

Blockchain Technology

State Legislative Update
July 2018



NATIONAL
ASSOCIATION *of*
REALTORS®



Contents

- Summary 3
- Governmental Attention 3
- Key Blockchain Technology Definitions 5
 - “Distributed Ledger”: The recording mechanism of a transaction..... 5
 - “Smart Contract”: The process by which a transaction occurs 6
 - “Cryptocurrency”: The financial exchange between parties 6
- Importance of Legislative Definitions..... 7
- 2018 State Legislation..... 9
- Conclusion 10
- Appendix A - Blockchain Definitions in State Legislation..... 11
- Appendix B - Smart Contract Definitions in State Legislation 13
- Appendix C - Cryptocurrency Definitions in State Legislation 14

Summary

The true impact of blockchain technology on the real estate industry is currently unknown. However, it is predicted to be a major part of all real estate transactions in the near future. Consequently, state governments are recognizing the current use of blockchain technology and some states have taken legislative action to ensure the proper laws are in place to protect consumers and businesses.

Blockchain technology can be explained by using online platforms to conduct a transaction between two or more people. Whatever the transaction is, all parties involved receive information in a secure way. When all parties agree to the terms of the transaction, there is a recorded "block" that locks the agreement in place indefinitely. This ensures the data cannot be altered unless all parties agree once again to accept changes, which would record the new block. New blocks always include a reference to the previous block forming a "chain." The old block would be visible but clearly identified as having an amended version. Each block of connections/agreements/activities are recorded and stored properly for easy access to data indefinitely.

The transfer of real property can be improved with blockchain technology. Two specific benefits of the technology to real estate are accuracy and speed. Buying a home is one of the most stressful and expensive decisions a consumer will make in a lifetime. Consumers must trust the buying process. Ensuring that trust is often a role that legislative and regulatory entities provide. To which, legislative efforts at the state level reflect the notion that blockchain technology and the impact in the marketplace, not limited to real estate, will be a regulated industry.

REALTORS® have a long history of supporting an orderly real estate market which is why it is critical to be involved in any legislative or regulatory effort that may impact real estate transactions now or in the future. Therefore, ensuring consistent definitions in government oversight of blockchain technology ensures a smoother adoption for REALTORS® and consumers.

Governmental Attention

The jargon of blockchains can be confusing as with any emerging technology. Technology companies use technical terms to establish marketplace leadership in the

minds of customers, even though the customers may not fully understand the technology. Positioning in the market allows blockchain vendors to establish an authoritarian voice that often translates into control of feature sets¹, product rollout, timing of delivery and service pricing. Efforts to educate customers on blockchain products and services only begin after a company has established dominance and competition is minimal.

Companies investing in emerging technologies generally do not spend resources on regulatory and legislative matters because dominance in the market consumes most of their energy. As competition arises, efforts to create standards usually follow within a decade of use for that specific technology. Government controls are implemented in a reactionary manner, typically in response to reported consumer harm or if standardization of the technology is ineffective or inadequate.

Governments were not compelled to act on other recent technologies like software-as-a service² (SaaS) and “cloud” because they are considered innovations with no apparent threats to the market. However, recent concerns over privacy and the chain-of-custody of data will bring more governmental scrutiny. For example, Congress is pouring over facts related to Cambridge Analytica’s role in the sharing of personal data offered by Facebook users. In terms of real estate, chain-of-custody agreements are made between the owners of an MLS and people that have access to the MLS. If that information is shared by someone with access to the MLS, a chain-of-custody should determine how information is shared and provide traceability to the original source, the MLS. Typically, legislative or regulatory oversight of technology comes fifteen years after public use. Conversely, state legislatures are moving fast to debate blockchain technology. Which is why it is critically important that any governmental bodies accurately define the terms or activities within blockchain.

Blockchain technology differs from other technologies because it can affect the monetary and recording aspects of business transactions. It is assumed that state governments are acting sooner than normal to ensure an orderly marketplace because the use of blockchain technology has the potential to heavily impact certain industries, real estate being one of many. This potential significant shift for certain industries

¹ Feature sets offered by technology are the ways by which the technology interacts with either people or data. Example of technology feature set is Alexa or Amazon Echo, a person talks to Alexa for a response.

² Software-as-a service or “cloud” services are rentable servers so data stored within a “cloud” is rented server space. The data is not stored on operating systems you or your company own.

creates an unusual situation where governmental controls are being established before the technology is made available.

