



Blockchain Solutions for Mortgage Loan Origination

Delivering a remarkable
user experience for
lenders and consumers



Owning a home is a dream for many people. It is also one of the most expensive purchases in life. To help with the cost, homebuyers apply for loans from banks and financial institutions, but the mortgage origination value chain is a complex process. Gathering data to determine whether to originate a loan is a multi-party engagement, and implementing changes to an application and its operating procedures can be complicated.

Key industry issues for mortgage loan origination include:

- **Increased loan production cost, decreased net gains for lenders**
Multi-party coordination, multi-level executions, and complex reconciliation procedures result in huge time delays.
- **No standard rules and regulations for storing land records**
Whenever there is a change in ownership, searching, validating, and scanning land records from government databases becomes a tedious activity.
- **Difficulty verifying documentation**
Any misrepresentation in the base documentation—especially income of the consumer, occupancy and property details, undisclosed debts and identity details—which form the key parameters, results in false loan approval and disbursement.

- **Limited access to documents**
Duplicate copies for data and documents are maintained by various independent parties with different patterns and procedures.
- **Lack of transparency in the execution process**
Limited visibility of data management leads to poor user experiences and lowered customer satisfaction.

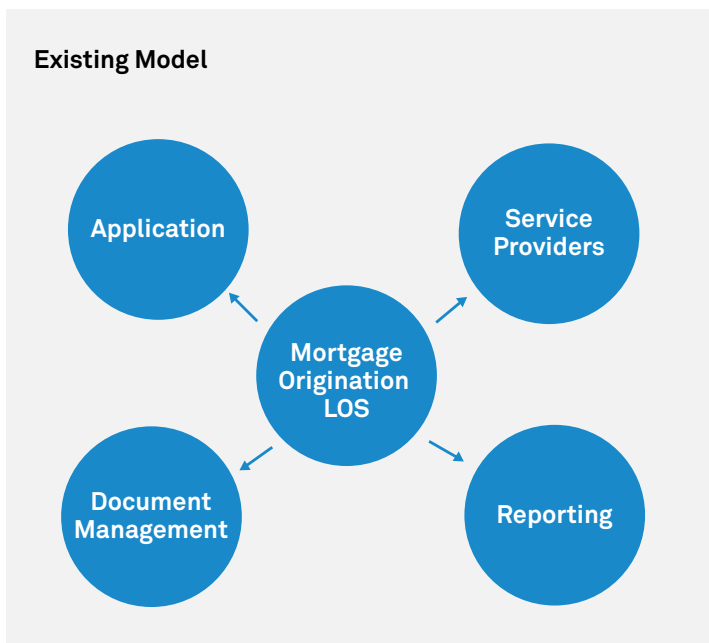
Now, blockchain technology is being recognized as a viable solution to these challenges.

Blockchain Solutions

Blockchain technology can help eradicate all the key issues in mortgage origination by means of distributed ledger framework, which provides a list of benefits and capabilities:

- Multi-party transactions with decentralization capabilities
- No intermediaries
- Security assurance
- Improved transparency
- Lower transaction costs
- Covert from a centralized to a distributed trust
- Empower automation using smart contracts

