BLOCK CHAIN-BASED CROWDFUNDING SOLUTION

Prof. Keshav Tambre, Akhil Bhalerao, Aseem Khandekar, Radhika Bhutra, Varshitha

Department of Information technology, International Institute of Information Technology Pune, India

ABSTRACT:

The utilization of Block chain technology is on the rise in the 21st century as an underlying technology for Information Communication and Computation (ICCT)[1], and it has the potential to benefit various industry sectors, including primary, secondary, tertiary, and quaternary industries. This study has focused on exploring specific potential applications of Block chain technology principles in the finance industry. This paper discusses the potential of using smart contracts to automate the execution of crowdfunding transactions and to ensure that investor funds are released only after the crowdfunding goal is met.

Block chain has applications in a variety of industries, including the energy sector, forestry, fishing, mining, material recycling, air pollution monitoring, supply chain management, and their related operations. Block chain is essentially a trusted and decentralized database. We give a survey of Block chain-based network applications in this study.

Our objective is to cover the development of Block chain-based solutions that aim to revitalize the current, largely centralized, network application area. When we use Block chain to reimagine the area, we outline a number of typical difficulties, traps, and shortfalls that could arise. We want this to serve as a helpful reference tool for anyone considering switching to a Block chain-based solution for their current use case or building an automated one from scratch.

Finally, the paper will focus on existing and upcoming developments in this area, and consider the potential future of Block chain-based crowdfunding solutions.

Keywords: Crowdfunding, Block chain Technology, Synergy, Smart Contracts, NFT

[1] INTRODUCTION

Block chain technology has become one of the most disruptive forces in the financial world. It has enabled companies to offer innovative services and products to their customers, as well as increased transparency and efficiency in the financial system.

A block chain is simply a public ledger or distributed database [2] of all completed transactions or other digital events that have been shared among involved parties. The agreement of a majority of the system's users verifies each transaction in the public ledger.

Moreover, data cannot be deleted once it has been entered. A specific, verifiable record on the Block chain contains information on every transaction that has ever been made.
Among the more recent applications of block chain is crowdfunding [4], which is becoming increasingly popular thanks to the use of smart contracts and non-fungible tokens (NFTs).
Smart contracts are pieces of code stored on the block chain, and they can execute transactions automatically once certain conditions are met. NFTs are special tokens representing unique digital assets, such as artwork, game items, and digital real estate. Together, smart contracts and NFTs are revolutionizing the way crowdfunding works.
With block chain-based crowdfunding [3], companies can easily deploy and manage their crowdfunding campaigns. Smart contracts can handle the release of funds and the management of pledges, while NFTs can be used to reward backers with exclusive digital assets. This makes Block chain-based crowdfunding much faster and more efficient than traditional crowdfunding.
Furthermore, block chain-based crowdfunding can also help businesses to reduce costs and increase their profit margins. By using smart contracts and NFTs, businesses can reduce their overhead costs and streamline their operations. This allows them to generate more profits and focus their resources on developing and marketing their products. Overall, block chain-based crowdfunding is an effective way for businesses to raise funds and grow their operations. Smart contracts and NFTs offer businesses a secure, transparent, and cost-effective alternative to traditional crowdfunding. As more businesses take advantage of the power of the block chain, we can expect to see more successful crowdfunding campaigns in the near future.

[2] SYSTEM IMPLEMENTATION

Block chain-based crowdfunding is a way to raise capital and provide investment opportunities to those who wouldn't normally have access to traditional investment vehicles. By leveraging the power of block chain and smart contract technology, companies and individuals can raise money much more quickly.
The key to a successful Block chain-based crowdfunding campaign is the implementation of smart contracts and non-fungible tokens (NFTs). Smart contracts are computer programs that run on the Block chain and automatically execute specific tasks when certain conditions are met. They are used to facilitate the transfer of funds and ensure that the terms of the agreement are upheld. NFTs are unique digital assets that can be used to represent ownership of a crowdfunding campaign, allowing investors to track their returns in real-time [7].
A consensus protocol [4], which goes hand-in-hand with any block chain technology, is integral for the system since it is the major authenticator or validity check for the transactional records. The consensus protocol validates and cements the blocks as part of the chain, thus maintaining an identical copy on all the system nodes, thus boosting credibility.
Finally, the funds can be released to the investors when the crowdfunding campaign is successful. The NFTs can then be used to track the performance of the campaign and provide investors with real-time updates.
Implementing a Block chain-based crowdfunding solution is a complex process. But by leveraging the power of smart contracts and NFTs, companies and individuals can raise capital much more quickly and efficiently than ever before.