Different controls in each state will drive up the cost to implement blockchain technology. If this happens, standardization will be difficult and expensive because it will have to accommodate rules for each jurisdiction particularly for companies with locations in multiple states. This may also stifle improvements to the technology.

Key Blockchain Technology Definitions

Common blockchain terms can be broken down into three primary groups; Distributed Ledger, Smart Contract, and Cryptocurrency. Although the definition of “blockchain” also varies, see Appendix A for a comparison of state legislation definitions.

“Distributed Ledger”: The recording mechanism of a transaction

Access – There are two types of access; public and permissioned. In either case, users perform actions using a unique ID. In the public situation (also called permissionless), anyone can access the system using their ID. This approach is popular with cryptocurrencies such as Bitcoin or Ethereum. Permissioned systems (also called private) require a central authority to grant/revoke users access and is popular in asset management and supply chain applications. In this case, a person’s identity is recorded before issuing an ID. Access style is not dependent on the application; it is possible to record transactions, using cryptocurrency, within a private network.

Accountable – All recordings create an audit trail that includes:

- An identifier of the person or entity making the recording.
- A location identifier that can be used to retrieve the record.
- A timestamp

The identifiers are not humanly recognizable³, taking the form of a long series of numbers and letters.

³ The identifier is a long series of numbers or letters that is traceable to a person or business entity. Blockchain has the ability to track down a specific series of numbers or letters that will precisely identify the transaction the identifier is used within even if there are millions of identifiers associated with a transaction.

Consensus – The method used, across locations, to ensure that all information is recorded.

Decentralized - Copies of records are stored in multiple, physically separate locations. This replication improves data integrity and availability. Separate locations are administered by different business entities. Each location is called a node.

Immutable – Once information is recorded it is “locked” with cryptographic methods and cannot be changed.

“Smart Contract”: The process by which a transaction occurs⁴

Synonyms for “Smart Contract” are computer code and “Chaincode.” See Appendix B for a comparison of state legislation definitions.

Event – When a data state is detected, it is called an event. All events have associated actions.

Event-driven – Logic that is created by grouping events sequentially. This is commonly called a computer program. A number of different actions can result from executing a computer program or event-driven logic.

State – A condition described by the value of one or more data values. A computer program is used to evaluate state data and act on it accordingly. Common state data includes levels and thresholds. A computer program can communicate with another program to create or alter a state.

“Cryptocurrency”: The financial exchange between parties

Synonyms for “cryptocurrency” are digital cash, token, “bitcoin,” “ether,” digital unit, or virtual coin. See Appendix C for a comparison of state legislation definitions.

Creation – Units of cryptocurrency are created as a reward for verifying that a transaction is unique. A computer program is used to verify or encrypt the transaction. The creation process is also known as “mining” and the unit of cryptocurrency is

⁴ Smart Contracts are not to be confused with a “contract” between two parties in a hard copy or electronic copy form. Smart Contracts are distinct in that these are computer codes that automatically stimulate an event after specific criteria has been met within a transaction.

awarded to the owner of the computer whether or not the person is the buyer or seller of an asset.

Transfer – Moving a unit of cryptocurrency between the wallets.

Wallet – An account, associated with an individual, company, or legal entity where units of cryptocurrency are stored.

Importance of Legislative Definitions

Blockchain terms need to be translated into definitions for governmental use because accuracy and consistency in legislation and regulation will ensure the technology is implemented properly to avoid confusion or delays in offering services, which will improve the transactional experience. If the technology is codified poorly, tools will have to be customized for each jurisdiction. The definitions presented here are referring to blockchain in the broadest sense.

Some of the pieces of legislation have been narrow in scope. But use broad technical terms. This discrepancy can lead to misunderstandings because a subset of options/narrow defined scope can be argued as applying in broader contexts thus having unintentional consequences.

An example of an over simplified definition can be found in Colorado SB086, which addresses the use of cyber coding in state records:

Blockchain distributed ledgers provide the capability of openly traceable transactions while maintaining the privacy of each person performing the transactions

The Colorado bill, is important to note because privacy controls have already been implemented without laws specifying how to do so:

- 1) Today, the popularized blockchains only require an ID thus, already protecting privacy. So the words “openly traceable” is inaccurate as it would violate privacy protections within the transaction. The Colorado bill is misleading as openly traceable transactions do not have the ability to protect privacy.

