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Digitalization of Land Records using Blockchain Technology

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***Abstract*— In sectors that require to be shielded from corruption, human error or human intervention, Blockchain features a comprehensive approach. The Land Registry is one of the cases in which many intermediaries use the framework to position their trust. The solutions currently in place are obsolete. When you've got thousands of land records, it's difficult to track who owns which pieces of property. It is very normal to face inconsistencies for example, falsified identities, forged materials and complete record loss inside the paperwork. These situations result in expensive court battles between the parties to the dispute. The transparent nature of the blockchain will make it possible to trace the property's hands. The immutable, auditable and traceable features of Blockchain entice governments round the world to implement decentralized technology within the process of land registration. With the potential of The blockchain to demonstrate authenticity will, without a need for third-party verification, legally pass land ownership to the customer.**

Keywords—Decentralized, Immutable, Auditable, Traceable, Transparent.

I. INTRODUCTION

In its relationship to global changes, technology has always been at the forefront of disrupting the status quo and bringing in a fresh new perspective to look at things. The technological changes often end up entangled with the policy regulations when it comes to public domain related industries and are presented with a great deal of difficulty while scaling up. E-governance and in particular property registration and management of land records are one such instance. We go deeper into the understanding of the above example in this thesis, while conferring it to the Indian context and the associated current problems. The main aim of this study is to determine whether it is a successful solution to incorporate with blockchain technology or not. We will look at the characteristics of blockchain technology which makes it a desirable solution to the current problems, and finally we will present the results obtained during the performance assessment of the implemented system.

II. WHAT IS BLOCKCHAIN?

Blockchain is a decentralized electronic ledger built on a P2P mechanism that can be freely exchanged between various users, each time stamped and connected to the previous one to create an unchangeable transaction record [1]. The information becomes another block within the chain whenever Add a number of transactions (hence, the name). until new data is entered

[2]. it's a technology of Write-once, attach-many, making each transaction verifiable and auditable.

III. WHAT ARE THE BENEFITS OF USING BLOCKCHAIN?

1) Accelerating the Process

The intermediaries involved in the land registration process include information which cannot be accessed or cannot be permitted to work in an area for a property transaction. The A distributed database will be created by the blockchain land recording platform to allow everyone to record and access information with none centralized authority being involved. so as to move the land, you would like Sign it, take notaries for rubber stamping and give the documents to the State fill out blanks in the deed.

The method looks sluggish and too old. However, it can enhance the method by generating a digital title with the Land recording network blockchain.

The blockchain's ability to show authenticity enables homeowners legitimately to move the land to the consumer without the need to check the property of third parties.

2) Reducing Fraud Cases

In the digital world of today, with the editing tools, it's Impostors can now falsify documents and pretend ownership of titles. You would like to upload the title documents into the blockchain network with the Blockchain Land Registry Platform, Where the documents can be signed by the signers

and checked by other users when necessary. You should show that Blockchain is the

Estate title holders owner of land title simply by holding an unalterable record of transactions.

The network can also be used as proof of ownership, lives, trade, and transactions for blockchain land registry.

3) Bringing Transparency with Smart Contracts

Quite a few people are there directly purchase land. Because of administrative problems, the loan or mortgage process Very slower, but intelligent contracts simplify the mechanism by automating managed transactions. As a seller and buyer, you can build a decentralised digital ID. with the blockchain land registry platform. Doing so will make the transfer of ownership smooth and faster than the conventional process [3]. After The registrar authorises land ownership transfer, intelligent contracts trigger an update of replacement buyer ownership and the resulting transaction will then be held in the blockchain.

In this way, the history of ownership documents can still be traced back.

IV. Objective

Since all transaction data is available to everyone The blockchain technology is considered secure and transparent in all applications (clients) and traceable stored. As an alternative to government-based schemes where surveying engineering plays a crucial role, a variety of cooperative property registration services and initiatives are also being introduced. In this respect, the immobiliary industry blockchain technology is seen as a viable technology and is used in some circumstances[10]. The choices for introducing and developing a blockchain-based land registry are explored in this paper. The concept of upgrading a blockchain solution to The current electronic land registry takes into consideration the evolving value, over the last few years, Technology of the blockchain. The following goals are to establish a blockchain land registry:

- Quicker completion of the change of ownership pending land registry.
- Proprietary automatic warnings or modifications to the land registry.
- Clearer transactions concerning land registry ownership changes. Avoid contract and register physical archives.
- Versatility and flexibility Improved security of the land registry agents It will also address Potential legal, operational and technological barriers. Finally, the assessment of the definition
- A Blueprint of the implementation of a blockchain-based land is implemented to create viability registry.

V. Tools Required

A. Postman:

We would be using Postman to write prerequisite script to validate the schema mapping.

