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Survey Paper on Government Fund Allocation Using Blockchain Technology

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ABSTRACT: The tracking of government funds is a critical function that ensures accountability and transparency in the use of public resources. However, traditional tracking systems are often prone to errors, fraud, and inefficiencies, which can lead to misallocation and mismanagement of funds. Blockchain technology offers a promising solution to these challenges by providing a secure, decentralized, and immutable ledger that can track and verify transactions in real time.

In this abstract, we propose a government fund allocation tracking system that leverages blockchain technology to ensure the transparency and accountability of fund allocation. The system would utilize a smart contract, which is a self-executing code that defines the rules and conditions for fund allocation and tracking. The smart contract would be deployed on a blockchain platform, such as Ethereum or Hyperledger, to ensure that all transactions are secure and tamper-proof.

KEYWORDS: Blockchain, Transparency, Security, Funds, Encryption

I. INTRODUCTION

The proper allocation and tracking of government funds are essential to ensure that public resources are used effectively and efficiently. The use of blockchain technology in government fund allocation and tracking has the potential to revolutionize the way public funds are managed and allocated. Government agencies and other authorized entities can submit proposals for funding, which would be reviewed and approved based on the criteria defined in the smart contract. Once approved, the funds would be automatically allocated to the relevant project or initiative, and the transaction would be recorded on the blockchain for transparency and accountability. Additionally, the use of blockchain technology would enable the government to monitor the use of public funds in real time, ensuring that they are being used for their intended purpose.

II. LITERATURE SURVEY

Blockchain technology is a distributed and decentralized digital ledger that can record transactions between two parties without requiring a third-party intermediary. The use of blockchain technology in various sectors has increased in recent years due to its secure, transparent, and immutable nature. In this literature review, we will explore the various ways blockchain technology can be utilized to track government fund allocation and the benefits it provides.

Benefits of Blockchain Technology in Government Fund Allocation: There are several benefits of using blockchain technology to track government fund allocation. Firstly, blockchain technology provides transparency and accountability by creating an immutable record of transactions. This means that every transaction is recorded and cannot be tampered with, which reduces the likelihood of fraud and corruption. Secondly, blockchain technology can reduce the cost of tracking government fund allocation by automating the process and eliminating the need for intermediaries. Lastly, blockchain technology can provide real-time tracking of government fund allocation, which can help governments make informed decisions about where to allocate funds.

In Government Fund Allocation and Tracking System using Blockchain, The literature review highlights the potential of using blockchain technology to track government fund allocation. Studies have shown that blockchain technology can increase transparency and reduce corruption in government fund allocation. The proposed system aims to improve transparency and accountability in government fund allocation by creating a secure and immutable record of transactions. The system will have two modules: an admin module for the government to provide funds and a user module for users to request funds and check their transaction history and wallet balance. Overall, the use of blockchain technology can create a more transparent and secure environment for tracking government funds. In conclusion, The conclusion of the literature review highlights the potential of blockchain technology to address the challenges of corruption and lack of transparency in government fund allocation.

In Government Fund's Allocation and Tracking System Using Blockchain Technology, The conclusion of the system suggests that although there is no practical implementation of blockchain technology for the development of rural areas, there are various implementations on smaller parts that can be combined to create a "Fund tracking system for Scheme." The article highlights the potential of blockchain technology to provide advanced decentralized peer-to-peer security for financial transactions without the need for authorized third parties. The various research papers mentioned in the text provide useful information on the security and performance of blockchain technology, its implementation in private and public blockchain security, and its applications in IoT and financial systems. The paper also highlights the need to reduce the risk of revocation of transactions on blockchain forks that end up being discarded, and the impact brought by large-scale network latency on the fundamental properties of the blockchain. Overall, the research suggests that blockchain technology has immense potential and could be used to create secure and transparent systems for financial transactions in various domains.

The text discusses various research papers related to blockchain technology, including its security and performance, its applications in the private and public blockchain, its use in maintaining data integrity, and its potential future applications in IoT and financial systems. The papers also discuss the six confirmations convention to reduce the risk of revocation of transactions on blockchain forks and the possibility of double-spending within the Bitcoin blockchain based on changing the number of confirmations required and the computation power of attackers. The papers provide insights and analyses on the impact of large-scale network latency on the fundamental properties of the blockchain.

In Government Scheme and Funds Tracker using Blockchain, Introduction: The text describes the use of blockchain technology to create a fund tracking system for government schemes. The process involves encryption and hashing to secure transactional data, which is added to a chain of blocks in a transparent and incorruptible way. The system allows for full-proof and secure allocation and tracking of funds. The text includes a diagram (Fig:1) showing the blockchain process and a prototype model diagram (Fig:2) showing the properties and participants involved in the system. Additionally, there is a prompt for providing the details of the scheme (Fig:4) and the activity of transferring funds to project participants.

