

# Defund: Crowdfunding Platform using Blockchain

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**Abstract**— Crowdfunding has become an important tool for raising funds on the whole globe, but it has issues like security problems, lack of transparency, and lack of international accessibility. Defund solves all these issues by instantiating an Ethereum-based decentralized crowdfunding platform. Smart contracts on the platform guarantee that funds are securely transferred from donor to donor and audited by the public, as such comparison with possible systems through which international participation is foreseen. This includes the creation of the campaign, direct contributions to it, and a kind of withdrawal whereby approval will require a certain degree of consensus. Already deployed and tested, therefore, Defund confidently serves as an anti-fraud alternative to traditional-type crowdfunding, bringing trust in supporting truly worthy causes.

**Keywords** — Crowdfunding, Blockchain, Transparency, Security, Ethereum, Decentralized, Smart Contracts.

## I. INTRODUCTION

Crowdfunding has really taken off as a game-changing way to gather funds for all sorts of projects, causes, and individuals who need a helping hand. Its popularity skyrocketed during the COVID-19 pandemic, with campaigns popping up everywhere—from grassroots efforts to provide oxygen and medical supplies to major initiatives like India's PM Cares Fund. However, even with its widespread use, many current crowdfunding platforms face some serious issues that undermine trust and efficiency. These problems include weak security measures that leave large sums of money open to hacking, despite encryption attempts; a lack of transparency that allows fraudulent schemes to slip through the cracks; and limited global participation because of region-specific platforms.

To tackle these issues, we're excited to introduce Defund, a decentralized crowdfunding platform built on Ethereum blockchain<sup>[1]</sup> technology. Drawing inspiration from initiatives like CryptoRelief ([www.cryptorelief.in](http://www.cryptorelief.in))<sup>[2]</sup>, which successfully raised around \$1 billion for COVID-19 relief in India with impressive transparency, Defund harnesses the unbeatable security and decentralized nature of blockchain. This approach guarantees that funds are protected, transactions are clear at every step, and contributors from all over the world can join in effortlessly. By rethinking crowdfunding as a secure, transparent, and inclusive process, Defund aims to rebuild trust and empower communities to back meaningful causes without worrying about misuse.

## II. FEASIBILITY ASSESSMENT: TECHNICAL AND NON-TECHNICAL PERSPECTIVES

- Technical Viability
  - We're building the platform as a ReactJS application, which means it will work smoothly on all the major web browsers.
  - Just a heads up, you'll need an active internet connection for it to function properly. Plus, to securely authenticate and handle transactions, users will have to install the Metamask browser extension.
- Social Considerations
  - Crowdfunding has shown its worth in helping communities for quite some time, but it still faces issues with fraud. That's where Defund comes in, aiming to change the game by making the crowdfunding process more transparent.
  - This way, we can build trust and inspire more people to get involved in meaningful projects.
- Economic Practicality
  - By tapping into the built-in security features of the Ethereum Blockchain, the platform really cuts down on development costs.
  - The main financial outlay comes from the server infrastructure needed to run the live application.
- Project Scope
  - Defund aims to revolutionize crowdfunding by making it completely transparent, fraud-resistant, and super secure, tackling the major flaws found in current systems.

## III. PROPOSED SOLUTION

### Identifying stakeholders

Let's break down the stakeholders into two main groups:

- Campaign Creators: These are the folks who take the initiative to create a Campaign.
- Contributors & Approvers: Contributors are the individuals who pitch in and fund the campaigns.

Approvers are a special subset of Contributors who have given more than the Minimum Contribution, and they have the authority to approve any withdrawal requests.

## IV. COMPREHENSIVE SOLUTION

Traditional crowdfunding platforms tend to function as centralized systems, relying on servers that are under the control of a single organization. This centralization brings along risks like data manipulation, fund mismanagement, and a lack of transparency. Defund takes a fresh approach by utilizing a decentralized application (DApp) built on the Ethereum Blockchain. By keeping all campaign details, contributions, withdrawal requests, and fund movements across a distributed network of blockchain nodes, Defund

guarantees that every transaction is publicly verifiable and resistant to tampering. This decentralized model removes the dependence on a single point of control, stopping funds from being funneled through intermediaries and cutting down on chances for misuse.