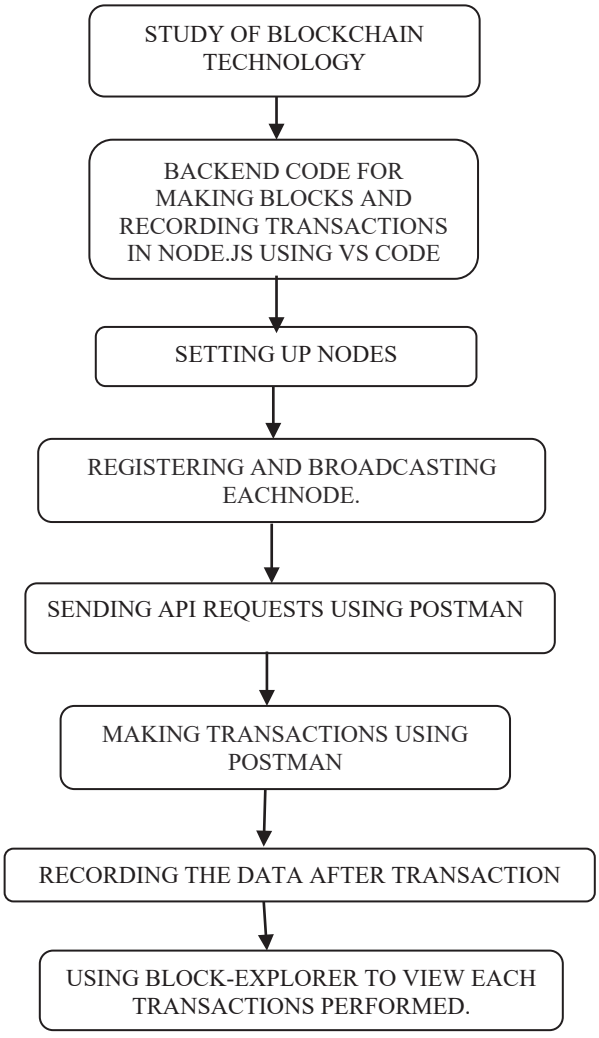
Postman *is a lightweight tool the interact with Web Services.*

B. Node.js:

Node.js is an open-source and cross-platform JavaScript *runtime environment.*

Node is an asynchronous event driven JavaScript runtime *built upon Chrome's V8 JavaScript engine. It's designed to build scalable network applications.*

VI. Implementation Of Blockchain For Land Registeration



Following are the steps involved in making of this project:

1. Study of Blockchain Technology in detail.
2. Detailed study of all the properties benefits and disadvantages of Blockchain in Land Registration.

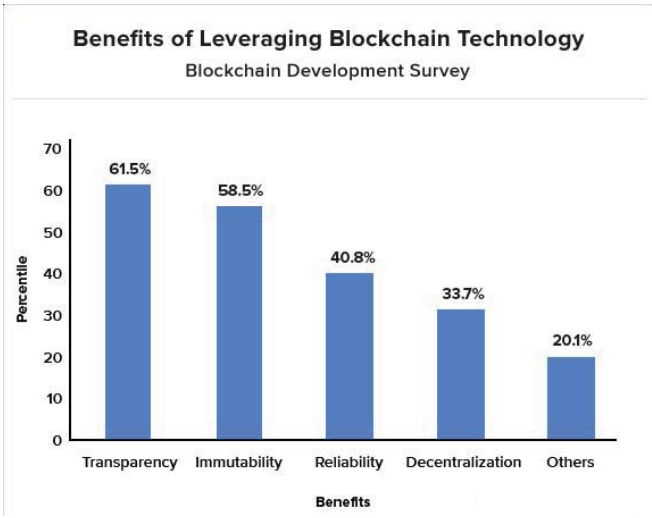
3. Designing of the app to work according to our idea.
4. Writing some code to develop blocks so that it can store data related to land records.
5. Launching each node in the network by sending API requests using postman.
6. Setting up node to solve proof of work to mine a block.
7. Sharing of information stored in the block created to all the nodes in the network.
8. Broadcasting nodes to setup a network and broadcasting transaction to each node.
9. Writing some frontend code to make a web browser to display all the transactions performed using blockchain.

We have a chance to solve all of these issues with the blockchain. The solution we are developing integrates many of the technology's key advantages, such as an eternal history of transactional records, so that no one can ever challenge the authenticity; records are permanently connected to the system so that nobody can ever falsify or falsify its own record; at any moment, any party can see these records. It's solid and validating.

VII. Result

Building this project will help further in The Land Registry It is a decentralized, scalable technology that makes it possible for buyers and sellers to deal directly without requiring intermediaries. To show the property, request entry, and get possession of the land title, buyers can sign up and use the platform at the Land Registry. Buyers need to enter data to complete the verification process, such as personal, financial and professional information, to sign up for the application.

Buyers may request entry [4] to see the property data on the smartphone. Sellers are able to Check the request and allow the buyer access. The seller may also reject or accept applications. The buyer may access the property information Once the order is accepted by the seller. The buyer may also view the property's history and ownership records. The seller sends a request to the land inspector for the domestic registration. The Land Inspector shall review and install a new land record after complete verification[6]. from the blockchain network. This whole idea can be achieved using blockchain technology only.



VIII. Conclusion

The main aim of this study is to assess whether or not the introduction of blockchain technology into the existing land record management business process is a feasible solution. A literature review is conducted on the existing business method to address this question and we discovered the problems associated with the current process during this study. We then made an argument about why we assume the best possible solution is blockchain technolog. While we have made an application to mimic the current land record mechanism, the main focus of the thesis is on the blockchain network's design aspect and performance assessment.

For land registries, three characteristics of the blockchain are especially attractive:

Using cryptography, Information is saved, which means that every asset is securely encoded on a blockchain ledger[7] using a unique ID which allows security and tracking.

The blockchain, such as a property transaction, its validity is checked based on whether it has a valid link within the network to other nodes. If it does not, then it is impossible to add the record.

Blockchain enables distributed records to be stored Where the The approved parties without an intermediary, e.g. a national land registry, can access and add information to the network, or by a centralised authority.

Since blockchain can store all relevant property, buyer, and seller information Many person and still largely manual steps on an online platform are theoretically applied to build an reliability required for easier transactions of property could be streamlined [5]. These include contracts with real estate agents, verification of land registry information, the establishment of Credit and loan obligations and a selection of properties and buyers inspections prior to Final finish. Trust is built into software with blockchain. The participants will see improvements to the booklet and have real-time access to its records [8-9] as it was originally added, the information has been secured and immutable.

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