Secure Land Registration Using Blockchain

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Abstract **:The current land registration system in India involves a paper-based approach that is susceptible to fraud, errors, and security risks. The traditional method is time-consuming and involves a complex documentation process, which contributes to the rising cases of fraudulent activities. The blockchain model offers an immutable and decentralized public ledger that can enhance the accuracy and security of land records. Removing middlemen, the blockchain land registry platform can accelerate the validation process of land ownership, reduce costs, and decrease the time required for land registration. Prevent fraud, store land ownership records, and facilitate ownership transfer through cryptographic algorithms and smart contracts.**

Keywords: Land Registration, Blockchain, Smart Contract, Secure .

I. INTRODUCTION

Land registration is a process of recording detailed information regarding land, such as ownership and property size. Currently, India uses a paper-based land registration system, which involves physically registering the land system is not transparent, recording of property sales is challenging, and storing data is also inadequate in terms of data security. Which causes fake identities, forged papers, and absolute loss of information. “Secure land registration using blockchain” is a digital approach for selling and buying land in a decentralized manner using blockchain. Proposed system based on blockchain technology which ensures data integrity and secure transaction

II. EXISTING WORK

In the current land registry system, all the documentation is done physically with paper and verified by checking physical registers. The buyer will approach the notary department to prepare the official documents for the transfer of land. Surveyor department to verify the actual physical measurements and location of the land as specified inthe land record/papers. Recording office take buyer, seller identity and verify it. Land mutation department then submits and update all the land documents to the revenueand registry department for the final updating of the records. Several states have introduced online portals where users can access information related to land records, apply for property registration, and track the status of their applications. Many states have initiated programs to digitize land records, making them available online for public access. This includes details such as ownership records, survey numbers, property area, land type, and other related information. In certain states, property buyers and sellers can fill out and submit applications for land registration online. This process includes uploading necessary documents and paying registration fees digitally. Some states facilitate the payment of stamp duty and registration fees through online modes, allowing for secure and convenient transactions. Online systems often provide tools for users to verify property details, track the progress of their registration applications, and obtain digitally signed documents.

III. PROPOSED WORK

Secures and verifies land records by using blockchain for storing these information. blockchain land registry platform can offer you a distributed database where anyone can record and access information without the involvement of any centralized authority. platform will allow you to upload the title documentation to the

blockchain network where signers can sign the document and other users can verify it when needed. smart contracts can make the process simpler by automating verified transactions. In recent times, a lot of problems are faced by commercial real estate industries and land registration systems where even though the data is in digital form , they are stored on disparate systems and thereby lack transparency, trust and efficiency. The intention is to implement a small module of the land registration process with regards to the state of Maharashtra. We proposea private and permissioned blockchain system that restricts the participants who can contribute to the consensus process, to overcome the obstacles faced earlier as mentioned Our blockchain system makes use of Asymmetric cryptography for security of users and distributed consensus algorithms for ledger consistency. The main features of blockchain technology are decentralization, persistence, anonymity and audibility and an amal- gam of these results in reduced cost and improved efficiency, and reliability In our portal, we register land users by taking into account all their credentials and mandatory verifieddocuments where the admin invokes the smart contracts Put for Sale and Change of Ownership a for the purpose of selling and buying the land. Once all the necessary conditionsare met then only the user is eligible to buy or sell the land. After the completion of the transactions one can view all the transaction history including all its previous owners, the date of purchasements and summary of all land details. The lands are displayed areawise or land id wise as per the usersˆ convenience. Thus our system works efficiently and caters to the need of a modified and decentralized land administration system.

IV. METHODOLOGY

A. Approach

To overcome multiple problems discussed earlier, blockchain implemented by hyper ledger fabric was proposed to replace the existing system. The Hyperledger fabric is a blockchain platform that is an open source and business specific distributed ledger technology. The working has been divided into 2 modules where module 1 gives a detailed description of the working of the administrator with regards to registration and invoking the smart contracts whereas module 2 gives a detailed brief of procedures related to change of ownership and completion of the purchasement of land. to register a land to their name. The platform is handled by an admin peer who acts as a super admin and manages all transactions and records.

1) Register Users : The admin adds users to the platform by filling in a form with their details that include their name, email, phone number, their unique identification (like Aadhar and pan card) details, their occupation, their account balance, their electricity bill to verify the address entry and the criminal history details of the user

2) Register Land : The admin then adds the land asset record by filling a form that contains the land identity number, the location of the land, the type of land, the price of land in units, the size of the land in acres, the 7/12 contract details to verify the land, the corresponding contract number and finally the identity number of previous owner and the current owner of the land.

