Real Estate Property Transaction Using Blockchain

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ABSTRACT

The commercial real estate (CRE) industry appears to take pride in keeping several aspects of its operations private, such as comparable lease rental rates, property prices, and valuations, to create a possible competitive advantage. However, secrets are hard to keep and may not even be desired in today's hyperconnected and digitized world. In response to greater demand for transparency, technology advancements and the disintermediation by startups are gradually making some of this information public. As a result, property-related information is increasingly available in digital and paper form. However, a significant portion of the digitized information is hosted on disparate systems, which results in a lack of transparency and efficiency, and a higher incidence of inaccuracies that creates a greater potential for fraudulence. This paper aims to present the Blockchain and smart contract for a specific domain which is real estate. Currently, the real estate business online is at risk of fraudulence. The main objective of this project is to create a platform to maintain transparency in the real estate world so that no fraudulent activities can happen due to false contracts. Goal is to create tamper proof systems and to remove third party reliability for transactions. Consensus algorithms such as Proof of Work and Proof of Authority can be used to achieve consensus in the network. Blockchain uses Proof of work concept to ensure transaction denial thus helping remove denial of services. Proof of authority on the other hand ensures only authorized smart contracts pass the system. In conclusion, the integration of blockchain and smart contracts in real estate transactions signifies a significant advancement towards a more efficient, transparent, and secure ecosystem. While challenges exist, the benefits promise to reshape the landscape of real estate transactions, offering a new era of reliability and accessibility for all stakeholders involved.

Keyword : - *Real Estate, Smart Contract, Ethereum, Blockchain.*

1. INTRODUCTION

Globally, real estate is undergoing a major evolution and transformation towards smart cities. Smart cities are being developed and a plethora of network, services, and transactions are integrated into the city planning initially and daily use. Technology has not only improved the life of tenants but has also helped simplify the process of trading of properties. But, even technological advancements come with security threats. So, with evolution in Blockchain after cryptocurrency, the immutable, tamper proof technology started laying its roots in a wide range of applications. Real estate being unpredictable previously due to secrecies in lease agreements and other reasons can now be a transparent process with the help of Blockchain technology.

1.1 BLOCKCHAIN

A blockchain is a time-stamped series of immutable records of data that is managed by a cluster of computers and not owned by any single entity. Each of these blocks of data (i.e. block) are secured and bound to each other using cryptographic principles (i.e. chain). It is a decentralized, distributed networking system of replicated state machines that resemble the form of a data chain, where later data blocks refer to a single ancestor block often identified by its

hash. When blockchain grows, new blocks are included in state machines and being propagated to all participating nodes within the network such that every node in the network has a single global view of all transactions.

1.2 ETHEREUM

Ethereum is a platform used for creating a decentralized network of nodes with transparent transactions using ether as cryptocurrency for transactions. It includes two types of accounts: Externally Owned accounts (EOA), users directly send transactions via them, and Contract Accounts, based on the codes of the contract if it needs to call another contract it sends an internal transaction.