The solution presents a sleek, blockchain-driven framework designed to address the fundamental issues of security, transparency, and global accessibility in crowdfunding.

**Here are the key features of Defund:**

1. Campaign Creation

*Fig 1: Form to create a campaign*

Just like traditional crowdfunding platforms, Defund lets anyone set up a campaign in just a few minutes. Users can fill in essential details through an easy-to-use interface, and the campaign is launched as an Ethereum smart contract. This smart contract lays down the rules and data for the campaign, making it unchangeable and safe from unauthorized alterations. (Check out Fig 1: Form to create a campaign.)

2. Campaign Contributions

*Fig 2: Contribute to a campaign*

Once a campaign is up and running, it can be shared far and wide, inviting global participation. Contributors send funds directly to the campaign's unique blockchain address, rather than to the personal account of the initiator. This direct transfer method boosts efficiency and eliminates the risk of funds being misdirected, reinforcing the platform's commitment to preventing fraud. (See Fig 2: The "Contribute to a campaign" screen.)

## 3. Fund Withdrawal Process

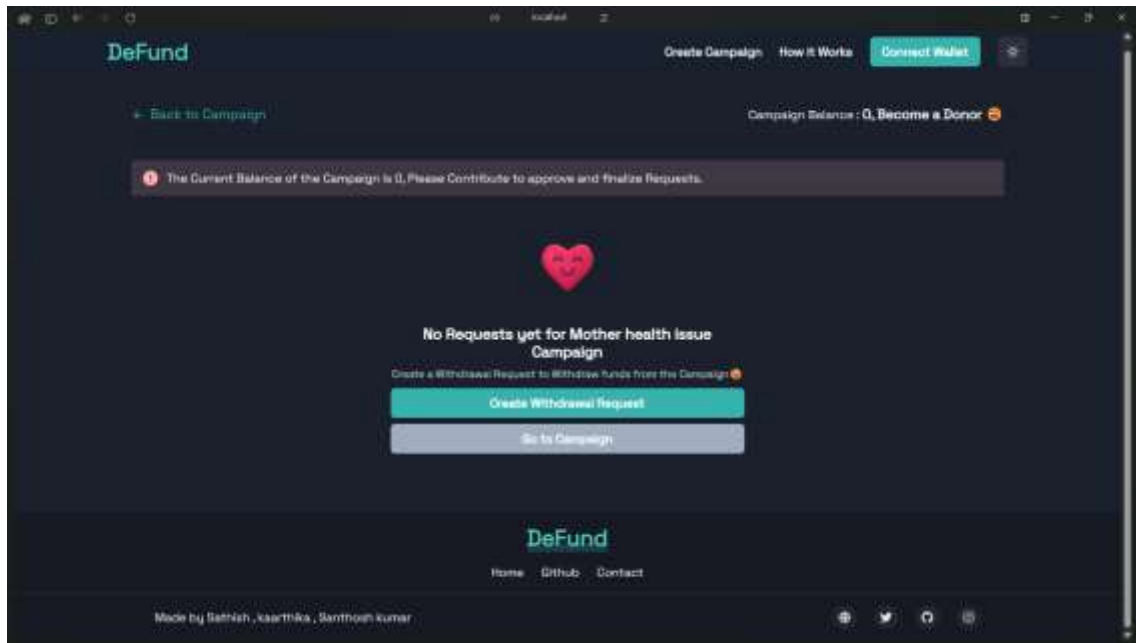


Fig 3: Withdrawal Requests

Campaign initiators can request access to collected funds by submitting a withdrawal proposal, detailing the intended use. Validators—contributors who have donated above the minimum threshold—review these requests and vote to approve or deny them. Funds are released only when at least 50% of validators grant approval, embedding a democratic safeguard into the process. This ensures that money is spent as intended and provides contributors with visibility and control over their donations. (See Fig 3: The “Withdrawal Requests” screen.)

## V. TECHNICAL ANALYSIS

### UML Diagram: Class Diagram

To model the structure and interactions within the Defund platform, a Class Diagram has been developed, outlining the core entities and their relationships. This diagram provides a blueprint of the system’s architecture, ensuring a clear understanding of its components and their interconnections.

