

# **POLYFUND: CROWDFUNDING PLATFORM POWERED BY BLOCKCHAIN**

PROJECT REPORT

submitted by

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to

the APJ Abdul Kalam Technological University

in partial fulfillment of the requirements for the award of the Degree

of

Bachelor of Technology

In

*Computer Science and Engineering*



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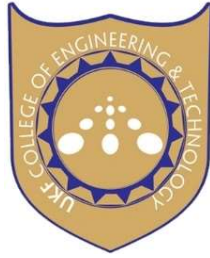
## DECLARATION

We undersigned hereby declare that the Project report “**Polyfund: Crowdfunding Platform Powered by Blockchain**”, submitted for the partial fulfillment of the requirements for the award of degree of Bachelor of Technology of the APJ Abdul Kalam Technological University, Kerala is a bonafide work done by me under the supervision of Asst. Prof. Mrs. Sherin Wilson. This submission represents our ideas in our own words and where ideas and words of others have been included, we have adequately and accurately cited and referenced the original sources. We also declare that we have adhered to ethics of academic honesty and integrity and have not misrepresented or fabricated any data or idea or fact or source in my submission. We understand that any violation of the above will be a cause for disciplinary action by the institute and/or the university and also can evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained. This report has not been previously formed the basis for the award of any degree, diploma or similar title of any other university.

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**CERTIFICATE**

This is to certify that the report entitled '**POLYFUND: CROWDFUNDING PLATFORM POWERED BY BLOCKCHAIN**' submitted by **Bijin B James (UKP19CS022)**, **Azhar Luqman A (UKP10CS019)**, **Mohammed Afzal (UKP19CS042)**, **Amal Joy (UKP19CS007)** to the APJ Abdul Kalam Technological University in partial fulfillment of the requirements for the award of the Degree of Bachelor of Technology in Computer Science and Engineering is a bonafide record of the project work carried out by them under my guidance and supervision. This report in any form has not been submitted to any other university for any other purpose.

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## ACKNOWLEDGMENT

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**Amal Joy**

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# **ABSTRACT**

Crowdfunding is one of the most popular ways to raise funds for any project, cause or for helping any individual in need. With the onset of Covid we have seen a rise in Crowdfunding activities across the globe which includes small campaigns to help people get oxygen and medical help to large funds such as PM Cares. The major problems with the Current Crowdfunding Platforms that we wanted to solve were security, non-transparency, fraudulency and globalization. We propose a Decentralized Application powered by Ethereum Blockchain, where all the information about campaigns, contributions, withdrawal requests and funds are kept on a Blockchain Network, visible to all and decentralized. This means the funds and transactions are visible to and stored at every node on the blockchain, and prevents the data from being stored in a centralized server, single location. By introducing our crowdfunding platform powered by blockchain, we believe that we have implemented a solid solution that can do away with these long standing problems. The aim to have a transparent, anti-fraudulent, decentralized platform has been achieved to a great extent. This project has covered the weak points of general crowdfunding platforms to provide transparency to the process of crowdfunding and build trust among people, so that they may contribute their wealth to good causes without fear of fraud

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# CHAPTER 1

## INTRODUCTION

### **Problem Statement and Necessity**

Crowdfunding is one of the most popular ways to raise funds for any project, cause or for helping any individual in need. With the onset of Covid we have seen a rise in Crowdfunding activities across the globe which includes small campaigns to help people get oxygen and medical help to large funds such as PM Cares.

The major problems with the Current Crowdfunding Platforms that we wanted to solve were :

**Security :** As the funds become larger, they need to be heavily secure, although stringent measures such as symmetric encryption are in place to make e-payment safe and secure, it is still vulnerable to hacking. Blockchain which has never been compromised yet can provide that level of security.

**Transparency and Anti-Fraud :** We have seen, and continue to see a lot of crowdfunding scams happening around. There is no way to see where the funds are being used. We wanted to make the entire flow of funds transparent at every stage, so that there is no possibility of the money being misused.

**Global contribution :** With some of the platforms being country specific, it becomes hard for people from other countries to contribute to various campaigns. Using blockchain anyone in the world can contribute to the campaign. Transactions are quick and convenient.

