Secured Real Estate Transactions using Blockchain Technology

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Abstract - *The Real Estate is facing a lot of problems including the trust issues, the path of how data shared and lot of automatic process. There are many organization agents, e-commerce websites and various other channels through which people can search a property for buying, leasing or putting their own property up for sale. The real estate by name itself has a lack of trust and transparency in data and record management. The public land title records are maintained in a local space, and the lenders need to contact the relevant local entities for each title assurance process, hence the maintenance cost of asset data from a transactional perspective is high and its required to maintain a title and search for public records which contribute to delay and higher costs. A solution for monitoring and transferring properties in a secure way can drastically reduce title search, examination time and costs. Block chain is a decentralized data management and transaction solution, has the potential to address many of the challenges faced by this industry*

Key Words: **Blockchain technology, Real Estate, distributed ledger, Transactions, decentralized.**

1. INTRODUCTION

After the bitcoin formation has led to lot of attention recently. Block chain serves as a fixed ledger which allows transactions take place in a decentralized manner. Blockchain-based applications are leaping up, covering number of fields including financial services, reputation system and Internet of Things (IoT), and so on. However, there square measure still several challenges of blockchain technology like measurability and security issues waiting to be overcome. This paper presents a comprehensive summary on blockchain technology.

We provide a summary of blockchain architecture first and compare some typical agreement algorithms utilized in completely different blockchains. Furthermore, technical challenges and recent advances are briefly listed. We also lay out possible future trends for blockchain.

This chain grows as new blocks square measure appended thereto unendingly. Asymmetric cryptography and distributed agreement algorithms are enforced for user security and ledger consistency.

The blockchain technology usually has key characteristics of decentralization, persistency, anonymity and auditability. With these traits, blockchain will greatly save the price and improve the potency.

The process of collating data from various disparate repositories to form a property details and ensuring the integrity of data are key challenges, especially at the manufacturer stage where different raw details are assimilated to form one property. There is a possibility that data inaccuracies may arise either due to errors or malicious intent. Although there are traceability systems based on centralized repositories, organizational siloing makes the process of tracing provenance information from these distinct sources tedious and fraught with delays.

Our intention in this research is to present a new way of sharing information and traceability system for the stakeholders involved in this process based on fundamental properties of distributed ledger technology (Blockchain) [4].

2. BLOCKCHAIN TECHNOLOGY

Blockchain is a data structure formed by blocks linked together in chronological order. Each block consists of a block header and a block body, which is a collection of industry data such as bitcoin transaction records, smart contract codes, and agricultural tracing records as in this article, etc. The block header includes the metadata of the block. The most important part includes the timestamp of the block, the hash value of the block, the ID of the block, the ID of the parent block. Existence of the parent block ID makes all the blocks form a chain structure, as shown in Fig.1. The insertion of new blocks is allowed only in the tail, while the existing blocks are not allowed to be modified, which is a key rule of blockchain.
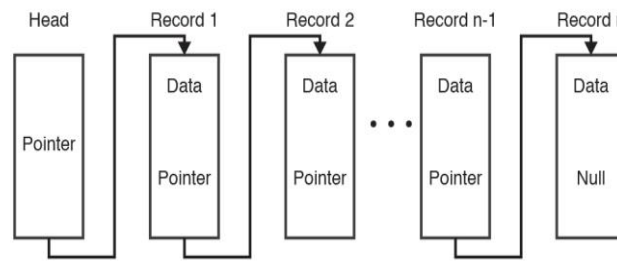

Fig -1: Structure of a typical blockchain

2.1 The Blockchain technology layout & its properties

The Blockchain technology allows digital information to be stored in a distributed shared ledger (distributed database) [8]. The stored information in the blockchain is checked by cryptographic algorithm before grouped to the "blocks" and enter to the distributed shared ledger [8]. The network consists of many nodes, which are distributed geographically around the world, and their communication is a peer-to-peer mode. Every ode in the network have the same data of blockchain that is automatically downloaded by using the peer-to-peer synchronization protocols [8]. This lead to unnecessary central authority. All the participants in the blockchain network rely on the interaction of the nodes in the network instead of central authority [9].

2.2 Related works based on blockchain in Real Estate

Beyond the crypto currencies, the blockchain technology finds its application in a variety of sectors including in Real Estate and Smart contracts. The fastly emerging technology will disrupt many existing technologies. One among them is Real Estate. Many real estate projects are started. Rentberry is a good example for the supply chain project.

3. HYPERLEDGER SAWTOOTH

The Hyperledger project proposes a set of open-source Blockchain technologies for business applications, like Sawtooth, Fabric, and Iroha [9]. These platforms are designed to be general purpose to accommodate as many use cases as possible, putting forward and emphasizing different features. None of them is built around a cryptocurrency. Nevertheless, many use cases of blockchain involve a form of asset/token transfer [9].