2. PROBLEM STATEMENT

Currently, due to digitalization, even real estate business has switched to online. But the participation of 3rd party vendors for transactions and the brokers still exist. Even if it was somehow able to remove the brokerage, the system did not replace much human work, just made it digitalized. The tedious work of contract file verification still is done manually and the existing systems still are susceptible to frauds. The proposed system can be a better solution to the above mentioned problems by removing third-party's dependency, the brokerage and making the system highly secure and fraud tolerant by introduction of smart contracts. A web based application using blockchain-smart contract in Ethereum for property trades is being developed with objectives to remove third party reliability, ensure authorization, prevent fraud and denial of transaction for the Real Estate World.
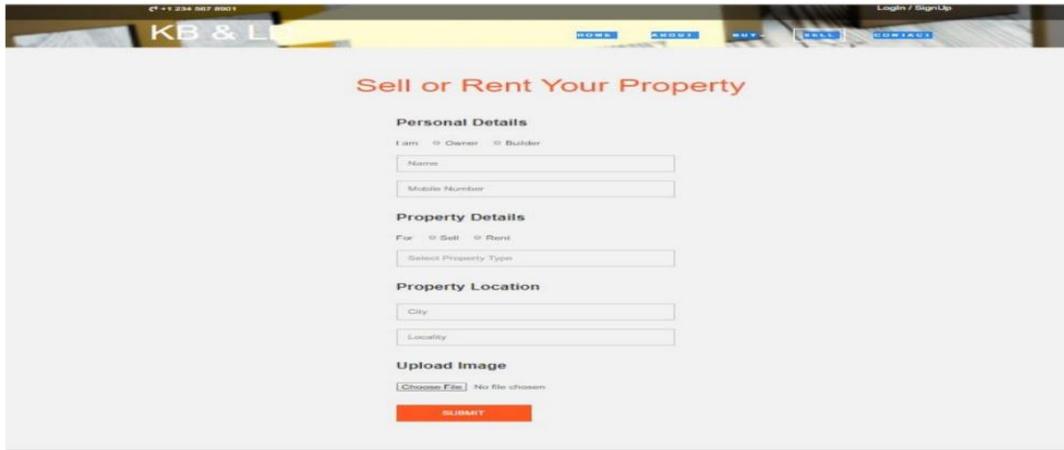
3. PROPOSED SOLUTION

Blockchain systems combined with the real estate business have offered an innovative solution in terms of speed and security, which may significantly minimize technological frauds. This revolutionary technology simplifies the process of data transfer and shortens the time between signing the preliminary sales agreement in real estate (i.e. smart contract). The automation of real estate transactions is enabled by new digital architecture. This system only allows members to join the Blockchain and access the parcels for trade after they have verified their details. Smart contracts, which are tone-executing contracts that are directly written into lines of legislation with the parameters of the agreement between merchandisers and buyers, will be emphasized in the proposed system. A distinction-free approach is used to handle a variety of different edge circumstances connected to the transfer of land and property. For each sale, the system strictly respects the decentralized elements of mongrel Blockchain with medium of agreement of realities. The data stored on the system will be visible to only the members of the blockchain. Members outside the visual range will only be able to view the packets for trade at the cost of being enrolled in the blockchain, ensuring that the blockchain does not come into contact with unauthorized people in the restricted areas. For a reliable data storehouse, the authorization system redefines the essential concept of access control.

3.1 METHODOLOGY

The website for Property trading using blockchain on Ethereum has three roles namely, the buyer, the seller and the validators.. The User creates an account(block) in blockchain for uploading Property Details. The user needs to buy ether for transactions. A smart contract consists of a contract and ether together in Ethereum. When a transaction is being initiated, a block is created for both parties. For verification of smart contracts, Proof of Authority concept is used. For validation of transactions, Proof of Work concept is used. When another party is involved in the transaction with the first block, their chain is formed and both have. Solidity language is used to code for blockchain in Ethereum. We use the above two concepts and form a chain of blocks as the users get added to the block, the chain increases and the chain of each user has the same blocks. In a decentralized system, consensus algorithms thus take care of multiple block changes at a time and update the network based on various factors.

4. PARTIAL RESULTS

The below fig 4.1 is a snippet of a page which takes in the details of the seller who wants to sell the property. Various parameters such as personal details, property details, property location and property image have been taken through the form.

