Real Estate Deals Using Smart Contracts

Anish Rane[1], Aniket Palkar[2], Prasad Kadu[3], Shashikant Mahajan[4]

[1,2,3]*Student, Department of Information Technology, Vidyalnakar Institute of Technology, Mumbai, India*
[4]*Professor, Department of Information Technology, Vidyalnakar Institute of Technology, Mumbai, India*

Abstract: **Real Estate Deals are one of the sensitive transactions, which includes intermediaries and agents. And most of the frauds are committed in this field of business. Like Title Deceptions, Hurried Sales, Forced Cancellations, Selling the same unit to multiple buyers. And this is possible due to Conventional methods of dealing still used in this field of business.**

Many governments over the world have come up with a solution to solve this problem by digitalizing the records and integrating biometric authentication and authorizations for this type of transactions. Our literature survey concerning the current system in INDIA showed that major steps are taken and policies are been introduce to protect the interests of both buyer and sellers, but the deals are executed in conventional paper work method.

The purpose of developing this project is developing an online web portal, which is capable of handling REAL ESTATE deals with immutability and integrity. Which can eliminate the intermediaries and can avoid frauds.

Keywords: **Real estate deals, Smart contracts.**

1. Introduction

Real Estate business transactions are the transactions which are still executed in the conventional paperwork method. But this system possesses several windows for error and vulnerability, which lead to frauds like Title Deceptions, Hurried Sales, Forced Cancellations, Selling the same unit to multiple buyer's scams, this leads to demotivation of client's interest, confidence and trust in this kind of business transactions. Governments over the world have revised this system particularly to overcome this problem at some extent and introduced several policies to safeguard buyers and seller's interests.

Blockchain technology is a growing list of records, called blocks, that are linked using cryptography and has proven to maintain data integrity and system immutability. As maintaining the integrity in real estate at the core level is related to maintaining the integrity and immutability of transaction records. The project proposed is an application based on blockchain technology developed with the intent to handle real estate "DEALS" using a blockchain development platform named Ethereum which introduces SMART CONTRACT. A smart contract, also known as a crypto contract, it is a computer program that directly controls the transfer of digital currencies or assets between parties under certain conditions.

The project proposed is an application based on blockchain technology developed with the intent to handle real estate "DEALS" using a blockchain development platform named Ethereum which introduces SMART CONTRACT. A smart contract, also known as a crypto contract, it is a computer program that directly controls the transfer of digital currencies or assets between parties under certain conditions.

2. Literature survey

Smart Contracts and the Real Estate Industry- A Match Made in Heaven!

So what would you do if you wanted to buy a house? Simple -even if you've never bought one, chances are high that you already have an idea you get pre-approved for a mortgage, then you find a real estate agent, you shop around, you make an offer, get an inspection and then close the deal. Guess what? Blockchain and Smart Contracts are set to disrupt this chorus in the $217 trillion worth of Real Estate global Industry! Areas of opportunity include improved property searches, expedited pre-release due diligence, smarter decision-making, ease in leasing and subsequent processes like cash flow management and property management.

The blockchain technology is rapidly hitting the mainstream and according to a World Economic Forum survey of 800 executives and information and communications technology sector experts, 57.9 percent of the respondents believe that 10 percent of the global GDP information will be stored on blockchain technology by 2025. Until recently, blockchain was known more as the technology powering Bitcoin. However, industry players now realize that blockchain-based smart contracts can play a much larger role in real estate dealings, potentially transforming core real estate operations such as property transactions.

Upgrading Real Estate: Blockchain, Smart Contracts & Tokenization is the Future.

The act of buying and transferring ownership of the property remains a tedious and lengthy process. These transfers typically need to be reviewed and confirmed by an array of intermediaries including agents, lawyers, and governmental bodies, just to name a few. By applying blockchain and smart contract technology, the process can be simplified, thus saving time and money for both the buyer and the seller.

Blockchain start-up SMART Realty is one example of a company working to create a seamless process for buyers and sellers to interact. This includes transferring ownership, making payments, and solidifying the terms of their agreements, as well as all interactions between landlords and tenants who need to

International Journal of Research in Engineering, Science and Management
Volume-3, Issue-3, March-2020
www.ijresm.com | ISSN (Online): 2581-5792

142

send and receive regular rent payments, record the length and conditions of their tenancy agreement, underline any penalties, and establish renewal agreements, all using the blockchain.

3. Proposed System

Our proposed system is Ethereum blockchain-based web portal which can be used by realtor, builders or government. Realtors and Builders can make use of this portal for the sale of the Estates, directly online without any intermediaries between seller and buyer, the system assures once the property is sold and entitled to an individual, the data is committed on Blockchain and is immutable. This can eliminate fraud, increase trust between buyers and sellers. And especially this can be executed online with more reliability.

To implement this system, we are using the Ethereum Platform for blockchain Development, Ethereum has a unique feature called Smart Contract. A smart contract is a computer protocol intended to digitally facilitate, verify or enforce the negotiation or performance of a contract. Smart contracts allow the performance of credible transactions without third parties. These transactions are trackable and irreversible.

