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Helphands: Empowering the Fundraising, Innovating With Blockchain and Smart Contracts

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Abstract: ***The concept of crowdfunding, a method for online fundraising, has evolved to enable public contributions in support of creative projects. Leveraging blockchain technology, cro wdfunding platforms now integrate smart contracts, ensuring secure, transparent, and reliable transactions. This study focuses on the development of interactive interfaces for campaign creation and financial contributions, facilitating engagement for both creators and donors.***
Campaign creators can propose initiatives and submit them for approval, while donors can browse and support projects through financial contributions. Transparency is ensured through blockchain recording of all transactions, offering immutable and transparent records.
The incorporation of smart contracts is pivotal in removing the need for intermediary trust in blockchain-based agreements. This work emphasizes the importance of developing executable code for blockchain execution, ensuring transaction integrity and security.
Initially associated with cryptocurrencies, blockchain technology has expanded its applications across industries, offering a sustainable solution for internet transactions. Crowdfunding platforms stand to benefit significantly from blockchain integration.
Challenges in the current crowdfunding landscape include inadequate oversight and fraudulent investment schemes. By leveraging Ethereum smart contracts, this study seeks to address these challenges, enforcing time limits and automating contract execution to enhance trust and transparency in the crowdfunding process.

Keywords: Crowdfunding, Blockchain Technology, Solidity, Thirdweb, Smart Contract.

1. INTRODUCTION

Background and Significance of Crowd Funding

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Crowdfunding is a widely recognized method of funding a project or venture by raising monetary contributions from a large number of individuals, typically facilitated through online platforms. It represents a form of collaborative financing and alternative fundraising. As of 2015, the global crowdfunding market surpassed US$34 billion in funds raised. While similar concepts may be executed through methods such as mail-order subscriptions and fundraising events, the term "crowdfunding" specifically refers to internet-mediated platforms.

This modern crowdfunding model typically involves three primary entities: the project initiator who presents the idea or project seeking funding, individuals or groups who contribute funds to support the idea, and a facilitating organization or platform that connects the parties involved to launch the idea. Crowdfunding has been utilized to finance a diverse range of ventures, including for-profit entrepreneurial endeavors, creative projects, medical expenses, travel, and community-oriented social entrepreneurship initiatives.

Despite the association of crowdfunding with sustainability, empirical evidence suggests that sustainability plays only a partial role in crowdfunding initiatives. Additionally, crowdfunding has faced criticism for funding fraudulent or unproven treatments, particularly in the realm of expensive and dubious cancer treatments.

In summary, while crowdfunding offers a dynamic and accessible means of raising funds for various projects and endeavors, it is not without its challenges and criticisms, including concerns regarding sustainability and the potential for funding misinformation and fraudulent ventures, particularly in sensitive areas such as healthcare.

2. RELATED WORKS

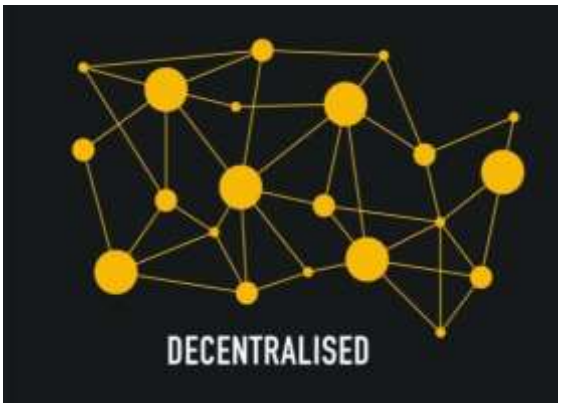
How Blockchain Helps Crowdfunding Fix its Downsides

The effect of blockchain technology on the crowdfunding scene is tremendous, and its true capacity is really unending. In this way, how about we take a gander at the benefits that blockchain execution could bring to crowdfunding application improvement.

