

Crowd-Funding using Blockchain Technology

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Abstract: Crowdfunding is a way to help founders with small donations. Crowdfunding allows individuals to invest in a startup through an intermediary such as a broker. The problem with the website right now is that it has no donation policy and has no control over the money donated. This article aims to promote financial aid using blockchain technology. This allows us to offer a safe, secure and transparent way to the masses. The purpose of this article is to provide interactive information to create, donate, and seek approval from developers, and donors can easily create and fund events. Donors can track the money sent to them. Blockchain will record all transactions and store them as a block. Crowdfunding is not a charity, and failure has costs and risks. The role of blockchain removes the risks of traditional fundraising. Decentralized crowdfunding allows us to eliminate all risks faced by the crowd.

Keywords: Crowdfunding, Blockchain, Campaign, Smart Contracts, Request Approval, Consensus

I. INTRODUCTION

Crowdfunding has emerged as a powerful tool for sourcing funds, offering an alternative to traditional financing methods. The decentralized application built on the Ethereum blockchain ensures that all information related to campaigns, contributions, and transactions is stored on a secure and decentralized network, visible to all users. Crowdfunding has reached a new level of innovation to provide safe and secure financing for various projects and projects such as startups, new products and good causes. The decentralization and transparency enabled by blockchain technology transform the interaction between innovators, donors and consumers, providing donors with secure investment and a platform for innovators to publish their ideas. The decentralized application built on the Ethereum blockchain ensures that all information regarding activities, collaboration and transactions is stored in a secure network and distributed and visible to all users. This eliminates the need for central servers and makes the process more efficient and less fraudulent. Creating a campaign only takes a few minutes and anyone can easily share their project and invite contributions from the public. The use of smart contracts further strengthens the integrity of the system, making it a real solution in the economy of the crowd.

II. RELATED WORK

1. Crowdfunding Platform Using Blockchain Technology June 2022: The main purpose of the author is to solve the limitations of current crowdfunding platforms by using business application used on the Ethereum Blockchain. By doing this, they aim to provide a platform where all campaign details, donations, withdrawals, and funds are stored on an open blockchain network and accessible to all. In a shared list, transactions only need to be recorded once, eliminating the need for redundant efforts. This approach increases the transparency and security of the crowdfunding process, ensuring that all changes are immutable and irreversible.
2. Applying Ethereum Smart Contracts for Blockchain-Based Crowdfunding System to Increase Trust and Information Symmetry July 2021: The author's research focuses on the creation of a crowdfunding system Ethereum Blockchain. The main feature of the platform is a smart contract that monitors the status of user-creating contracts and automatically executes them when an event occurs. use of this system leads to greater transparency, minimizing information asymmetry. However, the study does not cover the use of smart contract tokens, which can be difficult to users who do not have a basic understanding of blockchain technology.
3. Study on Crowdfunding Platform at International Conference Of ICT: This study presents a new way to use crowdfunding to fund smart city development. This study examines the investment behaviour of individuals participating in crowdfunding and their reactions to these platforms. The idea is presented concepts lays the

foundation for the creation of smart city crowdfunding platform It should be noted that the framework mentioned in this study is centralized, that is controlled by a central authority.

4. Study On Conventional Crowdfunding Platform at Shingai: This study uses statistical analytics to examine the impact of emotional impact on crowdfunding. A blockchain-based crowdfunding platform has been proposed to achieve this goal, but detailed information is not available. The research focuses on the behaviour of investors and developers in crowdfunding, but the platform did not take into account personal references of the developers.
5. Crowdfunding - A Literature Review and Research Direction: The literature on crowdfunding primarily concentrates on the motivations behind capital-seeking parties, factors contributing to crowdfunding success, and legal restrictions on equity crowdfunding. However, most of these platforms are limited to a one country, and government access is critical to their operation.
6. Kickstarter, Facebook: This study uses correlation analysis to examine the relationship between the fundraising campaign success and collaboration between fans and broadcast news. However, the platform used in this study is not available on GitHub.
7. Interviews, Kickstarter, Indiegogo, and Rock hub: This study explores the efforts fundraiser need to plan and run a successful campaign However, the white paper for this study is not yet available, which raise concerns among potential reader about the study's reliability. The lack of supporting information may cause the readers to doubt the accuracy and validity of the results [1-6].

