

Fundraising Platform for Startups using Blockchain and Smart Contract

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Abstract. There are various platforms available that allow startups to get funds for the development of their ideas. There are many difficulties in traditional crowdfunding. Approaching investors and verifying the integrity of a fundraising platform are two significant concerns for startups. Crowdfunding is the process of collecting little amounts of funds from a variety of contributors in order to obtain the entire necessary funds. After investment In the return contributors will be get equity in the startup based on their contribution. The campaign creator holds entire control of the fund raised in traditional crowdfunding. He has total control over how the funds are used. These are the most typical and significant problems that occur on the crowdfunding platform. This paper proposes a blockchain-based fundraising platform that links investors directly to startup without the use of a third party, allowing any startup to raise funds by publishing pitches. The major objective of this paper is to allow funders/investors to successfully contribute to any project by building smart contracts that allow contributors to have control over the invested money and project creators and investors to effectively make and reserve financing.

Keywords: Crowdfunding, Start-up, Blockchain, Smart Contact

I. INTRODUCTION

Crowd Fundraising is a popular method of raising funding in which a group of contributors makes small amounts of money or investments. To promote the development of new startups in exchange for equity in their organisation. Trust is essential for all parties involved in fundraising, including the funder, service provider, and fundraiser. Technology, in addition to trust, is crucial. Existing platforms charge a large percentage of the funds raised and leave the new startups with promises. The use of a decentralised platform for fundraising changes the traditional method of new startup investment. The use of blockchain technology builds confidence and ensures that money is collected from valid sources. It validates beneficiaries of payments, increases transparency, and eliminates the need for a middle man. Blockchain based Fundraising platform is a Decentralised Autonomous Organization that encourages fundraising without the control of any central authority and recognizes investors' active engagement in supporting artists or projects while benefiting.

1.1 Types of crowdfunding

Equity-Based Crowdfunding. : Equity is the worth or ownership of a part of a company. In exchange for their investment, investors receive a share in the startup. The concept is comparable to buying and selling stocks on a stock market or investing in venture capital.

Donation-based Crowdfunding. : Unlike the previous form of funding, in this type of funding, individuals pay a little amount of money to fulfil the target goal of the fund specified by the project's organiser and earn no basic material or material benefit.

Rewards-Based Crowdfunding. : In this style, people donate to projects in exchange for benefits, which might be money or products. There are several sites that employ this type of crowdfunding nowadays.

1.1 Blockchain technology

Blockchain functions as an immutable record that enables decentralised transactions. Blockchain is well recognized for its significant task in cryptocurrency systems like Bitcoin in keeping a secure ledger and a decentralised transaction record. The blockchain innovation is that it assures the accuracy and security of data while also generating trust without the need for any trustworthy third party service providers. The way data is arranged is a fundamental difference between a traditional database and a blockchain. Blockchain divides information into groupings called blocks that include sets of information. After a block is entirely

completed, it is closed and connected to the previously filled block, establishing a sequence of data known as a blockchain. The introduction of multiple cryptocurrency, non-fungible tokens, smart contracts, and decentralised financial apps has drastically improved the use of blockchains. Blockchain's goal is to enable digital information to be recorded and widely distributed, but not modified. In this sense, a blockchain serves as the foundation for immutable ledgers, or records of transactions that cannot be changed, erased, or destroyed, also known as distributed ledger technology. A blockchain may hold several sorts of data, although it is most typically used as a record for transactions.

1.1.1 Benefits of leveraging Blockchain technology

This means that users do not have to place their faith in a central authority, which eliminates the possibility of data being sold to other parties and minimises single points of failure. To have a comprehensive knowledge of the blockchain ecosystem, near about 50 Blockchain Development Startups and experts conducted a poll.

Reliability came in third place, with 40 percent of poll participants supporting it. The blockchain's dependability suggests that it is appropriate for a wide range of applications. Every application that needs to store large amounts of data can benefit from the dependability provided by Blockchain technology.