Decentralization: The fundamental specialty of blockchain is its decentralized nature. It could impact crowdfunding drives by chopping down the handling expenses. Blockchain doesn't have to draw in middle people or outsiders in monetary exchanges, so it can make crowdfunding significantly more reasonable for makers. There's likewise a likelihood that crowdfunding will not have as numerous restrictions with a decentralized organization like blockchain. To send off a mission now, a startup needs to have a group of people prior to raising support begins. Blockchain-based crowdfunding models could empower makers to begin raising funds not on one but rather on numerous platforms making beneficial mixes. With blockchain execution, B2B organizations or the individuals who produce administrations rather than items will have an opportunity of a lifetime for perceivability

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Tokenization: Tokenization can make the value kind of crowdfunding much better. With tokens, investors can have a valuable portion of the task they are funding. It has a few benefits for crowdfunding application improvement, so we should investigate them.



1. Better visibility for additional fruitful activities. Since investors will have resources of a startup they decide to subsidize, this will demonstrate the greater part's viewpoint on its point of view. This, thus, will spur different investors to investigate the best undertaking of blockchain-based crowdfunding.
2. More expenses to spend on employing. New companies frequently experience an absence of expenses and at times can't bear to shape a promoting division which places them in an awkward circumstance. Gathering pledges can be harsh without legitimate showcasing, however blockchain-based crowdfunding application advancement could transform new businesses into representative possessed organizations. On the off chance that tokens are resources and can be transformed into the inner money for new companies to enlist, they can shape a fair local area without significant expense misfortunes.
3. Straightforwardness and security. Blockchain technology is known for being transparent and extra got. In crowdfunding, this would be particularly significant thinking about this industry's concerns. Smart contracts can move funds to a startup just for an assigned achievement, so there's no space for extortion in this kind of raising money. Moreover, investors are furnished with tokens subsequent to funding a startup which provides them with a type of proprietorship so the fraudulent maker will not move away without any problem. Cost-efficiency and security

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are indispensable benefits, yet blockchain technology can accomplish more. We should investigate how smart contracts can improve crowdfunding.

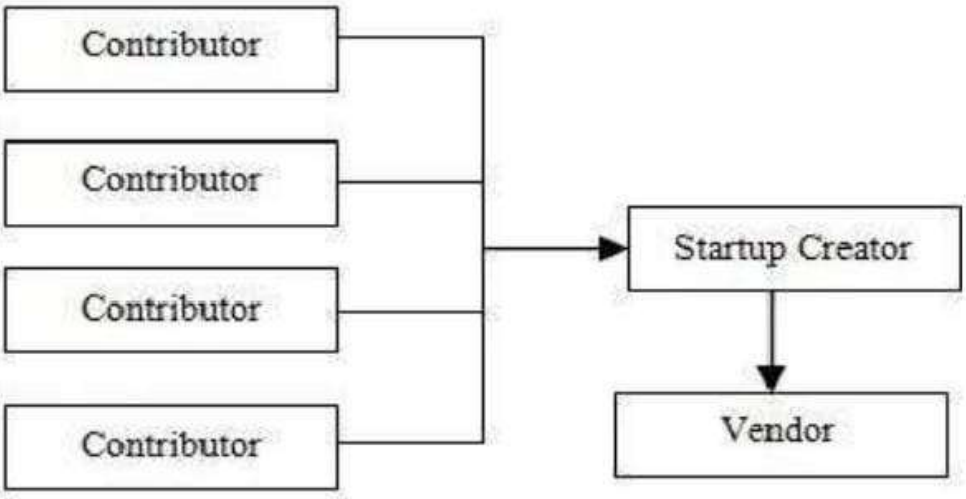
Survey of Existing Systems

1) Crowdfunding stage in a unified system:

In a unified crowdfunding stage, fabricating a dependable connection between the item group and allies is vital. The item group depends on getting funding in view of undertaking progress and fruition, while allies anticipate that their assets should be dispensed appropriately and discounted assuming the venture falls flat. The crowdfunding stage fills in as a broker, charging huge expenses to both the item group and allies to cover dangers like fragmented projects or then again absence of additional help. Nonetheless, the requirement for trust in the stage and high expenses might prevent potential allies and item groups.

