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The Crowdfunding Application by Blockchain and ThirdWeb Hybrid Model

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Abstract: ***The advancement of Web3 and blockchain is happening rapidly in various fields, including healthcare, social services, and electronic voting. Blockchain technology is being used by crowdfunding platforms to combine its benefits of speed and low fees with traditional finance, creating a new way of raising money. By integrating Reacts user-friendly interface, Solidity smart contracts, Meta-Mask wallet integration and Hardhat development and testing capabilities, it forms a versatile and secure platform. This project aims to find out how much money is missing in the current crowdfunding market and offer them smart contracts and tools that use Ethereum to create their own application businesses. Hybrid Model Platform is a ThirdWeb tool that allows for easy and flexible scaling and visibility. this new crowdfunding app is a major leap in fundraising, fulfilling numerous customer requirements and poised to revolutionize crowdfunding with its fresh and inventive strategy.***
Keywords: Blockchain, Web3, Smart Contract, Meta Mask, Third-Web, Hybrid Models, Crowdfunding.

I. INTRODUCTION

Funding a project or some type of business with the aid of gathering cash from many people, specially using the internet, is referred to as crowdfunding. Crowdfunding has come to be a effective device to elevate price range and aid new initiatives, agencies and ventures. the integration of blockchain technology into public carrier applications has created a brand new technology of transparency, safety and performance. one of the primary players in this space is the “Binance Blockchain Crowdfunding App”, a platform that uses the ability of Binance smart Chain (BSC) to provide a unique and convenient crowdfunding enjoy.

Crowdfunding apps in general have confined security, so traders danger their cash to guide startups. Our effort to create this project is to create communique among investors and startups to save you such frauds. surely put, our aim is to create a cozy platform in which cash can be raised with out worry of fraud or corruption. this is wherein blockchain is available in reachable. Blockchain is a dispensed ledger used to document all transactions throughout multiple structures in order that information can not be changed later.

Hybrid models constitute a revolution in the discipline of crowdsourcing as they connect conventional domains and blockchain domains. This version combines the transparency, security and private networks, enhancing scalability and protection of blockchain. as a result we've bear in mind thirdweb platform. Binance Smart Chain is a blockchain network created by Binance that has many advantages such as high scalability, low transaction fees and fast confirmation times. These features make it an attractive option for public service projects trying to overcome some of the challenges associated with traditional blockchain networks. Additionally, the large user base and strong infrastructure of the Binance ecosystem provide a good foundation for the crowdfunding scheme to be successful. Combining the benefits of blockchain technology with traditional financial systems, the platform solves many problems while providing many benefits to creators and supporters. From start to finish, we'll cover the key features and benefits of the Binance Blockchain crowdfunding app, define its dedication to compliance and investor protection, and examine how a hybrid model can bridge the gap between blockchain and traditional finance. Whether you are an investor looking to raise capital for a project or an investor looking for an exciting opportunity, reviewing the Binance Crowdfunding app will shed light on the platform that is changing against the crowd.

II. LITERATURE SURVEY

A. Crowdfunding in Blockchain

In this project, we are investigating the integration of blockchain into crowdfunding. Researchers have examined how blockchain can increase the transparency, security and efficiency of the fundraising process.

B. Binance Smart Chain(BSC)

BSC process is important to understand, such as it provides effectiveness and low costs. Research on BSC architecture, consensus mechanisms, and network dynamics provides insight.

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C. Hybrid Models

We are investigating the idea of hybrid models and how they might integrate traditional banking with blockchain technology to offer a wider range of payment choices and improve accessibility.

The blockchain platform Thirweb has a strong emphasis on security, scalability, and anonymity. It uses a special consensus method known as Proof-of-Merit to verify transactions. Thirweb seeks to protect user privacy and data integrity while facilitating decentralized applications (dApps) and smart contracts. Efficiency and inclusivity are given top priority in its architecture for blockchain operations.

D. Crowdfunding Smart Contract Security and Challenges

This paper will discuss the security variations and challenges that you may face both during and after using a blockchain-based crowdfunding platform. Smart contracts are starting to play a bigger role in the crowdfunding ecosystem.

E. Blockchain is Revolution Crowdfunding

In this paper, we will explain the limitations of crowdfunding platforms and the benefits of blockchain technology and how it is the future of crowdfunding owing to the ease and transparency of this model.

