

MINOR-2 PROJECT-

SYNOPSIS

For

Land Documentation and Registry system using
Blockchain technology

Submitted By

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Synopsis Report

Project Title

Land Documentation and Registry system using Blockchain technology

Abstract

Blockchain technology is a decentralized and secure digital ledger system that is well-suited for managing and recording complex transactions and its data. Land registry and its documentation is a critical area that can benefit significantly from the implementation of blockchain technology. With the use of blockchain, it is possible to create a secure, transparent, and efficient system for recording and managing ownership, transactions, and other related information about a particular land. The system will provide users with real-time access to the information. This will enable faster and easier access to information while also significantly reducing the risk of fraud and human errors.

Keywords: Blockchain, Decentralize, transaction, secure, accuracy, transparent, registry, smart contract

1. Introduction

Traditional registry systems often lack transparency, making it difficult to verify the authenticity and integrity of records. The traditional registry offices make records of all the transactions based on the proofs submitted by buyers and sellers. It's difficult for them to verify the actual transactions. The whole process of the land registry system through paperwork is lengthy, it requires physical visits at each stage of registration resulting in a waste of money and time. The updation of records in the current registry system takes several weeks or even months in some cases, which leads to land double spending issues i.e. A person can sell the land to multiple parties.

The middleman is another big issue in traditional registry systems, they are the ones who charge a good amount to smoothen this complex registry process. It has been seen in many cases that these middlemen have sold the land with fake documents[1].

Most traditional registry systems rely on a centralized database, which makes them vulnerable to hacking, tampering, and data breaches. This is where blockchain technology comes into play. The decentralized nature of blockchain makes it more secure[2]. In a decentralized system, the data gets stored in different nodes rather than storing it in a central place which makes it difficult for a person to corrupt the information. It becomes challenging for hackers to steal data as it requires breaching multiple nodes to access the data.

Blockchain technology uses cryptographic algorithms for securing data which makes it possible to create a tamper-proof record of transactions and land ownership[2]. The records can be verified by anyone in the network and it will help in increasing confidence in land ownership. Since the people would be able to verify ownership easily, they don't require any middleman to do any of this for them. Our project aims to use blockchain technology to solve these problems faced by people during the land registry process.

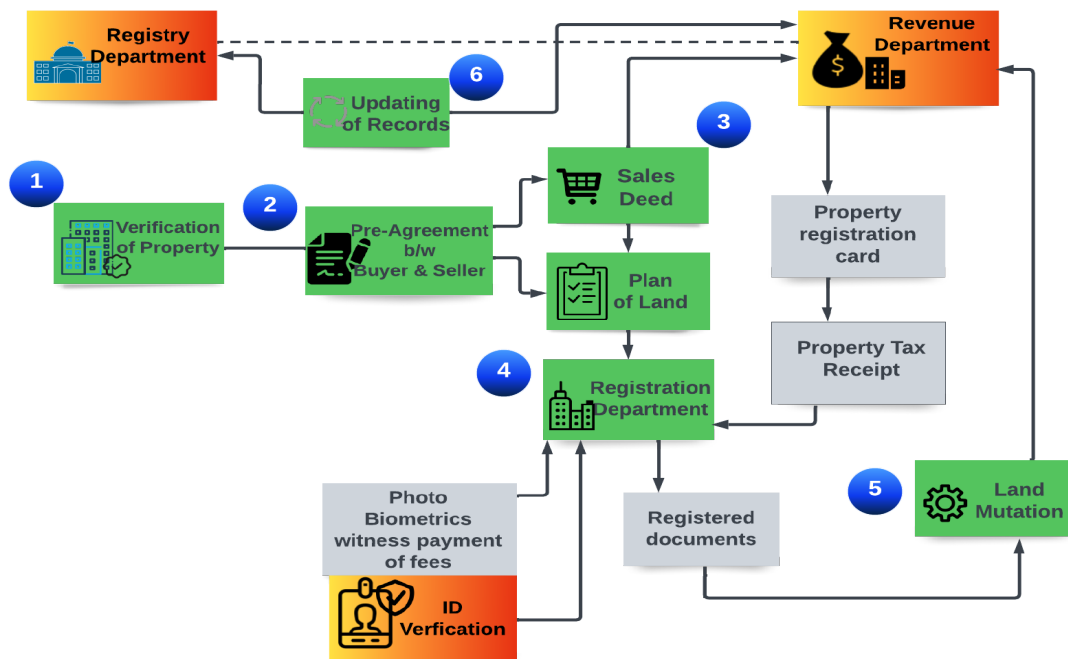


Fig 1: Traditional land registry system

2. Literature Review

Land Documentation and Registry systems play a very important role in finding out the ownership of land, recording transactions that take place during the process and managing disputes between the parties. However, traditional land registration systems frequently face some problems such as fraud, inaccuracies, and lack of transparency which causes inefficiencies and delays in the transaction process of the property.[5] Blockchain technology offers a clear solution to these problems by providing a decentralized, secure, and transparent ledger for recording and managing all the information related to land.