In Government Scheme and Funds Tracker using Blockchain, The proposed system is used to track the funds allocated to the state government as they travel through the government process at every stage. We here make use of blockchain technology to secure the transactions at each stage while maintaining transparency in every transaction sealing every transaction with proofs as the funds move ahead. This allows maintaining a crystal clear record with on-demand right to transactional data on a need-to-know basis. The system makes use of encryption to secure transactional data using hashes to maintain a block of transactions in a chain manner which is maintained and verified by every node involved to authenticate the transaction & save the data in a transparent form within the government.

In Blockchain for government fund tracking using Hyperledger.

, This paper describes a prototype that was developed using Hyperledger Composer. It then discusses the future development of this prototype and finally, concludes with the applicability of Blockchain,

III.PROBLEM STATEMENT

To design and developed a system for government fund distribution and tracking system management using a blockchain framework. This system carried out different modules such as Admin (Government Staff), Distributer, and end user. The implementation of custom blockchain provides data distribution in peer-to-peer network data security in a parallel manner.

IV. PROPOSED WORK

The most commonly used machine learning algorithms for The proposed system is used to track the funds granted to the state government as they go through the government process. It uses blockchain technology to safeguard transactions at each level while retaining transparency in every transaction and sealing every transaction with proof as the money goes forward. The system secures data using hashes to keep a block of transactions in a chain. It enables a complete proof, secure, and authentic financial distribution and tracking mechanism, which contributes to the formation of an incorruptible government. In our system, there are 2 modules i.e., Admin (Government) and User.

Admin (Government) Module: Government provides the requested funds to the user.

User Module: In this system, the user will request the funds according to their needs and also, and they can check their transaction history and wallet balance as well.

The user requests the funds from the admin (Government) then the request gets sent to the Government for approval. After that, the government views the request and then can approve or reject the request. The transaction is validated by the network's nodes (people in real life). Following this confirmation, the block is put on the blockchain along with a timestamp. After that, the transaction could be enforced. All transactions submitted in this manner will be noted and made publicly available to everyone.

V.I Project Overview

A project for a government fund allocation tracking system over blockchain technology would involve designing, developing, and implementing a system that can track the allocation of government funds using blockchain technology.

Here is an overview of the project:

1. Identify the scope and requirements: The first step in the project would be to identify the scope of the system and the requirements of the stakeholders, including government agencies, auditors, and citizens. This would involve understanding the current processes and systems for government fund allocation, as well as the challenges and pain points of the stakeholders.
2. Design the system architecture: The next step would be to design the system architecture, including blockchain technology and smart contract logic. The architecture would need to be scalable, secure, and cost-effective, taking into account the technical and regulatory constraints.
3. Develop the system: Once the system architecture is designed, the development team would need to develop the system, including the frontend user interface, backend logic, and integration with existing government systems. The team would also need to ensure the security and privacy of the system, using best practices for cybersecurity and encryption.
4. Test and validate the system: After the system is developed, it would need to be tested and validated, using both functional and performance testing. The testing would need to ensure that the system meets the requirements of the stakeholders and is scalable, secure, and efficient.
5. Deploy the system: Once the system is tested and validated, it can be deployed, either as a standalone system or integrated with existing government systems. The deployment would need to be carefully planned and executed to minimize disruption and ensure a smooth transition to the new system.
6. Monitor and maintain the system: Finally, the system would need to be monitored and maintained, using best practices for maintenance and support. This would involve monitoring the system for security and performance issues, ensuring that the system is up to date with the latest software and security patches, and providing support to users as needed.

Overall, a government fund allocation tracking system over blockchain technology would require careful planning, design, development, testing, and deployment to ensure its success. The system would need to be scalable, secure, and efficient, while also meeting the requirements of the stakeholders and regulatory frameworks.

V.II Research Scope

The scope for research on government fund allocation tracking systems over blockchain technology can cover various aspects. Here are some possible research scopes to consider:

1. Technical feasibility: The first scope of research could focus on the technical feasibility of implementing a blockchain-based system for government fund allocation tracking. This could involve analyzing the performance of existing blockchain systems, evaluating the scalability of the technology, and assessing the costs involved.
2. Security and privacy: Another research scope could be to explore the security and privacy implications of using blockchain technology for government fund allocation tracking. This could involve analyzing the potential vulnerabilities of blockchain systems, evaluating the privacy protections offered by the technology, and assessing the potential risks of data breaches.
3. Governance and regulation: A third research scope could focus on the governance and regulatory frameworks needed for implementing a blockchain-based system for government fund allocation tracking. This could involve analyzing the legal and regulatory frameworks governing blockchain technology and cryptocurrencies, evaluating the risks associated with using these technologies for government transactions and identifying best practices for governance and regulatory compliance.
4. Case studies and use cases: Finally, the research could explore case studies and use cases of blockchain technology being used for government fund allocation tracking. This could involve analyzing existing implementations of blockchain technology in government, evaluating the effectiveness of these systems, and identifying best practices for implementation and adoption.

