SYNOPSIS

Project Title: DRUG TRACEABILITY IN HEALTHCARE SUPPLY CHAIN USING BLOCKCHAIN

Project Group No.: Group I

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Project Area: Blockchain Technology

Project Platform:

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Abstract

The goal of a drug traceability system is to track or trace where a drug has been and where it has gone along the drug supply chain, which is critical for public drug security and pharmaceutical company business. Traditional centralized server-client technical solutions have failed to meet expectations in terms of data integrity, privacy, system resilience, and adaptability. For drug traceability, we've proposed a totally new blockchain system. This solution is more secure and scalable than other options currently available. Furthermore, the suggested system can prune its storage effectively, resulting in a robust and useable blockchain storage solution.

A. Background

Drug traceability is critical for the health and well-being of patients, businesses, and the government. Patients and other parties involved in the drug supply chain could easily track the location of their medication if it had a dependable traceability mechanism. In fact, governments all around the world are increasingly making drug tracking a requirement. Prescription medications must be identified and tracked electronically and interoperably as part of the U.S. Drug Supply Chain Security Act (DSCSA), enacted on November 27, 2013, to ensure their safety in the country's supply chain. About eight years ago in China, the above-mentioned stakeholders were compelled to input the drug information of individual pharmaceutical goods into the official authorised IT system whenever pharmaceuticals entered or exited their warehouses.

An effective drug traceability system should be able to maintain track of or trace drug transactions as they move through various supply chain participants. It should provide stakeholders and patients with trustworthy information about the flow, particularly regarding the origin of medicine production for anticounterfeiting purposes. In some cases, it could be utilised as a means of tying the hands of the relevant parties in the control of drug security. There must also be a high level of privacy for traceability data, especially that pertaining to statistical information on drugs that have passed through the stakeholder's hands (such as productivity, sales volume, and so on).

For the first time, a blockchain system for drug traceability and regulation is presented in this study. As time goes on, it rebuilds the entire service architecture, ensuring the authenticity and privacy of traceability data, while at the same time, achieving a finally stable blockchain storage There have also been presented algorithms that mirror the practical workflow of the medication supply chain.

B. Aim or Purpose of Project

- Healthcare supply chain is a complex network of several independent entities that include raw material suppliers, manufacturer, distributor, pharmacies, hospitals and patients.
- Tracking supplies through this network is non-trivial due to several factors including lack of information, centralized control and competing behaviour among stakeholders.
- Such complexity not only results in inefficiencies such as those highlighted through COVID-19 pandemic but can also aggravate the challenge of mitigating against counterfeit drugs as these can easily permeate the healthcare supply chain.

C. Method Used

- Our method identifies and involves significant stakeholders in the medication supply chain, such as the FDA, suppliers, manufacturers, distributors, pharmacies, and patients, whereas the FDA, suppliers, manufacturers, and wholesalers are the only ones involved.

- We make a concerted effort to identify and disentangle linkages between stakeholders, on-chain resources, smart contracts, and decentralised storage systems, which is currently lacking.
- We use smart contracts technology to achieve real-time, seamless traceability with push alerts, reducing the need for human intervention and, as a result, unnecessary delays.
- Each drug Lot is given its own smart contract, which generates an event whenever there is a change in ownership and sends a list of events to the app user.

D. Findings/Results

1. Drug Traceability
2. Security
3. Decentralized network

E. Conclusion

We looked into the problem of drug traceability in pharmaceutical supply chains and found that it is especially important in the fight against the sale of fake medications. Using blockchain technology, we have created and tested a system for tracking and tracing pharmaceuticals in a distributed fashion. Because of the cryptographic foundations of blockchain technology, we suggest a method that makes use of smart contracts on Ethereum blockchain to automatically record occurrences and make those records available to all stakeholders.

Signature of following member :

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