2) Research of Good cause:

Researchers have proposed different strategies to build the validity of noble cause associations. For example, Liu Na has proposed the need to manage noble cause in regulation, organization, industry, and society. Bi Rui Xiang has reasoned that Chinese foundation associations have low monetary data revelation. Yu Xi has suggested further developing the responsibility system and government oversight to limit the force of noble cause associations. Wang Jian and Xu Yochai have planned a foundation gift data the executive's system to oversee and expose good cause gifts. Different researchers have investigated the utilization of blockchain technology to oversee and increment straightforwardness in altruistic gifts, including the utilization of Bubi blockchain and Ethereum platforms. Anushka Jayasinghe et al. have even fabricated a Bitcoin noble cause stage in light of blockchain technology to work with protected and advantageous gifts to troublesome regions without a Web association. These investigations all things considered educate our proposed new model regarding a good cause system that influences blockchain technology.



Traditional crowdfunding Approach

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Restrictions in Existing System/Research Hole

1) High Expenses: Crowdfunding platforms have turn into an inexorably well-known choice or startups to raise funds. In any case, one disadvantage of these platforms is the expenses that are charged. These charges can change from stage to stage and might be a decent sum or a level of the aggregate sum raised. For startups, who are in many cases working on strict financial plans, these charges can be a prevention to getting the funds they need. It is significant for businesspeople to painstakingly consider the expenses related with various crowdfunding platforms prior to choosing which one to utilize.

2)Scam Campaigns: While crowdfunding platforms can be an important wellspring of funding for startups, there are sure dangers related with putting resources into these campaigns. One such gamble is the chance of falling casualty to a scam crusade. Sadly, it isn't exceptional for a few deceitful campaigns to show up on crowdfunding platforms, which can result in financial backers losing their whole speculation. This can be harmful for the impacted financial backers as well as for the standing of crowdfunding platforms as a entirety.

3) Non-Straightforward: Straightforwardness is a basic perspective of any monetary exchange, and this is the same with regards to crowdfunding platforms. Nonetheless, at times, the exchanges on these platforms may need straightforwardness, making it challenging to follow the wellspring of the funds. This can be a worry for financial backers who need to know where their cash is going and the way things are being utilized. It is significant for crowdfunding platforms to guarantee that all exchanges are straightforward, with clear documentation and divulgence of the progression of funds.

4) Centralized Authority: One concern is the centralized authority that controls and deals with the information. This centralized authority has the capacity to change and alter information, making it defenseless against information robbery and misfortune in case of a cyberattack or reinforcement disappointment. Centralized control can be a gamble for the two financial backers and startups, as it puts their information and interests in the possession of a solitary element.

3. METHODOLOGY

Crowdfunding has emerged as a popular mechanism for raising funds for various projects, initiatives, and charitable causes. Traditional crowdfunding platforms often involve intermediaries, which may lead to increased transaction costs, delays in fund disbursement, and concerns regarding transparency and accountability. In response to these challenges, blockchain technology offers a decentralized alternative that promises greater efficiency, transparency, and security in crowdfunding processes. This research paper presents a methodology for developing a crowdfunding decentralized application (DApp) using blockchain technology, specifically focusing on the Ethereum blockchain, Solidity smart contracts, React.js frontend framework, and Tailwind CSS for styling.

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The foundation of the crowdfunding DApp lies in the design and implementation of smart contracts using Solidity, Ethereum's native programming language for creating decentralized applications. The smart contract logic includes functions to facilitate fund collection, track funding progress, manage refunds in case funding goals are not met, and enable fund withdrawal upon successful completion of the campaign. Security features and access control mechanisms are integrated into the smart contracts to mitigate risks associated with crowdfunding activities on the blockchain.