There are many studies that show the benefits of using blockchain for Land Documentation and Registry processes. One benefit is definitely increased security and better accuracy because of the decentralized nature of blockchain. This decentralized nature makes sure that the information cannot be altered by anyone and can only be updated with the agreement of multiple parties that are involved in the process.[3] This significantly reduces the risk of fraud and errors in the entire system. Another benefit is the transparency in the process. All the parties have real-time access to information.

We came across several initiative projects that focused to test the feasibility of using blockchain for Land Documentation and Registry. One example of such a project is in Sweden[6] which used blockchain to record and manage real estate transactions reflecting the benefits of blockchain to smoothen the process and increase transparency. Another example is a project in Georgia that used blockchain to create a digital registry of property rights, reducing the time and cost associated with property transactions. There are also other multiple pilot projects that provide valuable insights into blockchain technology for Land Documentation and Registry systems.

However, there might be several challenges in the implementation of this technology. One challenge is the need for legal frameworks that support the use of blockchain technology for land registry purposes.[4] Another challenge might be the resistance from users who are used to traditional land registry systems as they may be doubtful of new technology.

In conclusion, blockchain technology has the potential to transform Land Documentation and Registry systems by providing various benefits such as increased security, accuracy and transparency. While there are also certain challenges and limitations associated with the implementation. The pilot projects and case studies demonstrate that it is a positive solution for improving the process of land registry.

3. Problem Statement

Although the traditional registry systems are self-sufficient to an extent for accurate and secure Land Documentation and Registry, we often see certain inefficiencies, errors, and fraud in these methods which leads to delays and higher costs in the land transaction process. Hence a solution for this is the use of blockchain technology that can improve the accuracy, transparency as well as security of Land Documentation and Registry systems.

4. Objectives

- To explore the benefits of using blockchain technology for Land Documentation and Registry systems.
- To create more efficient, secure, and transparent Land Documentation and Registry systems.
- To overcome the inefficiencies, and errors and reduce the chances of fraud in the traditional registry systems.

5. Methodology

- Ethereum as the blockchain platform.
- As a programming language, we will be using solidity for writing smart contracts.
- Use of React, JavaScript, and Node.js for the backend and frontend development.
- We will be using PostgreSQL for the database.
- Git version control system and GitHub for collaboration.

