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Web3Art: A Decentralized Marketplace for Digital Art Using Blockchain Technology

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ABSTRACT: This research paper examines the emergence and evolution of the digital art industry and the development of creative industries in the Internet era. Blockchain is a digital ledger that allows data to be entered, verified and processed between nodes in an end-to-end network. Every part of the peer-to-peer network must be able to use every transaction to add or remove existing data. Data is stored in blocks that are linked together to form a blockchain. One of the first steps to update the data block is to create a new block and then put all the new changes in that block.

The block is recently expanded to the existing blockchain and broadcast to the rest of the network. Data is added to each block and a hash of the data is created and used to connect other blocks. The first block in the blockchain is called the genesis block, and other blocks are added on top of it. This article reviews the available literature on the subject and conducts a case study examining the business models, features and challenges of various digital art businesses. The study revealed that the digital art market offers artists new opportunities to showcase and profit from their work, while also providing free access to art for these buyers.

However, the article also highlights important issues such as the platform's intellectual property rights, authenticity, and costs, and offers suggestions for tackling them. Overall, this study highlights the importance of the digital art industry in changing the arts industry and contributing to the growth of the creative industry.

KEYWORDS: Digital Art, Authenticity, Creative economy, Intellectual Property Rights, NFT, Smart contract.

I. INTRODUCTION

The advent of Web 3 and blockchain technology in recent years has changed many industries, including the arts industry. Using blockchain technology, the digital art marketplace provides artists and collectors with a secure, transparent and distributed platform to market and display their artworks. With the rise of blockchain-based business art, new opportunities and challenges are emerging.

This research paper focuses on the digital economy created by Web 3 and blockchain technology running on Polygon. This article explores the advantages and challenges of this new platform for artists and buyers, examines its features and business models, and offers information research across various stores. This study examines the impact of blockchain technology on the art market, including its potential to generate new revenue for artists and increase transparency and security for buyers.

Additionally, this document examines the challenges this business faces, including issues with capacity building, management, and user experience. This study highlights the importance of understanding the potential of blockchain-based business art and the challenges that need to be addressed to ensure its success. Finally, this research provides insight into the emerging digital arts industry based on Web 3 and blockchain technology running on Polygon and its potential to transform the arts industry.

II. LITERATURE SURVEY

The emergence of digital art marketplaces has been a topic of interest for researchers and industry professionals alike. The following literature survey provides an overview of the current research on digital art marketplaces and their impact on the art industry:

[1] ‘Incorporating Registration, Reputation and Incentivization into the NFT Ecosystem’ by HayaHasan, IbrarYaqoob, Mohammed Madine proposed NFT is a unique asset encrypted on the blockchain, loved by artists and art lovers, providing freedom to artists and centralized access to fans. However, there is a risk that traditional art will be neglected and historical art forms will disappear in the future.

[2] ‘A Blockchain Based Decentralized Computing And NFT Infrastructure for Game Networks’ by KoshikMuthe, Khushboo Sharma, KarthikNagendra Sri proposed this application uses the security features of blockchain technology, including data integrity, proof of concept, transparency, accountability and non-repetition. The solution was designed to prevent known security attacks, and security analysis shows that smart contracts are protected against known vulnerabilities.

[3] ‘Enhancing Non-Fungible Tokens for the Evolution of Blockchain Technology’ by Farhan Khan, Rakshit Kothari, Mayank Patel, NiharikaBanoth proposed NFTs are private encrypted vehicles on the blockchain that are loved by artists and art lovers, providing freedom for artists and centralized access for those interested. However, there is a risk that traditional art will be neglected and historical art forms will disappear in the future.

[4] ‘NFTs: Applications and Challenges’ by WajihaRehman, Jaweria Imran, NarmeenBawany, Hijab e Zainab Transactions using ERC-721 on the Ethereum blockchain ensure full ownership of real digital assets such as images, gifs, videos and music. However, challenges remain due to the lack of industry-wide security standards for smart contracts, the risk of fraud through fraud, and the environmental impact of using too much electricity.

[5] ‘NBA- Top Shot’ the uniqueness of TopShot NFT may limit its appeal to a wider audience and hinder the potential for cross-market trading. Additionally, the limited supply of TopShot NFTs can also create problems for the long-term stability and growth of the business. But TopShot's success has paved the way for other niche NFT markets that cater to specific interests or markets.