To enable user interaction with the crowdfunding DApp, the frontend is developed using React.js, a popular JavaScript library for building user interfaces, and Tailwind CSS for responsive and visually appealing design. The frontend interface allows users to view project details, contribute funds securely through blockchain transactions, monitor funding progress in real-time, and track campaign results. Integration with web3 libraries facilitates seamless communication between the frontend and the Ethereum blockchain, enabling users to interact with smart contracts directly from the DApp interface.
Deployment of the smart contracts is conducted on the Sepolia test network, a Ethereum test network suitable for research and development purposes. The choice of Sepolia facilitates testing and experimentation without incurring actual transaction costs on the Ethereum main network. Thorough testing and debugging are conducted to ensure the functionality and security of the crowdfunding DApp, encompassing unit tests, integration tests, and security audits to identify and address potential vulnerabilities.

The incorporation of the third web, facilitated by libraries like Web3.js or ethers.js, plays a pivotal role in bridging the frontend interface with the Ethereum blockchain. Through the integration of web3 libraries, the crowdfunding DApp enables seamless communication between the decentralized application and the blockchain network, allowing users to interact with smart contracts directly from the user interface. This integration facilitates functionalities such as querying blockchain data, initiating transactions, and listening for events, thereby enhancing the overall user experience and accessibility of the crowdfunding platform.
Additionally, the utilization of the third web empowers developers to leverage the full potential of blockchain technology while abstracting away the complexities of interacting with decentralized networks. By providing intuitive APIs and abstractions for interacting with smart contracts, web3 libraries streamline the development process and enable developers to focus on designing compelling user experiences and implementing innovative features within their DApps.

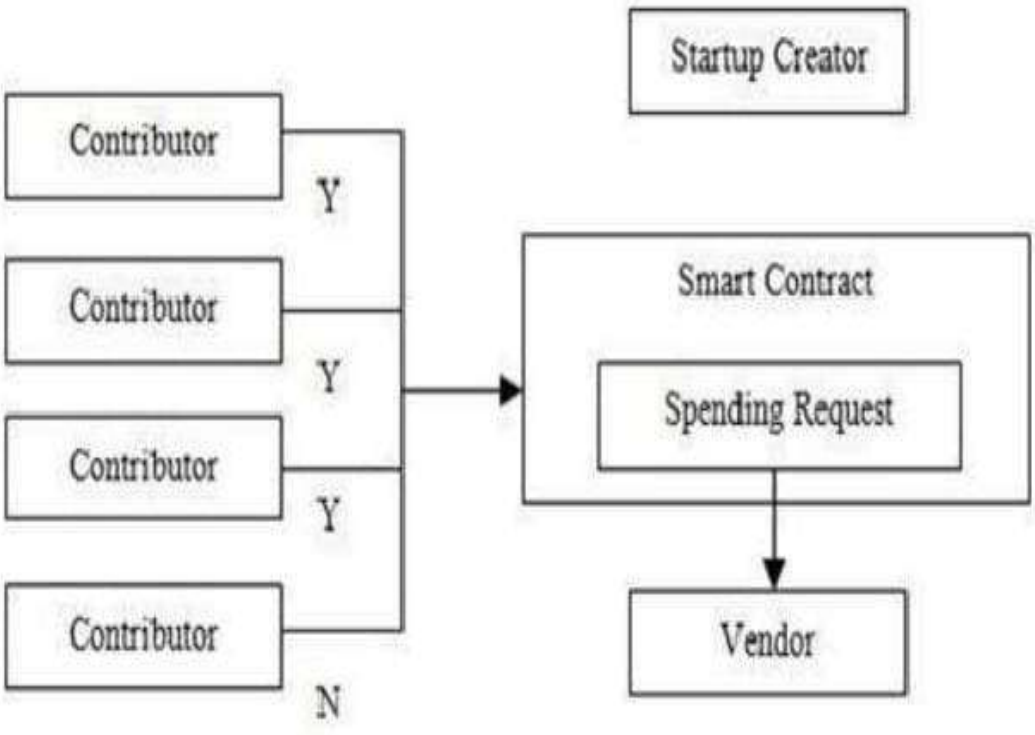
Moreover, the integration of the third web extends beyond basic transactional functionalities, offering opportunities for advanced features such as decentralized identity management, decentralized storage solutions, and integration with external oracles for accessing off-chain data. These capabilities expand the scope and functionality of decentralized crowdfunding platforms, enabling developers to explore new use cases and unlock additional value for users and stakeholders.
In summary, the integration of the third web represents a critical component of developing decentralized crowdfunding applications, facilitating seamless interaction between users, the

