

Decentralised Techniques Based White Paper Publication Portal

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ARTICLE INFO

Article History:

Accepted: 01 April 2023

Published: 12 April 2023

Publication Issue

Volume 10, Issue 2

March-April-2023

Page Number

318-323

ABSTRACT

This paper presents the development of a web application, which aims to provide a platform for white paper authors to upload and have their documents reviewed by industry experts and scholars. The web app will utilize Ethereum block chain technology to provide security and authenticity to the uploaded white papers, which will be converted into non-fungible tokens to ensure their uniqueness. The authors will have the ability to self-upload their white papers onto a secured IPFS (Inter Planetary File System) database and use ERC721 (Ethereum Request for Comments) protocols to mint them as non-fungible tokens. In addition, the web app will allow white paper authors to receive crowd-funded support from users holding ETH in their web3 wallets. With our unique authentication system utilizing decentralized techniques, the Paper Publication Portal ensures that only verified authors can publish their work, enhancing both the security and credibility of the platform.

Keywords: White paper, Block chain, NFT, ERC-20 token, Publication portal, IPFS, Ethereum, Web 3.0, Decentralisation, crowdfunding.

I. INTRODUCTION

A white paper is an in-depth documentation that enlightens the reader about the solution for a proposed problem. It is a widely known way for writing documentation, which may be used by individuals or organizations for marketing, research, development, and education purposes. It has its foundation roots in Great Britain, and it is often believed that first white paper was penned by Winston Churchill in 1922. Even almost a century later, white paper has failed to acquire the status of authenticity that a research paper hold. The reason is,

experts and intellectuals consider white paper to be bias to a certain magnitude, as they are widely released by an organization without any peer review and analysis. Moreover, white paper writing, once considered boring and irrelevant, is witnessing a staggering rise as the crypto space is booming.

The trends suggest that crypto start-ups often tend to release their white paper before the public sale of their cryptocurrency for their marketing and financial benefits. Often, in this race, there are some malicious crypto scams, which succeed in their intentions because they have created a well decorated

but misinforming white papers for marketing. Since, there is no peer review, user gets scammed by thinking whatever written in the white paper is true and authentic.

Ethereum uses its own cryptocurrency, called Ether (ETH), as a means of payment for transactions and fees on the network (S. Casale-Brunet, 2021). Ether is also used to power smart contracts (al., 2021), which require computational resources to execute. Ethereum is a highly flexible and customizable platform, with a wide range of tools and frameworks available for developers to use. Its flexibility has also allowed for the creation of many other projects built on top of the Ethereum network, such as stable coins, which are digital currencies pegged to the value of a fiat currency, and non-fungible tokens (NFTs), which are unique digital assets that represent ownership or proof of authenticity of a particular piece of content or artwork. Overall, Ethereum is a powerful and innovative platform that has the potential to transform various industries by enabling the creation of decentralized applications and the execution of smart contracts (Niclas Kannengießner) in a secure and efficient manner. Our aim with this project is to onboard white paper authors to the world of crypto and introduce them to DeFi, Block chain.

II. BACKGROUND

A white paper publication portal project is a specific initiative for creating a web app that hosts and provides access to white papers on a particular topic or niche. The primary goal of a white paper publication portal project is to provide a centralized location where users can find high-quality, authoritative information on a specific topic. The project involves about creating the web app, soliciting white papers from experts in the field, reviewing and curating submissions, and promoting the portal to potential users. In addition to providing a valuable resource to users, a white paper publication portal

project can also benefit the creators and contributors. By establishing themselves as experts in the field, they can increase their visibility, reputation, and credibility. They can also use the portal to promote their own products or services, or to attract new clients or customers. However, creating a successful white paper publication portal project requires careful planning, execution, and ongoing management. It is important to identify a specific niche or topic that is not already well-served by existing portals, to ensure the quality and relevance of the white papers, and to attract and engage a critical mass of users over time.

White paper publication portal uses Block chain technology in its setup to provide decentralization. Block chain is a digital ledger technology that provides a secure and decentralized way of storing and sharing information or data. It consists of a network of computers or nodes that work together to verify and record transactions in a transparent and tamper-proof manner. Each block in the block chain contains a cryptographic hash, which is a unique code that represents the contents of that block. When a new block is added to the chain, it is linked to the previous block using this hash, creating a chain of blocks that cannot be altered without changing the entire chain. This decentralized approach ensures that no single entity controls the network, making it resistant to hacking and fraud. Instead, all participants in the network have a copy of the block chain and work together to validate transactions and maintain the integrity of the network.