### **Feasibility: Technical and Non-Technical**

- Technical Feasibility
  - It is to be a ReactJS based application, which will be supported by any web browser.
  - Internet connectivity will be required.
  - Users will require 'Metamask' browser extension to sign transactions.
- Social Feasibility
  - Crowdfunding over the years has helped people but has also seen heavy frauds in the name of Crowdfunding. With Betterfund we want to bring transparency to the process of crowdfunding and build trust among people to contribute to all the causes.

- Economic Feasibility
  - Given the Ethereum Blockchain provides us with most of the security features, the development does not require much cost.
  - The only cost would be the server cost of the deployed application.

## CHAPTER 2

### LITERATURE SURVEY

- **Victoria Lux**, March 29, 2022, Searching for Trust: Blockchain Technology in an Age of Disinformation, *Blockchain*, pg 71-120.
- **Scott Harrison**, September 18, 2021, Evaluating The Financial Impact of Data Breaches Involving Account Credentials, *Blockchain*, pg 120-137.
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## **CHAPTER 3**

### **EXISTING SYSTEM**

Crowdfunding is one of the most popular ways to raise funds for any project, cause or for helping any individual in need. With the onset of Covid we have seen a rise in Crowdfunding activities across the globe which includes small campaigns to help people get oxygen and medical help to large funds such as PM Cares. Here the existing system lacks transparency, security and globalization.

### **3.1 Disadvantages**

#### **Financing target must be achieved**

A major disadvantage of crowdfunding via crowdfunding platforms is that if you fail to collect the budget you have set in time, your project will be removed from the platform, and you will have to start again from scratch. In addition, in the event of bankruptcy, there may be a claim against your personal assets. Some platforms offer the option to re-promote a revised version of the campaign, but this is not a general right.

#### **Platform risk**

Bankruptcy of a platform can directly adversely affect both entrepreneurs and investors.

#### **Time-intensive campaign**

Financing your project through crowdfunding requires intensive and extensive preparation. Designing a successful campaign takes a lot of time and energy, which you can possibly spend on other things. How will you set up the campaign? Which donation platform will you choose for the campaign? How does the promotion happen? These are questions to consider when launching a crowdfunding campaign.

#### **Fraud by a crowdfunding platform**

Due to the relatively new and growing market, not many systems have yet been designed to prevent or compensate for such fraud.

#### **Payment risk due to poor budget**

Poor preparation and calculation of the money requirement can cause many problems for lenders, borrowers and the platform itself. Payment problems are the biggest risk here: because you have not drawn up a

reasonable investment budget in advance, this results in over-or under-financing. This can considerably complicate the further course of the project and even lead to bankruptcy.

### **Fraud by borrowers**

It is possible that borrowers set up a fraudulent campaign. This is because there is less strict control than with other financing methods. If you decide to invest in such projects, there are fewer safety nets to absorb your losses.

## **CHAPTER 4**

### **PROPOSED SOLUTION**

We propose a Decentralized Application powered by Ethereum Blockchain, where all the information about campaigns, contributions, withdrawal requests and funds are kept on a Blockchain Network, visible to all and decentralized. This means the funds and transactions are visible to and stored at every node on the blockchain, and prevents the data from being stored in a centralized server, single location.

#### **4.1 Advantages**

- More security
- Transparency in the working
- Anti-fraud System
- Globalization
- Given the Ethereum Blockchain provides us with most of the security features, the development does not require much cost.
- The only cost would be the server cost of the deployed application.

## CHAPTER 5

### METHODOLOGY

Any web based application is a centralized application which means that anything we do on the platform is managed by a server which is owned by a single company.

We propose a Decentralized Application powered by Ethereum Blockchain, where all the information about campaigns, contributions, withdrawal requests and funds are kept on a Blockchain Network, visible to all and decentralized. This means the funds and transactions are visible to and stored at every node on the blockchain, and prevents the data from being stored in a centralized server, single location.

Hence not letting the money get into the hands of anyone and eliminating every possibility of it getting misused — an elegant and logical solution to the problem in hand.