Decentralisation was selected by 33.7 percent of Blockchain experts. This means that users do not have to place their faith in a central authority, which eliminates the possibility of data being sold to other parties and minimises single points of failure. To have a comprehensive knowledge of the blockchain ecosystem, near about 50 Blockchain Development Startups and experts conducted a poll.

To have a comprehensive understanding of the blockchain environment, 50+ Blockchain Development Companies and experts conducted a poll. Transparency and immutability were affirmed by 61.5 percent and 58.5 percent of survey participants, respectively. Without matter what type of transaction occurs using Blockchain, the whole transaction history is shared with every user inside the network. To change any transaction record, network-wide authority is necessary. As a result of its immutability, blockchain data remains consistent and accurate.

Decentralisation was picked by 34% of Blockchain experts. This means that users do not have to place their faith in a central authority, which eliminates the possibility of data being sold to other parties and eliminates single points of failure. With 20% of the vote, further attractions of Distributed ledger technology include cost savings, security, no middlemen, and automation.

1.1.2 Crowdfunding using blockchain

Blockchain provides for decentralisation in raising, which implies that no one website or set of platforms controls its smart contracts, making it transparent to everyone on the blockchain. It is a peer-to-peer network that collectively maintains a standard for inter-node interaction and new block validation, so no one may modify any transaction in the network without the consent of more than 50 percent of the total of the cryptographic nodes. This increases its safety and reliability. Anybody can join a blockchain project on the webpage, and anyone with internet connectivity can donate to the project. Unlike traditional crowdfunding, funders do not have to worry about impossible promises. Because smart contracts will manage all transactions, there will be no need for a third party. Blockchain enables project managers & funders great flexibility, enabling donors to make fractional contributions to the project

1.1.3 Tools and technologies used in blockchain technology

Each blockchain developer must be familiar with the technology and techniques used in software development. It is critical to understand whether developers are using the appropriate technology to save time and money. The following figures were gathered by polling the finest blockchain developers:

With 97.6% of the vote, Hyperledger may be deemed a highly recommended technology among developers.

To develop intersectoral blockchain technology, the Hyper Ledger was formed. The most extensively used private blockchain is Hyperledger, which is hosted by the Linux Foundation. It is mostly utilised in enterprise environments to improve the smoothness and efficiency of transactions across numerous firms. Ethereum received 93 percentage - point approval from poll respondents. Ethereum is a blockchain-based open software platform that allows developers to create and deploy decentralised applications. It is a decentralised public blockchain network that is not governed by a single body. EOSIO is the third-most-used tool among poll respondents. It received 60% of the vote among blockchain developers. The native cryptocurrency EOS powers this public blockchain. Some more tools and technologies to consider are Parity, multichain Hedera Set, R3 Corda, and Credits with Votes. This research was also completed by 18% of the registrants.

1.2 Review of Literature

In the paper [1] "Platform for Tracking Donations of Charitable Foundations based on Blockchain Technology" by Hadi Saleh, Sergey Avdoshin and Azamat Dzhonov proposes a description of how the blockchain-based platform for tracking donations will be implemented. The platform encourages transparency based on blockchain, of activities to donors, charitable organizations, and recipients. The charity website offers a clear path for donations, allowing users and donors to keep tabs on where, when, and to whom resources for charity funds are going.

The paper [2] 'BitFund: A blockchain-based crowdfunding platform for future smart and connected nation' describes how to create a safe crowdfunding system based on Ethereum smart contracts that uses a bidding method and an iterative auction algorithm that allows developers to change their bid amounts over iterations to increase their chances of winning. With this approach, there is no longer any need for manual talks between investors and developers over any aspect of the project.