V.III Features

- Decentralized Ledger
- Smart Contract
- Permissioned access
- Real-time tracking
- Immutable record keeping
- Auditability
- Transparency
- Security

VI.CHALLENGES AND LIMITATIONS

While blockchain technology can offer several advantages for government fund allocation tracking systems, it is important to note that there are also some limitations to its implementation. Here are some limitations to consider:

Scalability:-

The current infrastructure of blockchain technology can limit the speed and scalability of transactions. This could be a challenge when it comes to managing large amounts of data and transactions that are typical in government fund allocation tracking systems.

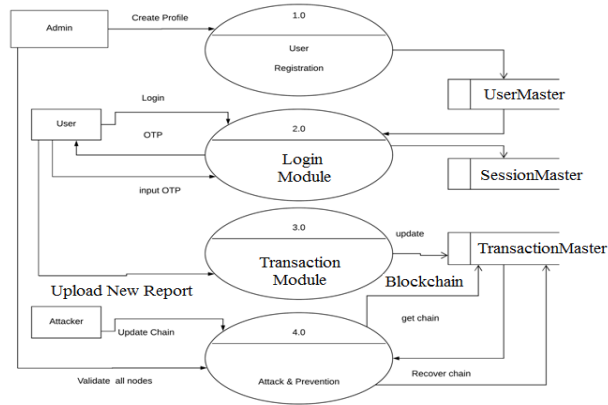
Cost:-

The implementation and maintenance of a blockchain-based system can be expensive, which could be a limitation for government agencies that are already constrained by budgets.

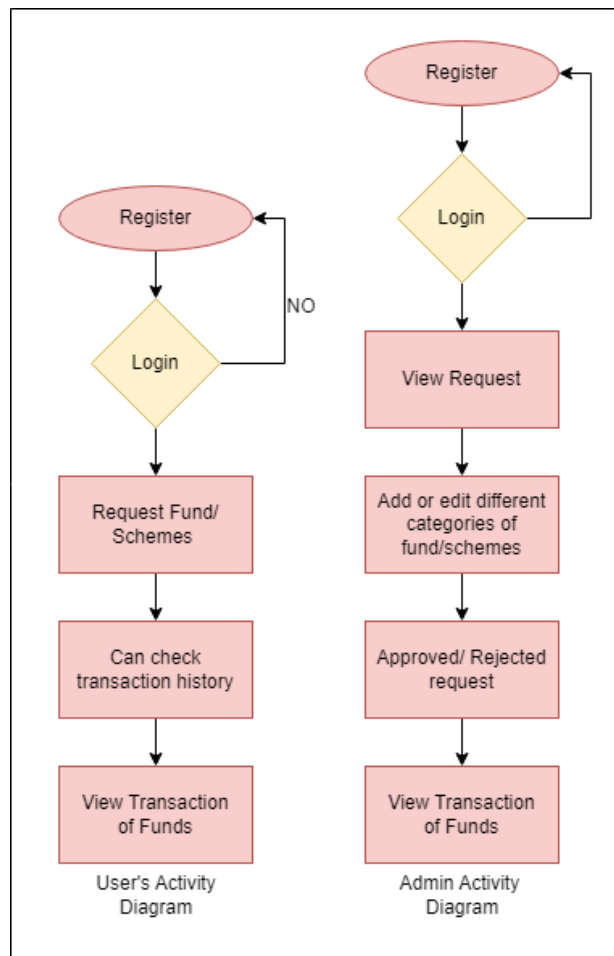
Regulatory concerns:-

Blockchain technology and cryptocurrencies are still relatively new, and there are regulatory concerns around their use for government transactions. Governments may need to navigate these issues before implementing blockchain-based systems for fund allocation tracking

VII. DATA FLOW DIAGRAM



VIII. ACTIVITY DIAGRAM



Activity Diagram



IX. CONCLUSION

In this full-proof, secure government fund allocation and tracking system, the allotted funds are tracked at each level until it reaches the beneficiaries. This proposed framework is added to assist the authorities to lessen corruption and offer transparency in all transactions because of the functions of blockchain-like immutability, proof of work, and security. It offers the right governance and transparency. It will maintain track of all transactions made. As blockchain technology is used the transactions as soon made cannot be changed and if there's any try of tempering, we can get to recognize approximately that easily.

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