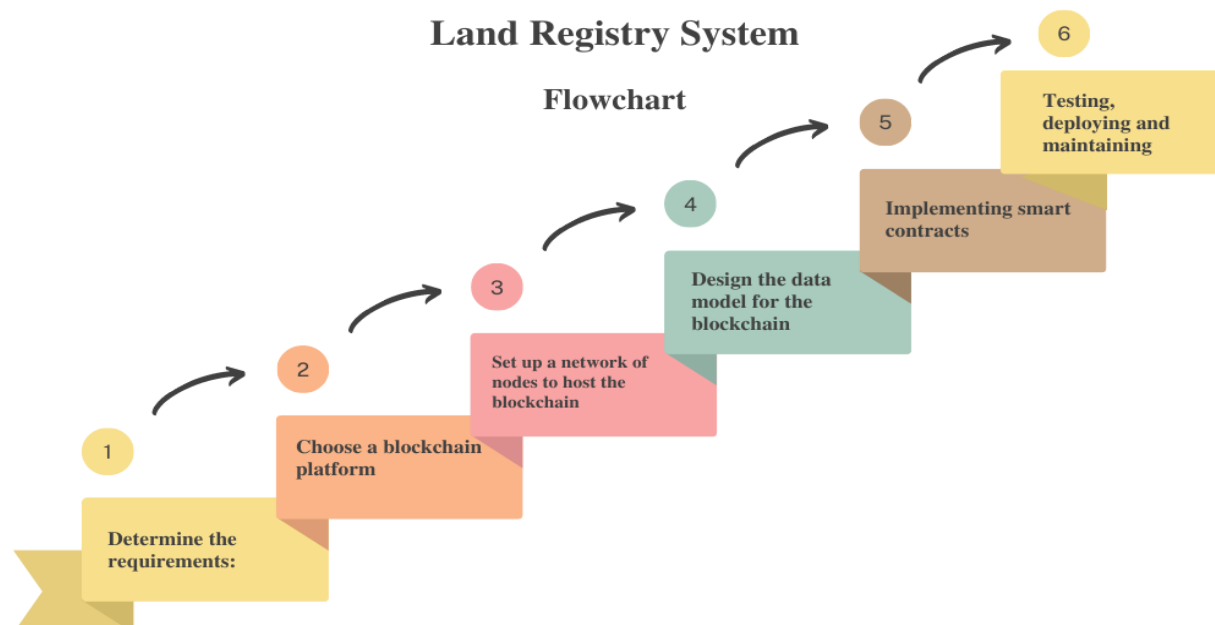


Fig.2: Flowchart

6. PERT Chart

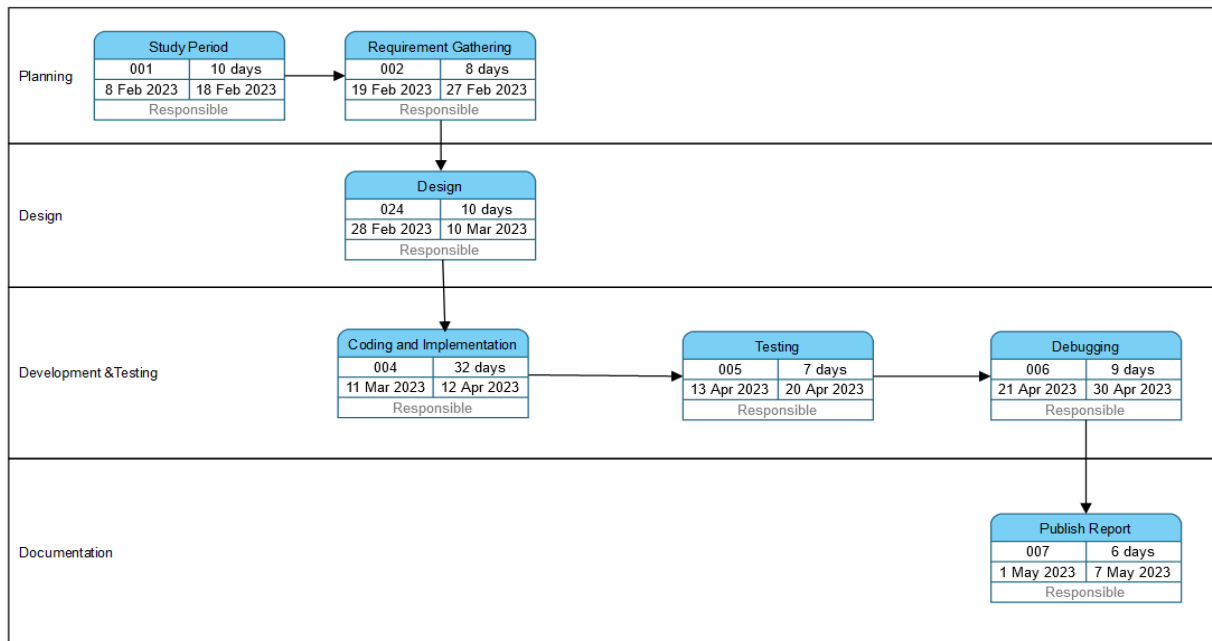


Fig 2: Pert Chart

References

- [1] J. Vos, "Blockchain-based land registry: panacea illusion or something in between?," IPRA/CINDER congress, Dubai, 2016.
- [2] R. Benbunan-Fich, A. Castellanos, "Digitization of Land Records: From Paper to Blockchain," Thirty Ninth International Conference on Information Systems, 2018
- [3] Kshetri, N. (2017). Blockchain-based secure and transparent land registry. *Government Information Quarterly*, 34(4), 669-676.
- [4] S, Krishnapriya & Sarath, Greeshma. (2020). Securing Land Registration using Blockchain. *Procedia Computer Science*. 171. 1708-1715. 10.1016/j.procs.2020.04.183.
- [5] M. Nandi, R. K. Bhattacharjee, A. Jha and F. A. Barbhuiya, "A secured land registration framework on Blockchain," 2020 Third ISEA Conference on Security and Privacy (ISEA-ISAP), Guwahati, India, 2020, pp. 130-138, doi: 10.1109/ISEAISAP49340.2020.235011
- [6] Blockchain-based framework for secure and reliable land registry system Article in TELKOMNIKA (Telecommunication Computing Electronics and Control) · October 2020