III. LITERATURE REVIEW

A decentralized hosting platform aims to reduce the reliance on centralized web hosting services. The platform uses blockchain technology to create a distributed network of nodes which can host websites and applications. Blockchain technology has gained significant attention in recent years, with its potential to transform industries ranging from finance to healthcare. In this review, we will explore the

existing research on blockchain (Erins, 2019) technology, its underlying principles, and its potential applications.

Blockchain technology is a decentralized, distributed ledger that allows for the secure and transparent transfer of data and assets between parties (Legault, 2021). The technology is based on a series of cryptographic algorithms that allow for the verification and validation of transactions without the need for a trusted third party. Research has shown that blockchain technology has the potential to increase the efficiency, transparency, and security of various industries. For example, in finance, blockchain technology can be used to create a more efficient and secure payment system, reducing the need for intermediaries such as banks. In healthcare, blockchain technology can be used to securely and transparently store patient data, increasing data accuracy and privacy (Henry Rossi Andrian, 2018).

However, there are also challenges associated with the adoption and implementation of blockchain technology. One challenge is the scalability of the technology, as the current blockchain infrastructure can only handle a limited number of transactions per second. Another challenge is the regulatory and legal framework surrounding the technology, as there are still uncertainties and challenges regarding its legal status and regulatory oversight.

Overall, the research suggests that blockchain technology has the potential to transform various industries, but its widespread adoption and implementation will require further research and development. In particular, the scalability and regulatory challenges need to be addressed to fully realize the potential of blockchain technology.

Scholars required a third party to publish their paper in the existing system. They don't have actual information of the paper whether it is

published or not. The existing system is centralised which is based in web 2.0 technology. The current system is based on web 3.0 technology which is decentralised.

IV. METHODOLOGY

The development of web app follows agile methodology which is focused on the continuous iteration of platform development.

A) Dashboard for Client

Client is the interface that will interact with the users/authors/contributors and will be accessible for the world. Whereas backend is the part that will include the panel of reviewers for reviewing the project.

B) Whitepaper Uploading in Backend

For the authors, that want to upload their whitepaper to the website, their paper needs to be approved by reviewer/s first. Here, on the initial stage, the user interacts with Client UI developed on React.js, that sends an email to the web app's exclusive email address using sendgrid or email.js.

C) Other Features for Client

Client is a user frontend deployed on web which enables the world user to interact with the platform. It broadly has two functions, first is for the random user scrolling and second is for uploading paper.

D) Storing WhitePaper in IPFS

Each file is assigned a unique hash that can be used to retrieve it later, even if the original uploader goes offline. This ensures the document's accessibility and long-term preservation, as it can still be accessed by anyone who wants to read it, regardless of whether the original hosting platform or website is still available.

