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Crowdfunding Platform Using Blockchain

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***Abstract*—** Crowdfunding, a method that permits people who own businesses to make fundraising requests, is a unique and fresh methodology to supporting diverse business ideas. Businesses might be educational or commercial. Capital is regularly exchanged for future products or services. This comprises leveraging social media to link investors and businessmen. internet in exchange for financial incentives to fund alternative business ideas. Social media and the Internet are rising platforms. The internet and social media are critical fundraising tools for charity groups such as dealers. This article discusses the importance of technology in crowdfunding after providing a brief overview of the numerous crowdfunding platforms that have recently emerged. Crowdfunding relies on trust between investors and stakeholders. New technological advancements hold enormous promise for businesses and private crowdfunding. Blockchain-based crowdfunding platforms bring in a lot of money from sponsors and investors and boost the legitimacy of many different projects and enterprises. Key concepts include blockchain technology, collaboration, smart contracts, and crowdsourcing.

Keywords*—crowdfunding, business idea, smart contract, crowdsource, Blockchain.*

I. INTRODUCTION

Simply described, crowdfunding is the practise of using a group of individuals to support an initiative or project instead of more traditional institutions as banks or lenders. According to Freedman and Nutting [1], crowdfunding is a strategy for gathering lots of little donations using an internet fundraising page in order to support or advertise well-known companies. His three parties were primarily involved in the crowdsourcing campaign: The ability to quickly increase the required value is the biggest benefit. Indeed, a large number of people today use social media websites. This implies that project owners can utilize these channels to temporarily make them public [2]. Because it can be more challenging to obtain loans from banks or other investors, many creators use crowdfunding to finance their projects [3]. This is because processing mortgages typically takes some time. Numerous research have discovered additional non-financial advantages of crowdsourcing. Participants in crowdfunding, for instance, can raise brand recognition and corporate promotion while contributing valuable involvement and input to the initiative [4]. Schlueter [5] identified two primary advantages of crowdsourcing. The crowdfunding is more appropriate, which is the first benefit between investors and inventors from all over the world. Another benefit is that investors can get more information, even at the project's early stages. Investors can be inspired to participate in such crowdfunding events by this data because it has such high value to them. Although it offers certain benefits, there are still many issues with crowdfunding which need to be resolved. The main problem with traditional crowdfunding is fraud [6]. He claims that online fundraising exposes participants to fraud because conventional legal and social safeguards may not have been effective. This is emphasised further in [7], which asserts that license is not required for publishing and claims that there are few legal obligations to fulfil after an initiative is completed. More research has identified the following two issues with crowdfunding: 1) Significant award delays; or 2) drive initiators delaying delivery dates for backers by more then six months. or 3) The promised goods hasn't received, and the customer support agent hasn't offered a satisfactory explanation. Reimbursement [8]. In a different poll, or more 75% of crowdfunding delivered items later than expected [9]. Through the incorporation of payment systems into your crowdfunding system, you may create a contract that holds donor Capitals in storage until a particular deadline or goal is achieved. Depending on the conclusion, the money will either be securely repaid to the donors or given back to the project owner. A blockchain is a decentralised database that contains records of each transaction that takes place and that is sent back and forth between parties. Blockchains are characterized by decentralisation, permanence, anonymity, and data verifiability [10]. A blockchain system is composed of two main components transactions and blocks. Transactions represent actions triggered by participants, while blocks are tuples that record transactions and other relevant details like exact order, creation timestamps, and more. [11The data or blocks of transactions in the blockchain tamper-resistant because they are linked cryptographically [12]. This means that every inserted No block can be edited or removed. To establish assurance, the Consensus algorithms are used in blockchain. This aims to guarantee that every node in the system has the same copy, doing away with the requirement for network wide assurance. Mining refers to the process of creating agreements on a blockchain. Because mining makes all of the data associated to the ledger secure and immutable, it is crucial [13]. Unpopular consensus algorithms include Byzantine Fault Tolerance, Proof of Stake, and Proof of Work (BFT).Many industries around the world have been disrupted when it comes to its implementation, due to the various advantages blockchain has over conventional systems. These include finance and insurance, real estate, the