### Defined Classes

The system comprises the following key classes:

- **Campaign:** Represents an individual crowdfunding campaign, encapsulating its details, funds, and associated logic.
- **Campaign Factory:** A utility class responsible for generating and deploying new Campaign instances on the blockchain.
- **Requests:** Manages withdrawal requests initiated by campaign creators, including details such as amount, purpose, and approval status.
- **Connect Wallet:** Facilitates the integration of a user’s Ethereum wallet, enabling secure transaction signing and interaction with the platform.

### Defined Relationships

The relationships between these classes are structured as follows:

1. User to Campaigns (One-to-Many): A single user, via the connect Wallet class, can engage with multiple campaigns by connecting their wallet, allowing them to contribute to or manage various initiatives.
2. Campaign Factory to Campaign (One-to-One): Each instance of Campaign Factory produces a single corresponding Campaign, establishing a direct and exclusive link between the factory and its output.
3. Campaign to Requests (One-to-Many): A single Campaign can have multiple associated Requests, reflecting the ability of a campaign initiator to submit several withdrawal proposals over time.

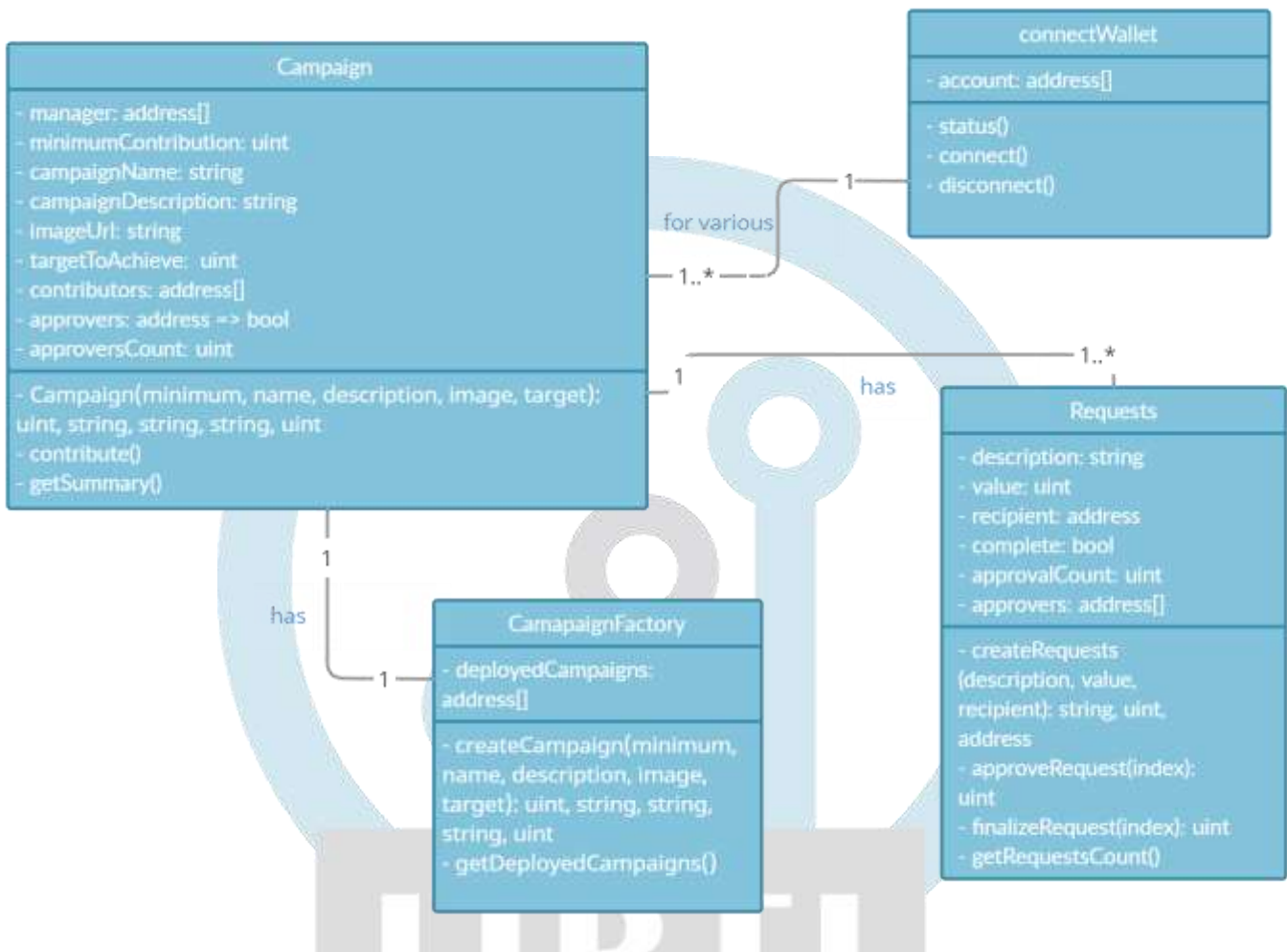


Fig: 4 Class Diagram showing class and object relationships.

## VI. TECH STACK ANALYSIS:

To bring the vision of a decentralized crowdfunding platform to life, Defund has carefully chosen a technology stack that focuses on three key features: speed, efficiency, and strong security. This thoughtful combination ensures that the platform can cater to a global audience while building trust and reliability in a blockchain-based setting.