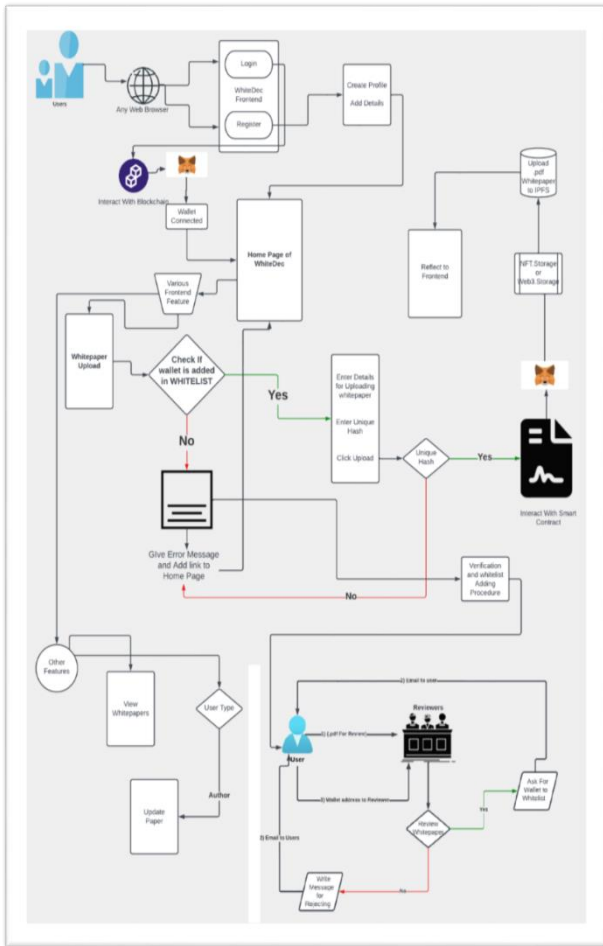


Figure 1. Architecture Diagram

E) Reviewing White Paper by Reviewer

As per the domain, a panel of reviewers will be assigned to analyse, examine the white paper, and provide judgement based on probabilistic voting. If the voting results to above or equal to 0.5 i.e., voting result $> = 0.5$, then the white paper will be accepted to be publish. In this scenario, the web app will contact the author and will ask them for a wallet address, which will be added in whitelist for uploading. After the author is added in the whitelist, they will be capable to upload their whitpaper. If otherwise, an email will be sent, by underlining the reasons for not getting selected.

Apart from this, a consensus algorithm for a white paper publication portal would need to ensure that all published papers are legitimate and have been peer-reviewed by qualified experts in the relevant field.

One possible consensus algorithm for such a portal could be a modified version of Practical Byzantine Fault Tolerance (PBFT) algorithm. In this modified version of PBFT, the network participants would be qualified experts in the relevant field who have been selected to act as validators. These validators would be responsible for reviewing and validating the papers submitted to the portal. This paper would be reviewed by a set of validators who would then vote on whether the paper should be accepted for publication. The block validation process would involve the validators reviewing the paper and checking it for accuracy and relevance to the field. If the paper passes the review process, the validators would cast their votes in favour of its publication. The consensus mechanism would require a minimum threshold of votes in favour of publication before a paper could be added to the portal. Once the threshold is met, the paper would be added to the portal and made available for public access. Block confirmation would involve updating the portal with the new paper and notifying the author of its acceptance. This modified PBFT algorithm would ensure that qualified experts in the field, ensuring the quality and legitimacy of the content available on the platform, have validated all papers published on the portal.

V. RESULTS AND DISCUSSION

The development of a NFT-based web application for white paper publication using web development and block chain has been successfully completed. The application enables users to publish white papers as NFTs, which can be traded and owned by other users on the blockchain. The whole backend of web app was to build a smart contract (Bani-Hani, 2021) Ethereum and connect it to web3.

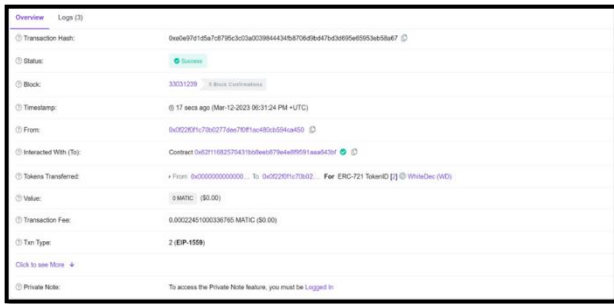


Figure 2. Transaction Overview in Backend

The web application was built using modern web development technologies such as ReactJS and NodeJS, which provide a fast and responsive user interface. The application also integrates with various blockchain technologies such as Ethereum and IPFS to ensure the security and transparency of the white papers published on the platform.

The user experience of the application is intuitive and a user-friendly, allowing users to easily upload and publish their white papers as NFTs. The application also includes features such as a marketplace where users can buy and sell NFTs, a portfolio where users can manage their NFTs, and a search function that enables users to find specific white papers (Yaqoob, 2022).

The key finding of the web app platform is that decentralization can significantly enhance the security and transparency of white paper publication. The platform achieves this by leveraging the power of blockchain technology, which provides an immutable and tamper-proof record of all transactions. This means that once a white paper is published on the platform, it cannot be modified or deleted, and its authenticity can be verified by anyone. This finding has significant implications for the research community, particularly for those who rely on white papers as a means of communicating their research findings to the wider public. By using the web app platform, researchers can ensure that their white papers are published in a secure and transparent manner, which can enhance their credibility and reputation. Moreover, the use of decentralized techniques can also help to reduce the risk of fraud or

plagiarism, which can be a significant problem in some areas of research.

Another implication of the web app platform is that it can help to promote collaboration and knowledge-sharing among researchers. Because the platform is decentralized, it allows researchers from all over the world to publish and access white papers without any barriers. This can help to facilitate the exchange of ideas and promote cross-disciplinary collaboration, which can be beneficial for advancing research and finding innovative solutions to complex problems.