The features are explained below :

1. **Creating a Campaign** : Just like Crowdfunding in the real world as well as on other crowdfunding platforms, anyone can create a campaign in a few minutes. The campaign information will be managed by the Ethereum-based smart contract and thus cannot be tampered with.
1. **Contributing to a Campaign** : Once a campaign has been created, users can share the campaign and anybody can contribute to the campaign. **The funds will go to the address of the campaign and not to the creator of the campaign**, thus making the process more efficient and anti-fraudulent.
2. **Withdrawal of Funds** : The Creator of a Campaign can propose how to use the funds in the form of a Withdrawal Request. Anybody who contributes more than a particular amount is called an approver, and will be able to approve or deny the request.

**Funds can't be withdrawn without the approval of 50% approvers.**

## 5.1 Technical Analysis

### 5.1.1 UML Diagram

#### Class Diagram

The **Classes** defined are:

- Campaign
- CampaignFactory

- Requests
- connectWallet

The **Relationships** defined are:

- A User connects his wallet to support various campaigns; one to many.
- A campaignFactory has its Campaign; one to one.
- A Campaign has multiple Requests; one to many.

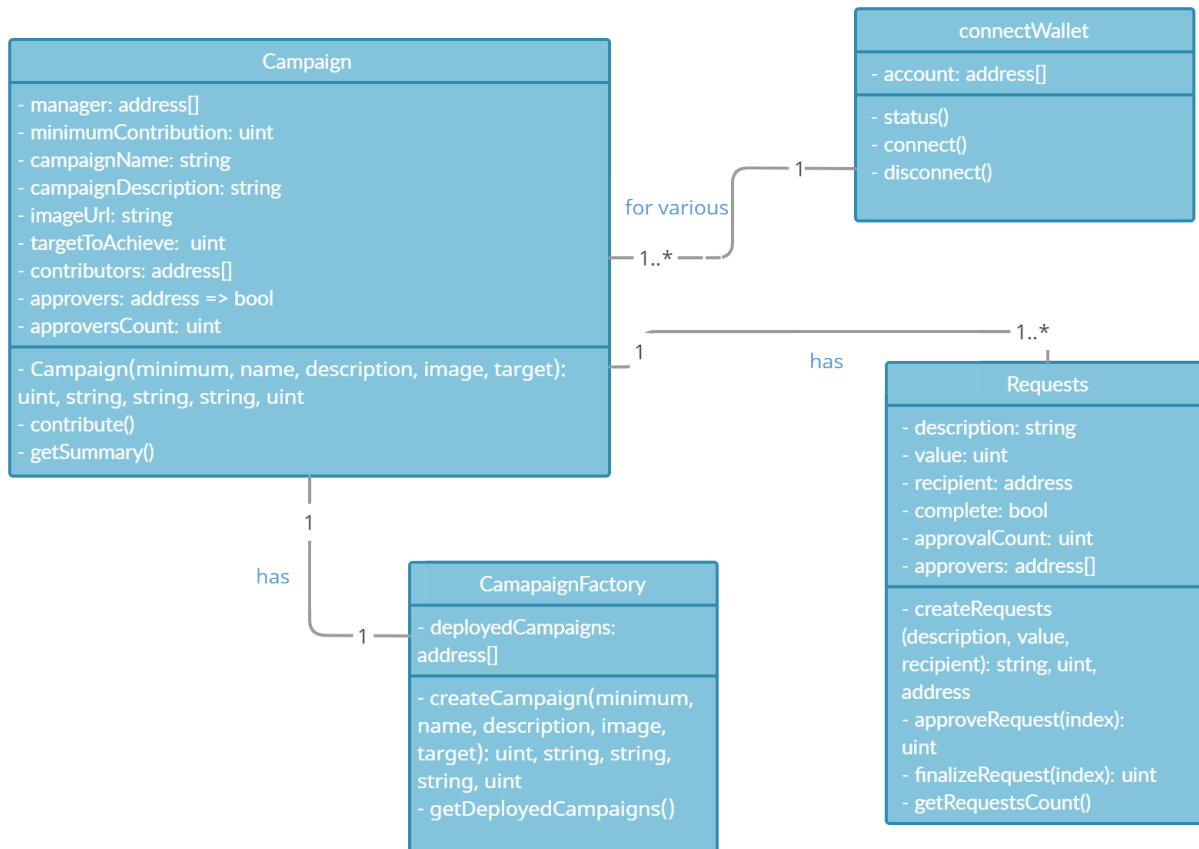


Fig 5.1: UML Diagram

## 5.1.2 Tech stack analysis :

In order to achieve the solution we have chosen a tech stack that is

- Optimized for speed
- Efficient
- Secure

The Technologies that have been used are :