4. Implementation

A. Methodology used

The decentralized blockchain application developed is in its prototype phase. And at its core, it passes capable and impactful test cases (i) Buyers Consent to Participate in the Portal. (ii) The seller can sell a property to potential buyers only once and record of the blockchain is committed on transaction Successfully. (iii) A potential buyer can buy several properties on the portal. (iv) It eliminates the chance of sellers to sale the same property to multiple users. (v) At the same time, the Buyer is aware and can see that which of the properties are sold and which of them he/she can buy. A blockchain-based transaction wallet called MetaMask handles the transactions on this portal and is available on widely used browsers like Google Chrome and Firefox. End-User has to login into his MetaMask wallet to access and participate in any kind of deal on the portal.

5. Future Scope

This developed prototype is capable and is limited to point of sale only by builder or Realtor. But as public blockchain is still not evolved at that level of the private blockchain. Therefore, the limitation of this project does not allow one to post the property for resale, and it is because of an absence of middleware that can verify the hereditary of the property he/she is willing to list. This decentralized application will be more efficient and can be useful if the government maintains the records in Blockchain and its API can be used by decentralized apps to verify the legal legitimacy of the particular property and then approve for the listing for sale. And also at the same time, the property`s hereditary is maintained and also kept anonymous. This could enhance the way real estate deals are

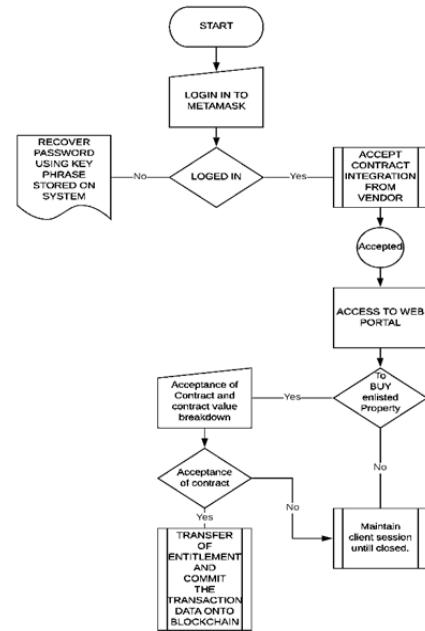executed and also create more reliability and trust between buyers and sellers.

Fig. 1. Flowchart

Fig. 2. Block diagram

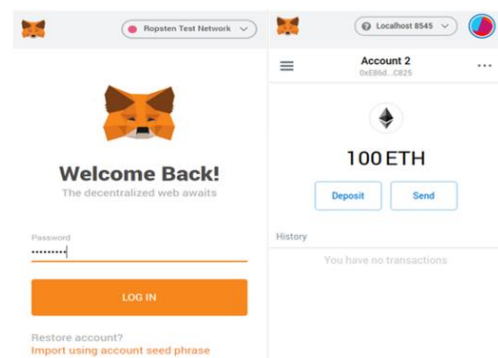This wallet handles the functions between end users browser and Ethereum network.

Fig. 3. Metamask wallet

International Journal of Research in Engineering, Science and Management
Volume-3, Issue-3, March-2020
www.ijresm.com | ISSN (Online): 2581-5792

143

Upon Accessing any Decentralized App through browser MetaMask confirms Users Consent to access or connect his wallet to that particular Decentralized application.
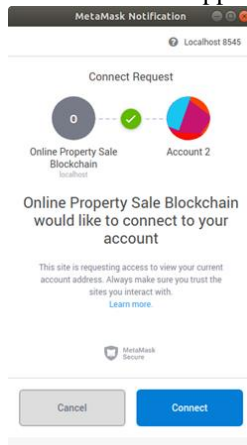

Fig. 4. Notification

This prototyped Ethereum based portal displays the list of properties on sale. Which can be directly used by Builder or Realtors to engage with costumers in deal, eliminating intermediaries. A potential buyer has to click on sign contract to initiate the transaction or "DEAL" for particular or interested property or Real Estate the buyer is willing to but, which fires up SMART CONTRACT written for property Entitlement transfer from Builder or Realtor to the Customer.
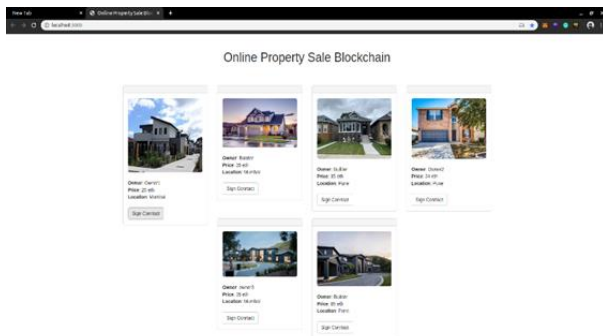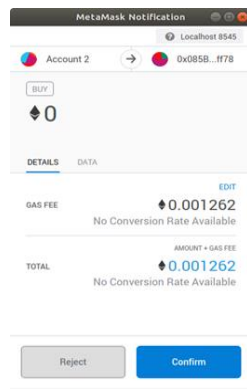

Fig. 5. Sale Portal

Fig. 6. Notification

As metamask is Crypto Wallet it deals the monetization in cryptocurrencies only, and as we are using Ethereum Blockchain the monetization is in eth(ethers). Due to the crypto ban and as it is a prototype model there is no monetization set for BUYING confirmation only the operational cost which is known as the GAS PRICE Ethereum Blockchain network is deducted from Buyers a/c.

