-expensive-nft-ever-sold-auctions-for-over-60-million.html> (18. 5. 2024).

Harmath, D. & Breszkovics, B. Festmény a blokkláncon avagy, mi is az az NFT. <https://kutatokejszakaja.pt.hu/programok/festmeny-a-blokklancon-avagy-mi-is-az-az-nft/> (18. 5. 2024).

Harmath, D. Telegram chat messages. <https://telegram.org/> (18. 5. 2024).

Hayward, A. 2023. NFT Sales in 2022 Nearly Matched the 2021 Boom, Despite Market Crash. Decrypt. Available at: <https://decrypt.co/118438/2022-versus-2021-nft-sales> (18. 5. 2024).

Learn. 2022. What are NFTs? Available at: <https://opensea.io/learn/what-are-nfts> (18. 5. 2024).

Non-fungible. 2021. Yearly NFT market report. Available at: <https://nonfungible.com/reports/2021/en/yearly-nft-market-report> (18. 5. 2024).

- Locke, T. 2021. Jack Dorsey sells his first tweet ever as an NFT for over 2.9 million. CNBC. Available at: <https://www.cnbc.com/2021/03/22/jack-dorsey-sells-his-first-tweet-ever-as-an-nft-for-over-2point9-million.html> (18. 5. 2024).
- Mazur, M. 2021. Non-Fungible Tokens (NFT). The Analysis of Risk and Return. IESEG School of Management. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3953535 (18. 5. 2024).