arts, and recreation, and more.[14] benefits of utilizing blockchain technology include its capacity for high productivity and low cost.. Furthermore, you can assurance the integrity of your blockchain data. Indeed, once in the ledger, it cannot be manipulated anymore [15].The only issue with employing blockchain technology is the distributed systems' high energy and processing resource consumption. . Blockchain technology can facilitate cybercrimes like money laundering, internet poker, get rich-quick scams, extortion, unlawful transactions, and financing for terrorism [17] because of its anonymity. Smart contracts are one of the appealing aspects of blockchain technology. The downloadable code that operates also on blockchain to facilitate, carry out, and enforce the contract's provisions is referred to as a "smart contract." When certain requirements are met, a contract is automatically executed [20]. On a variety of platforms, including Bitcoin, NXT, Ethereum, etc., smart contracts can be employed. It involves the account balance, the memory file, as well as the programmed code. By publishing transactions upon that blockchain network, people can construct contracts [18]. One application area for blockchain is the crowdfunding industry. The majority of the crowdfunding platforms currently in use are centralized platforms, which can result to some platforms like Wei Fund, Acorns, and Cubit. Users are able to create drives utilizing Wei Fund's smart contract, which powers the platform. Users can also design their personal smart contracts. Currently, Wei Fund is in alpha. Cubit and Acorn remain in the major ICO phase, in the meantime. In Malaysia, meanwhile, bitcoin crowdfunding is still in its early stages. The state of crowdfunding in Malaysia is depicted in Table 1. Government Central Bank is still examining the usage of cryptocurrencies in Malaysia (CBM). In Malaysia right now, using Cryptocurrencies is not prohibited, but it is also not accepted as legal [17].

II METHOD OF REASEARCH

A. *Motivation*

The money raised through crowdfunding is given directly to the startups working on the projects because the existing crowdfunding applications do not guarantee the security of fundings made by backers, or investors. As a result, those applications cannot guarantee that the projects listed on their respective websites will be completed. As a result, since there is no assure that the project they provided will be finished and, consequently, does not guarantee the investors' returns, this could end up in potential losses for those investors.

The project tries to end the issue by employing a strategy that guarantees projects are completed and funds are spent appropriately. The strategy developed, claims that a smart contract would be used to hold the entire amount of funding rather than transferring it straight to the firm. Startups will need to reach predetermined goals they have established for themselves. Thus, a sum comparable to a portion of the total milestones will be sent to the startup each time a milestone is achieved. The amount that was given to business owners at various project phases is shown below:

Let the total milestones to be completed for the project be n.

After each milestone is completed by the startup, $\frac{1}{n}$ times the total amount stored in the smart contract will be transferred to the startup. This is how eventually the startup will get the full funding transferred to their account.

The program will also promote open communication between investors and entrepreneurs, enabling investors to track the development of the projects for the various businesses in whom they have made financial investments.

In the event that the project is abandoned in the middle, money will be returned to the backers. The following displays the amount reimbursed to the supporters on different phases of the project, and how it will be determined in accordance with those stages:

Let n be the total amount of project milestones that have to be accomplished.

- If no milestones have been completed yet and the project is aborted at this stage, then the whole amount that the backers funded is refunded to them immediately.
- If the milestone that is completed is m and the project is aborted at this stage, then the amount funded to the backers will be $\frac{n-m}{n}$ times the total amount funded by that particular.

