Modern Land Registration and Transactions using Blockchain

Shashikant V. Athawale

Department of Computer Engineering, AISSM College of Engineering, Pune 411001, Maharashtra, India

Abstract—

In India, as well as many other parts of the planet, real estate management is an often unproductive and not secured process. Creating a system that not only speeds up the process of land registration but also makes it safe and efficient will be helpful. Over the last 9-11 years, blockchain technology has evolved into one of the world's most cutting-edge and secure technologies. There is enormous potential to use Blockchain technology within the land industry as it represents one of the most advanced and secure technologies on the horizon. Blockchain has evolved over the past 9-11 years. In this study, we describe a blockchain-based land management system that will improve land management transparency, efficiency, and security. Using the decentralized data storage system and its interactivity with Ethereum Virtual Machine (EVM), a smart contract can be created which can be used for real estate management using blockchain smart contracts. As part of a wise contract, estate owners and users will receive a detailed design and interaction mechanism. The transaction data will be stored on a distributed blockchain, which will be extremely secure and not vulnerable to hacking. The user can initiate, create, modify, or terminate a wise contract, thus potentially offering a more immersive, intuitive, and visually appealing contracting experience, while land agents and owners can enjoy greater profitability and sales. An important real estate management problem worldwide is solved with this practical solution.

Keywords : Blockchain, Smart Contracts, Real Estate Management, Ethereum Virtual Machine, Transparent Contracting Process

I. Introduction

Since land is a high-valued asset, it is vital to have accurate records identifying the current owner and providing proof that he is indeed the owner. With these records, you can:

a) preserve owner's rights

b) avoid sale fraud

c) resolve disputes

d) ensure ownership is successfully transferred to brand new ownership Thus, it's far important to preserve the correctness and completeness of this information, and save you unauthorized, fraudulent changes.

II. CURRENT LAND REGISTRATION PROCESS IN INDIA

Land purchases are vital in India, and you need to pay close attention to every phase of the process. Especially, you need to ensure that all the records are free of any title defects.

Getting your land registered requires the assistance of a legal professional as they examine each and every document and advise on whether to proceed further.

Procedure for land registration:

Document verification:

The first step should be to verify all documents related to the land.

a) Drafting of the deed: Regardless of how you obtained the land, you should ensure you possess the correct deed. For example, if the land is a gift, a gift deed is required. If it is a purchased one, a sale deed mentioning the contract, payment, terms, and conditions of the agreement between the seller and the purchaser is necessary.

Encumbrance certificate: This document confirms there are no loans or mortgages affecting the land.

b) Preparing stamp paper: Stamp duty is a fee for the government to be paid on property transactions and related documents like conveyance deeds, sale deeds, and sale agreements. To obtain the stamp paper, you need to buy it from authorized vendors.

c) Execution of the deed: Deeds have to be executed at the Registrar's office and both parties must be present to sign the documents. If either party, the seller or purchaser, is unavailable, a Power of Attorney can be used to execute the deeds.

d) Registration: The registration of a plot of land is a final step after all the paperwork has been reviewed and found to be correct. Personal documents like PANs, Aadhar numbers, etc. For land, there is no field inspection by the authorities, unlike for residential or commercial buildings. Land registration currently faces the following challenges:

2.1. The Involvement of middlemen and brokers

Mediators and brokers are essential parts of any large corporation since they have a better understanding of request immolations. Buyers and Merchandisers frequently seek assistance from these in order to obtain dependable assistance. As a result, buyers have a better grasp of the request and locate lower/ advanced rates for the sale. Because real estate is an enormous business, it involves a large number of actors, including brokers, lenders, interposers, and original governments. Mediators acquire needed information from dealers, uncover crimes, and interpret and smooth the execution of real estate deals. It results in new expenses, making the entire ecosystem valuable.
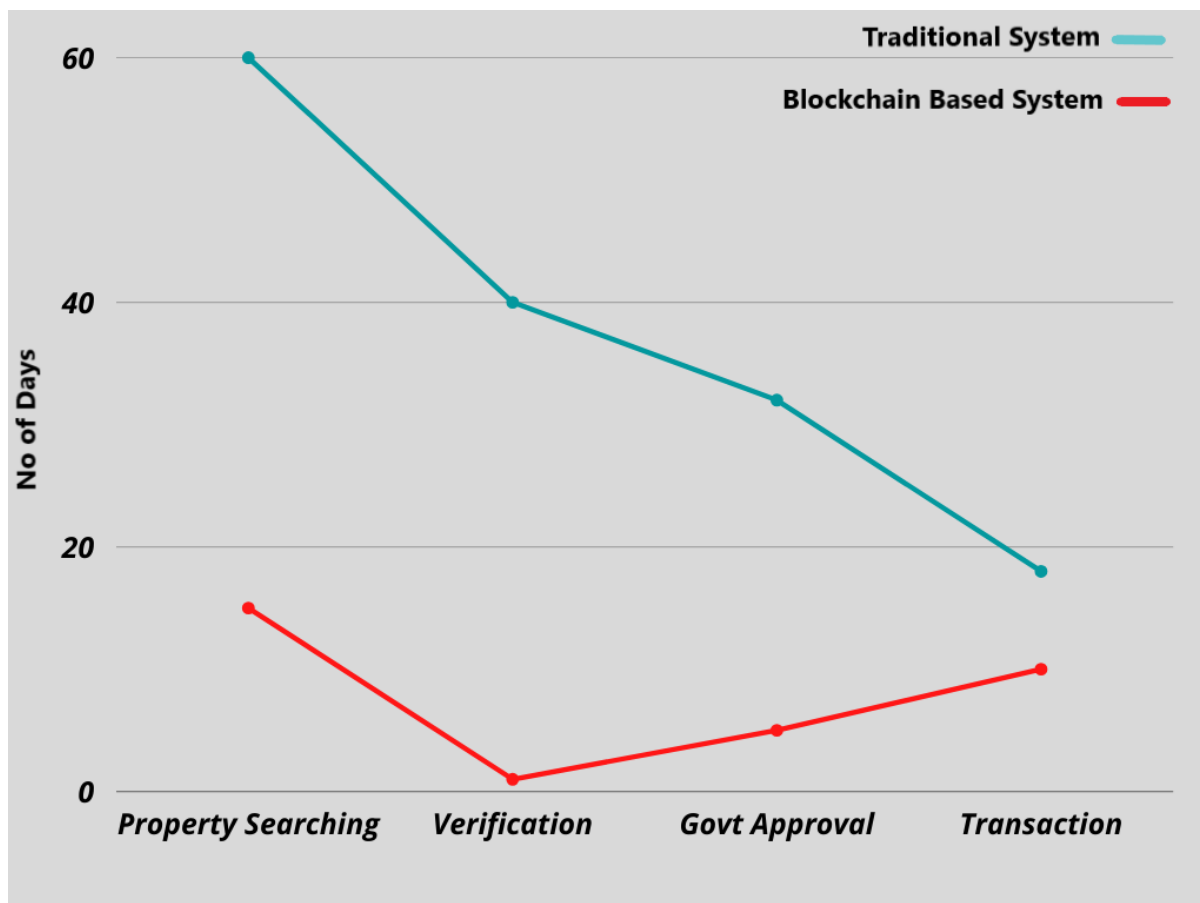
2.2. The increasing number of fraud cases

Impersonators acting as property dealers have been reported in various cases. If an impostor successfully impersonates a property owner, they may concede the whole amount after completion and flee with the funds. Both merchandisers and buyers were often unaware of the scam until it was found by the land register during a spot check.

2.3. Time Delays

Property registration is a complex procedure, as various legalities and paperwork are involved in it. Due to this complexity, it takes a lot of time for registration and transaction.

III. THE PROCESS OF LAND REGISTRATION ON OUR PLATFORM

Stakeholders involved in the Blockchain Land Registry Platform:

• Buyer: Those who are interested in buying land use the platform to find the property, request access, and communicate with the seller so that they can obtain the land title.

• Seller: The platform is used to manage property details and to transfer land title to a buyer who has expressed an interest in purchasing the land

• Land Inspector: The audit of the land transfer process is done by legal authorities and is supervised by these authorities.

Stepwise approach for land registration:

Step 1:

A user registers to the platform: On the blockchain land registry platform, users who want to sell or acquire properties create an account. They can enter details such as their names, government-issued IDs, and designations. Users submit their identity information to the blockchain, which stores a hash of that information.

Step 2:

Property descriptions are uploaded to the platform: Sellers can upload photographs of their properties and documents, as well as locate the location of their land on a map. All buyers who have registered can access the property details after they have been uploaded to the platform. The transaction that represents the seller listing the property details is recorded on the blockchain.

Step 3:

The seller receives requests for access to the listing. A buyer who is interested in a certain property can inquire about it. The sellers are alerted when property access requests are received. The buyer's profile can be accepted or rejected by the seller. The buyer can review the property's past ownership data and make a purchase request. Sellers and purchasers record transactions on the blockchain in response to their requests, ensuring that the transactions are authentic and trackable.