The technologies listed below work together seamlessly to achieve these goals:

**NextJS:** Next.js<sup>[3]</sup> is an open-source React framework that drives the front-end development for Defund. By allowing server-side rendering and static site generation, it enhances the platform's speed and scalability, resulting in fast-loading, React-based web applications that perform smoothly across various browsing environments.

**Chakra UI:** Chakra UI is a sleek, modular component library designed specifically for React applications. It equips Defund with accessible and reusable components, making it easier to create an efficient and user-friendly interface that emphasizes inclusivity and ease of use, all while maintaining design flexibility.

**Solidity:** Solidity<sup>[4]</sup> is the foundational programming language for Ethereum smart contracts used in Defund. It allows for the secure implementation of campaign logic, fund management, and approval processes, ensuring that all interactions with the blockchain are executed accurately and remain unchangeable.

**Web3.js:** Web3.js<sup>[5]</sup> is a versatile library suite that connects Defund to Ethereum nodes through HTTP, IPC, or WebSocket protocols. This technology facilitates smooth interactions with the blockchain, enabling users to contribute, access data, and manage transactions securely and in real time.

**Ethereum Smart Contracts:** Ethereum smart contracts<sup>[6]</sup> form the secure backbone of Defund's decentralized infrastructure. Located at specific blockchain addresses, these contracts encapsulate the platform's operational logic and data, ensuring transparency, resistance to tampering, and decentralized control over all campaign activities.