Fig – 4.1: Seller Details for adding properties

The below fig 4.2 is the snippet of the home page of our web application. This website has a navigation bar connected to the pages with buying and selling properties, about page briefing about our site and contact details. Home page also has descriptions about the services provided and the featured projects at various locations.
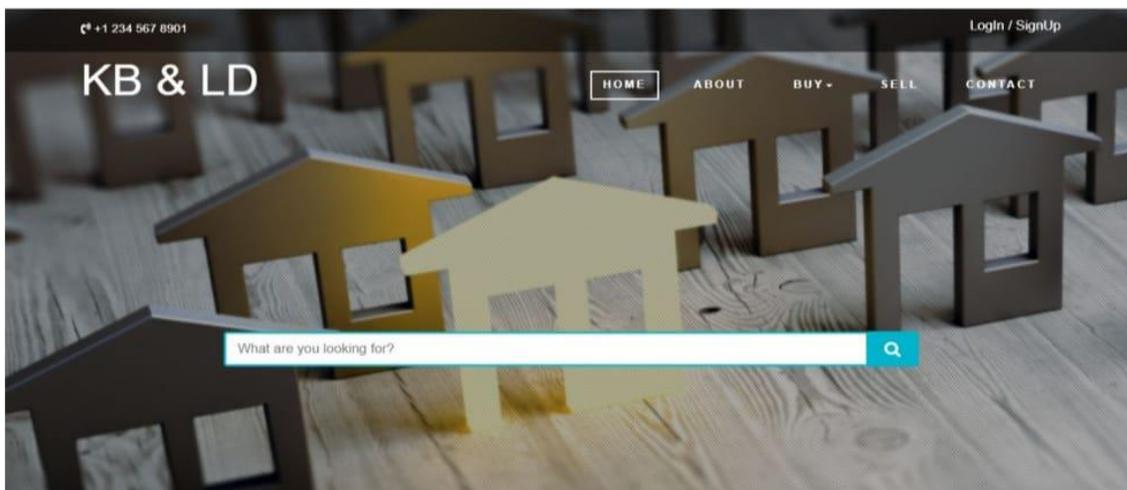

Fig – 4.2: Home page for trading Real Estate

Here in fig. 4.3, on our network, the first three accounts have been assigned to the deployer, the seller and the buyer respectively. The amount of 1ether is being transferred from seller to buyer on purchasing of property.

Fig – 4.3: Ganache

In fig 6.5, MetaMask is displaying the seller's account balance on the network with address 107.0.0.1:7545 a private network address from ganache.
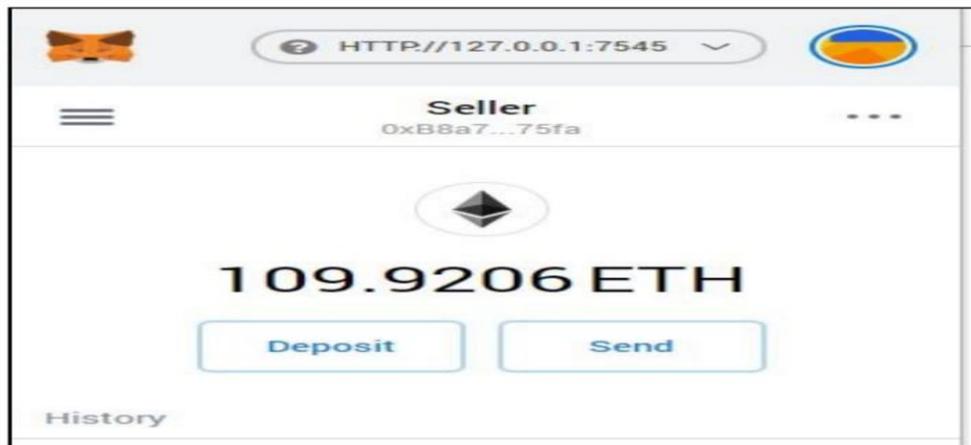

Fig – 4.3: MetaMask

5. CONCLUSIONS

Faster execution, reduced risks and highly secure transactions due to hashed blocks have made blockchain a strong technology. Immutability of blocks, proof of work and proof of authority make them fraud resistant. Proof of work helps remove denial of transactions. Proof of Authority for authorized documents and their validation. Denial of service attack will not exist with implementation of blockchain. According to the economic times, a large number of

scams are being experienced in this digital era of real estate trade. Some of them include hackers stealing your down payment i.e. also known as the id theft, the bait and switch scheme where in buyer is made to pay above market value price, duplicate listings i.e. copying a legitimate rental listing and post on Craigslist for a much cheaper price, fake profiles, fake or no realtor license, fake escrow service i.e. asking buyer to pay before seeing an apartment, etc. India's demonetization of November 2016 has become a major trigger for the country to move towards digitization and become a cash-free country. Though in their nascent stages, newer and potentially disruptive innovations such as Cryptocurrencies and Blockchain have the potential to replace paper money with digital currency providing a decentralized and secured environment. Blockchain features such as distributed computing, confidentiality, authenticity, non-repudiation, data integrity, and data availability can help a populous country like India to turn into a cash-free economy.

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