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Trusted Crowdfunding Using Blockchain

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ABSTRACT: Online crowdfunding enables people to raise funds for their project. People who are interested in a project can donate by making an online transaction. The donated money goes to the project manager, which he uses to complete the project or to make a product. This existing method of online crowdfunding has a major drawback.It does not allow contributors to have control over the money they have contributed.Since in the existing method the project manager has all the control over the money contributed he can very easily perform malicious activities. Here we address this problem faced by the existing online crowdfunding platforms by using ethereum network and smart contract. The development of Blockchain technology has allowed businesses to build decentralized models. One of the technologies that propose an alternative to the traditional model is the smart contract.A method has been proposed here that uses smart contracts to manage all the activities performed in a crowdfunding campaign.

KEYWORDS: Blockchain, Ethereum, Smart Contracts, Decentralized Applications

I. INTRODUCTION

The blockchain is an incorruptible digital ledger that records every transaction. It is a distributed system thus all the records are stored in every node in the decentralized network. Ethereum allows running applications in the blockchain called Smart Contracts. All the Smart contracts are run on the Ethereum Virtual Machine. Crowdfunding provides an easy way to find cash for innovative project ideas. The problem with the current crowdfunding companies charging high fees and sometimes there were scams happened. Implementing a crowdfunding strategy in blockchain will help to avoid these types of problems. By incorporating Peer to Peer smart contract for crowdfunding remove the traditional transaction fees and platforms fees normally associated with other crowdfunding platforms, such as Kickstarter.

The objective of our project is to create a reliable application so that every new idea gets life. We have designed a crowdfunding site which is a blockchain based website. We provide an easy to use interface for everyone to create and post their ideas on this application. These ideas then become public to everyone. Anyone who wishes to support their ideas can contribute. All these processes are done in an interactive manner.

Blockchain is fairly new technology, there are only few studies and researches available on the internet. Blockchain can be characterized as a distributed database of records of all transactions that have been executed and shared among interest members. The attributes of blockchain incorporates decentralization of information, persistency, anonymity and auditability. There are two primary parts in blockchain framework, which are transaction and block.

Transaction speaks to the activity set off by the member, while the block is a collection of information recording the transaction and other related subtleties, for example, the right sequence, timestamp of creation, and so on. The transaction records, or blocks, in a blockchain are connected together cryptographically, delivering them tamper proof. This implies each block that have been embedded can't be changed or erased. To achieve reliability, blockchain uses consensus algorithms. The research uses a systematic literature review method.

Literature review gives a good foundation for research in information systems and strengthens information system as a field. An audit of literature of smart contract applications reinforces the field of blockchain inside information frameworks. We direct the survey in four stages. Stage 1 is the audit of the purpose and protocol of the examination. Stage 2, includes looking through the writing and viable screening. In stage 3, the quality examination and information

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extraction are introduced. In stage 4, we break down the discoveries. This literature review method is chosen because it is developed specifically for information systems research.

II. EXISTING SYSTEM

Crowdfunding is a method of connecting between entrepreneurs and investors to invest in small amounts with an internet-based platform. Crowdfunding is divided into three categories according to the funding base offered by the crowdfunding platform.

The three categories are:
1. Donate
2. Pre-selling
3. Equity Crowdfunding

In crowdfunding, entrepreneurs, crowdfunding platforms and investors are the main criteria. The main stakeholders have their respective roles and interests. The first flow starts with entrepreneurs (businesses or startups) proposing ideas, funding requests through crowdfunding platforms and then promising returns to investors. Backers (investors) will look at investment opportunities offered by entrepreneurs and then give their commitment to fund or give advice. to bring together investors and supporters, a platform that acts as an intermediary is needed.

