

Block chain based Crowd funding platform for disaster relief and effective charity

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Abstract: Charitable giving is an important part of our culture and is frequently seen as a kind of social debt, resulting in large sums of money moving across the world. In recent years, the number of organisations and public charity funds collecting contributions for different charitable purposes has grown significantly. As a consequence of unethical organisations obtaining large sums of money from charitable funds, the industry's image is damaged, which has a negative impact on the capacity to raise funds. We feel that using this technology will help build trust, promote efficiency, and inspire more people to donate to our cause. Blockchain-based platform for charitable foundations, the Charity project helps build a trustworthy network and is responsible for collecting contribution cash. There are a number of well-known, reliable, and reputable firms on the blockchain network. Smart contracts and cryptocurrency will be used to create a decentralised system.

We firmly think that making use of our technology will improve public confidence, raise productivity, and spur greater charitable giving. Using the immutability, provenance, and non-repudiation qualities of the platform, all processes and functions inside the organisation will be completely transparent and accessible to the platform's users. The platform will lessen the consequences of dishonest activities, disclosing fraudulent companies' activity, since all operations and functions inside the platform would be completely accessible.

Keywords: Blockchain technology, Charity, Donations, peer-to-peer transactions, cryptocurrency.

I. INTRODUCTION

Nowadays, things are a little different. Even while people who want to give money to a good cause worry about the effect of their gifts, they often find themselves unable to put their faith in the society with which they want to make a difference. Numerous non-profit organizations (NPOs) and other groups dedicated to improving society are in desperate need of financial assistance. Blockchain technology has the potential to revolutionize the world of business. New ways of building trust encourage company owners to consider various options. You may either rely on an established charity or look for crowd-funding services that match your interests. There are several internet donation gateways for these organizations, but there seems to be a lack of confidence in many of them. A small number of charities also solicit contributions from the public since they do not operate on a massive scale. Their genuine aims can't be clearly communicated, and as a result, they don't collect enough funds. Blockchain is a peer-to-peer connections used to monitor transactions on the internet. In this project we have implemented on Ethereum blockchain, interacts with the block chain through smart contracts for each transaction performed the transaction hash is generated which is provided as a proof for Transaction is performed safely/correctly. There is still a scepticism regarding how the money is being put to use, despite all the openness that philanthropic organisations are striving to include in their platform. Furthermore, no one would sponsor a person who wanted to make a good deed by contributing to society, since people would only put their faith in well-known philanthropic organisations. This means that in addition to NGOs and organisations, people may use their talents and time to make the world a better place to live by donating their time and effort. Transparency and accountability are enhanced by blockchain technology. The trust difficulties are alleviated since consumers know exactly what they're paying, and the system is decentralised. Using this technology, donors are able to provide more money. Using Blockchain technology, a user can keep track of all of his transactions.

Decentralized, fault-tolerant distributed systems are being used to establish a public blockchain platform where certificates will be stored. To originate, verify, and transfer transactions to other nodes in the same network, the blockchain offers a mechanism of obtaining a decentralised transaction ledger. Blockchain technology may be used in a variety of industries, including business, healthcare, and more. Because it is self-validating, the system described here doesn't need any help from other sources. Due to their ability to independently verify transactions' integrity and consistency, blockchains have become more popular in financial markets. With the advent of blockchain, the charity industry will no longer be controlled by a single party or organisation. The general public will have easy access to the transactions and may check whether or not their money is being spent as they anticipated it to be used. Many private organisations are turning to the blockchain to beef up their cyber protection. As a result, blockchain is a more efficient and cost-effective method of transacting money. Blockchain technology may reduce data loss caused by a single point of failure. What we've done here is take use of the new capabilities offered by blockchain technology, which is our primary contribution.

II. PROBLEM STATEMENT

According to the development plan published by the state corporation ROSTEC in the field of technology development of the distributed register one of the priority sectors of technology implementation is the activities in the field of health and social services. According to the plan it is expected that 75% of private companies and 100% state-owned companies must move to systems of using the technology of the distributed registry [11]. The current volume of the market of systems of the distributed registry of the Russian Federation is 2.4 billion rubles. The potential volume of the market in 2024 will be 317 billion rubles. The total potential direct economic effect from realization of the potential of technology in Russia will amount to 782.1 billion rubles, the indirect economic effect obtained at the expense of transparency, immutability and automated updating of data from the implementation of the roadmap in 2024 will be 853 billion rubles [11].