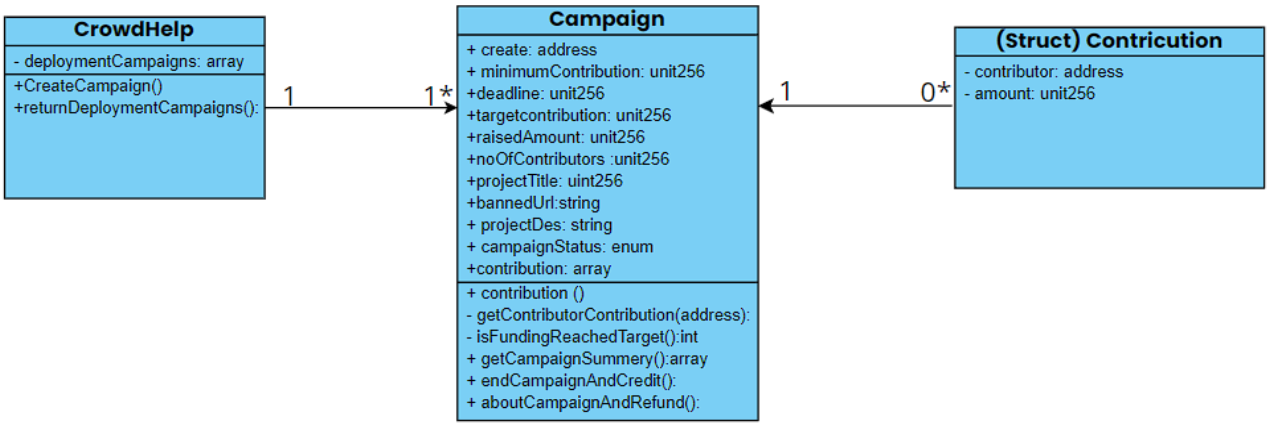
B. *Class Diagram*

A visual notation used to build and display object-oriented systems is the UML Class diagram. An example of a static structural diagram is a class diagram in the Unified Modelling Language (UML), which demonstrates a system's:

- classes,
- their attributes,
- operations (or methods),
- and the relationships among objects.
- A Class is a blueprint for an object. Objects and classes go hand in hand. We can't talk about one without talking about the other. And the entire point of Object-Oriented Design is not about objects, it's about classes, because we use classes to create objects. So, a class describes what an object will be, but it isn't the object itself.
- In fact, classes describe the type of objects, while objects are usable instances of classes. Each Object was built from the same set of blueprints and therefore contains the same components (properties and methods). The standard meaning is that an object is an instance of a class and object - Objects have states and behaviours.

Description Of Class diagram:

- This entire application is represented by the CrowdHelpcontract (class). It has a method called createCampaign () that, for each new create campaign call, instantiates the Campaign contract (class). A new address will be returned following a successful instantiation, and this address is saved in a private array called deployed Campaigns of type address. The function returnDeployedCampaigns (), which returns all the addresses of deployed campaigns and allows access to each individual campaign, will be called from Homepage. All public attributes are contained in the campaign contract (class), as they will all be accessed outside of the contract. A backer's donation request will result in a call to the method donate (). If the contribution amount exceeds the minimumContribution, which is a value established at the time of formation, it is verified. If passed, it adds the wallet address and contribution amount of the supporter to the contributions array. A backer's current amount will be increased if they give more than once. The amount of the gift will then be added to raisedAmount. When the fundraiser is over, it will call the method endCampaignAndSummary (). If passed, credits all the contributed amount to the fund raiser's wallet address, which is stored in contributor value.



C. Security

The fact that this programme is decentralized, which guarantees that no single individual has control over the entirety of the data flowing over the blockchain, assures that this service offers a strong level of security. Numerous nodes make up a blockchain, and they all work together to store the data that is sent between them. Second, only the admin has the authority to approve a project before it is included in the application. As a result, this prevents money from being wasted and guarantees that legitimate initiatives are visible to the backers. The admin is only able to select whether a project may be featured on the application or not; no additional information is up for decision.