1. **NextJS** : Next.js is an open-source React front-end development web framework that enables functionality such as server-side rendering and generating static websites for React based web applications.
2. **Chakra UI** : Chakra UI is a simple, modular and accessible component library that gives the building blocks one needs to build React applications.
3. **Solidity** : It is the programming language for implementing Ethereum based Smart Contracts.
4. **Web3** : web3.js is a collection of libraries that allow you to interact with a local or remote ethereum node using HTTP, IPC or WebSocket.
5. **Ethereum Smart Contract** : It is the collection of functions and data that reside at a specific address on the Ethereum Blockchain.

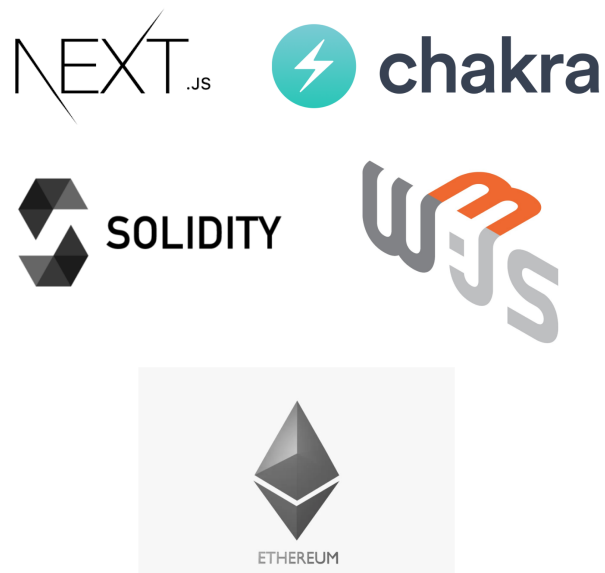


Fig 5.2: Technologies used

## CHAPTER 6

### RESULT AND DISCUSSION

#### 6.1 App Usage Instructions

##### Connect Wallet :

In order to perform any transactions, be it creation of a campaign or contributing to one, a user first needs to connect an Ethereum wallet to the site. We have made use of a browser extension called Metamask<sup>[7]</sup> to connect the wallet, which can be used to authorize transactions for cryptocurrency.

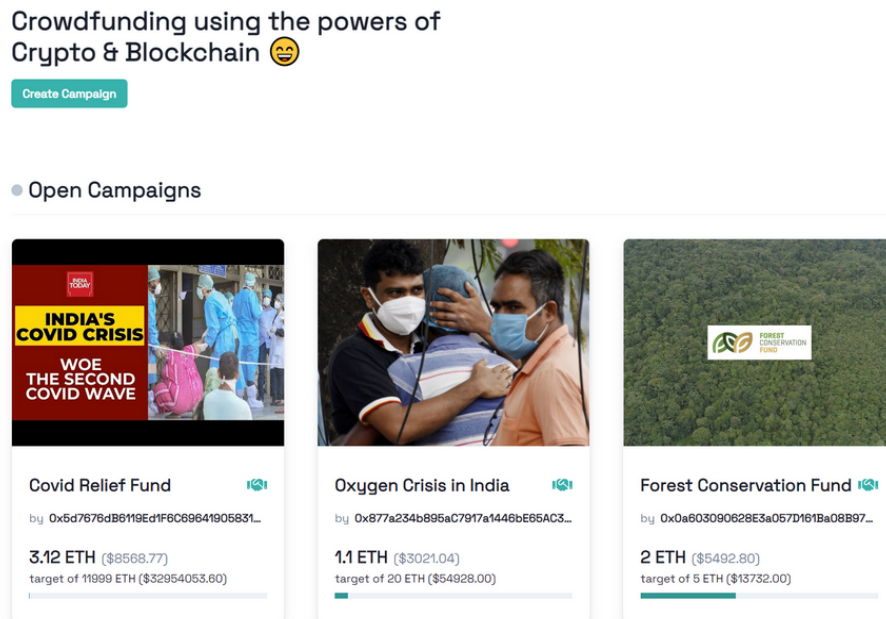


Fig 6.1: Home page

##### Creating a Campaign:

Once a wallet has been connected, anyone can create a crowdfunding campaign. The process is highly intuitive and self-explanatory, and the user only has to supply the data as asked in the forms.