Mortgage Origination Ecosystem



Blockchain Model

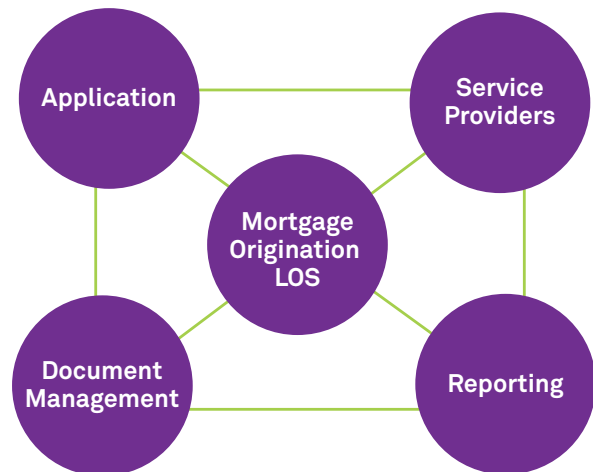


Figure 1

Possible Use Cases	Pros	Cons
<p>Title Search and Insurance</p> <ul style="list-style-type: none"> The title process usually takes 15 days, but may take more depending on the types of transactions. A title report costs between \$75 and \$200—a lender’s title insurance ranges from \$500 to \$1500. Record every land transaction maintained by the lender into a blockchain application. 	<ul style="list-style-type: none"> One-time update: All land ownership records with clear titles can be digitized. Cost savings: By eliminating intermediaries, the cost of a title search is reduced or free. Reduce title processing timelines for refinancing and purchase loans. Drastically reduce overall loan processing time. 	<ul style="list-style-type: none"> Lands with disputes or lack of ownership history will follow traditional approach until settled. Integrating a blockchain-based mortgage platform and government agencies will require a clear blueprint for common architecture in the ecosystem. In the future, integrating separate blockchain applications may pose a challenge.
<p>Verification of employment, income, and liabilities using smart contracts, APIs and artificial intelligence programs:</p> <ul style="list-style-type: none"> Record all asset and debt transactions that are maintained by the lender into blockchain applications. 	<ul style="list-style-type: none"> Consumers can self-declare employment, income and liability details in blockchain applications to enable digital verifications with respective employers, service providers, etc. Automate due diligence, and reporting of evasion and fraudulent transactions. Quick validation and auto-approval of employment details from the last two years. Eliminate unnecessary intermediaries for a simplified, automated, in-house underwriting process. Automate employment checks during specific loan processing stages, especially before funding, by interfacing with service providers or employers. Improve maintenance of employment and credit history. Reduce overall loan product cost, and improve turnaround time for processing. 	<ul style="list-style-type: none"> Traditional approaches may still be used for purchase loans that have limited or no information. Securing data outside of the organization is a challenge.
<p>Document management using smart contracts, APIs and microservices:</p> <ul style="list-style-type: none"> Develop standard templates for all disclosure document packages such as initial disclosure, flood, appraisal, credit, notice of incompleteness, closing disclosure and post-closing. 	<ul style="list-style-type: none"> An automated package-generation process can provide details that all attributes are met when a loan is requested. Ensure swift document exchange and due diligence among stakeholders. Eliminate multi-level document management intermediaries (service providers). All parties in the network have on-demand access to original copies. Meet regulatory standards earlier in the process. No separate reconciliation process required for individual parties. Post-verification, lenders or designated service providers can print and dispatch packages directly from blockchain applications. 	<ul style="list-style-type: none"> Standardizing package contents and templates across the ecosystem is a real challenge because each lender follows a different approach. Specialized services offered by lenders, especially for HNI consumers, have to maintain exclusivity which requires additional documentation and processes.

Banks, brokers, credit unions, financial institutions, can take advantage of these capabilities by forming a lenders consortium and moving operations to a blockchain platform. Initially, lenders can focus on specific segments of the primary mortgage market to develop blockchain applications using enterprise-permissioned blockchains. By using smart contracts, APIs and microservices, lenders can integrate blockchain and enterprise applications, and link them to other service providers for better visibility. To see how this compares to existing models, refer to Figure 1, which visualizes a typical mortgage origination ecosystem on existing and blockchain models.

Industry trends: Blockchain in lending and real estate

- In September 2018, the Chinese state-owned Bank of Communications (BoCom) used blockchain technology to issue \$1.3 million in digital mortgages. The technology helped increase transparency for all parties involved, and enable business operations to be performed more efficiently.
- A subsidiary of the Raiffeisen Bank International issued Russia's first e-mortgage through a blockchain platform called Masterchain. This platform ensures secure communication between parties and an accurate customer database.
- Bank of China Hong Kong (BOCHK) is presently processing 85% of its mortgage-related property valuations with blockchain technology. The bank states that, with blockchain, the property valuation process is done in a few seconds because there is no paper or manual work.
- In India, eleven big lender banks are set to launch the country's first blockchain-linked funding for SMEs. The banks have formed a consortium called Blockchain Infrastructure Company (BIC) to avoid any communication hurdles and to promote a single network to access the public credit data, which will ensure transparency in loan disbursement with a minimal risk.
- PROPY, a property technology company in the U.S., enables title registry that allows county and state authorities in other countries to record property ownership on the blockchain platform.
- SHELTER ZOOM is a blockchain platform used to record every transaction in the lending process, promising a new level of transparency, efficiency and trust when buying or renting property.

Recommendations

- Involve regulators in designing common frameworks across mortgage ecosystems to make blockchain practical and accessible. Advocate for new laws to support the technology.
- Consider Information security a top priority. Presently, a lot of personal and sensitive information is being shared with service providers who are off-network, which may create weak points.
- Encourage members and non-members of the consortium to participate in these initiatives and exchange ideas for how to improve the mortgage origination experience.
- Encourage mortgage origination vendors (agents, brokers, dealers, etc.) to use blockchain networks sponsored by the bank for sharing of origination-related data.
- Press government agencies to digitize property records and share them only through blockchain networks to increase security.
- Focus on the lines of business within the mortgage value chain that are easy to integrate with blockchain: for example, refinancing loans, because all required data already exists within the network.
Additional use cases on the blockchain platform that will help simplify the underwriting process and reduce loan processing duration include:
 - Property valuation and appraisal
 - Credit history management
 - Ongoing and closed mortgages and
 - LAR reporting

The way forward for blockchain technology transformation

The mortgage industry is a major financial sector worldwide. Blockchain technology has enormous potential to transform the entire mortgage value chain, delivering unprecedented customer experience and empowerment, driving cost efficiencies, and achieving process excellence. This transformation is realistic, but it may take years to develop a mature model. Enterprises that adopt the blockchain platform as early as possible will reap economic advantages and can retain considerable market share. Blockchain technology is not meant to remove traditional lenders, but rather support the industry value chain by improving the experience for lenders and customers.

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Sridhar Sathyanarayan is a certified scrum product owner and certified data analyst with 13+ years of experience in financial services. Sridhar offers a broad expertise across capital markets and lending portfolios with a strong focus on wealth management and US residential mortgage domains. He is part of banking practice organization, presently associated with Wipro Gallagher Solutions, Wipro Ltd. He manages product development and engineering for a global U.S.-based bank, and is extremely involved in consulting and advisory, with a focus on NetOxygen product.

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