D. Advantage

This programme is a decentralized, efficient, trustworthy, transparent, and secure platform for crowdfunding.
This project aims to fix issues like the involvement of third parties on crowdfunding platforms, the lack of assurances regarding the success of projects funded through crowdfunding, the loss of invested funds, the uncertainty regarding returns to backers, and the lack of a trustworthy, secure, and open crowdfunding platform.

E. Future Scope

The application's functioning prototype presently utilizes a local blockchain without the usage of actual bitcoin. The programme can be made available to the general public as a future update by being put into use on a real blockchain. The programme may be applied to safe crowdsourcing. Innovative projects with market growth potential can receive funding from real investors. The young startups will gain from being able to display their goods on a reliable platform.

F. Technologies Used

Ethereum Platform for developing Decentralized applications.

- Framework
  - Truffle
  - BootStrap5
- Front-end
  - ReactJS
  - MUi
- Back-end
  - Ganache
  - Solidity
- IDE
  - VS-code
  - Remix IDE
- Other Tools
  - Supporting modern browser
  - MetaMask (Browser Extension)

III .RESULTS

A.Objective Achived

Using our project, issues like these are resolved:

- participation of outside parties on crowdfunding sites.
- There are no assurances that crowdsourcing projects will be completed.
- Misuse and waste of investment funds.
- The backers won't receive any guarantees of returns.

Upon achievement of the milestones, the programme makes sure that the monies are properly sent from the smart contract to the startup's account. Additionally, it guarantees that in the event of a project cancellation, the smart contract's leftover money will be distributed to all stakeholders (i.e., supporters) in the proportion that they contributed to the startup's initial funding.