However, there are also some challenges associated with the use of decentralized platforms. One of the main challenges is that the technology is still relatively new, and there is a lack of standardization and interoperability between different blockchain networks. This can make it difficult for researchers to adopt the technology, particularly if they are not familiar with blockchain or decentralized systems. Another challenge is that the decentralized nature of the platform can make it difficult to regulate or enforce compliance with certain regulations or standards. This can be a concern, particularly for researchers who work in areas that are subject to strict regulatory requirements.

VI. CONCLUSION

The web app platform is revolutionizing the way white papers are published with its cutting-edge platform. The platform offers authors the opportunity to publish their white papers for free, providing a cost-effective solution for authors looking to share their ideas with the world. The web app platform is fully decentralized, allowing authors to enjoy the benefits of a secure, transparent, and tamper-proof platform. Utilizing block chain techniques, it has created a one-stop solution for authors looking to publish their white papers.

The platform allows authors to publish white papers from multiple domains, creating a diverse range of topics and knowledge sharing. This unique feature sets the platform apart from other publishing platforms, offering a comprehensive range of knowledge-sharing for users. The web app platform has also tied up with top industry experts to create a top-notch review panel, providing authors with constructive feedback and valuable insights to improve their white papers. This ensures that the quality of the published white papers remains consistently high, providing readers with valuable and insightful information. In theory, the scope for NFTs is limitless. However, the platform has identified the unique value of white papers as a form of NFT.

White papers are often unique and contain proprietary knowledge that requires provable ownership. The web app platform offers authors the ability to publish their white papers as NFTs, allowing for secure and immutable ownership of their intellectual property. Overall, the platform is a game-changer in the world of white paper publishing. With its innovative approach to knowledge sharing, its fully decentralized platform, and its integration of block chain technology, it offers authors a unique and cost-effective solution for publishing their white papers. With its diverse range of topics and top-notch review panel, it is the perfect platform for authors looking to share their knowledge with the world.

VII. REFERENCES

- [1]. W. Z. (2021). Smart contract development: Challenges and opportunities. *IEEE Transactions on Software Engineering*, 47(10), 2084-2106. doi:10.1109/TSE.2019.2942301
- [2]. Bani-Hani, S. N.-G. (2021). Blockchain smart contracts: Applications challenges and future trends. *Peer-to-Peer Networking and Applications*, 2901-2925. doi:10.1007/s12083-021-01127-0
- [3]. Erins, V. S. (2019). Blockchain-based model for software licensing. *4th International Conference on System Reliability and Safety (ICSRS)*, 30-34. doi:10.1109/ICSRS48664.2019.8987715
- [4]. Henry Rossi Andrian, N. B. (2018). Blockchain Technology and Implementation : A Systematic Literature Review. *International Conference on Information Technology Systems and Innovation (ICITSI)*. doi:10.1109/ICITSI.2018.8695939
- [5]. Legault, M. (2021). A practitioner's view on distributed storage systems: Overview challenges and potential solutions. *Distributed Ledger Technologies for Smart Digital Economies*, 11, 32-41. doi:10.22215/timreview/1448
- [6]. Niclas Kannengießner, S. L. (n.d.). Challenges and Common Solutions in Smart Contract Development. *IEEE Transactions on Software Engineering*, 48(01, November 2022), 4291-4318. doi:10.1109/TSE.2021.3116808
- [7]. S. Casale-Brunet, P. R. (2021). Networks of Ethereum Non-Fungible Tokens: A graph-based analysis of the ERC-721 ecosystem. *IEEE International Conference on Blockchain (Blockchain)*. doi:10.1109/Blockchain53845.2021.00033
- [8]. Yaqoob, M. M. (2022). Blockchain and NFTs for time-bound access and monetization of private data. *IEEE Access*, 10, 94186 - 94202. doi:10.1109/ACCESS.2022.3204274

Cite this article as :

Hemang Joshi, Hitesh Mewada, Chandan Gupta, Zeyan Ansari, Vinayak Shinde, "Decentralised Techniques Based White Paper Publication Portal", *International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT)*, ISSN : 2456-3307, Volume 9, Issue 2, pp.318-323, March-April-2023. Available at doi : <https://doi.org/10.32628/CSEIT2390220>
Journal URL : <https://ijsrcseit.com/CSEIT2390220>