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frontend interface, and the underlying blockchain network. By harnessing the capabilities of web3 libraries, developers can unlock the full potentialof blockchain technology and deliver compelling, user-centric crowdfunding experiences that prioritize security, transparency, and accessibility.

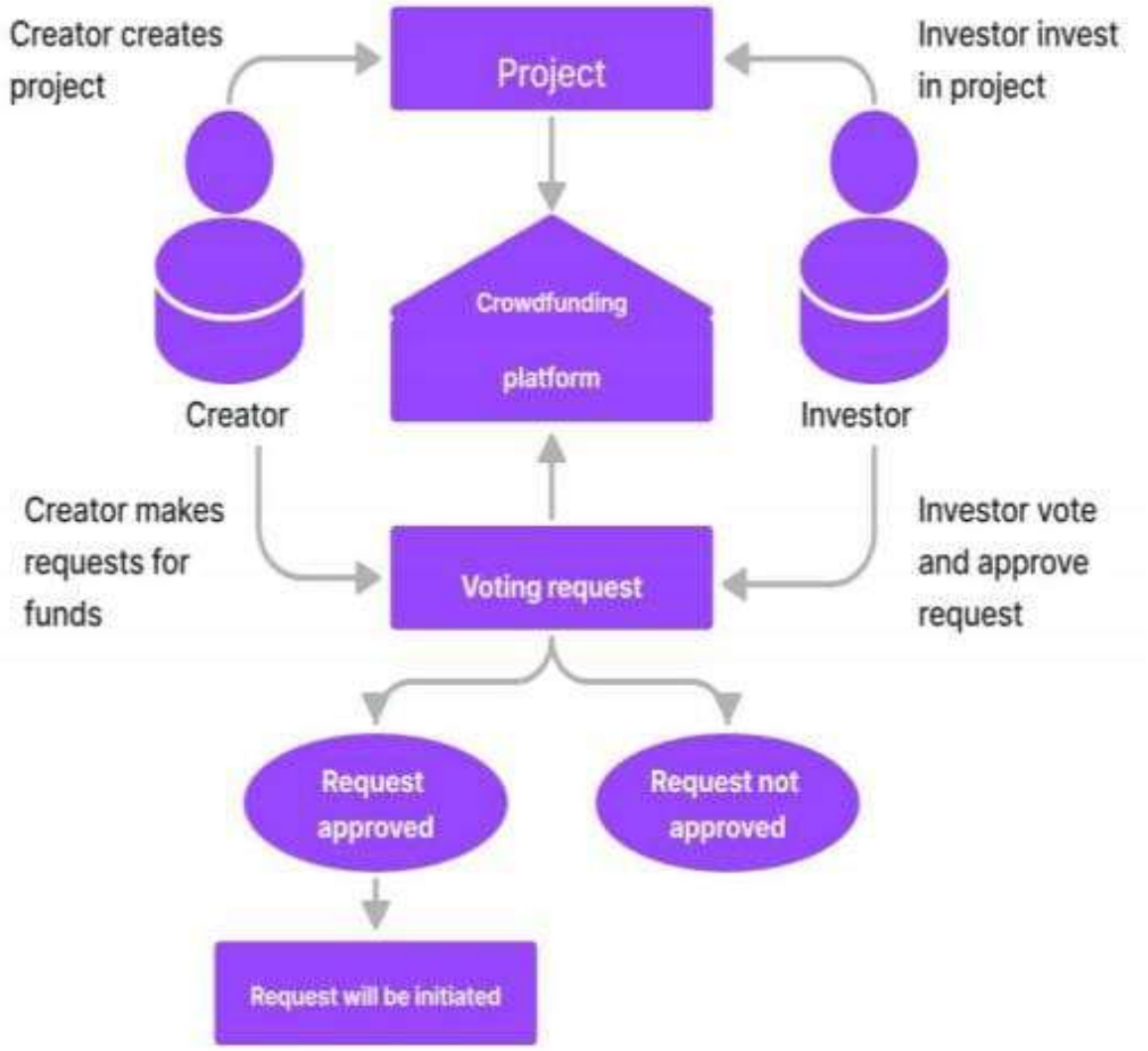
In conclusion, the development of a crowdfunding DApp using blockchain technology represents a significant step towards reimagining traditional fundraising mechanisms and fostering financial inclusion and innovation. By leveraging the transparency, security, and efficiency of blockchain technology, decentralized crowdfunding platforms have the potential to empower individuals, communities, and organizations to bring their ideas to fruition and create positive social and economic impact on a global scale. However, realizing this vision requires a multidisciplinary approach, collaboration across stakeholders, and ongoing research and innovation to address the technical, regulatory, and societal challenges inherent in the decentralized crowdfunding ecosystem.