Step 4:

Property ownership transfer request approved by the seller, land inspector notified: If the property transfer request is approved by the seller, the land inspector receives the notification to begin the transfer process. When the smart contract triggers, the land inspector is given access to the documents. After the inspector verifies the documents, a meeting is scheduled between the buyer and seller for the ownership transfer.

In addition, the record of the meeting is entered onto the blockchain in the event that future property disputes arise.

Step 5:

Transacting by Land Inspector and initiating transfer:Land Inspector verifies buyer and seller paperwork before uploading them to the blockchain land register network. In front of the land inspector, both the seller and buyer sign the document transferring ownership. Documents signed with the digital signature are stored in the database, and transactions for that document are recorded on the blockchain. When smart contracts are triggered, cash are transferred to the seller and ownership of the title is transferred to a new buyer. When all authentication conditions are met, funds can be transferred within minutes, eliminating the need for the seller to wait.

Step 6:

Validation and Authentication of Registered Land Documents: During any dispute, any authorized party can upload all official documents (authenticated) and perform a hash function search to determine the validity. Authentication is complete when the hash created after uploading the document matches that created when it was signed. After uploading the document, no changes were made.

IV. SMART CONTRACTS TO TRIGGER THE EVENTS

```
function registerUser ( string memory _loginId, string memory _password, string memory _name, uint _age, uint
_aadharNumber, string memory _panNumber, uint _contactNumber ) public {

    require(!userRegistered [msg.sender] , "You have already registered");

    user_Detail [msg.sender] = User( _loginId, _password, _name, _age, _aadharNumber, _panNumber, _contactNumber );

    userRegistered [msg.sender] = true;

}
```

```
function viewMyDetails() public view returns(string memory, string memory, string memory, uint, uint, string memory, uint){

    require(userRegistered[msg.sender] , "Please register first");

            return ( user_Detail[msg.sender].loginId, user_Detail[msg.sender].password, user_Detail[msg.sender].name,
user_Detail[msg.sender].age,          user_Detail[msg.sender].aadharNumber,          user_Detail[msg.sender].panNumber,
user_Detail[msg.sender].contactNumber );

}
```

Conclusion

In the process of land registration, there are numerous issues, such as the involvement of brokers or middlemen, time delays, and so on. The authors of the research offer a seamless, straightforward, easy-to-use, and hassle-free information platform to make this procedure easier. As a result, registrars in India, as well as registrars in many other nations, will no longer encounter land registration issues. The processes in the land registration process are described in full in the document. Paperless land registration will protect documentation of property ownership from various manmade and natural disasters, in addition to making land registration easier. Blockchain is getting a lot of popularity because of its inherent security features. As a result, adopting blockchain to record land transactions is a critical component of generating permanent records. Many further features can be added to this platform. The land is a volatile asset that cannot be liquidated in the current situation. Land assets can, however, be liquidated using a cryptocurrency associated with the land record created by a seller on the blockchain network. As a result, the platform's scope is vast, and it can be used in a variety of situations.

References

 [1] Sai Apurva Gollapalli | IEEE Xplore Author Details

[2] N. Shanthi | IEEE Xplore Author Details

[3]https://www.researchgate.net/publication/349443604_A_conceptual_framework_for_blockchain_smart_contract_adoption_to_manage_real_estate_deals_in_smart_cities.

[4] Salman Humdullah | IEEE Xplore Author Details

[5]   https://www.shearman.com/-/media/Files/Perspectives/2021/06/Blockchain-in-Real-Estate-Practical-Law-Article-Kris-Ferranti-May-2021.pdf

[6] https://ieeexplore.ieee.org/author/37088419918

[7] https://bit.ly/3LK15I8

[8] https://ideas.repec.org/a/arp/srarsr/2019p53-56.html

[9] Real Estate Management System based on Blockchain | IEEE Conference Publication

[10] https://www.investopedia.com/news/how-blockchain-technology-changing-real-estate/

[11] A secured land registration framework on Blockchain | IEEE Conference Publication

[12] https://www.ijraset.com/research-paper/real-estate-land-transaction-system-with-blockchain

[13] International Journal of Innovative Research in Computer and Communication Engineering:: (ijircce.com)

[14] Ishita Mishra | IEEE Xplore Author Details

[15]https://www.researchgate.net/publication/340830321_Blockchain_based_land_registry_system_using_Ethereum_Blockchain

[16] Influence of size and morphology on the optical properties of carbon nanostructures | SpringerLink

[17] New technology interventions including blockchain technology in land record and registry management in India | Proceedings of the 13th International Conference on Theory and Practice of Electronic Governance

[18] Smart Contract Definition for Land Registry in Blockchain | IEEE Conference Publication