

Bhoo.me

Land Title Ownership Transfer in Blockchain

Our mission is to - implement blockchain based record keeping system to digitize existing land records to create transparency and efficiency.

Problem

Land ownership is fundamental to how our society operates and determines where we live, pricing of real estate, where our employment and amenity is, and where we can develop future opportunity. Therefore, land ownership still determines economic prosperity, and social status of an individual or family.

Land is probably the most important asset in the rural-agrarian economy like Nepal. Land is the primary source of livelihood for many rural households, with 66% of the population reporting in 2011 that agriculture was their main occupation. The exclusion of the poor from access to productive assets, notably land, is one of the primary reasons for perpetuating their poverty, and restricting their full potential as citizens. Therefore, landlessness impacts both individual rights to food, housing, water, health, and work, and wider social stability and economic development.¹

Digital Economy and Digitization: Various Nepali industries from banking to education are going through digital revolution. Even the land registration process is being digital. The digital information need more security and privacy. This makes more case for blockchain to create trust in digital economy.

Inefficient and slow process: Current, land registration process is tedious and arduous. This is due to the fact the process is manual, need for verification, and multiple stakeholders. Bhoo.me makes this process more efficient and streamlined removing many third parties.

Corruption and Land fraud: The bureaucratic process invites corruption. Once Bhoo.me reduces verification in digital process the red tape will be basically nil - reducing corruption. The land information database is prone to hacks and alteration but, Bhoo.me runs on blockchain making the data incorruptible- reducing fraud.

Land disputes: According to Samridhhi Foundation, Nepal has about 4,00,000 land dispute cases. Bhoo.me can provide incorruptible ledger which can be used to resolve future land disputes in court cases. This will lower cost involved in legal fees.

Therefore, the land title ownership is still rife with

- Lack of financial inclusion for the marginalized
- Trust gap between buyer and seller
- Unreliable information
- Corruption and fraud
- Inefficiency in land transfer process
- Data privacy and data breach of digital records

¹ Land Issues in Nepal - <http://www.csrcnepal.org/pages/details/csrc/issue>

Solution

Digitisation is a process that has touched and transformed every industry from transport, to health and education to real estate sector. The government of Nepal has been focusing on Information and Communication Technologies for working around the idea of e-governance developing the digital infrastructure. It is vital to computerise land records, including mutations, improve transparency in the land record maintenance system, digitise maps and surveys, update all settlement records and minimise the scope of land disputes. Digitisation would provide clear titles of land ownership that could be monitored easily by government officials, to facilitate quicker transactions.² This will reduce disputes and issues associated with land title ownership and transfer.

Digitisation can speed up the process of land acquisition, thereby, making it easier for the government to work on its Smart Cities mission or plan industrialisation. For buyers, digitisation will offer the correct details of the owner of a particular property. The buyer can also check if the land is under litigation. If a buyer wants to buy a property from a developer, they can check if the building has adhered to all the regulations. Similarly, digitisation will help the buyer to check for transparent market-based pricing, before buying a plot of land.

Blockchain solutions are a promising step forward for businesses as an instrument for sending, receiving, and storing data in a secure environment. Blockchain can help speed up the digitisation process. The blockchain will become a catalyst.

What is Blockchain?

Blockchain today is a lot like the internet in the early 90s. Blockchain has been described as one of the most significant technological advances in modern history which has led to it being dubbed “The Internet 3.0”. Blockchain is decentralized, practically immutable, and cryptographically verifiable ledger (database), this type of blockchain appears to lend itself to countless applications beyond payments, including identity management, to reduce fraud, and remove bottlenecks.

- *Immutability* - The shared blockchain ledger information is checked for integrity by large network of participants based on shared agreement.
- *Irreversibility* - Once the information is accepted into the ledger it cannot be reversed.
- *Transparency* - The blockchain ledger is visible to all the participants. The records are visible.
- *Low-Cost* - There's no need for middle man to manage the transaction in blockchain reducing the middle-man fees.

