



# Blockchain for Business

## Moving Towards "Mortgage ID"

---

## BlockChain

Simply defined, BlockChain is a Decentralized Ledger System that creates a permanent (Immutable) and shared registry of every transaction, associated with any type of Asset (Tangible & Intangible). Every Transaction is Time Stamped, put into a Block and is appended to the Block before it. Due to the decentralized nature, data inside a Block is validated and appended by a common Consensus achieved by all (or some) of the participating parties, which makes the record Trustworthy, Transparent and Secure.

BlockChain is groundbreaking and has the potential to disrupt every business today, which involves transactions across multiple parties. This paper is intended to discuss the positive impact of BlockChain on the Mortgage Process.

“A mortgage application requires hundreds of documents and very sensitive data, a mortgage processing provider, W-2s, income statements, asset and bank statements, Social Security numbers, and all of that has to change hands numerous times over a variety of channels: fax, email, mobile phone.”

- Leo Loomie, senior vice president of client services at Digital Risk LLC.

## Mortgage Business

According to the Federal Reserve of United States per their last count, there were about \$10 Trillion worth of residential mortgages outstanding, with about \$2 Trillion in new loans being originated in a typical year.

Traditionally, this process is highly manual. The complexity is presented by the numerous versions of documents which are created by multiple parties, which are then edited by multiple parties. Added to these are the issues of meeting timelines around regulations.

On a high level, the industry today faces challenges like:

- Manual & Laborious Legacy process
- Anxiety around dealing with sensitive data
- Reliability of bookkeeping
- Sharing of data between different entities
- Complexity of the appraisal system
- Rising cost of the processing fees

In a scenario of such complex financial instrument, there is also the extreme importance of providing an exemplary customer experience.

---

## Trust in a Democratic way

The common anxiety around the mortgage process today are the deliverables. These could be in the form of money/asset being delivered with the correct value. Obligations are lined up since the start of the process and they are constantly checked to ensure that they are being honored. Fundamentally, these revolve around having trust among all parties.

The 2017 Edelman trust barometer discovered that trust in institutions like NGOs & corporations has declined in 2016 to trust "lows" similar to trust levels during the financial crisis. 85% of respondents indicated that do not "trust the system". And only 52% of the respondents trust in businesses.

-Edelman 2017

Implementation of Smart Contracts guarantees trust, without having to involve a human. A smart contract is a computer program that runs on BlockChain which simply believes on the fundamental of "If THIS, then THAT", purely based on a specific business logic. Smart Contracts are self-executing, self-sufficient and do not need an administrator, thereby replacing legacy systems which involve Authority, and Anxiety around processes and systems defined by others.

A Smart Contract should not be confused with traditional legal contract. It is rather a Business Logic implemented via software. For example, in the current discussion, Smart Contract can be implemented to ensure payment to the shipper, IF the shipment arrives on time and with the correct quantity. The contract once entered is irrevocable and WILL be implemented.

A typical mortgage network consists of buyer, seller, bank(s), realtor, insurance provider, and the title authority (collectively called Business Partners). Today each one of them have their own processes, databases and documentation systems, which are validated & revalidated at every instance of change, by everyone involved.

BlockChain brings in the concept of peer-peer networks, which work in a democratic fashion called Consensus. Every new change in the information (transactions) is broadcasted to all (or some of) the nodes (Business Partners) in the network. Each node collects the new transaction and verifies the "Proof-Of-Work", upon which the Block is shared (broadcasted) to the other nodes, which afterwards express their acceptance. Hence, none of the parties involved can either unilaterally change, or defy the information and break the rules of the system, thus increasing the Trustability of the system. The Smart Contracts can even help in the secondary markets along the securitization process, speeding the enablement of liquidity into the market.

---

## Transparency

Provenance and Authenticity along with real time visibility is key to a Mortgage Process, which is a real contribution from BlockChain.

There are important aspects like Insurance amounts, Loan offers, Loan to Value ratio which need to be shared across the business partners during the process. Ability to review these real-time, added with the view(s) of associated historical changes makes the process simpler.

Every business partner participating in the Mortgage BlockChain can append the registry of transactions, reach on consensus, and access the registry as well (depending on the implementation of BlockChain), which enables them to gain real time visibility. Smart Contracts can then implement the required business logic to enforce the journey based on predetermined criteria.

Participation in a typical BlockChain can be in two modes: *Permissionless* or *Permissioned*. Consensus is reached based on the mode implemented.

In a Permissioned mode (as in Ethereum), all parties (business partners) have access to all the transaction registry and everyone (regardless of whether the partner contributed to any transaction) participates in establishing the Consensus.

