



Real Info™

# BLOCKCHAIN: AN OVERVIEW

Blockchain is dominating conversations about emerging technologies. This paper provides a high level introduction to this technology and explores some potential applications in real estate appraisal.

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*Blockchain:  
Revolutionary  
Technology or a  
Solution Seeking a  
Problem?*

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## What is Blockchain?

Nearly a decade ago, a new technology was deployed to create a peer-to-peer version of electronic cash. Bitcoin was announced in a 2008 paper claiming to be authored by Satoshi Nakamoto who remains unidentified. Bitcoin was the first application of Blockchain technology and remains the most visible application, at least for now.

So, what is Blockchain? A Blockchain is an open-source data structure used to keep a ledger. Blockchain is a technology; it is neither software nor a program. There are several key features of Blockchain technology:

- It provides a method for managing data,
- It is a distributed, decentralized database,
- It operates using peer-to-peer networking,
- It creates an immutable and secure record.

One way to think of Blockchain is to think of it as Excel in the sky. It provides data management similarly to Excel, but it is distributed throughout a network instead of existing on one computer at a time. Once an entry is made to a block and validated, it cannot be undone – even if it is bad data; a new “block” would need to be created issuing a correction to the previous block.

## Cryptocurrency and Blockchain

Bitcoin is the world’s first decentralized digital currency; there is no intermediary. But the digital piece isn’t new. We have been transacting digitally for quite some time. Most of us pay bills online without ever seeing cash or writing a check. We use PayPal and Apply Pay without blinking. Hotel and airline rewards are essential digital currency, even World of Warcraft gold is digital currency. ACH transactions are just ledger entries; no physical cash actually changes hands. However, in each of these cases, there is a third party that serves as the “trust” agent between the transacting parties.

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Cryptocurrencies and Blockchain do some remarkable, game-changing things. Initial attention has been on removing the third party intermediary. Let's go back to PayPal for a minute. PayPal does two basic things. First it verifies that you have the authority to enter the transaction. For example, if you don't have money in your account that can be verified by PayPal, you will not be authorized to complete the purchase. Second, PayPal keeps the ledger. When either party to the transaction wants to know what the record of the deal looked like they go to PayPal.

Digital currency built on Blockchain technology allows people who do not know or trust each other<sup>1</sup> to exchange without a third party intermediary by creating a distributed, immutable record that requires digital assent or authentication up and down the "chain". In the case of cryptocurrency, each transaction must be validated by other computers. The ledger is replicated on thousands of computers called "nodes" and each transaction requires the assent of the nodes to be completed. Although the ledger is widely distributed, blockchain uses a public-key, private-key infrastructure to restrict access to the contents of individual blocks. In short, one publically prove that they have a private key without revealing the private key itself and thus the content of the block is not revealed .

Bitcoin (and therefore Blockchain) also creates digital scarcity. Scarcity has only existed in the physical world. Think of what happens when you send a photo or a MP3 file or an appraisal report. When you send it, the recipient gets it, but they get a copy. You still have the original. Further, the recipient can now instantly share their copy with anyone and everyone they know, and this pattern can be replicated down the line in seconds. Your prized photo can be on a million computers in seconds, and you have not control, nor do you have any idea of where it has gone. In the past, if you wanted one of my songs, I gave you a 45 or an LP, (or a CD for the younger crowd) and once you had it, I no longer did; only one of us could use it at a time.

Transactions conducted using Blockchain technology and digital currency create a means by which only one person can have a given digital asset at any one time. When I send a token to you, you get it and I no longer have it. The blockchain provides a complete transaction history and it provides proof of who owns the transacted item at any given point.

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<sup>1</sup> "Blockchain offers a way for people who do not know or trust each other to create a record of who owns what that will compel the assent of everyone. It is a way of making and preserving truths." ~ Economist, October 11, 2015

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Blockchain technology is extensible, meaning it can be built upon. An important extension to certain blockchains is smart contracts, also called self-executing contracts. The contract is written as code into the blockchain. A triggering event occurs, and the contract executes itself according to the coded terms. This has enormous implications for real estate, commodities, and myriad business transactions.

## What are the Applications for Real Estate?

A lot remains to be discovered in terms of application of Blockchain technology. Blockchain today is where the internet was in the early 1990's. We knew it was a game changer, we just couldn't foresee the specific applications.

Every major bank in the world is exploring Blockchain. NASDAQ uses blockchain to record trades in privately held companies. The Big 4 accounting firms have formed Blockchain groups.

The first real estate applications have been in moving deed and land records to Blockchains. Propy, a global real estate firm, is using Blockchain to create decentralized title registries and has created a platform with smart contracts to facilitate online transactions worldwide.

The Society of Industrial and Office Realtors (SIOR) envisions Blockchain opportunities that include database management, information management, and efficiency with multiple listing services (MLS) and smart contracts (leasing). SIOR foresees “a blockchain-based universal MLS service that could prevent the need for multiple MLS services, and provide better real-time information on listings, reducing human error, and safeguarding sensitive proprietary information from being shared or commoditized.”

In the field of real estate appraisal, smart contracts could prove beneficial to appraisers and users of appraisal services. There are certainly some hurdles, but imagine delivering an appraisal report to a blockchain wherein it could only be accessed by the client. Upon acceptance of the appraisal by the client, the smart contract would instantly fulfill payment to the appraiser. Any changes to the appraisal report would be logged allowing permissioned users to always know they are accessing the final report.

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## Conclusion

As the creative thinkers turn energy to this technology, many opportunities and applications will be realized, all of which are likely to benefit both real estate professionals and their clients alike; real estate appraisal and users of appraisal services will benefit greatly as well. As with any new, disruptive technology, some will be disrupted, while others will do the disrupting. Either way, this profession will look different in a very short time because of Blockchain technology and its many, yet to be seen implications.

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## About Real Info, Inc.

Real Info, Inc. has been providing Automated Valuation Models (AVMs), automated real estate analytics and property inspection/damage assessment services to national clients since 1995. Real Info provides access to one of the most comprehensive parcel databases containing assessment, ownership and sales data on over 110 million properties. The database serves as the foundation for the company's real estate reporting, home price indices, neighborhood & sales analytics, and proprietary Automated Valuation Models.

## About the Author

Bill King is President and Chief Valuation Officer at Real Info, Inc. He is responsible for overseeing product development and expansion for the company's line of valuation technologies and services. Mr. King has over 35 years of experience in real estate and valuation; he has served as a forensic expert on valuation and housing issues, and contributed to the country's most widely used appraisal textbook, The Appraisal Institute's *The Appraisal of Real Estate*. Mr. King is a licensed real estate broker and certified residential real estate appraiser in Washington State, and nationally recognized instructor of real estate and appraisal courses and seminars.

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