According to Rosstat research, in 2017 there were more than 9600 charitable foundations and about 1700 charitable organizations (movements, institutions) in Russia. Donors have every reason to fear that charitable funds will not reach people who really need them. According to the same HSE survey in 2017, 68% of citizens are willing to donate more if there is evidence of where and what they are going. By law, foundations are required to maintain public records (in particular, to publish reports on their websites), and now all reports are prepared by employees of a foundation manually [1]. The problem of mistrust of donors and overloading of funds can be solved by organizing an external database, records in which are recorded in the blockchain. Therefore, it is important to develop a social platform based on blockchain technology that can help non-profit organizations, foundations, volunteers and social entrepreneurs in their work and make donation processes transparent and understandable for all parties (donors and charitable funds). Blockchain will allow all users of the platform to see their account and a description of each payment of the organization it supports. Also, the technology of distributed ledger will guarantee a donor that the amount will reach the goal, and without any intermediaries. Transparency of transactions is achieved due to the fact that information about any actions is not stored on a separate server but exists on all devices connected to the network. It is assumed that the approach of social blockchain in the charity system will help Russian charities become more transparent, significantly simplify the work with reports and documentation and increase the trust of donors. Charity information will become more transparent to the public, structured and organized in a distributed database.

III. PROPOSED WORK

The planned charity system mode is depicted in the diagram below. Donors, recipients, charitable organisations, and cooperative stores are the four responsibilities. Through the website, charitable groups may receive information on how to seek aid and start charity initiatives. Donors use the site to learn about charity initiatives and then give to the recipients or charity organisations. Beneficiaries can acquire and spend tokens at cooperative stores after uploading their details to the website for assistance. The charity platform will be updated with the transactions that took place in the stores. To collect tokens, the cooperative stores provide services or items to the beneficiaries. Charity groups can trade the tokens for actual money. The whole flow of cash has been recorded on the blockchain, allowing transactions to be monitored and funds to be protected against misuse.

A) Process for Using the Platform

1. Donor: After logging in successfully, the donor browses the charity projects and chooses one to give to. The balance of the donor account will be checked by the system. The user will be notified to deposit if the balance is inadequate. Only if the balance is adequate can the donation be finalised.
2. Persons in need: People who require assistance should complete the rescue information, which will be sent to the charity organisation for assessment, with approved projects being placed on the charity platform. The recipient may check the account balance to learn about the project's progress, and then use the tokens to purchase services or items in cooperative stores.
3. Shops that work together to gain tokens, the stores supply the beneficiaries with the appropriate services or items, such as prescriptions or books. Charity groups can swap tokens for actual money.
4. Charity Organisation: The group can receive donations from the platform to aid others and use the funds to exchange tokens at cooperative stores.

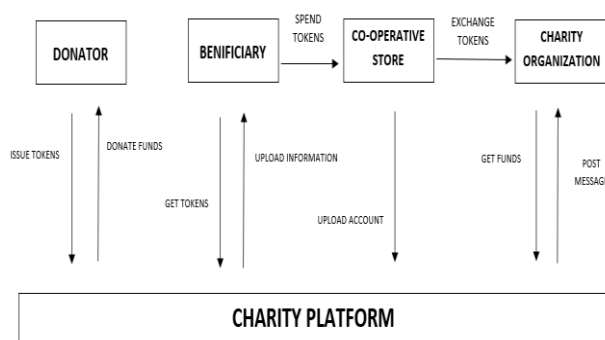


Figure 1: Interactions in a proposed model

B) Dapp Model The following features has to be achieved:

1. In the DApp, Beneficiary starts a charitable initiative.
2. Beneficiary asks for money from a charity effort that he started.
3. The donor makes a donation to the charitable initiatives of his choice.
4. A donor can vote on a funding request for a charity initiative in which they have previously engaged.
5. The monies are automatically sent to the beneficiary's account when the request for funds is authorised.

IV. SYSTEM METHODOLOGY

The main invention of pseudonymous creator of Bitcoin, Satoshi Nakamoto, is a decentralized consensus mechanism, which allows pseudonymous participants to agree on the contents of the distributed database: Blockchain. Nakamoto discovered novel ways to use a number of existing technologies which together would form a system with emergent properties, which were previously considered impossible to implement (Fischer et al, 1985). Following figure illustrates the decentralized consensus between participants (dinbits, 2016) Figure 1. Decentralised consensus between participants (dinbits, 2017). Nakamoto’s system would use internal currency based on public key cryptography to create incentives for mining nodes, who are the ledger’s upkeepers stamping transactions on a timeline. Adam Back’s proof-of-work scheme (Back, 2002) is used in a novel way to decide who gets to add information on the Blockchain next. Pending transactions waiting to be written on Blockchain are propagated in p2p network.