In a Permissioned mode (as in HyperLedger Fabric or R3 Corda), specific parties are pre-selected for specific transactions and only those parties can participate in establishing the Consensus.

All the due diligence, reporting, sharing becomes streamlined. The real-time visibility provides a chronological record all the way from the birth of the asset (house being built by the builder) till the last transaction. The compliance is technically built into the system rather than relying on individuals. The visibility eliminates the current challenges in the validation process of the weekly trails of audit, as it provides a single source of irrefutable truth.

As the consumers (home buyers) can also track the provenance, it yields a competitive advantage to organizations deploying BlockChain. Historical issues around construction, inspection, tax frauds around a home become visible, thus helping the seller network (realtor, or banks selling foreclosed homes) to establish credentials. BlockChain can further help in transferring Mortgage Servicing Rights (MSRs), thereby increasing the transparency and velocity to service impaired loans by the specialty servicers.

---

## Documentation

The most classical, yet the most important aspect of a robust Mortgage Industry is to gain accuracy in documentation. Be it the documentation from business parties, or the authenticity of the owner, better bookkeeping is of paramount importance.

Today, there is a “someone” who must confirm every transaction that happens in a mortgage process. BlockChain eliminates this dependence by updating ledgers immediately, automatically and with a full traceability, with consensus, making the documentation prone from errors. Blockchain can help validate and maintain the integrity of MISMO mortgage loan data and other documents, making it easier to transfer assets to servicers.

One of the constant challenges in the Mortgage industry is the presence of bad actors who fraudulently create documents around assets. BlockChain reduces the mortgage fraud drastically due to its inherent nature of being Tamper Proof.

Blockchain technology may radically alter the process through which consumers buy a home, as well as the way financial institutions handle mortgages. Specifically, the technology could remove cost and friction from the process, create transaction records that are infallible and incorruptible, and facilitate near instantaneous settlement. It could also dramatically change the way mortgages are serviced and sold on the secondary market.

-PwC

## Financial Impact

As per the Consumer Financial Protection Bureau (CFPB), a government agency built to protect U.S. consumers, explains that there are several different kinds of costs borrowers pay when taking out a mortgage. While some costs are paid upfront, including origination fees, points and third party closing costs, other are paid over time, such as principal, interest, and mortgage insurance. BlockChain inserts automation to the core of the Mortgage process. The loan cycle being automated creates lesser dependencies on the third parties, which will reduce the cost of mortgage production itself.

In 2015, Capgemini Consulting published a report which indicated that with advent of BlockChain, mortgage customers could expect a drop of 11% - 22%. In pure dollar value, that is a saving of \$480-\$960 on an average processing fees of \$4350, on each loan. Just via automation, loan providers themselves could save around \$1.5 Billion; which can be further incremented to a total of \$6 Billion, once a Business Network of external partners (credit scoring companies, Title companies, Registration Offices) is created on BlockChain.

---

## Author

### Anirban Chakraborty

Principal, Moonlight Capital

Sr. Advisor, B12 Consulting

Sr. Advisor, ThirdEye Inc.

[Anirban@B12Consulting.com](mailto:Anirban@B12Consulting.com)

[Anirban@Thirdeyeinc.com](mailto:Anirban@Thirdeyeinc.com)

[Info@B12Consulting.com](mailto:Info@B12Consulting.com)

+1.972.361.8434

© Copyright B12 Consulting 2017

The information in this document is without any warranty, express or implied, including any warranties of merchantability, applicability for a specific purpose, and any warranty or condition of non-infringement.

This paper is intended for general audience only. It assumes that the reader has the basic awareness around BlockChain. Neither the author, nor B12 Consulting LLC is not responsible for any potential loss sustained by any person or organization who relies on this publication.

Information in this paper may have been derived from external references. Neither author, nor B12 Consulting LLC has confirmed the veracity of such references. Neither author, nor B12 Consulting LLC makes no representations or warranties, express or implied.

## External References

KPMG & CB Insights (2015). 'The Pulse of Fintech' <https://home.kpmg.com/xx/en/home/insights/2016/03/the-pulse-of-fintech-q1-2016.html>

Lemieux V. (2016). Trusting Records: Is Blockchain Technology the Answer? Records Management Journal. 26(2), pp. 110-139

Nakamoto S. (2008) 'Bitcoin: A Peer-to-Peer Electronic Cash System': <https://bitcoin.org/bitcoin.pdf>

Deloitte (2016) Tech Trends 2016 Innovating in the digital era, Blockchain: Democratized trust <https://documents.dupress.deloitte.com/TechTrends2016>

Capgemini Smarts Contracts paper

[Mismo.Org](http://Mismo.Org)