F. Cross-Platform Compatibility

Explore cross-platform compatibility and the impact of expanding cross-platform collaboration across multiple blockchain networks.

G. Blockchain and its Needs

A distributed, decentralized, and unchangeable database and ledger shared by all nodes in a computer network is called a blockchain. Blockchain functions as an electronic database that records and manages transactions in a digital manner. Blockchain keeps a decentralized, safe record of all transactions. Blockchain's unique feature is its fidelity and security throughout the record.

Data in the blockchain is stored in groups called "blocks". A block is a structure that stores a set of data. Blocks have a storage function that allows them to be linked to previous blocks, thus forming a blockchain, hence the name blockchain.

A decentralized, transparent, and safe method of recording and verifying transactions is offered by blockchain technology. Its capacity to foster confidence and do away with the necessity of middlemen in all aspects of business accounts for its allure. Blockchain guarantees data integrity, lowers fraud, and guards against manipulation. Its decentralized structure boosts efficiency and lowers the possibility of a single failure. Furthermore, digital currencies and blockchain-based smart contracts can streamline procedures, cut expenses, and boost productivity.

Overall, blockchain solves trust, security, and efficiency issues, making it useful in finance, supply chain, healthcare, and many other industries looking to update and improve performance.

H. Hashing in Blockchain

Binance Blockchain and Hybrid Model Hashing of large amounts of money is a simple security measure. It involves converting sensitive data or transaction details into a long alphanumeric string called a hash. Hashes serve several purposes: First, they protect user privacy and increase data security by hiding personal information. Second, they ensure the integrity of financial transactions and smart contracts by creating unique identifiers for each document. This will help prevent fraud and tampering. Finally, hashes facilitate the consensus in blockchain collaboration necessary to authenticate and verify transactions. In general, hash is an important factor in ensuring the stability and trust of crowd and hybrid models in the Binance blockchain ecosystem.

I. Smart Contracts

Because smart contracts write everything straight into the line of code, they automate the execution of contracts between buyers and sellers. As a result, it is beneficial to show the outcomes to each and every participant without the assistance of outside parties.

"If/when...then..." conditions that are encoded into code on a blockchain are how smart contracts function. Once these preset criteria have been confirmed and fulfilled, a network of computer systems executes the commands. The majority of these actions consist of issuing tickets, registering a car, notifying recipients, and releasing monies to the rightful parties. After the transaction is finished, the Blockchain is updated. This implies that only those parties with permission can view the outcomes, and that the transaction itself cannot be altered.

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III. METHODOLOGY

A. *Architecture*

Fig. 1. represents the architecture of our Crowdfunding application. This shows how our web application with Solidity as our backend works. All the smart contracts that interact with the Ethereum blockchain are written in Solidity language . We have also used Hardhat ,which is an Ethereum development environment, along with the Chai assertion library to perform various tests on our smart contracts. And then later ThirdWeb is used to deploy the smart contract which the hybrid model for Blockchain.

We use React.js and TailwindCss as a frontend to serve JavaScript content to the browser and to provide responsiveness. When a user performs an action, it does not reach the server. Instead, the app runs in a web browser using web3 and ThirdWeb and communicates with the Binance Smart Chain (BSC). enter the key and send the transaction to the EVM network. These changes can be tracked in BSC to ensure transparency throughout the entire process. These public and private keys are never sent to the server because you cannot ask the user for their private number. So here the customer has more power and privacy.

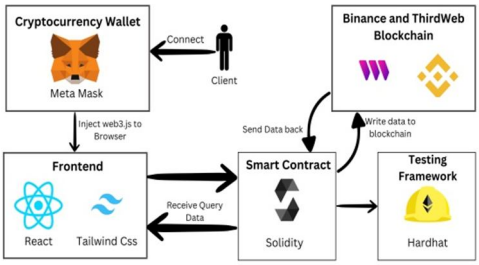


Fig -1: System Architecture of Application

B. *Proposed System:*

A custom script is used to construct smart contracts on Binance Smart Chain. A smart contract is an encrypted box that records outputs, processes inputs, stores information, and can only be read from the outside if specific requirements are met. We refer to it as "robustness". Actually, Binance can execute smart contracts with ease, and BSC offers online scripts for dependable codes to developers. All of the money that the provider receives is saved in the smart contract, where it cannot be altered or stolen, thanks to the way it is written. This money is stored in the smart contract itself rather than being delivered to the event creator directly.The following are the 6 modules that our application takes care of:

1) *Wallet Connect*: Users must have a cryptocurrency wallet (such as Metamask) to interact with our application. Initially, when a user enters our decentralized crowdfunding app, the cryptocurrency wallet is connected and then the user can make various transactions.
2) *Campaign Creation:* Users can create a campaign by providing relevant details such as campaign name, campaign description, donation amount, minimum donation amount, application deadline. A small gas fee is charged for each transaction. So for every transaction that needs to happen on the blockchain, we need to provide some amount of money for that transaction to be valid. When the transaction is completed after a few seconds, a new block containing the address of the contract will be added to the Ethereum blockchain. The Home Page then also displays this newly created campaign, with which the user as well as the contributor can interact.
3) *Fund the Campaigns:* Donors can search our app to look for events that might interest them. When donors find a campaign they like, they can support the campaign by donating Ether. After that, a Metamask pop-up will appear to confirm the change. The donor now becomes a supporter of the campaign and plays a role in deciding whether sellers will receive the revenue generated to date.
4) *Hybrid Model:* Thirweb is a blockchain platform emphasizing privacy, scalability, and security. It employs a unique consensus mechanism called Proof-of-Merit to validate transactions. Thirweb aims to enable decentralized applications (dApps) and smart contracts while ensuring user anonymity and data integrity. Its architecture prioritizes efficiency and inclusivity in blockchain operations.
5) *Withdrawal Request:* When a developer wants to withdraw some Ether from the funds he has earned so far for his campaign, he must first create a withdrawal request. The proposal must be approved by at least half of the campaign sponsors. If 50% is not voted, the seller will not be able to withdraw the money and will have to wait for people to vote again.

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6) *Approval:* When a seller wants to spend money, the cancellation request is notified to all sponsors. Therefore, the buyer must approve the request if he wishes. A participant can vote on a proposal for a sponsor, for example. Supporters can show their approval by clicking the "Vote" button next to the seller's removal request. This will then process transactions, pay a small fuel fee and add a block to the blockchain.
7) *End of Campaign:* Campgaign that has been created has the end date after that you cannot fund the campaign. Whatever the fund is raised is stored on your blockchainand after that the Campaigns will be terminated. All transactions taking place will be stored on the blockchain to ensure transparency in the entire process.

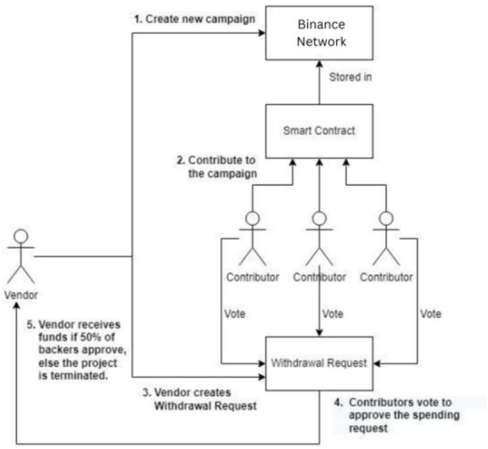


Fig-2: Flow of Crowdfunding the Application.

C. *Technology Used*

There are various technology and tools used while building Crowdfunding application in which some of them are :

1) *React and Tailwind CSS:* React is used for building the user interface. It enables the creation of dynamic, responsive, and user-friendly web pages, making it an essential technology for user interactions. And for responsive and interactiveness is handle by Tailwind Css.
2) *Solidity:* Solidity is a programming language specifically designed for creating smart contracts on blockchain networks. It is used to enforce the rules of the fund committee, including planning, financial management and payment rules.
3) *Hardhat:* Hardhat work as a development environment for Ethereum compatible blockchains such as Binance Smart Chain. It allows developers to write and test smart contracts, run tests, and upload them to the blockchain.
4) *Email js:* Email js is a platform that allows developers to send emails directly from client-side JavaScript. It simplifies the process of integrating email functionality into web applications by providing an API for sending emails without the need for server-side code. EmailJS supports various email services and templates, offering flexibility and ease of use.
5) *ThirdWeb:* Thirweb is a blockchain platform emphasizing privacy, scalability, and security. It employs a unique consensus mechanism called Proof-of-Merit to validate transactions. Thirweb aims to enable decentralized applications (dApps) and smart contracts while ensuring user anonymity and data integrity. Its architecture prioritizes efficiency and inclusivity in blockchain operations.
6) *Binance Smart Chain:* Based on blockchain technology, BSC provides an honest ledger for the handling of large amounts of money. It has a fast market and low cost, making it ideal for crowdfunding.
7) *Web3.js:* Web3.js is used to interact with the blockchain from the frontend. It enables communication with smart contracts, retrieval of blockchain data, and transaction handling.
8) *GitHub:* GitHub or similar version control platforms are used to manage the source code, collaborate among development teams, and track changes.