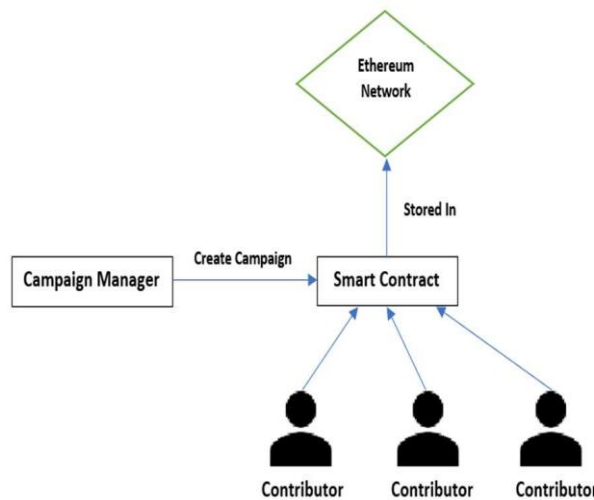


Figure 2: System Architecture

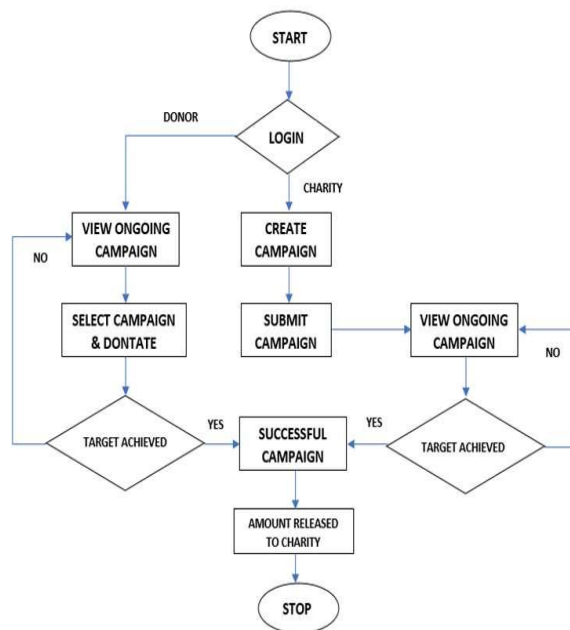


Figure 3: System Design Flow Chart

Tools used in proposed system:

1. Solidity:

Solidity is a high-level programming language for constructing smart contracts that is contract-oriented. Solidity is heavily influenced by C++, Python, and JavaScript, and it was built with the Ethereum Virtual Machine in mind (EVM).

2. What is web3.js used for?

web3.js is a set of libraries that let you use HTTP, IPC, or WebSocket to communicate with a local or distant Ethereum Node.

3. Ganache:

Ganache is a personal blockchain that enables the building of Ethereum and Corda distributed applications quickly. Ganache may be used throughout the development cycle, allowing you to build, deploy, and test your Dapps in a secure and predictable environment. Ganache is available in two flavours: user interface and command line interface.

4. MetaMask:

Through a suitable web browser or the mobile app's built-in

browser, MetaMask lets users to save and manage account keys, broadcast transactions, transfer and receive Ethereum based coins and tokens, and securely connect to decentralised apps.

V. CONCLUSIONS

Decentralizing charitable activity would increase transparency, and that's why we've developed a framework for it. It will provide a reliable framework and increase the level of openness throughout the whole process. As a result, there will be fewer intermediaries between contributors and philanthropic organisations. As a result, the suggested system will be able to track contributions and inform the donor that their money has been successfully sent to the recipient. Smart contracts are used by the charity chain to conduct and monitor the contribution process. Because it is a publicly accessible platform, Ethereum is widely utilised. As a result, donors will be more likely to donate to flexible yet efficient and traceable organisations if they see how their money is used. The Covid-19 problem has also resulted in a significant increase in the amount of money and resources needed. Efforts have been made to monitor the flow of funds and enhance the supply chain for humanitarian aid. Sharing contribution data, managing information between donors and recipients, managing contracts between charitable organisations and corporations and its use in dealing with the Covid-19-centered donations are all becoming more commonplace thanks to blockchain technology. As a result of the new Covid-19 classification, this is an emergency reaction to a particular regional crisis. With the inclusion of incentives to participate in block formation, we replace the proof-of-work technique with a well-known leader-based consensus mechanism from distributed computing. When we are done, we want our work on blockchain to be a fully integrated solution that takes use of both standard web services and blockchain technology in order to expedite system development and better serve consumers. Transparency, accountability, and involvement are all encouraged as a result of the system's design.

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