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NFTs IN MUSEUMS AND CULTURAL HERITAGE: OPPORTUNITIES AND CHALLENGES

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Abstract – In this paper we aim to address opportunities, challenges and possible criticisms about the adoption of Non-Fungible Tokens (NFTs) in the cultural heritage sector, with the goal to clarify pros and cons whilst exploring possible opportunities and criticisms.

INTRODUCTION

Museums and cultural institutions have always fought to attract funds and visitors [5][7][8] to survive in a digital era where the digital presence is necessary but difficult to monetise [11][19]. This is true for classical artworks whose digital reproduction is hard to protect against piracy or abuse as it is difficult to determine the value of royalties related to the ownership of a physical digitalized masterpiece [9][20]. Furthermore, new artistic expressions such as digital art and especially performances and related museums or temporary expositions present the difficulty of generating an exchange market [13]. In fact, digital art is particularly exposed to piracy and is difficult to trace to establish original authors and owners [4]. Due to their volatility, performances, on their side, are deeply interesting art expressions for their concept and contemporaneity but practically impossible to generate an art market, if not through documenting the performance itself [17][6].

Considering what was mentioned above, Non-fungible tokens (NFTs) could represent an opportunity to step into the digital era monetizing both traditional artworks and performances increasing funds and also giving visitors the possibility to “own” precious parts of cultural heritage.

This paper aims to address opportunities, challenges and possible criticisms about the adoption of NFTs in the cultural heritage sector, with the goal to clarify pros and cons, exploring possibilities, obstacles and pitfalls.

The next chapter introduces the concept of NFTs and how they work; in the following we explore the state-of-the-art in museum and cultural heritage, whilst the subsequent chapter analyses the challenges and the criticisms. Finally, a discussion and conclusion are reported.

NFTs: BACKGROUND

NFTs are blockchain-based digital signatures used to authenticate digital assets. According to Ethereum naming convention they are also known as *smart contracts* or *digital contracts*. Commonly, the word minting is used to indicate the process of taking a digital asset and converting the digital file into a digital asset stored on the blockchain. Making it officially a commodity that can be bought and sold.

The following Figure 1 illustrates how NFTs works from a technical point of view. Within the process, the blockchain purpose is to verify and track the state of the NFT at any stage of users' interactions (placing them on the market, selling, buying, reselling). All the details related to a NFT are stored in the Smart Contract. To operate in the NFT market, users need a digital wallet for the crypto currencies used in trading.

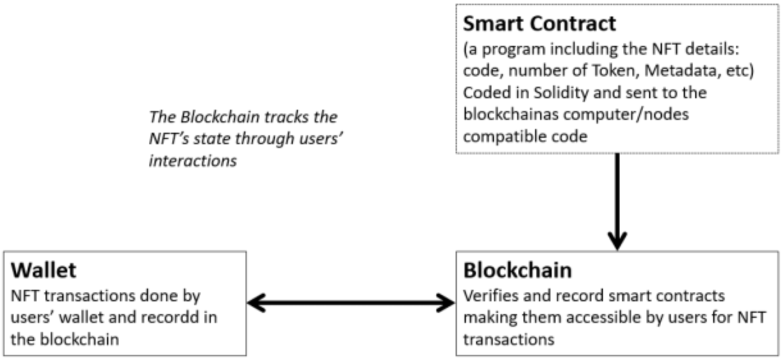

Figure 1: how NFTs work

The whole process of minting and selling a NFT can sound simple, but it hides some pitfalls that could mislead the inexperienced, so it is always better to rely on professionals.

Once created, NFTs related to artworks, events, performances should be placed on the market in in limited editions, not replicable in time, so that their uniqueness represents a desirable value for buyers. Given how NTFs work, it is also important to carefully evaluate how to place them on the market. This is possible through some marketplaces, such as Opensea (https://opensea.io/), Coinbase (https://www.coinbase.com/) or Metamask (https://metamask.io/). Mainly, the Ethereum Blockchain is the most used in NFTs trading, then the first step to make when placing an NFT on any marketplace consists of opening an Ethereum Wallet. Then the NFT can be sold following a fixed price or an auction. Potentially, the process of creating NFTs, placing them on the market and selling them, appears to be easy, but there are some aspects to which particular attention should be paid. To place an NFT on the market, an initial fee is required. This can be high, depending on demand, and therefore on the moment in which the operation is made. Therefore, inexperienced creators could face the risk of losing money in the process if they did not perform an initial assessment on the value attached to the NFT. Also, Ethereum (ETH) is not the only possible choice. Several options are available, based on other currencies such as Binance NFT Marketplace (BNB currency), Solana (Sol currency), and even non-crypto alternatives such as Coinbase. There is also a GAS-free alternative represented by Polygon Network (MATIC currency), an Ethereum-based platform that enables blockchain networks to connect and scale.

Choosing the right platform is fundamental because it affects both the trading currency of the digital asset, and the way in which such assets can be traded. Also in this case, non-professional NFTs creators and traders could take the toll of their choice. As an example, minting an NFT on Polygon blockchain allows the creation of more than one edition of the same file, but it can't be auctioned, whereas using the Ethereum blockchain, it can, but not with multiple editions. Opensea, the main NFTs marketplace [10], allows its users to sell their assets in several currencies, on both Ethereum and Polygon blockchains, facilitating multi-platform trading.

Once the NFT is sold, the new owner may decide to resell it (at a fixed price or auctioned) and may also receive offers from other users. The original owner, retaining the copyright of the original file, may decide to mint more than one NFT using the same art piece, i.e., the same file, at the risk of devaluing his own art.

