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Decentralized and financial approach to effective charity

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***Abstract*—In this fast pacing world of modernisation, people are moving ahead at the expense of affecting the society cataclysmically and making the people more standoffish and aloof. Some people are becoming too competitive to earn money while others have no clue how about getting even a penny. But at the same time, there exist people who wish to contribute to the society out of altruism. But the existing centralised systems and brokers for charities are so corrupt that people lose belief in these trustless systems and hence the charities become futile. What if we can use the rapacious ideology of money minded people coupled with the modern technology to make the charity system more effective and trustful. Using an approach of decentralisation, cryptocurrency and finance for donations, the system of charity can be improved to a great extent with the added advantage of the involvement of even these people in a conducive way. We propose a system, backed by cryptocurrency transactions, to make the system of charity more transparent and trustworthy where the charity (in form of work) by individuals or organizations is done first and then that work can be sold later as a stock (here we call it a certificate). This will work in a manner similar to the exchange market using crypto-currency. So, people can raise money out of it, just like stocks but finally the money would go to the charities, as the certificates can only be generated by the charity doers. The complete system will be decentralised using Blockchain Technology, Smart Contracts[2] and Cryptocurrency. This system would facilitate any individual to contribute independently to the society using his time and abilities apart from just money, and ultimately this will lead to an increase in hands towards the amelioration of the society**

Keywords—Blockchain, Ethereum, Smart Contract, Charity, Peer-to-peer transactions, Cryptocurrency

I. Introduction

People are now becoming voracious to contribute to the society. People want to donate generously for the causes they believe in but usually end up doing nothing due to no trust in the system around them. We have a lot of charitable organizations and NGOs who are in needs of funds every now and then, which are really working for the betterment of the society. There are a lot of online portals to donate to these charities which usually seems to be trustless. There are also charitable organizations that call up individuals for donations because they don't operate on a large scale. But they face a lot of problems to convey their genuineness and hence don't get enough donations. Additionally, there are a lot of meta-charities who try to evaluate charities and thus help individuals to donate to the top charities but they sometimes seem biased to a specific set of communities. Hence, in spite of all the transparency that the charitable organizations are trying to incorporate, there still exists the distrust about the way in which this money is being put to practice. Also, if an individual by himself wants to go out and do a noble deed, nobody would fund him as people would only trust recognized charitable organisations. What is needed is an arrangement where individuals or organizations do noble deeds first and then get patronage for its contribution by showing the proof of work over some third party platform. It can be achieved by creating a certificate in favour of the contribution he made which can be put forward to the decentralized platform to trade using blockchain system and cryptocurrency. This helps resolve the trust issues, as people already know what they are paying for and the system involves a decentralized way to solve the problem. The payment can be recorded by transacting cryptocurrency, which is known to be a very secure mode of payment. Going further, these certificates can have an exchange value just like stocks and can also be sold further like any other financial instrument, thus, involving some volatility in monetary value of that certificate. Hence the charity doer can further repeat its noble deed to earn more value against its contribution to the society. Hence, in this way apart from NGOs and Organisations, individuals can also contribute their talent and time to contribute for the wellness of the society and hence can make the world better place to live.

II. Using Blockchain

We are using the decentralized fault tolerant distributed system to build the platform where certificates (generated by the charity doers) will be kept on the public distributed network of blockchain, where the ownership of the certificate will be traded in exchange of cryptocurrency. This could be done using the smart contract which is also a part of the blockchain. So the ledger will contain both the transaction and ownership transfers. The system which we are proposing is based on the Ethereum network and hence, ether will be used as a crypto-currency for exchange. The Smart Contract can be written in Ethereum platform using Solidity[2] (which is the language for writing smart contracts), which runs over the Ethereum Virtual Machine[2].

III. Ethereum And Smart Contract

Ethereum is a platform used for making an instance of decentralized and distributed platform, a platform where we can make our own private blockchain and expose it to public and in a way we want to present our product or idea. Ethereum

supports a Turing-complete language environment. In other words, if there is an algorithm for something, it can be expressed mathematically. Ethereum scripts, called smart contracts, can thus run any computation and is written using a Java like language called Solidity.

These Smart contracts are the key element of Ethereum for writing rules and protocols which controls the flow of transactions and data throughout the platform. In them any algorithm can be encoded, can carry arbitrary state and can perform any arbitrary computations. They are even able to call other smart contracts[1]. This gives the scripting facilities of Ethereum tremendous flexibility and hence makes it possible for anyone to deploy its own peer to peer platforms by even having escrow mechanism[6] in it. Smart contracts are also immutable hence giving the immense power for security. The overall platform provides enormous transparency to the system which makes it more trustful.