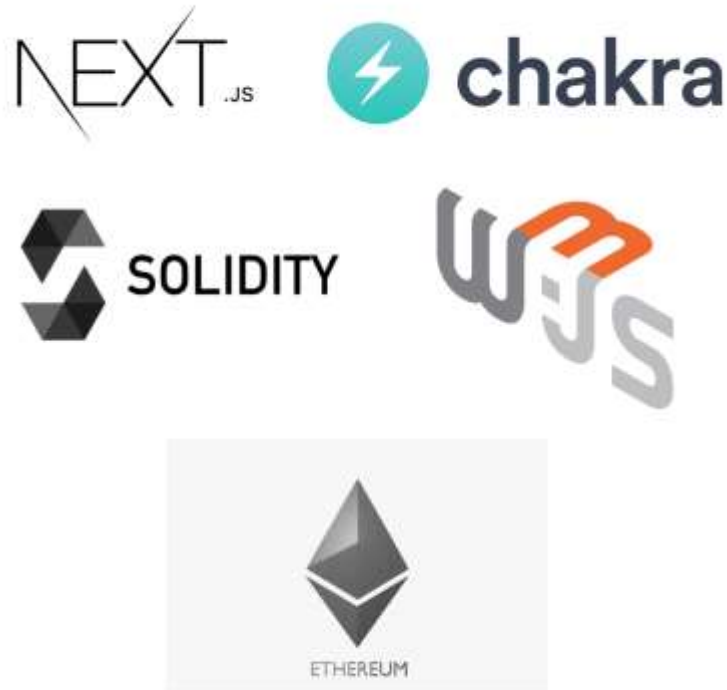


Fig: 5 Technologies Used

## VII. RESULT AND DISCUSSION

### App Usage Instructions:

#### Connect Wallet

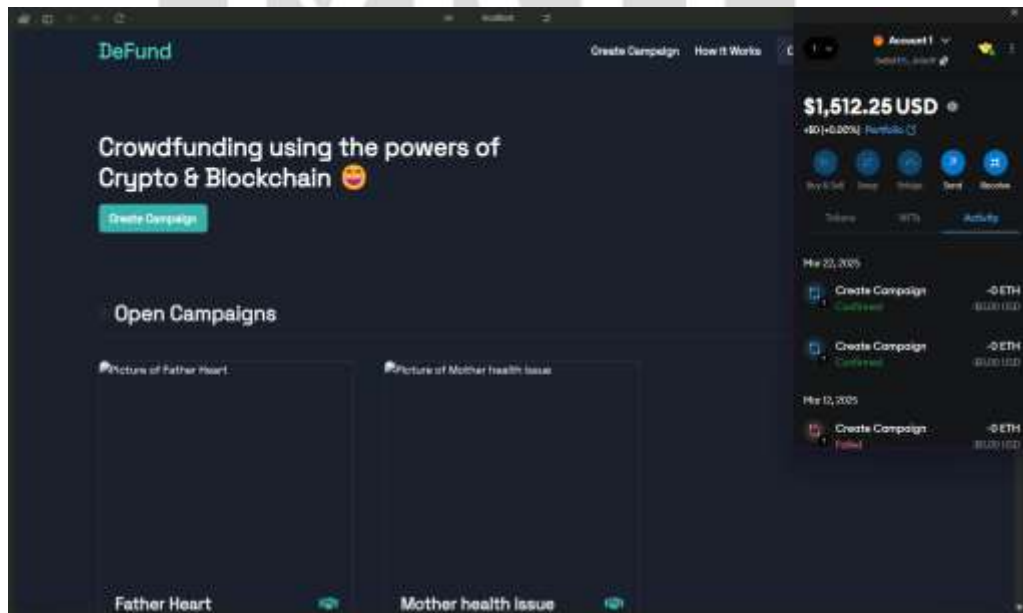


Fig: 6 Connect Wallet

To kick things off—whether you're starting a new campaign or joining one—users need to link their Ethereum wallet through the Metamask<sup>[7]</sup> browser extension. This step ensures that all cryptocurrency transactions are secure. (See in Fig 6.)

## Create a Campaign

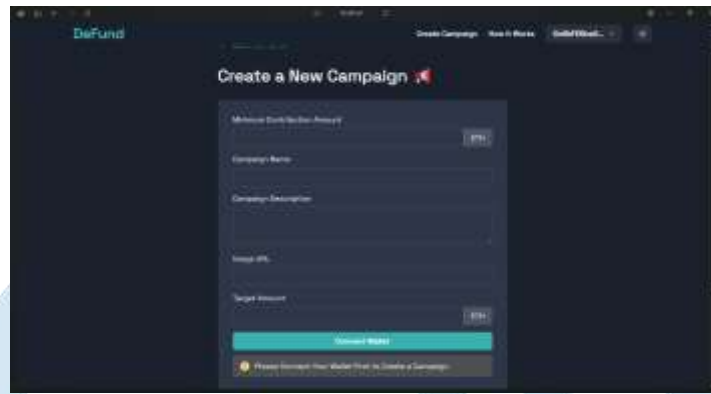


Fig: 7 Create a Campaign

Once your wallet is connected, anyone can launch a campaign. It's a breeze: just fill out a form with the necessary details, and voilà, your campaign is good to go! (See in Fig 7.)