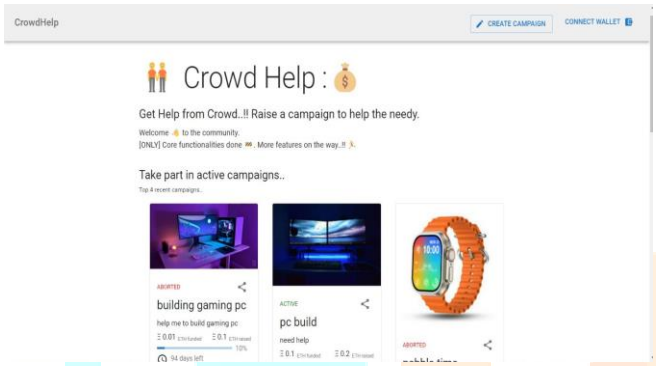


Fig. 1 Home Page

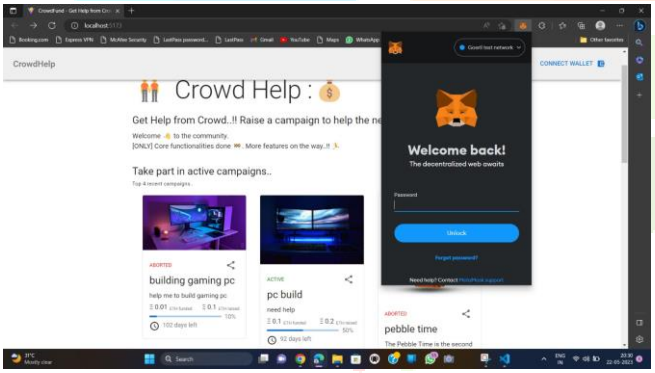


Fig. 2 Connecting Meta mask wallet

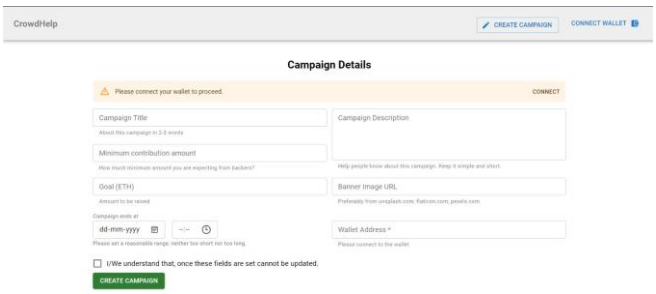


Fig. 3 Creating Campaign

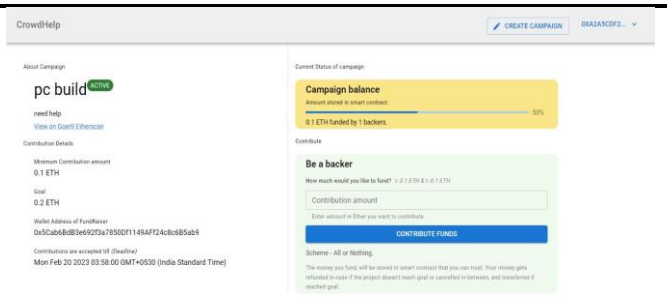


Fig. 4 Active Campaign

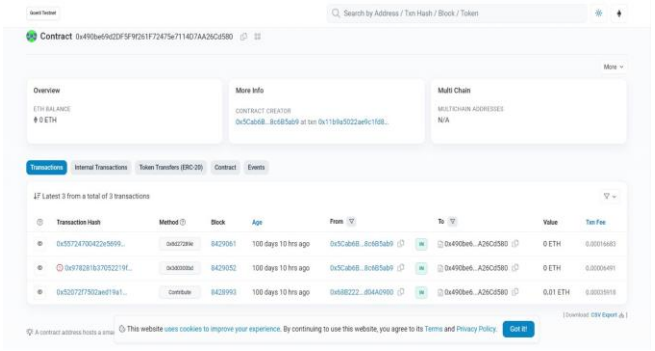


Fig. 5 Ether Scan GUI

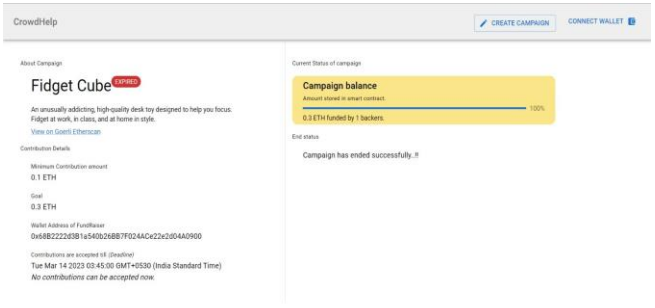


Fig. 6 Expired Campaign

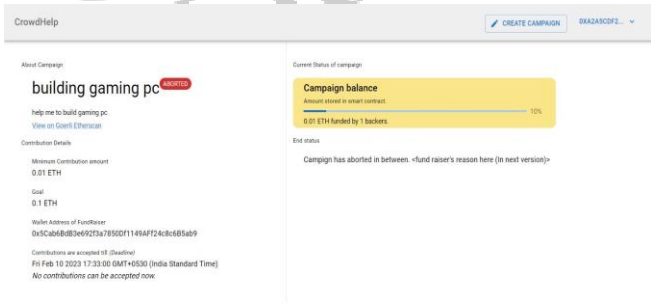


Fig 7. Aborted Campaign

IV. CONCLUSION

A. *Transparency*

The tool upholds openness between investors and entrepreneurs, allowing investors to continuously monitor the development of the startup's initiative. The leftover funds in the smart contract are reimbursed to backers in the proper proportion based on how much they contributed if a business decides to leave a project at any moment.

B. *Reliability*

The money will only be contributed to the smart contract up to the time at which the startup's condition is satisfied, preventing the transfer of any more cash to the smart contract. This programme also makes sure that the total amount of funds that backers may provide at one time is not greater than what the project as a whole requires.

C. *Security*

Although not impervious to attack, blockchain has a stronger line of defense since it is decentralized. To alter a distributed ledger, a hacker or criminal would need to have access to more than 50% of all the devices.

D. *Interactive User Interface*

This application's UI is user-friendly, and both supporters and startups can find detailed instructions on how to use it on a dedicated "Help" page. It also offers a link to a similar explanation in video form.

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