III. METHODOLOGY

- **Campaign Creation:** Users can create a Campaign by connecting their MetaMask wallet to the web application. After connecting their wallet, they can create a unique campaign by entering the campaign details such as Campaign Title, Campaign Photo, Campaign Details, Fund-Raising Amount. All the contract code is written in Solidity which is used to deploy the contract in the blockchain platform. A new campaign is created by making an instance of the Campaign factory. For every transaction, a specific amount of gas fee is required for processing. Gas fee is the amount of money (very small) to make that transaction a valid one. Thus, when the user clicks on "Create Campaign" button a new campaign will be created with the gas fees associated. After a few seconds, the transaction will be completed and a new block will be added to the blockchain with the contract address. After the campaign is created it will be displayed in the home page of the website. Other users can interact with it. Once the campaign is created and added to blockchain then an E-Wallet such as MetaMask is required to manage the transaction associate with it.
- **Contributors & Approvers:** Contributors are the users who contribute and fund the campaigns. After connecting their MetaMask wallet to the application, they can search for the campaigns they want to fund. The funds will go to the address of the campaign and not to the creator of the campaign, thus making the process more efficient and anti-fraudulent. Approvers are the contributors who have contributed more than the Minimum Contribution, and they can approve the withdrawal requests.
- **Withdrawal of Funds:** Contributors who have contributed more than a certain amount are known as approvers and are given the power to either approve or deny the request. This process ensures that the funds are being used in a manner that is agreed upon by the community of investors. In order to withdraw the funds, the approval of at least 50% of the approvers is required. Once approved, the funds will be transferred to the address that has been decided upon by the group. All transactions and decisions made during this process are securely stored in the blockchain, ensuring that they are transparent and cannot be altered or manipulated. This level of transparency and community decision-making adds an extra layer of security to the crowdfunding process, making it a more trustworthy and reliable way for startups to raise funds. S. Nagaprasad et al. [7], Ajay S. Ladkat et al. [8], S. L. Bangare et al. [9-14], K. Gulati et al. [15], P. S. Bangare et al. [16-17], Xu Wu et al. [18], V. Durga Prasad Jasti et al. [19], A. S. Zamani et al. [20], M. L. Bangare et al. [21] and S. Mall et al. [22] have proposed various research models which were referred here.

IV. SYSTEM ARCHITECTURE

The basic architecture of the crowdfunding application is shown, which is architectural diagram of the crowdfunding app that focusing on the high-level components. All interactions between campaign creators (those who come to the platform to raise funds) and campaign investors (those who come to the platform to invest) are mediated by written smart contracts written for the crowdfunding apps running on the blockchain platform. For example, if an investor wants to invest a certain amount of money in a particular campaign that interests him, a transaction is initiated and sent to the blockchain network, paying an additional transaction fee