² Digitisation of land records: Benefits for property owners and the sector - <https://housing.com/news/digitisation-land-records-benefits-property-owners-sector/>

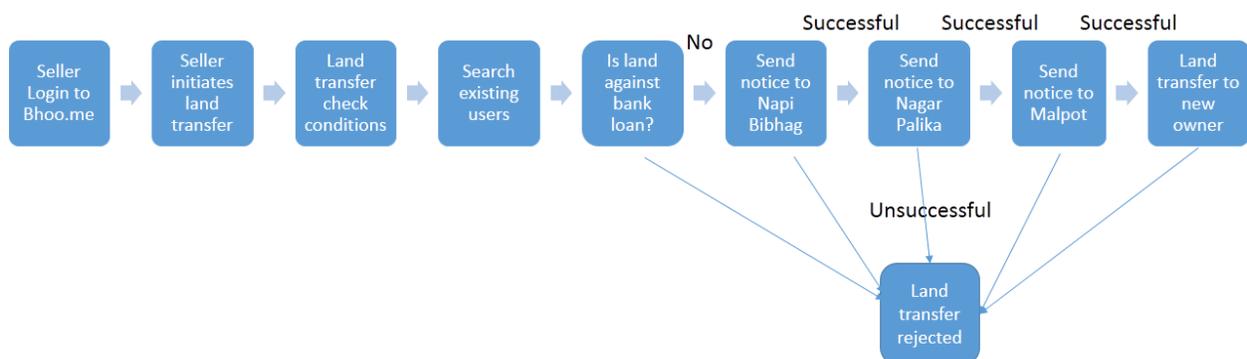
- *Decentralized security* - Blockchain uses strong cryptography and large network of participants to create transactions that are fraud-proof.

What is Bhoo.me?

Bhoo.me is a blockchain based land title ownership and transfer management system. Each time the land titles are exchanged between the two parties, there is a buyer and a seller. There are also third parties such as banks, a land registry and lawyers involved making the process take too long and costly. This can be automated, and costs can be drastically reduced while the number of parties involved reduced.

Once the rightful owner of the land is identified, it can be put in Bhoo.me system which can be verified through digital signatures. If someone wants to verify the land ownership they can check the transparent trail in blockchain. This makes it easy for land transfer and legal dispute management.

How it works?



System Architecture

Bhoo.me is based upon the blockchain technology. It is a distributed system which consists of separate nodes that communicate with each other in a peer-to-peer network. Peers run in separate secured docker containers and the peers of different organisations run in separate machines.

Hyperledger Fabric is used in Bhoo.me which is a permissioned blockchain framework. It includes:

- Permissioned system with strong identity management(Certification Authority- FabricCA)
- Modular Architecture and Pluggable Consensus(PBFT)
- Crash Fault Tolerant Ordering Service(Kafka based ordering system)
- Highly scalable

- Database: Ledger Data(Blocks) + State Database(CouchDB)
- Partitioning of data on the basis of channels
- Private data for private transactions between the organisations

Blockchain Network consists of the peers of organisations, - नापी बिभाग, नगरपालिका, मालपोत and Banks.

Tentative Road Map

2019

Q2: Bhoo.me Planning and Discovery

- Initial research and development of virtual ID
- Bhoo.me initiative started by eSatya
- Register in SUTC
- Business plan, design documents and white paper published
- Identify by Use cases for real world problem in Nepali market

Q3: Alpha Release: Bhoo.me

- Development of proof of concept
- Alpha release and in-house testing

2020

Q4: Marketing and Awareness

- Pilot in ward - user sign-ups to the app
- Raise capital to scale up

2021

Q1: Beta Release

- Release Beta version

Q4: Grow enterprise user from out of valley

Market

Bhoo.me is a land management system to be used by the Department of Land Management and consortium of other stakeholders (नापी बिभाग, नगरपालिका, मालपोत and Bank) to easily access the audit trail relating to that property

Land owners and sellers - Land registry information can be stored in distributed ledger

Resources

<https://housing.com/news/digitisation-land-records-benefits-property-owners-sector/>

<http://www.csrcnepal.org/pages/details/csrc/issue>

<https://www.livemint.com/Opinion/YZ7goB2ERdl3VZQJTdWc9L/Modernizing-land-records-in-India.html>

<http://kathmandupost.ekantipur.com/news/2018-08-28/land-revenue-data-goes-digital.html>

<https://www.lexology.com/library/detail.aspx?g=36641e13-b81d-48fc-95e9-3ea3bc9135aa>

<https://coincentral.com/blockchain-land-registry/>

<https://hrbe.io/images/whitepaper.pdf>