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Land Registry Management System Using Blockchain

Sanjana Gate, Rohan Temgire, Atharva Bankar, Rohit Chavan, Prof. Priyanka Sherkhane
Department of Computer Engineering
Terna Engineering College,
Nerul, Navi Mumbai, India

Abstract- The present Land Registration System is a time consuming process and it involves a lot of vulnerabilities and fraudsters use it to cheat the common people and the government. The incomplete/improper registration leads to dispute of ownership and litigations of the land. In this project we make use of blockchain technology to overcome some vulnerability in the existing system. We use Metamask to proceed with the transactions and for verifying the users on our system. This application provides a simple and intuitive user interface, where users buy and sell their lands. The Land Inspector is the one who verifies and approves all the transactions and user accounts. With this system, users can ensure enhanced security.

Keywords- Metamask, Blockchain, Security.

I. INTRODUCTION

A blockchain is a distributed database or ledger that is shared among the nodes of a computer network. As a database, a blockchain stores information electronically in digital format. One key difference between a typical database and a blockchain is how the data is structured. A blockchain collects information together in groups, known as blocks that hold sets of information. Blocks have certain storage capacities and, when filled, are closed and linked to the previously filled block, forming a chain of data known as the blockchain. Land Registry is a scalable decentralized application that enables buyers and sellers to deal directly without the involvement of intermediaries on the blockchain platform.

This technology builds trust between parties in transactions as the agreement is implemented and imposed automatically. It also makes business transactions faster and more organized. It ensures the originality of land records, builds customer's faith in the government, and improves the security of data.

For the validation or proof of this blockchain technology in the land registry, the concept of the smart contract is followed. A smart contract is the legal proof of ownership and contains the history of the property.

II. LITERATURE SURVEY

Khan Rijwan, Shadab Ansari, Sneha Jain, and Saksham Sachdeva [1], have used Ethereum blockchain for land registration purposes which keeps track of the property ownership as it has a distributed system which stores all the land history and shares it among the interested buyers. The stakeholders are the seller, buyer and land inspector. It makes the whole registration, selling and buying process seamless, easy to use and hustle-free and secure by using smart contracts.

Krishnapriya, S., & Sarath, G. [2] have discussed a secure land registry implemented using blockchain which works on the basis of majority consensus. By implementing the land registry in blockchain, the security issue is resolved to a great extent. The hash value calculated for each block will be unique as it is linked to the hash of the previous block.

Singh, P. [3], has discussed that the blockchain technology which is a very secure way for doing any transactions is used for making land related transactions. It also helps in maintaining records with government authorities as well as the customers. The history of past transfers of ownership is used to help in verifying the current legal owner of the land. Once the land transfer task completes, the information automatically updates and saves on that blockchain platform, and this process is the safest and tamper-free mode of the operating system.

III. EXISTING SYSTEM

Land record data are still being stored either on a centralized server or on paper-based huge registers that are being monitored by a single person. Although the government has taken steps in digitization of land records, still much land data needs to be saved onto a computer which is a centralized server in nature. This centralized server can become a single point of failure, i.e., due to attacks by hackers and due to environmental factors, and the person who is managing and overseeing the complete system can also forge the data. Middlemen and brokers are an integral part of every big business as they know more about market offerings. Buyers and Sellers usually prefer to call them to build a full support team.

As a result, buyers acquire a deeper understanding of the market and identify lower/higher prices for the transaction. There have been several cases of imposters posing as the seller of a property. If an imposter successfully pretends as

a property owner, they may receive the full amount after completion and escape with the funds. In many of the cases, both sellers and buyers were unaware of the fraud until discovered by the land registry as part of a spot check exercise.

IV. METHODOLOGY

Smart Contract Definition for Land Registry in Blockchain. In this system, Blockchain has been used for faster execution of land transactions. This system typically considers a land sale transaction and the process is carried in the below 5 steps:

- Step 1: The users have to register on a client-side application.
- Step 2: The seller must upload land documents in order to initiate a sell transaction.
- Step 3: The buyer requests the land owner to view the land details.
- Step 4: The land inspector verifies the seller and buyer along with the sale deed.
- Step 5: The hash value of the document uploaded by the owner is the same as the hash value at the time of buying the property (signing) then the document is 100 percent authenticated.

V. WORKING MODEL OF THE SYSTEM

The system displays the main page i.e. the landing page of our web app. Further it checks if Metamask extension is present or not. If it isn't installed the user of our website is required to install the Metamask and then he's allowed to use the website. Metamask is required on our website for validating the person's identity. Once the Metamask is set up, the system gives the user two options, i.e. to Login if he is an existing user, or to register if he's a new user.

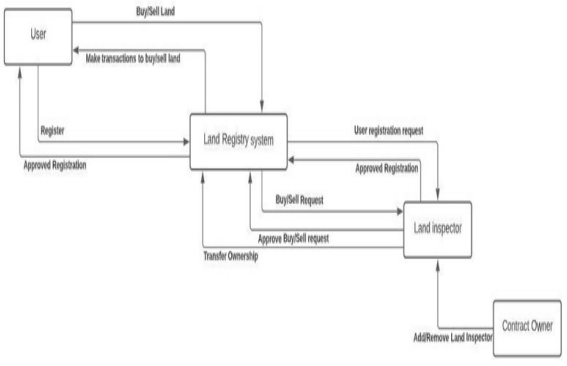

Fig 1. Context Level Diagram.

Once the user registers, the Land Inspector checks and validates the user, and it's up to the Land Inspector if he approves the user or not. Logging in into the system, the system checks if the user is a buyer, a seller or a Land Inspector. The transaction made by the buyers and sellers on the platform is verified by the Land Inspector. He has the power to cancel the transactions. He checks for all the valid documents and accepts the transaction. All the transactions are made using Ethereum coins.

VI. CONCLUSION

This whole system explains the importance of the absence of third-party involvement in a process that is so delicate which also needs to be constantly updated. The usage of a decentralized platform and implementation of blockchain along with smart contracts guarantees both security and synchronization which has been implemented efficiently.

This work dealt with the basic smart contract creation and deployment of the Land Registration process. All the functionalities thought necessary in the land registration process have been implemented and tested. There is a significant scope to develop this project further by designing a suitable web application and integrating it with the smart contract and Ethereum MetaMask application to make it more users friendly and easy to use.

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