NFT initial sale sequence diagram:

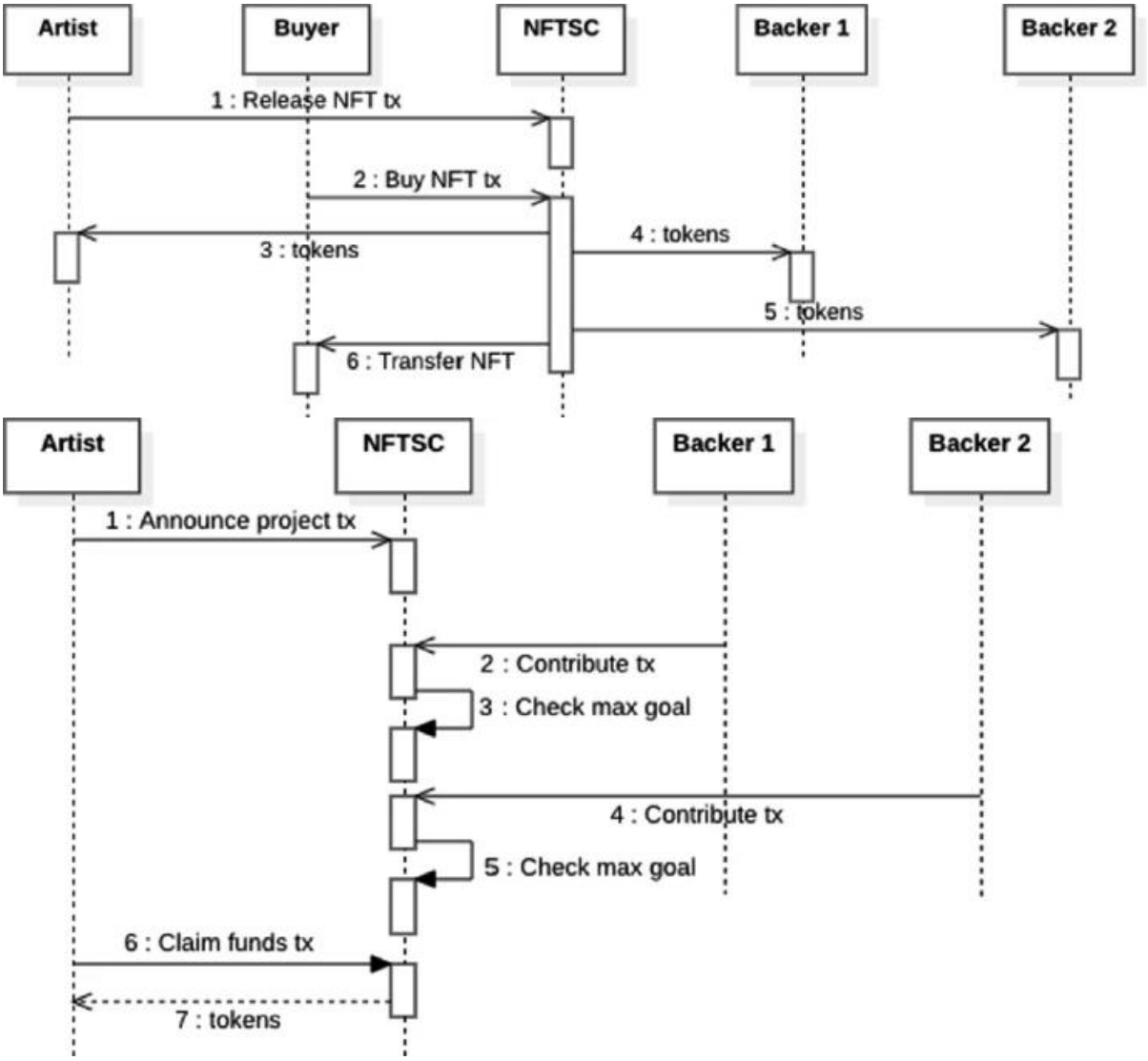

Fig. 2 crowdfunding sequence diagram.