D. *Deployment*

First, we need to create account on thirdWeb and we load the local blockchain created by Hardhat to test and deploy our smart contract written in solidity. You can enter *npx hardhat node* to know addresses of various users.

As BSC is EVM-compatible, which means you can use the same Solidity language and many of the Ethereum development tools. However, you need to connect your development environment to the Meta Mask network. Ensure that the devlopement environment is setup and the contract written is compeletly fine.

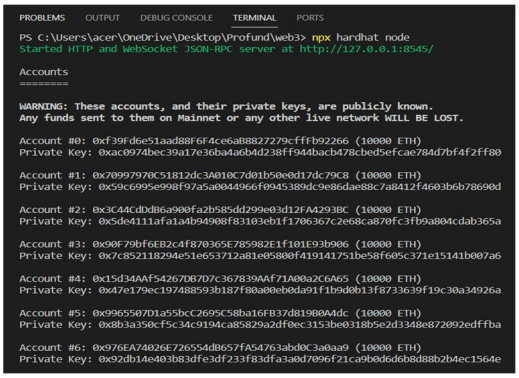


Fig-3: Hardhat Node Command

The Crowdfunding instance was then deployed to the Hardhat test network and the address of the deployed Crowdfunding contract was console logged in the terminal using the command npx hardhat run scripts/deploy.js --network localhost.



Fig-4: Deployed Smart Contract

The Crowdfunding application was then started by navigating into the client directory (which contains our frontend code) and running the command npm run dev.

After this you require Thirdweb login you should connect your wallet to thirdweb and sign-in. After that you have open cmd and type *npm thirdweb install.* After thirdweb is setup then you need to deploy your smart contract to thirdweb sever by command *npx thirdweb deploy.* After deploying contract to thirdweb then you need to authorize and you need to have secret and API key.

Once the contract is deployed suceessfully on thirdweb then you just copy the contract address and can use in your application.

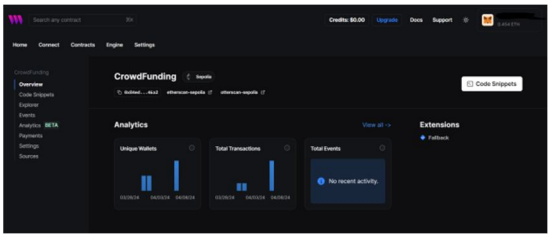


Fig-5: ThirdWeb Contract deployment

IV. RESULTS

We are able create Dapp application for Crowfunding with help of React, Solidity, ThirdWeb and responsive UI due to Tailwind Css. As because of ThirdWeb, Meta Mask and Binance it provides more transparency, scalability, and flexibility. The smart contract used in our application is shown below:

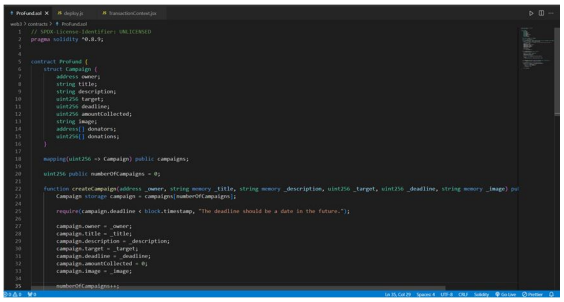


Fig-5: Smart Contract Used in Application

Moving on to the front-end part as it is been developed using react and tailwind css. It is simple page having Navbar with app name, About us, Contact us, Team member and Crowd funding button.