STATE-OF-THE-ART IN MUSEUMS AND CULTURAL HERITAGE

In the context of museums and cultural heritage, NFTs technically enable the ownership and the trading of digital assets ensuring through the blockchain the possibility to verify author, authenticity, relevant ad associated royalties and their duration [1][18][21]. This way, NFTs currently represent the opportunity to double incomes derived from artistic productions both for authors [14] and for the owners of a masterpiece and, they also represent possible fundraising opportunities for museums, galleries, libraries, and archives. These latter, with external technical support, could, in fact, sell digital copies of limited collections related to every exposition both in case of a traditional-based masterpiece and in the case of performances of the digital art. Performances, for example, could benefit from NFTs because all the related information, video, music, comments, visitors reactions, artists explanations, could be converted into NFTs, also representing a tangible way to measure their success.

The Uffizi Gallery and the Hermitage Museum have already investigated NFTs in order to raise funds. In fact, NFTs of well-known masterpieces were minted by the Uffizi, notably Michelangelo's Tondo Doni (May 2021). In July 2022, the Hermitage followed the Uffizi's example, minting works by Leonardo, Monet and Van Gogh. At the same time, the Whitworth Art Gallery in Manchester minted its NFT of William Blake. The house Christie’s already set the auction for an NFT of a digital image, sold for 69 million USD (The work was “Everydays: The First 5000 Days,” by Mike Winkelmann, who goes by the name Beeple).

The list will certainly grow to include others that have undertaken similar initiatives or are thinking of doing so. Until now museums have experimented with the use of NFTs similar to limited edition prints of a physical original (think lithographs). The associated advantage is traceability and the dematerialisation of the work does not affect the relationship between the physical original and the corresponding DAW (Digital ArtWork), which is validated thanks to NFTs.

NFTs are undoubtedly interesting from a financial point of view: the valuation of the leading NFT marketplace Opensea rose from 1.3 million in July 2021 (source TechCrunch) to more than 13 billion in January 2022 (source NBC); the total trading volume across 14 NFT marketplaces rose close to 23,000% year-over-year, from $85.7 million in 2020 to $19.6 billion in 2021; the total market cap of NFTs is about $31.4 billion, making up 1.53% of the current $2.05 trillion total market cap for cryptocurrency (source Blockworks). In March 2017 thirty subjects including Fortune 500 companies, startups, and research groups founded the Enterprise Ethereum Alliance (EEA)[3]. In July 2017 EEA counted over 150 members including Toyota Research Institute, Samsung SDS, Microsoft, Intel, J. P. Morgan, Merck KGaA, Deloitte, Accenture, Banco Santander, BNY Mellon, ING, National Bank of Canada, MasterCard, Cisco Systems, Sberbank, and Scotiabank.

CHALLENGES AND CRITICISMS

A criticism may arise if we consider that open access is the strongest trend in recent years. The Creative Commons Zero license has been increasingly used by museums as a guarantee that users can "reliably and without fear of subsequent infringement claims construct, modify, incorporate into other works, reuse, and redistribute as freely as possible in any form and for any purpose, including, but not limited to, commercial purposes." Obviously this goes against the adoption of NFTs that are meant to be objects for trading. In a certain sense, however, the use of NFTs for fundraising could also be seen as a process of sensitization towards the need of funds for the preservation of the artistic heritage through the "democtatization" of the possession of a work of art. In fact, those who buy NFTs do not necessarily need to have large sums of money because museums could decide to put NFTs on the market at a low cost, addressing, in this way, also the passionate public that would have the possibility to own a work in a certain way, giving economic support to the cultural heritage.

Another related criticism is related to the shift toward open access, particularly with respect to works of art in the public domain, that runs counter to the principles of scarcity that inform the production and minting of NFTs, particularly by open access museums. Indeed, technically there would be no difference between an NFT minted by a museum and one minted by an art gallery or private individual. Does this automatically and unequivocally imply that anyone, anywhere, can coin as DAW NFT artworks in museums whose collections are open access?

Nonetheless some perplexity is raised because of their impact on the environment – due to the energy consumption associated to the so-called minting process and to the blockchain-based trading operations [2]. Also, considering the expansion of the OpenGLAM licensing movement [15][16], other considerations should be made about the opportunity to time limit the license or the rights acquired with the digital ownership in art. Moreover, the level of digitalisation in most organisations is underdeveloped and affected by technological obsolescence. Hence, not many institutions are ready to embrace the revolution represented by NFTs.

DISCUSSION AND CONCLUSION

Despite criticisms related to the last discussed points, NFTs appear an attractive opportunity especially in the current situation where museums and cultural institutions suffered from a lack of income and funding due to Covid-19 restrictions. In fact, NFTs represent a great opportunity for museums and cultural heritage. To date, however, they are not used extensively due in part to a lack of technological awareness. In fact, although the process of minting and selling NFTs is seemingly simple, it hides pitfalls that need the attention of professionals. Moreover, there are criticisms regarding the sustainability of NFTs and also the contradiction in terms of cultural open access.

However, some experiments show that collaboration between museums and industry could be a partial solution to this museographic impasse [12], providing the expertise to bring NFTs to market and also the right balance about their sustainability. A good example are the startup LaCollection, or the startup xxx They present themselves as a "community of people passionate about art, culture and NFTs." They offer support to work alongside museums, galleries, and artists to offer a careful selection of NFT. Partnering in these cases is particularly convenient since many museums do not have the resources to coin NFTs despite the enthusiasm around NFTs showing no signs of abating. Most museums are still reluctant, perhaps because of perceived risks also due to lack of knowledge. Others think that selling NFTs of original artwork might be demeaning.

NFTs are certainly not yet mainstream, but certainly their usefulness is destined to grow especially since the character of uniqueness makes them particularly applicable to the art world.

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