[3] LITERATURE SURVEY

[1] "Toward a Block chain Enabled Crowdsourcing Platform"- Dimitrios G. Kogias and Helen C. Leligou Published by the IEEE Computer Society 11 September 2019, IEEE):
The paper discusses the concept of crowdsourcing and its potential applications across various fields such as data integration, asset gathering, and task implementation with diverse objectives. The paper emphasizes the importance of ensuring information integrity and non-repudiation in such systems, which is not always guaranteed. To address these concerns, the paper suggests that Block chain technology can enhance the integrity and transparency of crowdsourcing systems. The research explores the potential of integrating Block chain technology into crowdsourcing systems, providing real-life examples and discussing the benefits of using Block chain as a database system.

[2] "On Enabling Machine Learning Tasks atop Public Block chains: A Crowdsourcing Approach"- Yuan Lu, Qiang T, Guiling W.2018 IEEE International Conference on Data Mining Workshops (ICDMW):
The research paper presents a Block chain technology that is currently in development and boasts significant innovation. This technology is well-suited to supporting a decentralized sharing economy, which offers a compelling opportunity for businesses and entrepreneurs alike. Artificial intelligence (AI) is an integral aspect of decentralized ecosystems, and this research proposes leveraging the power of hidden nodes within the Block chain to execute complex and randomized AI programs. Given the limitations of existing computing systems, the research suggests a crowdsourcing approach from a theoretical perspective to determine the optimal solution. The research proposes an inspirational tool that uses Block chain to support the execution of a wide range of complex tasks while remaining open to redirection. This tool operates within an untrusted environment and is suitable for use within a model of non-colluding expert associations and any possible coalition up to n-1, where 'n' is the total number of expert centers. The research also discusses how to use Block chain to support two common types of AI tasks through crowdsourcing, highlighting the potential for decentralized applications that rely on AI programs.

[3] "Vizsafe: The Decentralised Crowdsourcing Safety Network"- Peter A. Mottur 2018 IEEE:
A city that utilizes its resources effectively can provide convenient transportation and increase the satisfaction of its residents. To manage public transportation efficiently, a large number of sensors and IoT devices are needed to collect data logically. The city's most complex sensors are used to coordinate and monitor the status of its residents. Users of the city's infrastructure can report any issues as needed. However, many people are unable to do so due to a lack of access to the proper communication channels. Moreover, the lack of immediate incentives often causes individuals to disregard problems that are not their responsibility. To address such issues, the Vizsafe platform has been proposed to create a community and encourage users to share valuable information that can benefit everyone. This study utilizes a decentralized ledger through Block chain technology, using smart contracts and SPOT tokens as incentives for individuals who upload event accounts, regardless of whether it is a potential security risk or a faulty infrastructure. This small nudge changes the perspective from "my problem" to "someone else's concern." People move from being consumers to contributors of data when urban areas start providing comprehensive or targeted support, which boosts their overall benefit while cutting costs for businesses and service providers. They take on a more active role in assisting the community in which they live and work.

[4] Efficient "ZebraLancer: Private and Anonymous Crowdsourcing System atop Open Block chain"- Yuan Lu, Qiang Tang, Guiling Wang.2018 IEEE 38th International Conference on Distributed Computing Systems":
The focus of this study is on the system design of de-telephone-exchange-izing, specifically addressing challenges related to public support, including data leakage and identity theft. The first steps entail outsourcing and showcasing how a network platform balances the conflict between data privacy and Block chain transparency, which is a vital use case for gaining public approval. When a job is distributed via the Block chain, ZebraLancer assures that the requester will not be charged for poor data quality in accordance with the stated policy. Additionally, each expert is rewarded for their contribution to the Block chain. These properties are achieved without the need for an intermediary and without revealing any information to the public Block chain. Our model will be tested for a banner image comment task during the Ethereum trial net, and the effectiveness of our model in a real-world Block chain can be assessed through further examination.