In the existing framework, the issue is that the organizations charge intensely to both the benefactor and the client. There is no track of the records of the cash, straightforwardness, communication between the investor and the client in building up the project. The trust is the fundamental issue with regards to the crowdfunding with the current organizations. None of these organizations give the benefactor guarantee policy.
– Not Transparent
– High Charges
– Donor guarantee policy not available
– No track of Records

III. PROPOSED METHODOLOGY AND DISCUSSION

Ethereum is an open-source, public, blockchain based distributed platform and operating to featuring smart contract functionality. It is the modified version of Bitcoin via transaction-based state transitions. Ether is a cryptocurrency which is generated and used by the Ethereum platform. Ethereum provides a decentralized operating, the Ethereum Virtual Machine (EVM), which can execute an application on the public nodes.The blockchain is originally originated from the Bitcoin, invented by unknown people. The Blockchain is a list of continuously growing records called blocks. Each Block is linked to each other and they were secured using cryptography. Blockchain has the characteristics of integrity, decentralization, Immutability, Security, Anonymity.

Blockchains can be divided into three types:
1) public blockchain (Bitcoin and Ethereum);
2) consortium blockchain (Hyperledger and Ripple)
3) private blockchain.

Peer to Peer The very important part of how blockchain works are based on Peer to Peer (P2P) system. The whole blockchain is connected to all the node in the network. This means information stored on blockchain cannot be lost or destroyed, to do so have to destroy every single node on the network and that is impossible.

Consensus protocol is the most important one in the blockchain technology. The Blockchain consensus protocol is what which keeps the blocks on all the node to synchronize with each other. The term 'Consensus' means that the nodes have to agree with the same state of the blockchain. Consensus protocol allows blockchain to be updated every minute (depends on the network) and ensures that every block in the chain is true. The aim of the consensus protocol is to guarantee a single chain is used and followed by all the nodes.

Proof of work (abbreviated to PoW) is a consensus protocol used widely by many cryptocurrencies. This process is known as mining and the node on the network is called as miners. The Proof of Work is a mathematical problem one that requires

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considerable work to achieve the solution. The only way to solve the problem is through the node in the network have to run the process based on trial and error basis.

A miner will continue testing different unique values until a suitable hash is produced. The miner who manages to solve will add next block, adding the block to the chain and validates all the transactions within it, and receiving the reward associated with the block.

An Ethereum based smart contract is a cryptographic box which stores information, processes inputs, writes outputs and is only accessible to the outside if certain predefined conditions are met and the contracts in Ethereum are written in special language called solidity. In practice, Ethereum allows for an easy implementation of such smart contracts and in addition Ethereum offers developers online compilers of solidity code. Smart contract is written in such a way that the entire amount funded by the contributors will safely be kept in smart contracts so that no one can modify it or steal it. The amount will not be directly given to campaign creator rather it will be held in smart contract itself. If the campaign creator wants to use this amount he/she has to create a spending request.

- 1. Why he/she wants to spend the money?
- 2. How much he/she wants to spend?
- 3. To whom(vendor address) he/she wants to send the money?