## Contribute to a Campaign

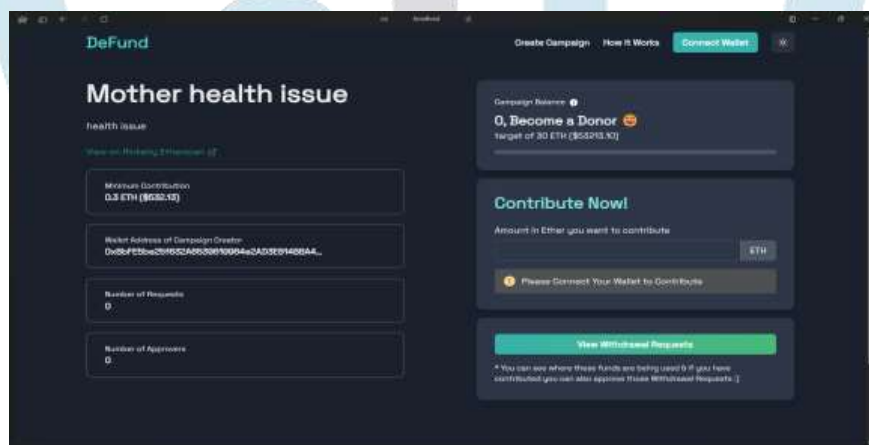


Fig: 8 Contribute to a Campaign

If you've got a connected wallet, you can easily donate to any campaign that catches your eye. Just select a campaign, enter how much you want to contribute, and confirm the transaction through MetaMask. It's fast and simple! (See Fig 8.)

## Make a Withdrawal Request

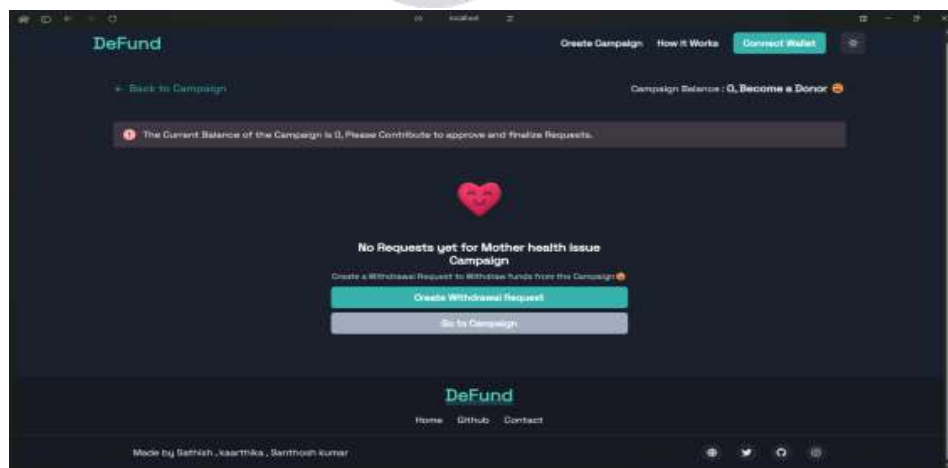


Fig: 9 Make Withdrawal Request

**For Creators:** If you want to access your funds, campaign creators can submit a withdrawal request by clicking "Create Withdraw Request" on the campaign page. Just enter the amount, the reason for the withdrawal, and the recipient's address, then confirm it with MetaMask.

**For Approvers:** Contributors who donate above the campaign's minimum amount become approvers. They get to vote on whether to approve or deny withdrawal requests. Funds will only be released if 50% or more of the approvers give the green light.

The funds go straight to the recipient, not the creator, which keeps everything transparent. (See Fig 9.)

## VIII. DEPLOYMENT AND TESTING STATUS

- The app's front end is up and running, and it has been tested with unit tests as well as by a group of 10 users.
- The smart contract is live on the Rinkeby<sup>[8]</sup> Ethereum Test Network at address 0x2Bec4B5E67FE9e6Ba5768D83d49a71A60067B813, where it has undergone thorough testing

## IX. CONCLUSION

Our project, "Defund: Crowdfunding Platform Powered by Blockchain," is up and running, fully developed and live for everyone to use. Traditional crowdfunding has faced significant challenges due to a lack of transparency and the risk of fraud—problems that we can definitely tackle. We're confident that Defund provides a solid answer to these ongoing issues.

By building a decentralized platform that emphasizes transparency and security, we've made great strides in reducing the risks of fraud. Defund tackles the shortcomings of traditional crowdfunding systems, helping to build trust and allowing people to support meaningful causes with confidence, all while feeling secure against potential misuse.

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