# Real Estate Management System Based on Blockchain

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*Abstract— In India, as in many other countries of the world, real estate management is a very inefficient process. It will be successful to create a safe central system that simplifies and speeds up the land registration procedure. This article describes a real estate management system that will be powered by blockchain technology and offer an open with one another safe, and effective real estate management system. All of the real estate management departments will be a part of this system. It will keep track of every transaction on a distributed permissioned blockchain, which is very safe from hackers and can be mostly automated. The system will be decentralized for data storage while centrally located for connecting all the departments.*

*Keywords- Blockchain, Real Estate, Decentralized Storage, Smart Contract*

## I. INTRODUCTION

Blockchain is a shared, immutable ledger that makes it easier to track assets and keep track of transactions in a network of businesses. By using a distinctive identification, customers can then confirm a product's legitimacy, increasing their trust in their purchases and defending themselves against fake goods. Using blockchain technology to detect fraudulent products has a number of advantages, including greater consumer trust, less fraud, more transparency, and improved supply chain stakeholder engagement. But there are obstacles to take into account, like scalability, interoperability, and regulatory compliance. In conclusion, applying blockchain technology to the detection of fraudulent goods has the potential to revolutionize the war on fake goods and create a more safe and reliable market for both businesses and consumers. We can develop effective countermeasures to the expanding counterfeit business by utilizing the decentralized and transparent features of blockchain.

Our Real Estate Management System prioritizes efficiency, security, and transparency by utilizing blockchain technology. This advanced solution aims to improve trust amongst all parties involved in the real estate ecosystem while streamlining property transactions and managing properties. Blockchain technology reduces the possibility of fraud and disagreement by ensuring that every real estate transaction is documented in an unchangeable and transparent ledger. The system's embedded smart contracts automate and monitor contracts, enabling a smooth transfer of property ownership. Our Real Estate Management System maximizes expenses and shortens transaction times by doing away with middlemen and using a distributed ledger, making real estate purchasing, selling, and administration easier to access and more convenient.

It's an exciting innovation that promises to make the real estate market safer and more effective for all.

## II. LITERATURE SURVEY

[1] P.L. Wijayathilaka Technology advances are transforming sectors across the globe, including the commercial real estate (CRE) sector. Parties acting in the CRE sector are evaluating their processes and institutions like banks, acting as trusted third party, are evaluating how to position in the future (Deloitte, 2017, 2018). The potential of technologies, such as artificial intelligence, big data and blockchain, is not only to streamline existing markets, but also to redistribute markets and create new ones (The Goldman Sachs Group, 2016). Real estate is a unique, complex and the largest asset class in the world. History shows that real estate plays an important role in economies worldwide, is known to resist change, and seemingly allergic in adopting new technology (Spielman, 2016). The importance of real estate.

[2] Clemence Niyigena, Soonuk Seol research about Real Estate Management in India as well as in many parts of the world is a very inefficient and insecure process. Developing a secure system that not only accelerates the process of land registration but also makes it efficient and secure will be

effective. Blockchain technology is one of the latest and secured technologies on the horizon and has evolved over the last 9-11 years. There is tremendous potential for usage of Blockchain technology in the land industry. This paper presents a blockchain powered real estate management system that will impart transparency, efficiency, and security in Real Estate Management. The decentralized data storage application and its interactions with Ethereum Virtual Machine (EVM) are presented to point out the event of a sensible contract which will be used for blockchain smart contracts in real estate management. Further, a detailed design and interaction mechanism are highlighted for the estate owners and users as parties to a sensible contract. It will store all the transactions on a distributed blockchain which will be very secure and will not be prone to hacking. A list of functions for initiating, creating, modifying, or terminating a sensible contract is presented and this will help the user enjoy a more immersive, user-friendly, and visualized contracting process, whereas the owners and real estate agents can enjoy more business and sales. It is a practical solution to the real estate management problem in the real world.