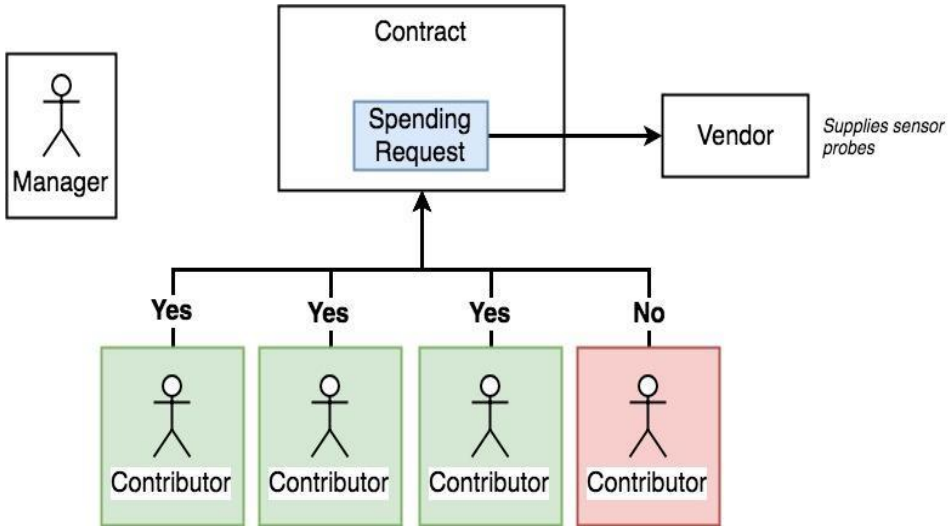

Fig. 3.1. Contributors voting for the spending request created by manager

IV. RESULTS

When the web application is started the first page that is seen is campaign page where existingcampaigns are displayed and a new campaign can also be created. All these operations can be performed provided that Metamask is installed in the browser.

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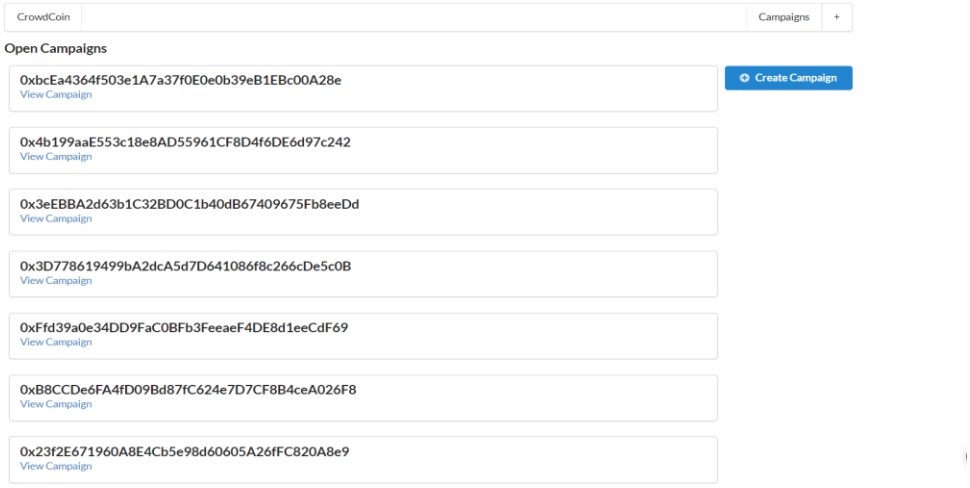

Fig. 4.1.view of campaigns web page

When create campaignis pressedit will redirect to the page where a transaction needs to be performed in order to create a new campaign as shown in Fig. 5.2.