4. Secured Real Estate Transaction:

 Secured Real Estate Transaction (SRET**)** blockchain implementers will experience high profile poor implementations at first. All early adopters have suffered through this painful, yet educational period. These failures will complicate adoption. The result of poor implementation leads to - Not understanding the technology, thus applying it incorrectly .Rushing implementation to claim superiority over competitors .Unanticipated industry reaction caused by the technology For instance, misunderstanding a feature, such as "transactions that last forever", can create a horrible mess. This can result when shortcuts are taken when determining the data the system will manage. Data changes from a transaction permanent after they are committed. If data fields are added at a later time, "old" transactions may become difficult to reconcile with "new", expanded transactions. Furthermore, there is the potential that real estate blockchains will prey on the ignorance those who do not know what they are buying. In the long run, this behavior leads to erosion of confidence because what is being sold does not match what is being advertised. In this age of social media, the speed at which bad news travels is faster than ever, making this consideration more critical than it was even a decade ago. Another unanticipated effect of blockchains could be accelerating the creation of "buying clubs". When inventory gets tight, closed groups form to keep inventory off of the open market, undermining the cooperative spirit of the MLS. Three features of Blockchain 2.0 could lead to more "buying clubs": Private Blockchains, flexible data models, smart contracts these factors make derivatives easier to create with blockchains than with traditional databases. Very little software needs to be created to deploy a new compensation model. When deployed in a private blockchain, only invited participants need to know about it. Though change is difficult, and there will be challenges in implementation, it will be difficult for traditional approaches to match the operating characteristics of blockchains for some applications. Successful early adopters will drive the market.

4.1 Decentralized Autonomous Organizations

DAO is outlined by a set of rules encoded in smart contracts that outline however the DAO behaves and the way it evolves. Typically, a DAO has several investors that then decide by option how the funds of the DAO ought to be endowed. as the goal of such an organization is to be ruled during a utterly decentralized approach and also the investors usually don't understand or trust one another, a permission less blockchain is of course a good suited such a design: The system is needed to store some state and multiple mutually distrusting and presumably unknown writers exist [13].

Decentralized autonomous organizations are, however, a special case. For a few applications a dedicated permissioned blockchain could also be helpful for one DAO. In most cases, however, DAOs don't need their own blockchain but are instead higher suited to be built on prime of an existing blockchain with an already existing currency (such as Ethereum [2]).

5. ARCHITECTURE

The process in the Blockchain based real estate transaction is explained with an architecture diagram. It contains the process of transfer of properties starting from the seller to the buyer. As the Blockchain makes the process transparent every process is visible to everyone. This makes the process impossible to change. SRET includes the integrated designing and planning as well as the execution of various processes. This involves material flow, data flow additionally as money capital flow.
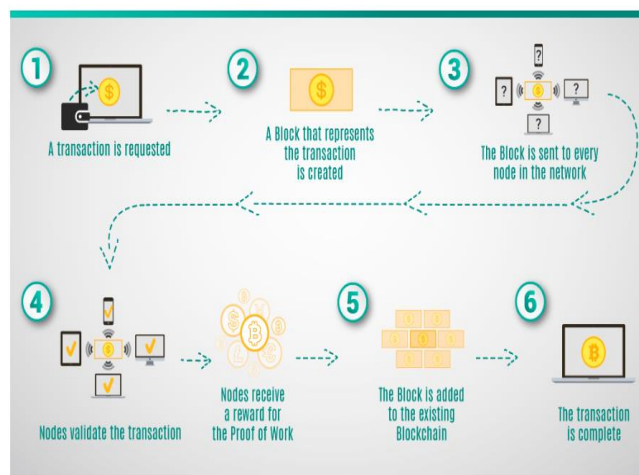
Fig -2: Architecture of the system

In the following we summarize the process involved in the Real Estate Transaction:

5.1 Transaction

Two persons or parties as A and B will be exchanging the digital money or assets related to their properties as land details or certificate about their birth or examination certificates. After producing this they will initiate the transaction

5.2 Block

This will be creating a block so that the transaction and other pending transactions will be stored in a block. This block will connect to a chain of blocks of forming a network of participants

5.3 Verification

The participants will be known as "miners" will evaluate the transactions with the use of mathematical calculations in order to evaluate whether the transaction are valid or not so that it will be verified

5.4 Hash

Each verified block of transactions is time stamped with a cryptographic hash. Each block also contains a reference to the hash value of previous block

5.5 Execution

The value that moves from the account of participant A to participant B in order to execute the transaction

6. CONCLUSION

As we already came to know about the problems that we are facing during real estate transactions, blockchains can be inherited in the real estate field to solve these problems by providing a secured transactions. It also makes the transactions on land without any insecurity of data. We conclude that blockchains can bring greater benefits to the real estate field.

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