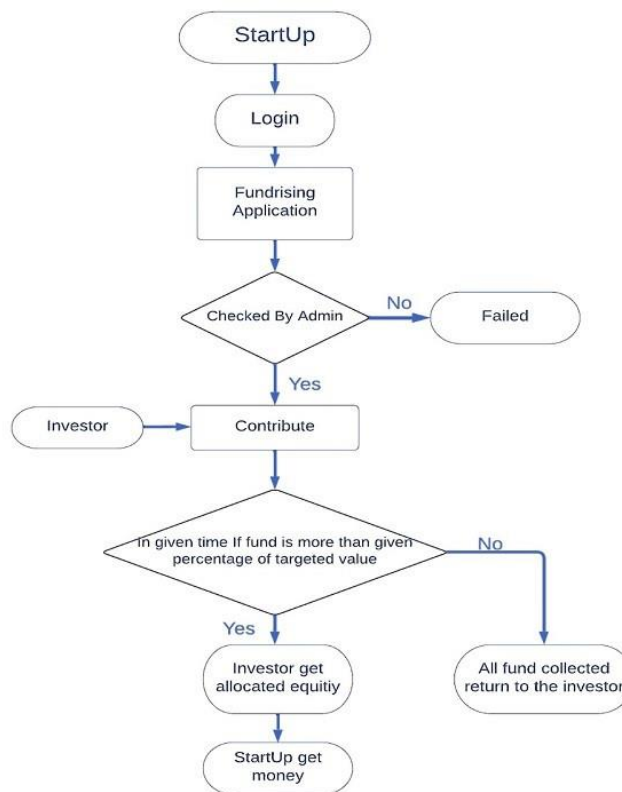
The paper [3] "Venturing Crowdfunding using Smart Contracts in Blockchain" proposed by Nikhil Yadav and Sarasvathi is a decentralized system that enables investors to fund projects using smart contracts, ensuring that contributors have complete control over their invested funds and that both investors and project creators can successfully raise money for the project. The technique that is suggested in this paper consists of two smart contracts, the first of which stores all the projects and the second of which manages the transactions for each project. The principal actors across all crowdsourcing platforms are the project manager, contributors, vendors, smart contract, spending request, and voting system. The solidity compiler is used to compile the smart contract into a form that can be deployed on the Ethereum network. All transfers are carried out using Metamask, a wallet that is accessible through a browser.

In the paper [4] "Crowdsourcing and crowdfunding platform using blockchain and collective intelligence" by Dhokley, Er Gupta, Saurabh Pawar, Ganesh Shaikh, Abrar According to analysis, crowdsourcing and crowdfunding are still in their infancy in India. Indians have not yet widely accepted internet crowdfunding because it is a very new concept. Despite some underlying difficulties, online crowdfunding support in India will ultimately succeed greatly. Capital and human resources are two essential components of any company. This is especially true for new, low-level organizations and startups, as these entities frequently battle to combine the necessary resources and capital. Additionally, the security component of this system will benefit from the use of blockchain.

1.3 Proposed Model

Whereas fundraising involves a large number of transactions, smart contracts are utilized to conduct and document the operations lawfully. It is an automated transaction protocol.

On behalf of project managers and investors, implements, controls, and documents transaction activity in accordance with the agreement. This article presents a technique that involves two smart contracts, one of which holds all projects and the other which manages transactions for each project. There are three major elements in any fundraising platform: project manager, funder, and smart contract. Fundraising is divided into three parts.