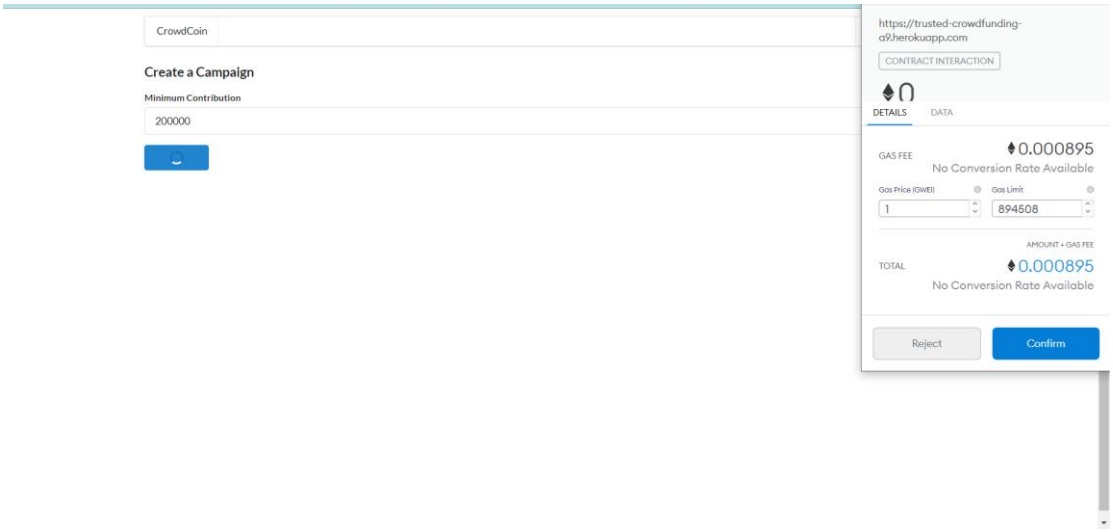

Fig. 4.2. Campaigns creation web page

When view campaigns button is pressed which is present in first web page it will be redirected tothis page which consists of campaigns details like address of person who created thecampaign(Manager), minimum contribution, number of requests created by manager, number ofapprovers and campaign balance as. Fig. 5.4 below represents the campaigns show webpage.

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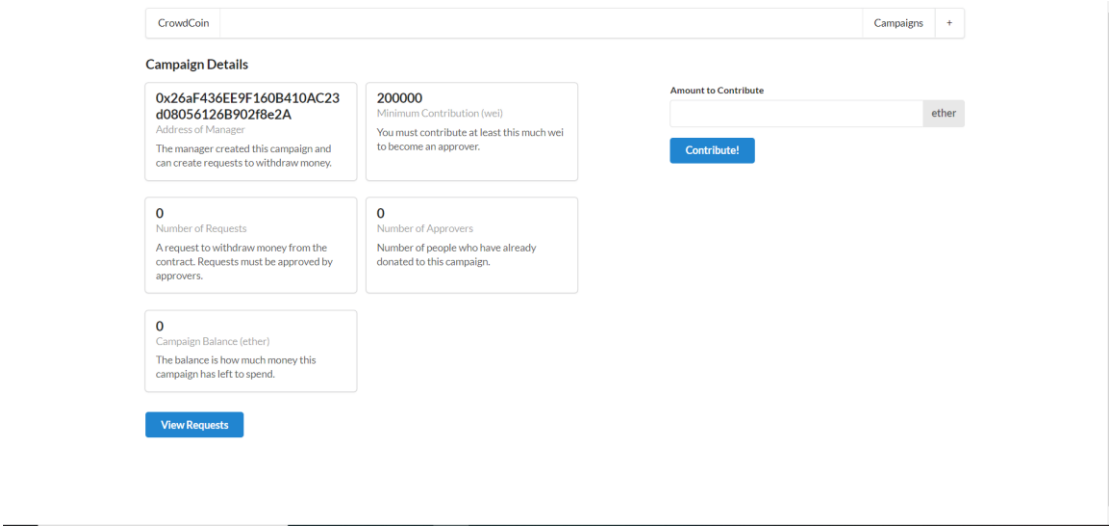

Fig. 4.3. Campaigns show webpage

When add request button is pressed it will be redirected to create request web page as shown in Fig. 5.5 where a request can be created by specifying description of spending request, value in ether that you want to spend and address of recipient to whom manager wants to send money(vendor address).

