ONLINE LAND REGISTRY SYSTEM USING BLOCKCHAIN

GUIDED BY

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ABSTRACT

The present Land Registration System is a time consuming process for the transfer of property ownership related to a land transaction. The data of the land is stored in a single place leading to security issues also. In some cases the incomplete/improper registration leads to dispute of ownership and litigations of the land. In this work, a land registration system using block chain is proposed to overcome the above mentioned limitations of the land registration system. The decentralized storage of data in block chain provides security and land owner data can be stored safely to avoid conflicts of land ownership. Land being an important asset, the use of block chain technology can help improve this sector in its work implementation as well as its characteristics significantly for a seamless and hassle free work flow to achieve a reliable system.

Keywords – Blockchain – Cryptocurrency - Ledger

1. INTRODUCTION

Land Registration process requires a lot of paper work.

The paper work takes a lot of time to complete the transaction of Land Owner updating. i.e. the land has already been sold by previous owner but the data in the server is yet to be updated. In some cases due to incomplete registration the land ownership is left uncertain. Documents might be forged through illegal processes to claim land ownership. other challenges faced in Land Registration: i. Middlemen/Brokers: Brokers/middlemen charge differently for their services based upon the land to be sold or bought, documents work required for the registration etc. ii. Fraudulent

Cases: People not having enough knowledge about registration process and documents validity are often prone to fraud cases.

2. LITERATURE SURVEY

Satoshi Nakamoto: The aim is to investigate the current state of blockchain technology and its applications and to highlight how specific characteristics of this disruptive technology can revolutionize "business-as-usual" practices. To this end, the theoretical underpinnings of numerous research papers published in high ranked scientific journals during the last decade, along with several reports from grey literature as a means of streamlining our assessment and capturing the continuously expanding blockchain domain, are included in this review. Based on a structured, systematic review and thematic content analysis of the discovered literature, we present a comprehensive classification of blockchain-enabled applications across diverse sectors such as supply chain, business, healthcare, IoT, privacy, and data management, and we establish key themes, trends and emerging areas for research. We also point to the shortcomings identified in the relevant literature, particularly limitations the blockchain technology presents and how these limitations spawn across different sectors and industries. Building on these findings, we identify various research gaps and future exploratory directions that are anticipated to be of significant value both for academics and practitioners. Almost a decade ago Satoshi Nakamoto, the unknown person/group behind , described Bitcoin how the blockchain technology, a distributed peer-to-peer linked-structure, could be used to solve the problem of maintaining the order of transactions and to avoid the double-spending problem. Bitcoin orders transactions and groups them in a constrained-size structure named blocks sharing the same timestamp. The nodes of the network (miners) are responsible for linking the blocks to each other in chronological order, with every block containing the hash of the previous block to create a blockchain. The blockchain structure manages to contain a robust and auditable registry of all transactions.

2.1 COMMON FAILURE MODES:

The above mentioned limitations of the land registration system can be overcome using block chain to maintain land owner data. Blockchain provides a solution to store data in a decentralized manner which provides better security to the data. It provides a fast and reliable system with respect to process execution. Smart Contracts are the tools used to carry out these procedures automatically and reliably upon the block chain eliminating the need of any third person intervention. They can be deployed using Decentralized applications for client side UI.

3. SYSTEM ANALYSIS

3.1 PROBLEM STATEMENT

Some of the major challenges faced in this sector include increase in the number of Land related litigations , difficulty to track double selling of the same land or landed property , non-existence of unique record or golden record of ownership, lack of system to facilitate citizens to verify the land records, lot of paper work for obtaining loan from banks using land as collateral security, financial institutions do not get the factual picture of the piece of land for providing loan as they rely heavily on property for collateral security, delay in the obtaining documents from revenue and financial institutions etc. The farmer has to spend time and money to collect all the documents such as R o R, mutation extract, crop certificate etc that are necessary for securing loan, subsidy and any other benefit from the Government. There is a need to ensure that the data in the land records system, registration system etc. are not susceptible to alteration as each of these departments rely totally on the integrity of the other to initiate transactions. Hence there is a need for trust to use a common source of data to perform approvals for different activities so as to avoid the problem. History shows that duplicate registration documents are generated by tampering original documents and the properties are being sold on the basis of the tampered documents. Also one property is being sold to multiple purchasers by keeping each other under dark.