[3] Jack Laurie Tilbury tales about The current real estate purchasing process in South African sector can be described as inefficient due to heavy reliance on multiple third parties which results in high transaction costs and a prolonging of the time in which property transactions are completed in. Additionally, the extensive manual review and verification of financial and legal documents as well as manually updating multiple systems with redundant information not only takes time but is also prone to error and fraudulent activities. Blockchain technology presents an opportunity for the real estate sector as it has the potential to bring about more efficient transactions. This study examines two approaches to executing real estate transactions; the South African case and an international blockchain technology use case. Two conceptual models are presented using Business Process Modelling and Notation. Document review was employed in order to provide sufficient information on the real estate transactions. The findings show that the South African real estate transaction process is inefficient as it is manual, involves paper-based documents and relies heavily on third parties which result in numerous bottlenecks. The study revealed that blockchain-based transactions are more efficient and reduce reliance on third parties and manual processes. The study contributes two conceptual models illustrating how the two different processes are conducted. It also contributes a list of the challenges and opportunities related to blockchain-based real estate transactions.

[4] Iftikhar Ahmad, Mohammed A. Alqarni, Abdul Wahab Ali Almazroi and Laiba AlamIn The text discusses the potential of blockchain technology to revolutionize various aspects of society, including the real estate industry.

It highlights the problems faced by the real estate industry, such as high transaction fees, lack of transparency, fraud, and the involvement of middlemen, and proposes a system to address these issues by recording real estate transactions on a private blockchain using smart contracts. The text emphasizes the immutability of blockchain ledgers and their role in providing a secure space for real estate transactions, as well as expediting background checks and reducing the risk of fraud through personal digital keys. The work aims to identify how blockchain technology can interact with the real estate industry and discusses the consensus mechanism used in the proposed system. real estate industry is estimated to be worth $162 trillion, with $29 trillion in residential and commercial real estate.

[5] Dipak D. Gaikwad, Akshay N. Hambir, Shantanu S. Chavan, Gayatri K. Khedkar, Dr. Shashikant V. Athawale, have survey reviews on Blockchain technology, which has evolved over the last 9-11 years, is presented as a suitable solution for real estate management.The system uses the Ethereum Virtual Machine (EVM) to interact with decentralized data storage and smart contracts for real estate transactions.It highlights the benefits of using blockchain, such as eliminating the need for central authorities and reducing the risk of fraud.
The system stores all transactions on a distributed blockchain, ensuring high security and resistance to hacking.

[6] Sobhan Latifi,,Yunpeng Zhang,,Liang-Chieh ChengTo have a survey review on The provided text discusses the potential of blockchain technology to address issues in the real estate (RE) market, such as liquidity and the presence of middlemen. It emphasizes that RE investments are considered safe and secure, providing security to investors, portfolio diversification, and a hedge against inflation. The paper suggests that blockchain technology, along with smart contracts, can bring significant improvements to the RE market, including liquidity, reduced reliance on middlemen, and de-risked assets with stable price tokens.

[7] Dr. Sangeetha M, Shalini J, Sowmithra M,Thriambika K B, Vishali Babu B The provided research paper discusses the implementation of a blockchain-based system for land registration and record management. It addresses issues in the current manual land registry process, such as duplicate documents, lack of security, and transparency. The blockchain technology is proposed to enhance security, trust, and transparency in land transactions. The paper mentions an "Impact Factor" of 6.752, which likely refers to the journal's impact factor, indicating its influence and reputation in the academic community.
The use of SHA-512 for hashing and encryption is highlighted, signifying a robust security measure.
The blockchain technology's potential to improve data security and transparency in land registry is emphasized throughout the paper.

|  | Traditional Method | Internal Finance Method | Blockchain Method |
|---|---|---|---|
| Customer Experience | Uniform Scenarios | Rich scenarios | Rich scenarios |
|  | Homogenous service | Personalize service | Personalized service |
|  | Poor customer experience | Good customer experience | Good customer experience |
| Efficiency | Many intermediate links | Many intermediate links | Point-to-point transaction |
|  | Complex clearing process | Complex clearing process | Distributed ledger, transaction clearing |
|  | Low efficiency | Low efficiency | High efficiency |
| Cost | Large amount of manual inspection | Large amount of manual inspection | Completely automated |
|  | High Cost |  | High Cost |
| Safety | Centralized Data storage and can be tempered | Centralized Data storage and can be tempered | Decentralize Data storage and cannot be tempered |
|  | Poor safety | Poor safety | Good safety |

*Table 1:* Comparing Existing Technologies

### III. PROPOSED METHODOLOGY

Proposing a methodology for a Real Estate Management System based on Blockchain involves a structured approach to developing, implementing, and managing such a system. Below is a detailed proposed methodology for creating a Real Estate Management System using Blockchain technology

*Blockchain* : A distributed ledger known as a Blockchain keeps track of every transaction in an unchangeable and transparent manner. Any type of information, whether financial, digital, or just a simple database entry, can be considered a transaction. A block is the fundamental component of a Blockchain. Multiple transactions can be stored in a block and are included in the majority of the involved parties have agreed to the Blockchain.