III. METHODOLOGY

A. Block Diagram

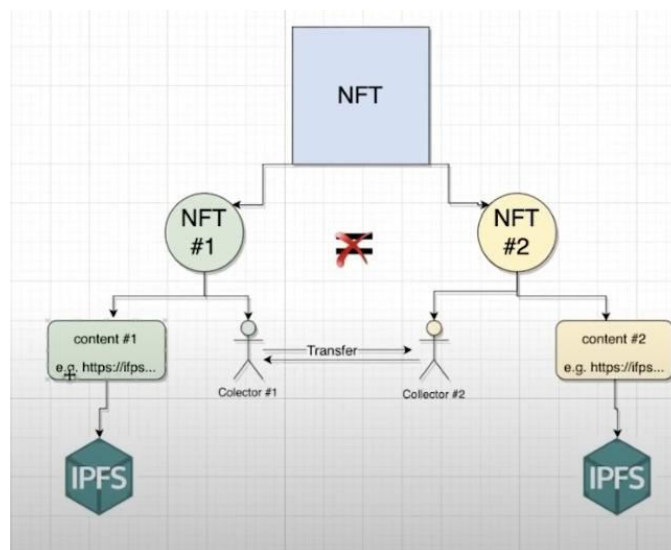


Fig. 1. BLOCK DIAGRAM

Block diagram of NFT drawing job usually has many layers and methods. Also, the user interface allows artists and buyers to interact with the platform and access its features. The next layer is the application layer, which holds the smart contracts that manage NFT creation, ownership, and trade.

Below the application layer, the data layer stores all NFT-related information, including ownership, transaction history, and other metadata. The file system is usually attached to a decentralized storage system such as the Interplanetary File System (IPFS) to ensure stable storage of NFT data.

Finally, the blockchain layer works as the base system to realize the security and control of NFT transactions. Depending on the market, this layer can be built on top of Ethereum, Polygon or other blockchain networks. In general, the block diagram of the NFT drawing business is a complex process that combines various technologies and infrastructure to ensure the security management and security of digital assets.

B. Working

Processing NFT-based digital art transactions usually involves several steps. First, artists upload their artwork to the platform and print it as NFT. Mining involves creating unique tokens on the blockchain that represent ownership of digital assets. Once printed, the NFT will be listed for sale on the market. Interested buyers can check available NFTs and purchase them using cryptocurrencies.

Ownership of NFT is transferred to the buyer, who can put it in his digital wallet or sell it on the secondary market. The ownership and trading history of NFT is recorded on the blockchain, making it transparent and immutable. This ensures that the originality and source of drawings can be verified and traced over time. In addition, the use of smart contracts allows NFT transactions to be managed, reducing the need for intermediaries and increasing market efficiency.

The success of NFT-based digital artwork depends on the quality of the artwork and the reputation of the artist. The market needs to provide a user-friendly interface, low cost, and reliability and flexibility for NFTs. Overall, the implementation of NFT-based digital art products provides a new way for artists to monetize their digital works and for art collectors to accept valuable assets and identify digital ones.

C. Flow Chart

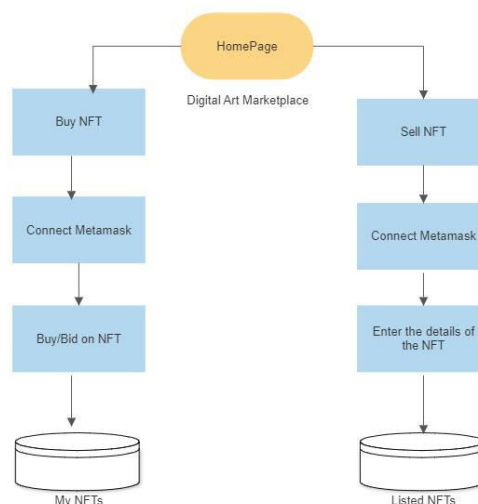


Fig. 2. FLOWCHART

Artists create digital artwork and upload it to the platform. This platform uses blockchain technology to work on art-based NFTs. NFT was added to the market and offered for sale buyers find and choose the NFT they want in the market.