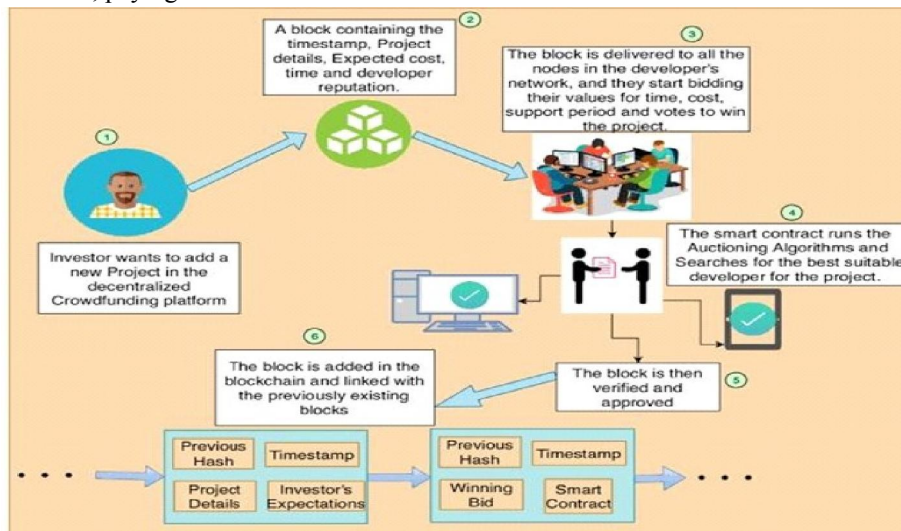


Fig.1. Architecture Diagram

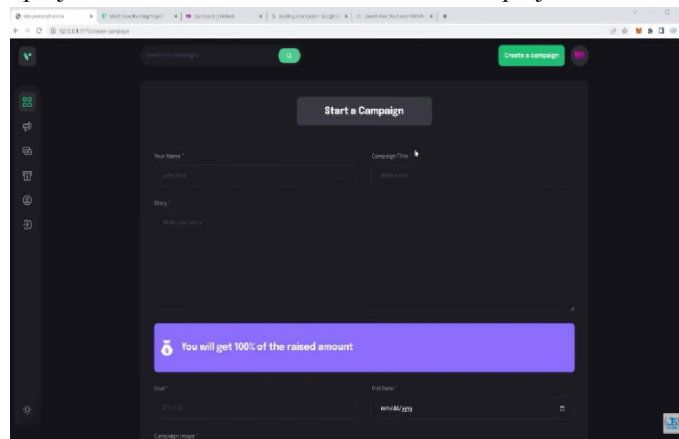
V. ALGORITHM

Hashing Algorithm: Hashing algorithms such as SHA-256 can be used to ensure the integrity of data on the blockchain. Transactions and blocks can be hashed using this algorithm, and the resulting hash values can be used to verify the authenticity of the data.

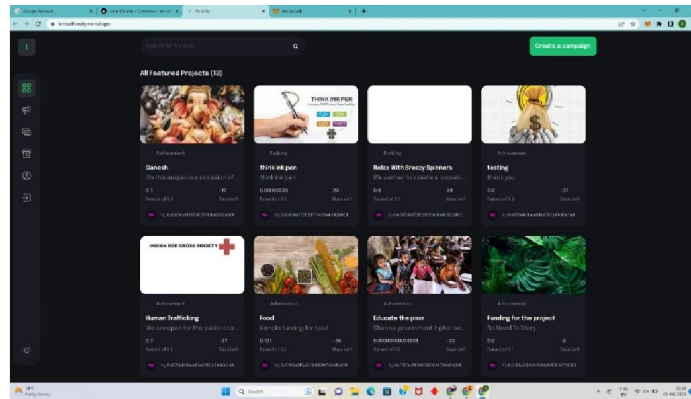
VI. IMPLEMENTATION AND RESULT ANALYSIS

The implementation of a crowdfunding web application requires a smart contract is needed which must be written in solidity language. This is then compiled and deployed to the Ethereum blockchain using the Solidity compiler. MetaMask is a Chrome browser extension for all the transactions. Steps for building a crowdfunding web app:

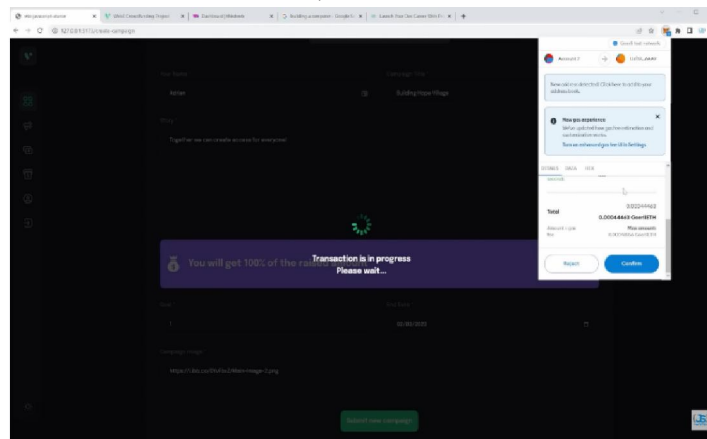
Step 1: When user wants to create new project then user can do it by pressing the create campaign button. It consists of the project, description of the project and the minimum contribution to the project.