Successful confirmation form buyers side the property which he intended to buy. that property`s status changed to Success. And hence the property is successfully sold or it can be said the entitlement or ownership of the property is transferred to Buyer.
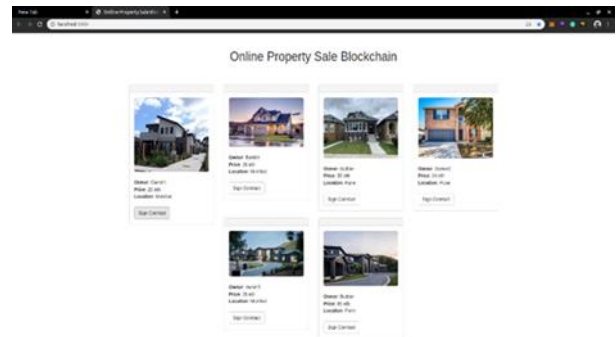

Fig. 7. Online property sale blockchain

The contract has a particular address, that is being highlighted in the following image. Therefore, the address of buyers is dynamic but the seller in this case which is contract owner also can be said as the one who is selling the property on the portal(Builder/Realtor) is Static. This address can be used by the buyer to verify whether the seller is genuine or not. And also, later on, preserve the record as proof of sale.
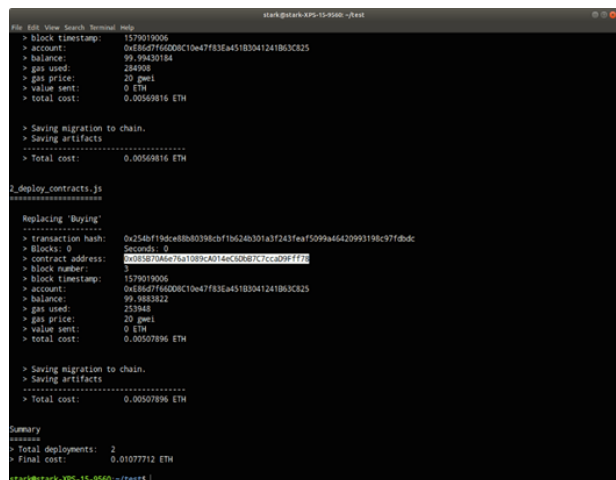

Fig. 8. Backend Technicalities

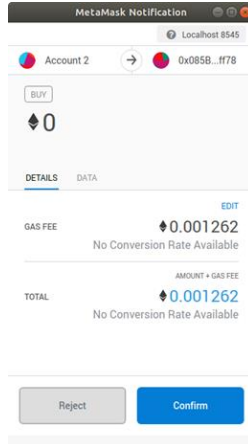This is the exact same address to which buyer transfers his ether to. Or can be said as buyer`s deal with.

Fig. 9. Notification

From figure, we can see account2 (buyers) address 0xE86D. Similarly, in the backend at ganache framework where we can check the mined or committed blocks, we can see that the account2 that bought property has transaction hash which is mentioned as TX and senders address and contract (receiver`s) address, therefore this block on the blockchain is mined and cannot be manipulated or changed.
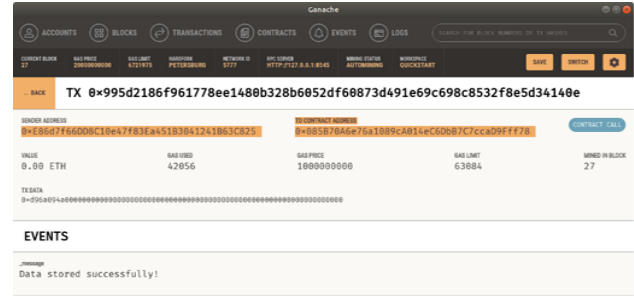

Fig. 9. Ganache Framework

6. Conclusion

The outcome of our decentralized application till now is that the application successfully handles selling and transfer or Entitlement of property from Realtor to client, which seems to be simple but can eliminate intermediary, keep realtor from dealing in bad faith, ensures data immutability establishes trust between buyer and seller. And at same time maintains the entity ownership hierarchy with integrity and anonymity.

References

[1] Ethereum Blockchain Developer Course (Edureka).
[2] https://medium.com/sea-foam-media/upgrading-real-estate-blockchain-smart-contracts-tokenization-is-the-future-9e6608fc9346
[3] https://www.blockchain.com/
[4] https://en.wikipedia.org/wiki/Blockchain