[5] "zkCrowd: A Hybrid Block chain-based Crowdsourcing Platform"- S. Zhu, Z. Cai, H. Hu, Y. Li and W. Li, IEEE Transactions on Industrial Informatics.doi: 10.1109:
Block chain, a decentralized paradigm, holds great promise in not only overcoming the deficiencies of conventional public support systems but also achieving specific developments like decentralization and responsibility management. However, there are some inherent limitations of Block chain, which are often addressed in writing when it is integrated into public support systems, and this can cause an introduction bottleneck within the public support systems. In this paper, we propose an innovative hybrid Block chain public support platform, named zkCrowd, which offers further advantages of the integration of Block chain and public support. The potential benefits of a hybrid Block chain architecture, smart contracts, binary logs, and binary consensus models are integrated and coordinated to ensure symmetry, verify transactions, and protect security. The proposed platform zkCrowd offers a solution to the challenges faced by traditional public support systems by leveraging the benefits of Block chain technology. By using a hybrid Block chain architecture, zkCrowd provides greater transparency and accountability while ensuring the privacy and security of users' data. Additionally, the platform integrates smart contracts, which allow for the creation of self-executing contracts that automatically verify and enforce the terms of the agreement. Moreover, zkCrowd utilizes binary logs and binary consensus models to provide a reliable and secure means of recording and verifying transactions. By using these models, the platform ensures that transactions are accurately recorded and verified by a distributed network of nodes, thereby eliminating the need for a centralized authority to oversee the system. This not only ensures greater transparency but also reduces the risk of fraud and corruption. The proposed platform has been extensively tested through theoretical assessments and exams, which have demonstrated its superiority over existing systems. In conclusion, zkCrowd offers an innovative solution to the challenges faced by conventional public support systems and holds great promise for achieving greater transparency, accountability, and security in public support initiatives.

[4] FUTURE SCOPE

The future scope of Block chain-based crowdfunding solutions using smart contracts and NFTs is incredibly vast and promising. With the advent of smart contracts and NFTs, crowdfunding can become even more efficient and secure. Smart contracts can be used to automate transactions, while NFTs can be used to tokenize ownership of physical assets like real estate, artwork, and more.

In addition, Block chain-based crowdfunding can make crowdfunding easier to access for investors. It can be used to create a safe, secure, and transparent platform for crowdfunding campaigns, allowing investors to make informed decisions and reducing the risk of fraud.

Furthermore, Block chain-based crowdfunding can create access to investments and opportunities that were previously not available to a wider audience. This could revolutionize crowdfunding and lead to an influx of new investment opportunities, especially from people who are underserved by traditional financial systems.

Finally, Block chain-based crowdfunding can help to reduce transaction costs, speed up the process, and make it easier for investors to participate in crowdfunding campaigns. This could be especially beneficial for early-stage startups who may not have access to capital from traditional venture capital firms or angel investors.

Overall, the potential of Block chain-based crowdfunding is immense, and it could revolutionize the way that people access investments and the way that new startups receive funding.

[5] CONCLUSION

Smart contracts and NFTs are one of the most promising solutions for Block chain-based crowdfunding. Smart contracts can provide the necessary security, immutability, and decentralization to make crowdfunding a safe and transparent process. NFTs, on the other hand, can provide a unique and collectible asset to make crowdfunding more attractive to potential investors.

The combination of these two technologies offers a wide range of advantages. Firstly, it provides investors with more security, as the smart contract ensures that their funds are automatically transferred to the project owner without the need for any third-party intermediaries. Secondly, it eliminates the possibility of fraud and dishonest practices, as the smart contract ensures that all of the terms of the agreement are met before the funds are released. Finally, it gives crowdfunding campaigns greater visibility and legitimacy, as the use of NFTs makes them appear more legitimate and attractive to potential investors.

In conclusion, Block chain-based crowdfunding solutions using smart contracts and NFTs are a powerful and versatile tool for making crowdfunding campaigns more secure, transparent, and attractive to potential investors. With the right implementation, this technology can help to revolutionize the way crowdfunding is conducted, while also providing investors with greater security and peace of mind.

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