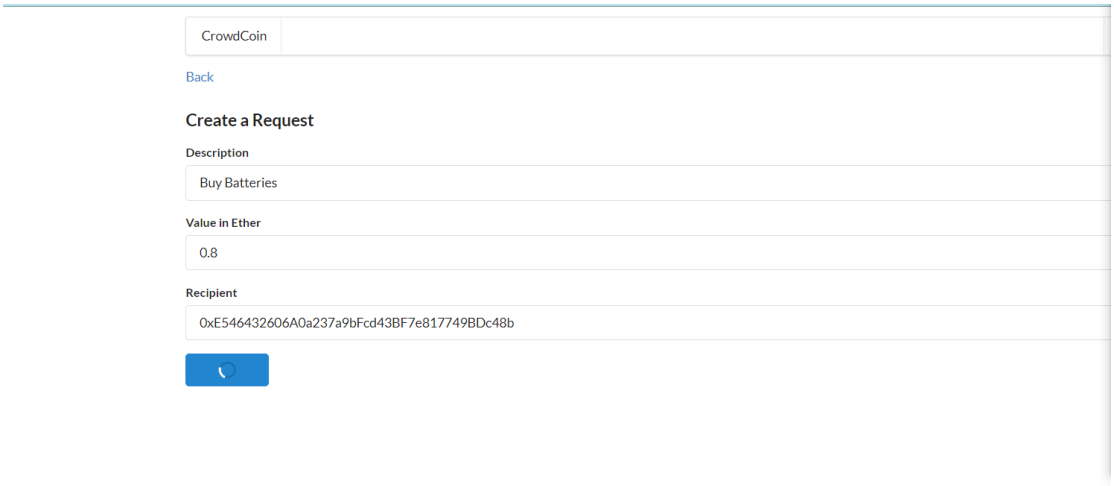

Fig. 4.4. Create a request web page

When view requests button is pressed it will be redirected to the view requests page as shown inFig. 5.6. It consists of all the requests created by the manager. It also consists of approve andfinalize button. Approve buttonis used by approvers to vote and Finalize button is used by managerto finalize the payment once the request gets enough number of votes.

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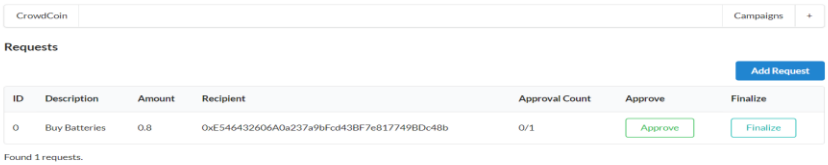
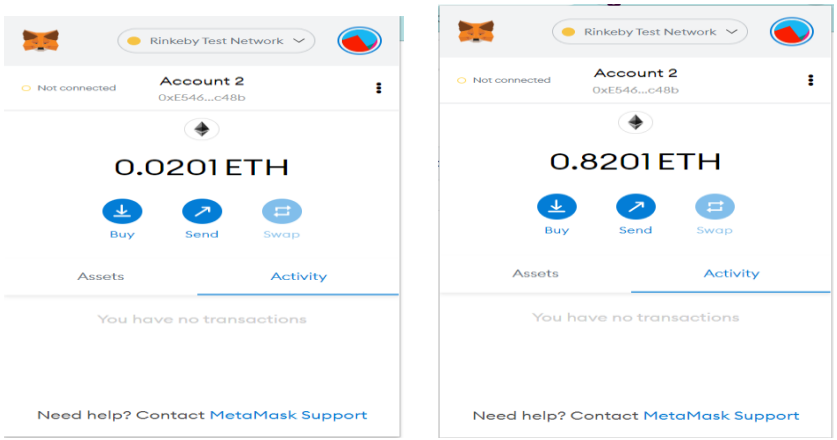


Fig. 4.5. View request webpage

After finalizing the request the amount goes to the vendor address that was specified and the whole request turns grey as shown in Fig. 5.7 indicating that the request has been closed.

Fig. 4.6. After approving and finalizing request



V. CONCLUSIONS

Blockchain in crowdfunding is a relatively new concept to the community. We have taken that into consideration and designed this app so that even a common man can use it with ease. But this is not the end. With the evolution of Blockchain and introducing of ICOs, our application has a bright future and a large scope for improvement and evolution. The world is still adjusting to Blockchain and Cryptocurrencies and it'll take a couple of years more for Ethereum based Dapps to become popular and to be recognized by the community. In such a situation Blockchain

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based crowdfunding application is a tough concept to be understood by everyone. We have taken that into consideration and designed this app so that even a common man can use it with ease. But this is not the end. With the evolution of Blockchain and introducing of ICOs, our application has a bright future and a large scope for improvement and evolution. In the future, we wish to provide an even easier and safer way for all ideas to get life through our crowdfunding application.

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