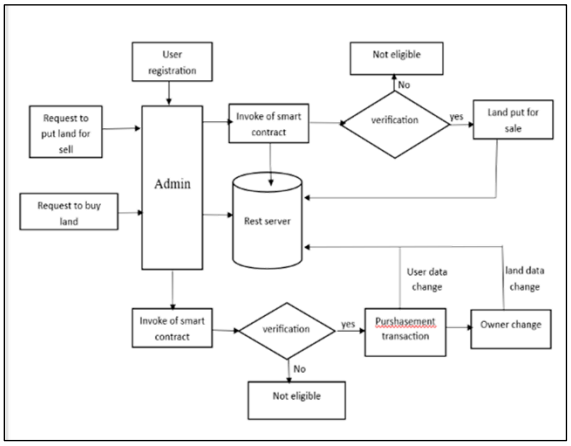

Figure 1 : System flow

3) Put a land for Sale : When requested by the User (owner) to put his land for sale, the admin invokes the Put For Sale transaction that in turn invoke the smart contract that contains the business logic for putting his land for sale

a) Changing Owner : The current owner is assigned to the previous owner attribute, while the buyer is assigned to the new owner attribute of the land asset.

b) Money Transfer : The seller gets the amount he quoted on the land into his account, while the buyer has to pay the quoted price along with some additional charges like the stamp duty and registration fee (to the

registrar). The value of the fees vary from time to time and city to city.

c) Initializing state of land : The land asset now belongs to the new owner. It is up to him to put the land for sale or not. So this attribute of the land is reset for the new seller until he decides to sell the land later

V. MODELING AND ANALYSIS

Land registration needs special attention to all its constraints. If a seller wants to sell a piece of land to the buyer A at a certain price x while to the buyer B at price y. The buyer A should be unaware of the price quoted to buyer B and vice versa. In this way the seller can deal with his buyers in a more personalized manner. Such transactions are possible only when using a permissioned blockchain network. This would not only help in increasing confidentiality of data among multiple customers, but also maintain the privacy of the business between the buyer and the seller. Other participants involved in the business are also not aware of the internal details of the deal. They only focus on whether the transaction can be validated according to the constraints specified in the smart contract. Blockchain technology has many approaches to a different problem statements. All these approaches have to be compared and based on the analysis the best approach for the current problem has to be selected.

VI. RESULT AND DISCUSSION

Capable of increasing transparency over ownership and valuation as well. In future, we will develop a prototype in the Ethereum blockchain platform, to show the stability, secu- rity, and effectiveness of our proposed system in land administration System is upgraded further and integrated with useful API then this will lead to faster transactions and will eventually lead to easement of the entire process, thus making the entire system hasslefree and convenient in the long run which would be beneficial to the mankind. As our im-plemented system is currently subjected to deployment of transactions where we directly make use of all the documents which are already verified manually by the authority, in future our scope could be expanded by integrating our system with government API. By doing so we can verify the users and their deeds automatically in a simple manner. Also, incorporation of a language translation tool can be done to users who speak their nativelanguages. Lastly, we can also keep a track of the entire history of a piece of land and add various dimensions to our system and thus making it more reliable and user friendly.

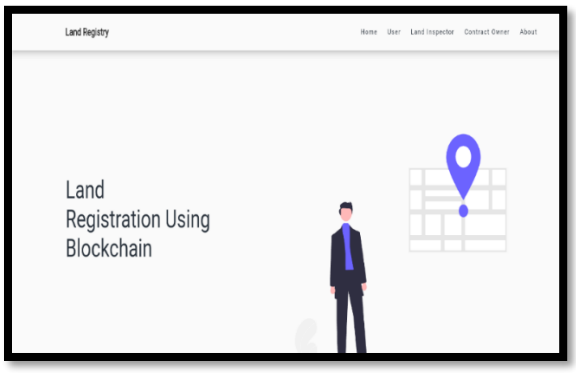

Fig 2. Home Pages of Land Registration System

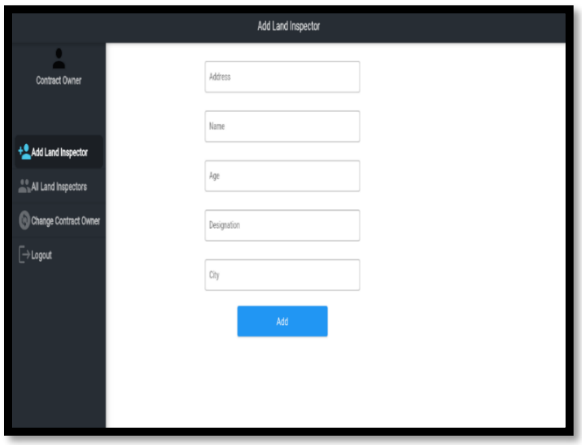

Fig 3. Add Land Inspector

Fig 4. Land Inspector Dashboard

VII. CONCLUSION

We proposed a secure, smooth and easy to use platform to facilitate land registration. Blockchain-based land registry systems might offer a decentralized answer to the issue of public corruption, privacy breaches, and mismanagement. Blockchain is one of the most secure ways of storing data without it being changed. It is a distributed ledger that is open to anyone and once data is put into it, it is very difficult to change or meddle with it. Using this property of blockchain we want to put it to use into one of the most fraudulent systems in India, the Land Registration System. Our system uses blockchain with the employment of Hyperledger. This gives rise to a system that is more evolved and features all the activities like buying and selling in an efficient and reliable way. Blockchain technology made this system secure and faster. If this kind of system is upgraded further and integrated with useful API then this will lead to faster transactions and will eventually lead to easement of the entire process, thus making the entire system hassle free and convenient in the long run which would be beneficial to the mankind.

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