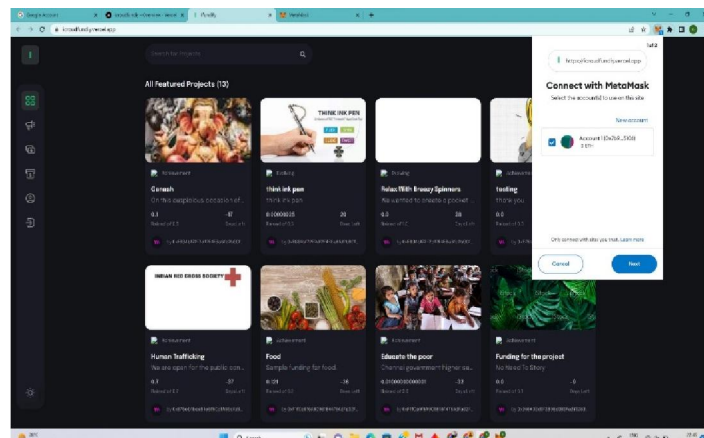
Step 2: Here are list of all current projects are shown with their name with their descriptions.



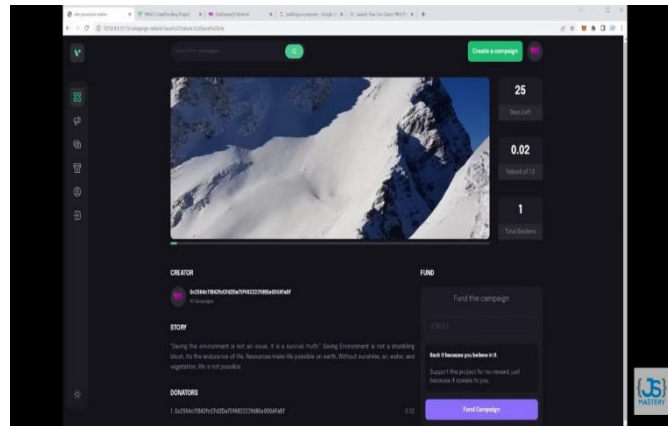
Step 3: When we have click on submit new campaign then showing the transaction is in progress then the user will know they have an interaction with MetaMask as soon as we confirm it then still its showing transaction is in progress because the blockchain takes time as soon as it finalizes, we will be redirected back to the home page.



Step 4: On the Home page, we can search for the campaign for which we want to donate fund and enter the amount and click on fund donate after that it's showing the transaction is in progress then connect to the MetaMask and again redirected to the Dashboard.



Step 5: when we connect to the MetaMask and again redirected to the dashboard where we can search any campaign there will show how many funds has been donated how many days are left to donate fund.



VII. CONCLUSION

In this paper we conclude that the proposed web-based crowdfunding system, developed using blockchain technology, solves the main problems faced by traditional crowdfunding platforms by using Ethereum documentation. Smart contracts and the solidity programming language this system provides financial support for the security of the enterprise, enhanced trust transparency control over funds and secure storage of transactions. The use of Infura ensures a reliable connection between the web system and the Ethereum network, ensuring that all transactions are securely recorded and in credible manner. This innovative method of crowdfunding eliminates the need for cost and provides a more secure and trustworthy way for startups to raise funds. The system is dedicated to the challenges faced by the traditional crowdfunding platforms and it has ability to change the way startups are funded

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