Additionally, stability in According to the Blockchain's context, once something is registered on the network, it can never be changed—the information is safe and indisputable.
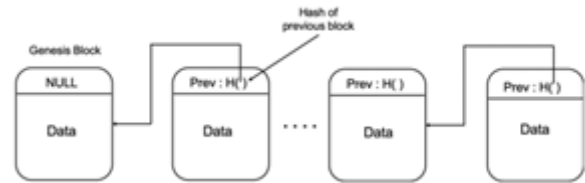


*Figure 1 :* A simplified view of the Blockchain

*A.*      *Data Collection and Preprocessing:*

   1. Project Scope and Objectives: -
     - Clearly define the scope of your real estate management system.
     - Set specific objectives and goals for the project.

   2. Market Research:
     - Analyze the current real estate management practi ces and identify pain points and in efficiencies.
     - Study existing block chain-based real estate systems to understand best practices.

   3. Requirements Gathering:
     - Engage with stakeholders, including property owners, tenants, and real estate professionals, to gather specific requirements.

   4. Technology Selection:
     - Choose the appropriate blockchain platform (e.g., Ether eum, Hyperledger, Binance Smart Chain) based on your project requirements.
     - Decide on the programming languages and tools for smart contract development.

   5. Smart Contract Development:
     - Create smart contracts to handle various real estate transactions, such as property transfers, lease agreements, and rent payments.
     - Ensure the security and robustness of the smart contracts.

   6. User Interface Design:
     - Design an intuitive and user-friendly interface for property owners, tenants, and real estate managers.
     - Focus on accessibility and ease of use.

   7. Security Measures: - Implement robust security measures to protect sensitive data and ensure the integrity of the blockchain.
     - Consider encryption, authentication, and access control.

8. Testing and Quality Assurance:
   - Thoroughly test the system to identify and fix any bugs or issues.
   - Conduct security audits to ensure the safety of transactions and data.

9. Data Integration:
   - Integrate with external data sources, such as property registries or financial institutions, to ensure data accuracy and consistency.

10. Regulatory Compliance:
    - Ensure that the system complies with relevant real estate and financial regulations in your jurisdiction.

11. User Training and Onboarding:
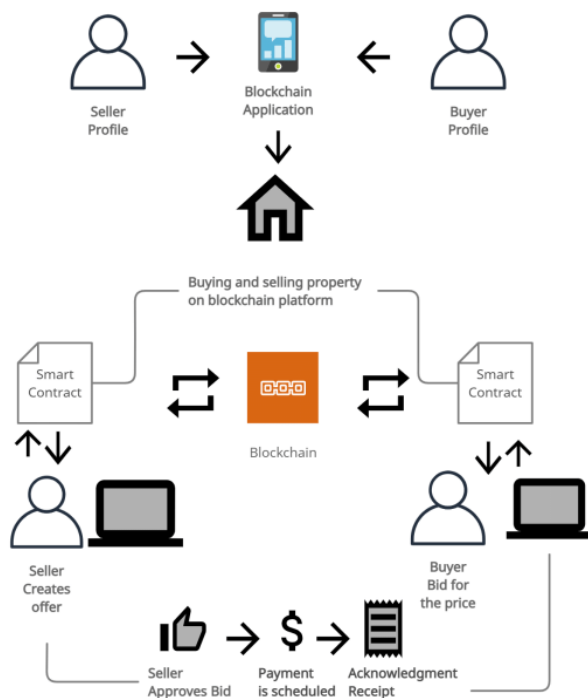    - Provide training and support for users to effectively navigate and use the system.



*Figure 2:* Architecture for Proposed System

## IV. FUTURE SCOPE

The real estate sector is expected to see an all-inclusive tech upgrade, including smart homes, automation via IoT, AI, and more.Property management just like virtual reality, cloud based. Property management being a smart investment for owners, especially if they bring multiple properties into their portfolio.

## V. CONCLUSION

In conclusion, implementing block chain technology in real estate management offers a promising solution to address several longstanding challenges and inefficiencies within the industry. Key benefits include reduced transaction costs, enhanced trust through transparency, improved security, and greater accessibility for a broader range of investors.

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