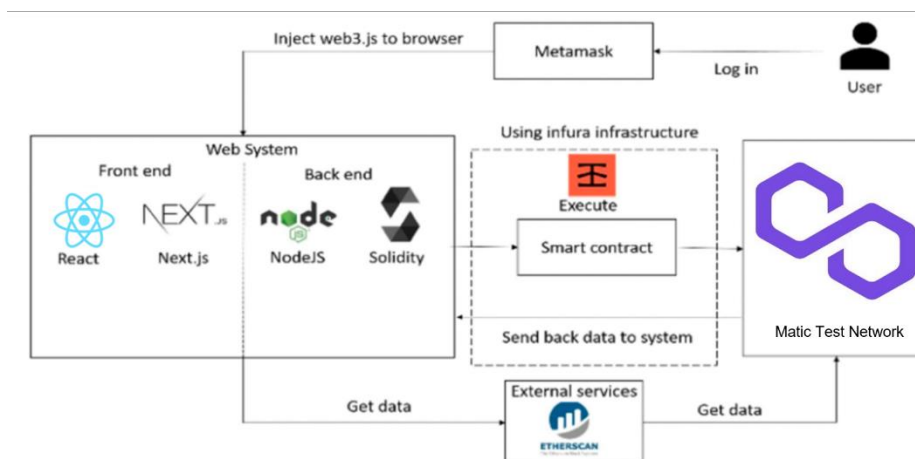
1.3.1 Registration and verification

Users must first register themselves utilising the Universal login mechanism. It specifies the login flow, which is the most important element of an Authorization Server. When a user has to confirm their identity, our application switches to Universal Login, and does everything necessary to ensure the user's identification. To identify oneself as a funder, people must first register as an investor by supplying a unique identification number. If user wants to get funding for their venture then the project

The manager has to register himself as an organiser.

1.3.2 Project development

After registering as an organiser, the project manager may begin the project by providing the startup's name, a description of the firm, the amount and length of the funding, and so on. The project will remain active till the deadline is met. If the goal amount is reached before the deadline, the funds will be sent straight to the project manager's Metamask wallet. If the project fails to meet its deadline, those who have invested have the option of reclaiming their money. It is not permitted for project managers to fund their own projects.



1.4 Implementation

To implement platform, a smart contract is required which has to be written in solidity language. The code is compiled and deployed in ethereum blockchain using remix IDE 0.5.4+commit.9549d8ff (solidity version 0.5.4) compiler. Metamask is used for all the transactions. Procedure for building funding platform:

- Step 1: Creation of smart contract and compilation
- Step 2: Deployment of bytecode to ethereum blockchain
- Step 3: Integrating smart contract with the UI and enabling user authentication

1.4.1 Creation of smart contract and compilation

Smart contract is a simple agreement in the form of code/program which is stored on a blockchain and is triggered when defined conditions are met. These contracts are typically used to automate the execution of an agreement so that all the beneficiaries can immediately know the outcome, without involvement of any third party or any time loss. This model has 2 contracts Crowdfunding and Project. The Crowdfunding contract acts as a container for all the Project contracts that will be created. Every new project will have a contract of its own. The Project contract instantiated through the Crowdfunding contract handles all the methods that can be performed in every crowdfunding project. The smart contract is compiled in Remix IDE. Every deployed contract generates ABI code which is a standard way to connect contracts in ethereum ecosystem. It helps in contract to contract interaction and outside blockchain interaction.

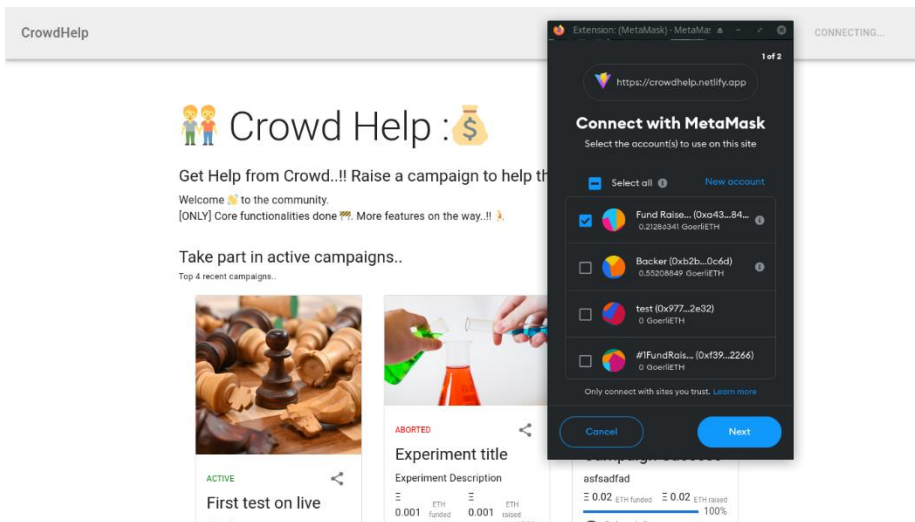
1.4.2 Deployment of bytecode to ethereum blockchain