3.2 PROPOSED SYSTEM

Smart contracts can also facilitate the payment of subsidy to farmers on failure of crops. In cases when the entitlement is only for certain types of farmers, the eligibility can be ascertained from the blockchain. The availability of data in a central location that can be accessed by all departments would enable faster disposal of requests for subsidy, mutation, There would be no

need for trusted authority like notaries to provide attested copies of documents. The farmers will be assured that their land ownership cannot be changed by spurious persons. The farmers can obtain loans quickly. The up dation of the details related to liability in the Record of Rights can be done as soon as the farmer repays the loan. This is to the farmer to avail other benefits / services. The facilities provided to the farmer from the agriculture / Horticulture departments / Animal Husbandry department when recorded in the blockchain will facilitate these departments to ensure that same benefit / multiple benefits do not reach the same farmer multiple times or might not receive multiple benefits as per the terms & conditions laid down. Blockchain data of the property registration will be made available in the work flow system of the Registration software as well as the public for verification. This will provide the complete details of the property chain right from the first purchaser to latest one. The Purchaser need not depend on any non-reliable personnel/agency to verify the authenticity of the document provided by the seller. A repository of a transparent, trusted and a tamper proof property Registration would be available for use by citizens & the registration department. Citizens can verify the ownership details & complete history of the property before going in for purchase of the property. The availability of document chain will eliminate registration based on bogus.

4. SYSTEMSPECIFICTAIONS

HARDWARE SPECIFICATION

PC Windows, Android, Apple or Linux
The above are the hardware systems used for the execution of this web App.

SOFTWARE SPECIFICATION

Docker is an open platform for developing, shipping, and running applications. Docker enables you to separate your applications from your infrastructure so you can deliver software quickly. With Docker, you can manage your infrastructure in the same ways you manage your applications. By taking advantage of Docker's methodologies for shipping, testing, and deploying code quickly, you can significantly reduce the delay between writing code and running it in

production. Docker provides the ability to package and run an application in a loosely isolated environment called a container. The isolation and security allow you to run many containers simultaneously on a given host. Containers are lightweight and contain everything needed to run the application, so you do not need to rely on what is currently installed on the host. You can easily share containers while you work, and be sure that everyone you share with gets the same container that works in the same way.

Docker provides tooling and a platform to manage the lifecycle of your containers :Develop your application and its supporting components using containers. The container becomes the unit for distributing and testing your application. When you're ready, deploy your application into your production environment, as a container or an orchestrated service. This works the same whether your production environment is a local data center, a cloud provider, or a hybrid of the two.

5. PROJECT DESCRIPTION

5.1 EXISTING SYSTEM

Mirroring the governance and ethos of a private firm, this approach, sometimes termed New Public Management, does not work everywhere, but it can buffer registries from partisan influence while also helping them deliver services in more innovative, cost-effective ways that serve citizens better. This cross-cutting brief profiles five experiments with this kind of governance model—two in high-resource countries and three others in lower income settings. THE COMMON GOAL The capacity of a registry to perform its functions well depends on the quality of its record keeping and its efficiency, accessibility, transparency, and fairness. Land agencies face several tough challenges when they try to meet these standards, including: The need to streamline procedures and introduce new digital technologies that offer the possibility of stronger security and easier retrieval; In some countries, the ability to administer a variety of tenure systems; The requirement to coordinate with other relevant agencies, sometimes including separate sub-national or municipal registries; Vulnerability to petty and grand corruption, given the high value—monetary and social—that land usually carries; Physical inaccessibility to many rural households; and Lack of

public awareness of the importance of having formal land records and conveying property through the registry instead of through informal sale or transfer. Some countries, such as Indonesia, have struggled with this challenge but made some headway within a largely traditional governance structure.

Introduction Registry System:

The land inspector has to verify the land in every transaction. The land verification may take time depending upon the circumstances. In the proposed system, the user's data is obtained from a central citizenship data that is maintained by the government. The land owner has to initiate the transaction which is completed by the buyer, this is called as dual consensus regarding a transaction. This system handles the case where the owner of land is absent and thus allocating its owner as the government.

There are three modules designed for the overall functionality demonstration. One is Seller, the other is Buyer and third one is the Node in blockchain based on which the sellers sell the property. Buyer who wants to buy a property by going through the information available to them which contains all the details of property like name of the owner, location, measurement etc. Seller and buyer are

able to access all the information available publicly to them. For each transaction, node will verify and copy it onto the ledger.