[← Back to Home](#)

## Create a New Campaign 📢

Minimum Contribution Amount

ETH

Campaign Name

Campaign Description

Image URL

Target Amount

ETH

Connect Wallet

Please Connect Your Wallet First to Create a Campaign

Fig6.2:Creating a new campaign

## Contributing to a Campaign

Any user whose wallet has been connected to the app can contribute to a campaign. The process is simple and detailed in the flow below. The user only needs to select the campaign, enter the amount he wishes to contribute, and then authorize the transaction (in this case, with the Metamask extension)

### Covid Relief Fund

This Campaign is to Donate Funds for Covid Relief in India, the situation. The manager is <https://twitter.com/harshbadhai28> and all the receives will go to ABCD Foundation which will help in buying, delivering oxygen, and other covid related help. If you want to withdraw funds from this campaign please feel free to create a request, and ping me on Twitter so that I can help you get the funds as soon as possible.

[View on Rinkeby Etherscan](#)

Minimum Contribution  
0.001 ETH (\$2.75)

Wallet Address of Campaign Creator  
0x5d7676dB0115Ed1F6C696419058310D16a734d...

Number of Requests  
5

Number of Approvers  
3

Campaign Balance ⓘ

3.12 ETH (\$8578.91)  
target of 11999 ETH (\$32993050.35)

### Contribute Now!

Amount in Ether you want to contribute

ETH

Please Connect Your Wallet to Contribute

[View Withdrawal Requests](#)

\* You can see where these funds are being used & if you have contributed you can also approve those Withdrawal Requests :)

Fig 6.3: Contribution to a campaign

## Making a Withdrawal Request

If you are the creator of a fund, you might need to withdraw from the available funds for various reasons. You can create a Withdrawal Request by the flow given below, which must be approved by the majority of approvers.

If you are a Contributor who has contributed more than the Minimum Contribution (specified in the campaign), then you are an approver. You can vote on the Withdrawal requests made by the creator, and either approve or deny the request.

← Back to Campaign Campaign Balance : 3.12 ETH (\$8578.91)

Withdrawal Requests for Covid Relief Fund... Add Withdrawal Request

ID	DESCRIPTION	AMOUNT	RECIPIENT WALLET ADDRESS	APPROVAL COUNT	APPROVE	FINALIZE
0	Need If for Oxygen Cylinders in Raipur	0.11ETH (\$302.48)	0x5d7676dB...	1/3	✓	✓
1	Need for Oxygen in Jalandhar Cant	0.44ETH (\$1209.85)	0x877a234b...	1/3	✓	✓
2	Need Remdesivir for Old Age Homes	0.22ETH (\$604.92)	0x877a234b...	1/3	✓	✓
3	Food for Orphan Care	0.22ETH (\$604.92)	0x5d7676dB...	2/3	✓	✓
4	Ambulance Funds	0.11ETH (\$302.48)	0x5d7676dB...	3/3	Approve	Finalize ⓘ

Found 5 Requests

Fig 6.4: Withdrawal request page

**No funds can be withdrawn without the approval of at least 50% of the approvers.**

The process is simple:

1. Click on the 'Create Withdraw Request' button on the campaign management page.
2. Fill out the form which will ask for the **amount** you are requesting, the **reason** for the withdrawal, as well as the **address to which the funds will be transferred**, should the request be approved.
3. Authorize the creation of the request with Metamask.
4. A page will show up which shows all the withdrawal requests for this campaign. This page is also visible to approvers of a campaign and they can approve or deny the request.
5. Once a request has gained a majority approval, the funds can be withdrawn.

## **CHAPTER 7**

### **CONCLUSION**

Conventional crowdfunding methods have long suffered from lack of transparency and fraud. It is an avoidable problem, and we believe that we have implemented a solid solution that can do away with these long-standing problems.

The aim to have a transparent, anti-fraudulent, decentralized platform has been achieved to a great extent. This project has covered the weak points of general crowdfunding platforms to provide transparency to the process of crowdfunding and build trust among people, so that they may contribute their wealth to good causes without fear of fraud.

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