Every deployed contract has its ABI and bytecode. Bytecode is a hexadecimal representation of the compiled contract which can be understood only by EVM. EVM (Ethereum Virtual Machine) is the core element of Ethereum network, and smart contract is a piece of code stored on the Ethereum blockchain which are executed on EVM. The bytecode can be deployed to either ropsten test network or ethereum live network. After deploying, it returns address which can be used to locate contract is deployed and user can make the transactions.

1.5 Result

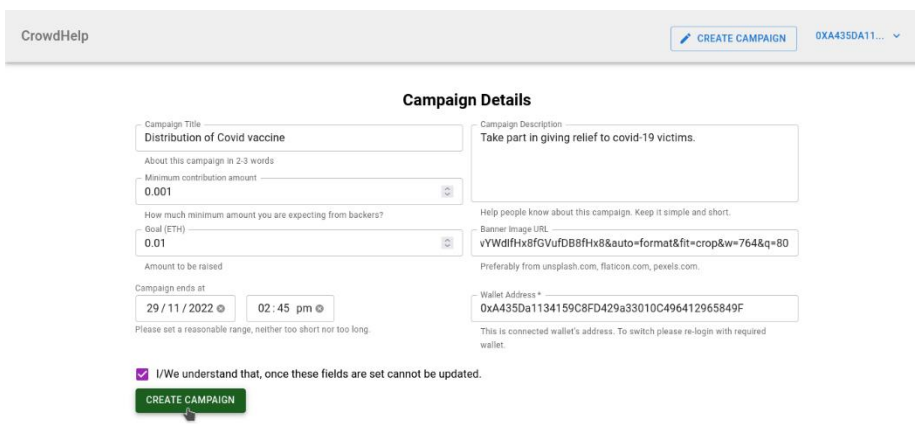
1.5.1 Wallet connection

- Click on Connect Wallet at top-right in navbar.
- Select the accounts you would like to connect with the site.

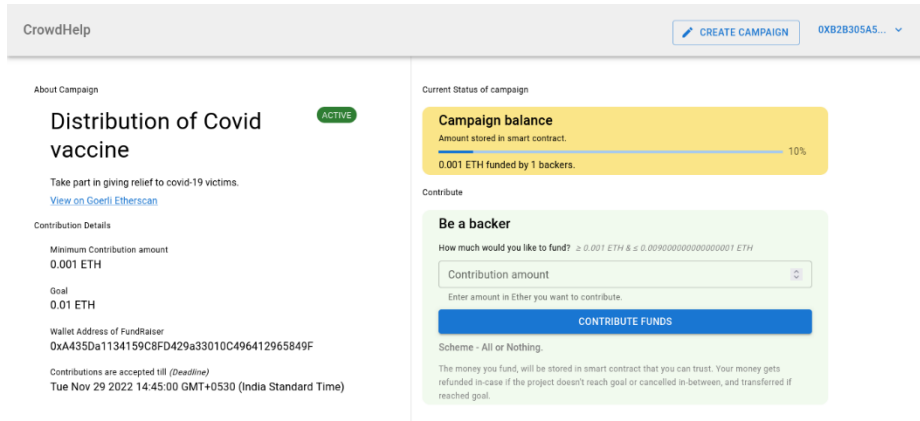


1.5.2 Campaign Creation & displaying

- Click on Create campaign button at top-right in navbar.
- Fill the details.