Buyers purchased NFT using cryptocurrencies registered on the blockchain. Ownership of NFT is transferred from artist to buyer and recorded on the blockchain. Buyers can view NFTs in their digital wallets or sell them on secondary markets stores monetize all NFT transactions.

Platform provides support and services to artists and buyers to ensure a great experience. The transaction history and ownership of NFT is recorded on the blockchain, making it transparent and authentic.

In summary, the NFT-based digital art business includes creating and printing digital art as NFTs, using cryptocurrencies to buy and sell in the market, transferring ownership of NFTs, monetizing, and providing support and resources to users. All these transactions are recorded on the blockchain to ensure a secure and transparent transaction.

IV. RESULT

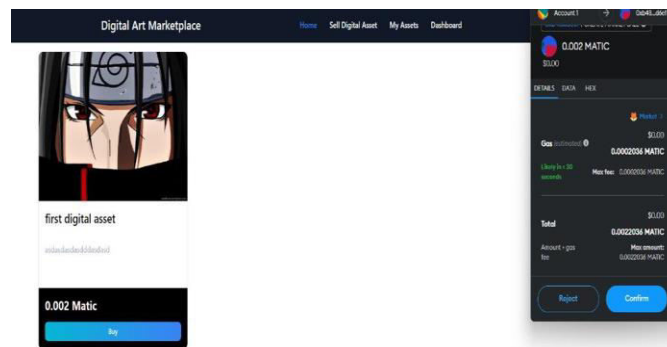


Fig. 3. Items Listed

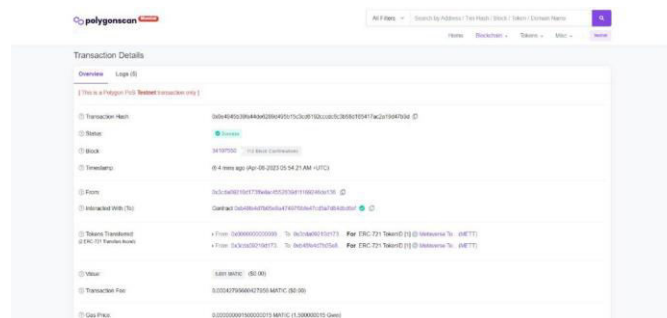


Fig. 4. Transaction Details

Fig. 3. shows the user buying listed digital assets from the homepage of the marketplace via Metamask.

Fig. 4. shows the Transactions details of the contract on the block explorer.

Using a digital art marketplace (NFT) running on the Polygon blockchain has many benefits for artists. First, it provides a platform for artists to showcase their work and reach a wider audience. This exposure can lead to greater recognition and potential sales.

Additionally, NFTs allow artists to retain ownership and control of their digital artwork. NFTs are therefore a unique cryptographic representation of blockchain-generated assets that provide proof of ownership and authenticity.

Artists can exercise greater control over their assets by ensuring that their work is not copied or reproduced without permission. Also, artists can take advantage of making a profit every time NFT is sold. This is because NFTs on the Polygon blockchain are equipped with smart contracts that enable the real estate payment process. This means that artists can profit from their work even after the first sale.

Also, using NFTs running on the Polygon blockchain eliminates the need for middlemen in the art business. This saves money for artists who can sell their work directly to buyers without having to pay intermediaries like art galleries. In summary, using a digital art marketplace (NFT) running on the Polygon blockchain gives artists a number of benefits, including greater accuracy, smarter control over art, monetization, and agents for cost savings.

V. CONCLUSION

In a nutshell, the NFT-powered digital art marketplace is revolutionizing by providing a secure and transparent way for artists to sell their artworks and for buyers to own and trade them as private commercial art collections. The use of blockchain technology and smart contracts enables authenticity, verification and ownership of digital art that was not possible before. In addition, the use of a decentralized market reduces the dependence on intermediaries, which leads to a fair distribution of money to the actors.

However, the digital art industry still faces challenges such as scalability issues and high operating costs. In addition, environmental concerns regarding the use of blockchain networks should also be addressed.

In the future, advances in technology may provide solutions to these problems by strengthening the potential of the digital art industry. Overall, the NFT-driven digital art market is a novelty in the art industry and its influence is only expected to increase in the coming years.

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