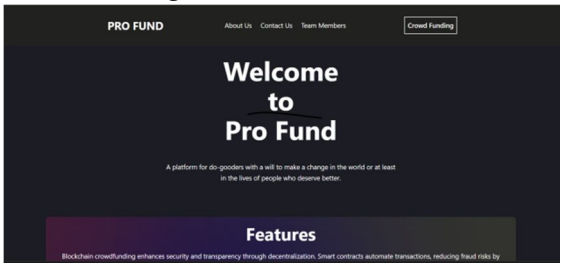


Fig-6: Front-end website page

In the Contact Us page comes with email js where you can send us the email and we will responsed to your query.

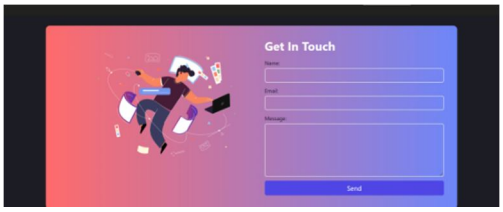


Fig-7: Contact Us page

Now when we click on Crowd Funding button then we are redirected to Crowd Funding website.

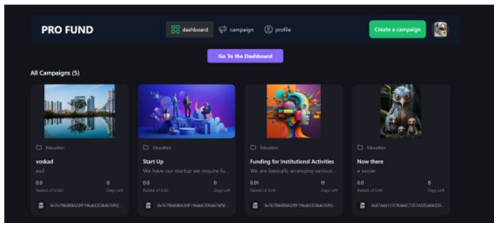


Fig-8: Crowd Funding Page

Here Firstly we have connect to the wallet and then you are further able create and fund the Camapigns. You have three sections:

1) Dashboard: Were you are able see all the Campaigns created by all users and organizations.
2) Campaign: In this section you are able to create the campaign. It is basically a form having fields such as Name, Title, Description, Fund Raise, End Date and Image of your Campaign.
3) Profile: This section contains the campaigns that you have created of your organization.

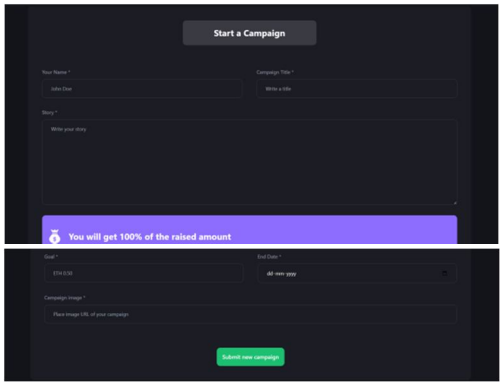


Fig-9: Create Campaign Page

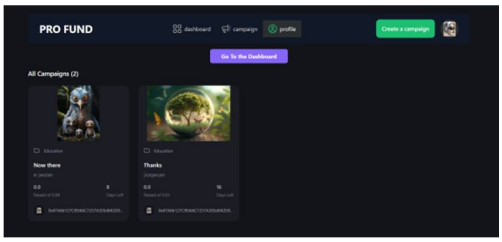


Fig-10: Profile Page

After the Campaigns are created the other users are ready to donate the Campaigns to fund the Campaigns you need to click on the Campaign and the fund card will pop-up as shown in below fig-11.

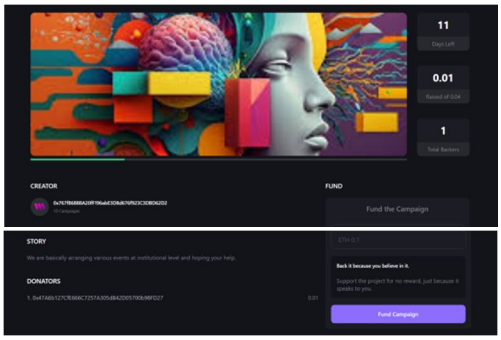


Fig-11: Funding Page

Funding Page contains the fields such as Owner of Campaign, Days left, Raised Fund, No of contributers, Story , and Fund Card where you put the Eth and donate to the Campaign.

V. CONCLUSION AND FUTURE WORK

In conclusion, a big step forward in the crowdfunding industry has been made with the Binance Blockchain and hybrid model crowdfunding application developed with React, Solidity, Harhat, ThirdWeb and Binance Smart Chain (BSC). The platform effectively blends the capabilities of blockchain technology with the creation of hybrid models, resulting in an easily navigable, safe, and transparent crowdfunding experience. The software is more dependable and draws in a diverse user base because to its low cost, security features, user training, and compliance management.