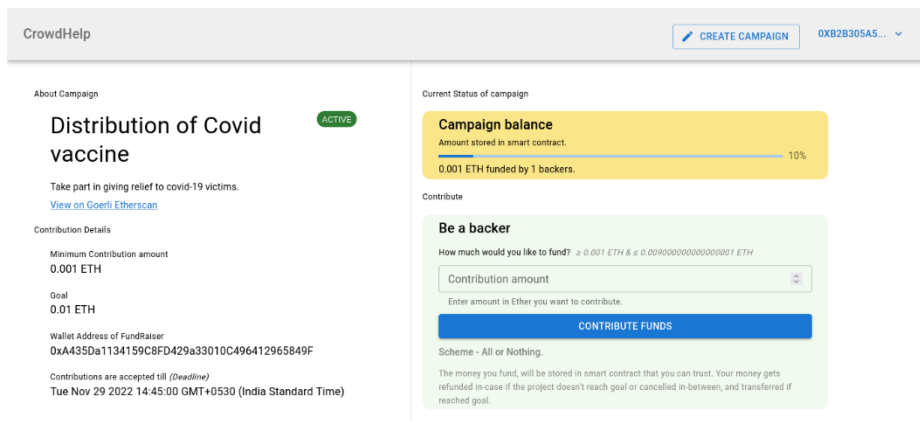
When fundraiser clicks on the campaign which they had created. Notice that, both are of same addresses, the connected wallet address (at top-right) and in the Wallet address of Fundraiser.



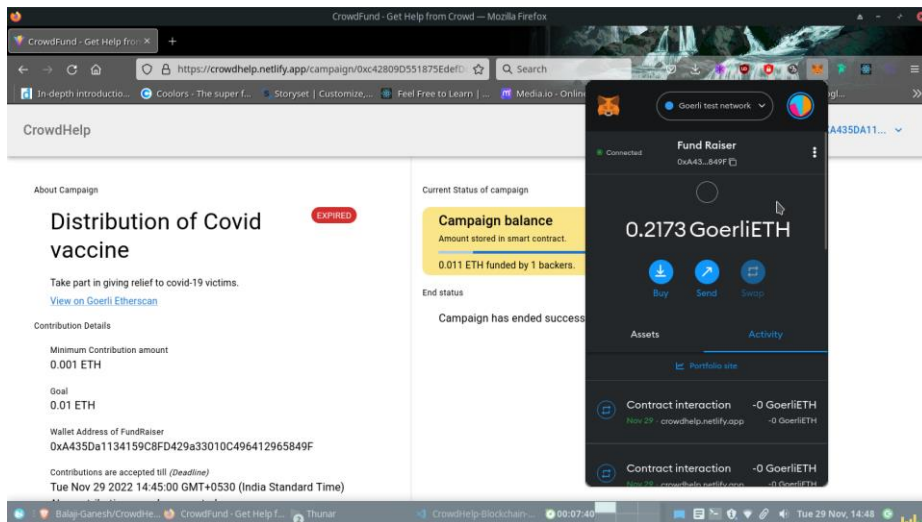
3. Contributing to campaigns

1.5.3 Contributing to campaigns

When public/backer clicks on the campaign which others had created. Notice that, both are of different addresses, the connected wallet address (at top-right) and in the Wallet address of Fundraiser.