Roles of Seller and Buyer: Sellers can upload the document to the smart contract, before that document must be digitalised. If document is not digitalised, then the seller must enter the document registration number on textbook. The smart contract will verify it by calling the Encumbrance Certificate API. Buyers must send the money as tokens to smart contracts and no partial transactions will be allowed. If the smart contracts will meet the requirements provided by sellers and buyers, then it executes a transaction.

DISADVANTAGES:

1. Heavy passing of corruptions

2. Having fees regulated and approved by

another part of government with more electoral legitimacy

3. Limits the likelihood that fees will be overly burdensome.

5.2 WORKING OF PROPOSED SYSTEM

Moving to a system of state guaranteed titles will be challenging: To address issues with land records, a move towards conclusive titling has been proposed. In a conclusive titling system, the government provides guaranteed titles, and compensation in case of any ownership disputes. Achieving this will require shifting to a system of registered property titles (as opposed to sale deeds) as the primary evidence of ownership, and having clear and updated land records.

However, adopting a conclusive system of titling will require undertaking several measures. All existing land records will have to be updated to ensure that they are free of any encumbrances. Information on land records, which is currently spread across multiple departments, will have to be consolidated. Further, several changes in existing laws that govern registration and transfer of land, and institutional changes in maintenance of land records will also have to be done.
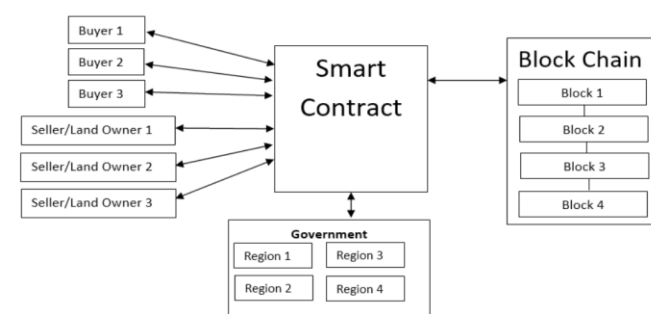
5.3 BLOCK DIAGRAM

Fig : contractor flow

5.4 SOLUTION

After each transactions, it will be verified by millions of nodes participating in the network based on the hashing program. If all the nodes in the platform accepts the transactions, it will be successful else it will be rejected.

There the address of the superuser and the village in which he/she is working is provided. The village is

mapped in to the address so that it becomes easier to check that only the super admin assigned to a village is able to register the details of a land in that village. Transaction: The transaction of a property has several stages involved. The algorithm is designed in such a way that there is no need for any central authority to verify the transaction process. It is important to note that the owner of a property can sell the land as a whole, i.e, there is no partial transaction of the property. This is just to simplify the problem in hand. Later on, while improving the App, more of these functionalities can be added. The following are the steps involved :Making the land available : Once the buyer and seller agrees to make the transaction, the seller should make the land available to buy. The land owner passes the property ID to the function "make Available()" and the function verifies the account of owner and changes the value of "is Available"

5.5 RESULTS:

The proposed work is implemented on ethereum blockchain platform with solidity as a notion to code the contract between various users. The work is initiated onto a personal device as an initial phase with a minimum of 4 GB memory requirement independent of the operating system.

The ethereum solidity contract consists of mainly two functionalities.

Registration : Here the user provides the land details to the government authority who is registered as the super admin. The land which is going to be registered should be in the same area as the super admin who is going to register the land. The super admin verifies the details with the existing records and enters into the App

6. CONCLUSION

Over the last few decades, the economy of the country has seen a shift from being agrarian based to becoming manufacturing and services based. This has necessitated the development of infrastructure, and a shift in land use from agriculture to commercial, industrial, and residential. Land that was earlier used for farming, is now being used to set up industries, power plants, manufacturing units, shopping malls. Unclear land titles, accompanying costs due to title

disputes and litigation, and lack of transparency in real estate transactions make the real estate market inefficient. Execution of new projects requires clarity on the ownership and value of land, both of which become difficult in the absence of clear land titles. Any infrastructure created on land that is not encumbrance free, or has unclear land records.Unclear land titles, accompanying costs due to title disputes and litigation, and lack of transparency in real estate transactions make the real estate market inefficient. Execution of new projects requires clarity on the ownership and value of land, both of which become difficult in the absence of clear land titles. Any infrastructure created on land that is not encumbrance free, or has unclear land records

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