In this paper, we have discovered that the many flaws in conventional crowdfunding processes have been eliminated with the help of blockchain technology integration. This is achieved by removing the concept of central authority from the platform, which makes it decentralized and eliminates the need for middlemen while maintaining transaction transparency.

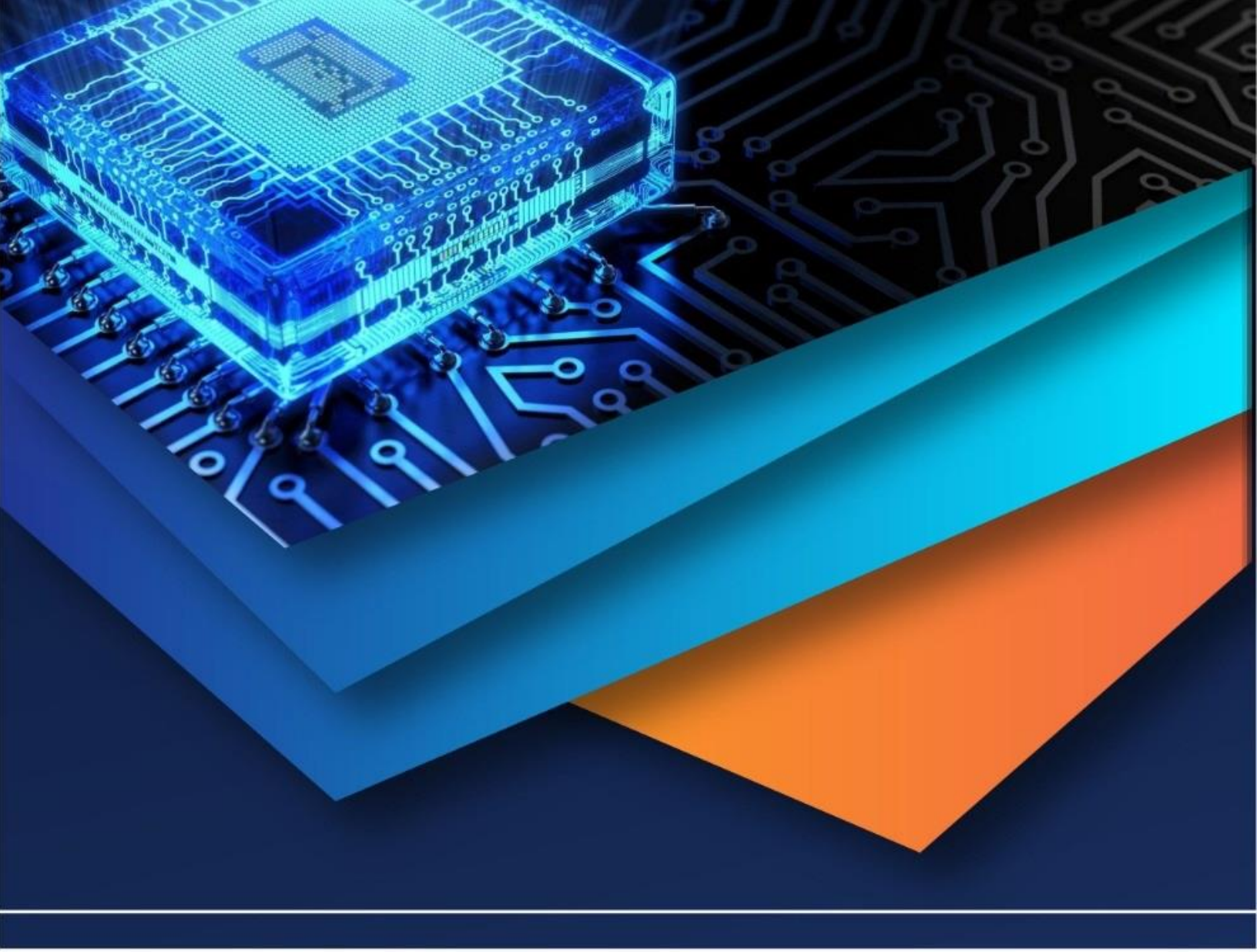
In order to comply with new standards, more work is required to assure coordination with diverse blockchain networks, scale worldwide to meet regulatory needs, and continue research. In order to gather user feedback and promote ongoing innovation, community interaction is essential for keeping the platform competitive and relevant in a rapidly evolving market.

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