Smart contract role in monitoring of each transaction

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Process Design

4. RESULTS AND DISCUSSION

The effect of blockchain technology on the crowdfunding landscape is huge, and its potential is really endless. In this way, we should take a gander at the advantages that blockchain. Execution could bring crowdfunding application advancement. In the future, most advancements all over the planet are supposed to utilize blockchain as an effective method for making on the web exchanges. One of the areas that blockchain innovations can be applied is crowdfunding platforms. The most well-known issue with the current crowdfunding scene

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around the world is that the campaigns are not directed, and a portion of the swarm funding campaign ended up being misrepresentation. In addition, the finishing of certain ventures likewise was fundamentally deferred. This venture plans to settle these issues by applying Ethereum smart contracts to the crowdfunding site to that the contracts will be completely naturally executed, hence forestalling cheats, furthermore, guaranteeing that the undertakings can be conveyed inside length given.

5. CONCLUSION

A blockchain-based crowdfunding platform holds the promise of enhanced reliability and credibility compared to traditional crowdfunding platforms, leveraging the inherent features of blockchain technology such as immutability, decentralization, and transparency. All transactions within a blockchain-based system are permanently recorded on the blockchain, ensuring transparency and irrevocability. This diminishes the reliance on intermediaries and fosters greater trust among participants. Furthermore, smart contracts can be utilized to automate fundraising processes and enforce terms and conditions, bolstering security and reducing the risk of fraudulent activities.

Ensuring Reliability, Transparency, and Trustworthiness - A blockchain-based solution can employ smart contracts to meticulously track and manage every transaction conducted by the product owner. Before any expenditure, the product owner must submit a spending request detailing the resource and budget allocation. Each spending proposal undergoes a voting process where donors cast their votes. If a majority of contributors approve the expenditure request, only then can the product owner proceed with the transaction. This inclusive approach engages investors in every aspect of the transaction, thereby enhancing the transparency, reliability, and trustworthiness of the crowdfunding platform. The immutable nature of blockchain ensures that once a block is added to the chain, it remains unaltered, thereby fortifying the security of the system.

B. Emphasizing Security and Decentralization - A blockchain constitutes a decentralized database shared among network components. Once data is validated and appended to the blockchain, it becomes exceedingly challenging to manipulate or erase, as any attempted change would be rejected by subsequent blocks in the chain due to mismatched hashes. The blockchain's integrity remains intact, and any attempt at data alteration would lead to a blockchain failure, thus highlighting the reason behind the change. Unlike traditional datasets susceptible to alterations or deletions, blockchain ensures data immutability, thereby enhancing application privacy. However, while blockchain technology exhibits significant potential, its current iteration may hinder its full realization. Coordinated research efforts are necessary to enhance its capabilities and support the development of intricate applications that can effectively operate within the network.

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