IV. Certificates

Certificates will serve as the basic element in our platforms. A certificate here is a kind of asset which can be only created by the individual / organisation who did the charity. These people will basically be the one who have done some welfare and now want to raise funds for what they have already done. A certificate will contain information about the generator of the certificate, what was done in charity, a public key of the certificate and the public key of the owner. Public key of the generator, public key of certificate and charity description in the certificate will always be immutable. The transactions of the certificates will be verified through public-key cryptography. Smart contract will handle the change in ownership of the certificate.

V. Players Involved

There are basically three types of users who are involved in this block chain network of decentralised system: Developers, Miners[2] and Users. Users can again be of two types. The first kind of users can be certificate generators as well as buyers/sellers of certificates. The second kind of users is only allowed to buy/sell the certificates. Certificate generation will be the sole right of charity doers. The information about the generator of the certificate will always be preserved and this will help other users decide which certificates they want to buy. The other type of people involved is the miners. Here we are using a proof-of-work[3] concept for the validations of the transactions, so each miner who validates the transactions is awarded with ethers as incentives. These miners are similar to any miner on other cryptocurrency networks. The only difference lies in the smart contract that is used for validation of this new type of transaction. The third type is developers, who are mainly responsible for the development of the efficient and optimized smart contracts and also for the development of any APIs if required to showcase the platform at Application level.

VI. Exchange

There exists an exchange where the certificates will be exchanged by bidding different prices to buy/sell, similar to the system used for transacting binary options. This will allow the resale of certificates on a larger scale and leading to volatility in the price of it. This is very important for the system, as there should not be a scenario where the buyer should know who is selling the certificate. It would affect the resale value of the certificate on the basis of the seller (doer / owner who is not doer), and ultimately lead to a lot of instability in the system. This exchange will be created by the developer community who can later on generate certificates of their development and ultimately make the system more powerful and effective.

VII. Ledger

This is a kind of book keeping dataset, which will be transparent, distributed and shared over the blockchain network. It will have all the information about the transactions and certificate transfers in the system.

VIII. Process Flow

(i) The charity doer first generates the certificate in the system. This generation of certificate will be added to the blockchain ledger and will be validated by the people in the system. The system also validates that the charity-doer has a unique public key (ii) The certificate then can be transferred either peer to peer through a transaction or can be transferred to exchange for sale / resale in exchange of cryptocurrency. This will be done using escrow mechanism. (iii) In case of peer to peer transfer, the ownership of the certificates will be transferred soon after it is requested in the blockchain. An entry regarding the same will be put in the public ledger. In this mechanism, the certificates are exchanged on their personal transfers, rules and agreement. If they want to transact through system, they have to put their certificates to bid in the Exchange. (iv) Once the user transfers the certificate to the Exchange (developed by community), it comes under blockchain and is governed by the smart contract. In this case, the user puts a bid price to transact the ownership. And the buyer can get a view to buy the certificate through exchange. (v) If buyer matches a seller who is selling the certificate at or below a price he is bidding, the ownership of the certificate will be transferred from the seller to the buyer once the cryptocurrency transactions are validated. And both the transactions will be added to the blockchain ledger.

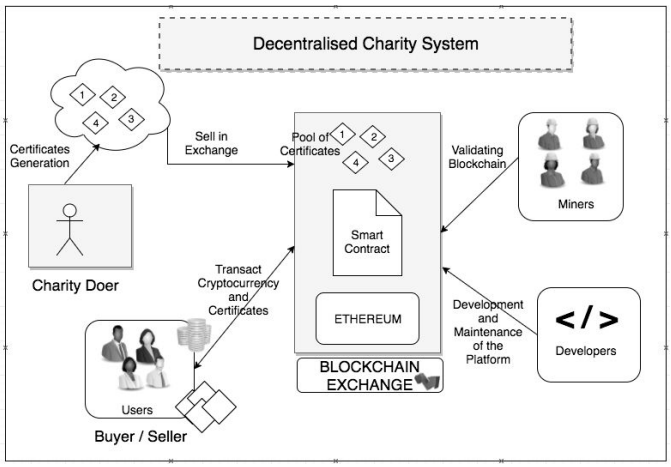

fig1. Process flow for the complete platform

IX. Conclusion

We have proposed a system for using cryptocurrency for charity work to make it more transparent through a decentralised system. Urbanization has made a lot of people more concerned about others and this has made a lot of people altruistic. But at the same time there are also people who want to ultimately make money in the process. This system will provide to both these requirements. Also, it will provide with a trustless system and will make the entire process more transparent. This will help get rid of middle men between donors and charity doers.

X. References

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