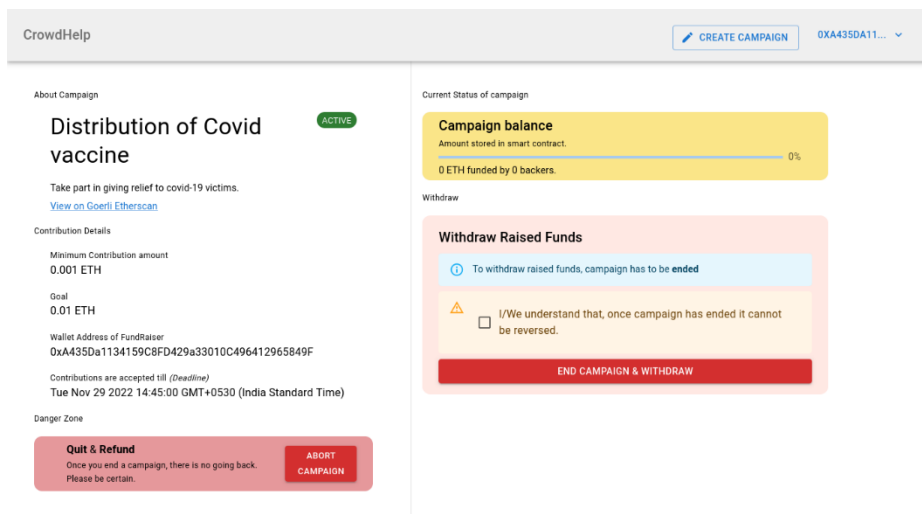


Fundraiser's wallet after successful end.



1.5.4 Aborting Campaign

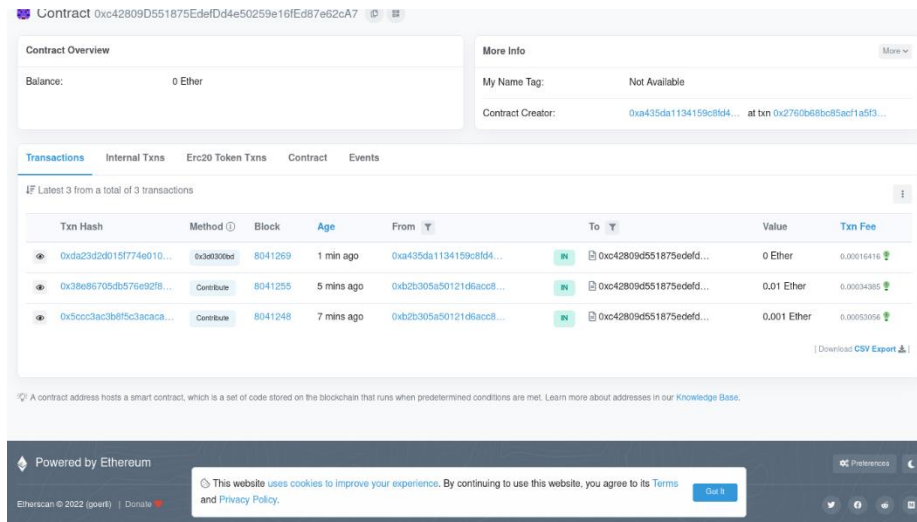
- Fund raiser clicking on Aborting campaign.
- Fund raiser filling the reason for aborting and accepting the condition of refund to backers.
- Fund raiser authenticating the transaction with the wallet.



1.5.5 Viewing [any] campaign's transactions

Any user can view the campaign's transactions in etherscan.io -- By clicking on View on Goerli etherscan link on any campaign page.

This opens up a new page of goerli.etherscan.io, showing the transactions.



2 CONCLUSION

A smart contract can be developed using a blockchain-based system that monitors and controls all transactions the product owner performs. To spend funds in any resource must first be specified in a spending proposal that is submitted by the product proprietor, along with the requested sum. Each expenditure proposal receives a contributor vote, which is recorded by the voting system. Only after receiving approval from more than half of the contributors can the product proprietor continue to pay for the resource. This approach involves donors in every transaction, which increases the crowdsourcing platform's transparency, dependability, and reliability. Once a transaction is put to the blockchain, it cannot be modified or removed, which increases the security of the application.

Finally, we can state that blockchain funding is a more recent and secure idea than traditional approaches.

Up to this point, the solidity compiler in Remix has been used to effectively write and build solidity code for new applications. Bytecode was the solidity compiler's output, and metamask was used to launch the interface into the Ethereum network. After the project is deployed, a decentralised web application is made with Web.js and Vue.js that has a frontend for enrolling as a project manager or investor, starting a new project, and making an investment in a project. Our suggested work has a promising future and plenty of room for growth and evolution given the development of blockchain.

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