- 2) Only “public” distributed ledgers (as used today) protect privacy because no individual or legal entity is associated with the identifier of a public blockchain and “permissioned” distributed ledgers are traceable to a person or legal entity because they have very specific membership components.
- 3) The Colorado bill asserts that future blockchains will be traceable but privacy of individuals may not be protected. “Blockchains” will begin to interact over the next three years making an identity blockchain, that works across blockchains, inevitable. Privacy will no longer be ensured when this happens, which is why governments need to flesh this area out more to ensure consumer protections are put into place.

An example of narrow scope legislation is New York A09862, which establishes a task force to study economic empowerment zones for cryptocurrency mining. Blockchain is defined as:

A digital ledger in which transactions made in cryptocurrencies are recorded chronologically and publicly.

No privacy capabilities are implied, which makes this definition more accurate than the Colorado bill in regard to future privacy protections. Other NY bills moving through the system (NY A08780 and NY A80793) define blockchain as:

“Blockchain technology” shall mean distributed ledger technology that uses a distributed, decentralized, shared, and replicated ledger, which may be public or private, permissioned or permissionless, or driven by tokenized crypto economics or tokenless. The data on the ledger is protected with cryptography, is immutable and auditable, and provides an uncensored truth.

The New York definition is very similar to the California definition used within multiple pieces of legislation (CA SB838 and CA AB2658⁵):

“Blockchain technology” means distributed ledger technology that uses a distributed, decentralized, shared, and reciprocal ledger, that may be public or private, permissioned or permissionless, or driven by tokenized crypto

⁵ These bills have been amended to define blockchain as “a mathematically secured, chronological, and decentralized ledger or database of transactions or other data.”

economics or tokenless. The data on the ledger is protected with cryptography, is immutable, is auditable, and provides an uncensored truth.

There is further similarity between New York (NY A08780) and California (CA A82658) for the definition of "Smart Contracts." The California definitions appears 30 days after the introduction of the language in New York. The California definition was removed later through an amendment.

Cryptocurrency definitions vary among the states as there does not seem to be consistencies. Of the three states defining cryptocurrency in legislation (Arizona, New York, and Wyoming), the most detailed definition comes from Wyoming HB0070:

As used in this section, "open blockchain token" means a digital unit which is: (i) Created: (A) In response to the verification or collection of a specified number of transactions relating to a digital ledger or database; (B) By deploying computer code to a blockchain network that allows for the creation of digital tokens or other units; or (C) Using any combination of the methods specified in subparagraphs (A) and (B) of this paragraph. (ii) Recorded in a digital ledger or database which is chronological, consensus-based, decentralized and mathematically verified in nature, especially relating to the supply of units and their distribution; and (iii) Capable of being traded or transferred between persons without an intermediary or custodian of value.

It covers a lifecycle of a cryptocurrency including creation and use.

2018 State Legislation

Legislation of particular interest was introduced, pending or has passed in the following states⁶:

- AZ (HB2601)
- CA (SB838 and AB2658)
- IL (HB5553)

⁶ This list includes legislation related to blockchain that the author has reviewed. Several other states have introduced legislation regarding blockchain or cryptocurrency (Arizona, Delaware, New Hampshire, and Washington).

- NE (LB691, LB694, and LB695)
- NY (A08780 and A09899)
- TN (passed SB1662/HB1507)
- WY (HB0070)

In addition to pending legislation, there are eight states that have created or are considering creating blockchain task forces:

- CO (SB086)
- HI (HB1481)
- IL (HJR0025 and HR0120)
- ME (LD950)
- NJ (S2297 and A3613)
- NY (A09862, A08792, and A08793)
- VA (HJR153)
- VT (H0765)

Conclusion

REALTORS® and REALTOR® Associations should be aware of blockchain and the potential impact on the real estate industry. It is critical to develop appropriate terms and definitions for this technology as it becomes more prevalent over the coming years. As more and more state lawmakers recognize the emerging blockchain technology and the impact on the marketplace, it is presumed legislative and regulatory actions will continue to be a hot topic across the states.

Appendix A - Blockchain Definitions in State Legislation

CA (SB838 and AB2658) – “Blockchain technology” means distributed ledger technology that uses a distributed, decentralized, shared, and reciprocal ledger, that may be public or private, permissioned or permissionless, or driven by tokenized crypto economics or tokenless. The data on the ledger is protected with cryptography, is immutable, is auditable, and provides an uncensored truth.⁷

CO (SB086) - Blockchain distributed ledgers provide the capability of openly traceable transactions while maintaining the privacy of each person performing the transactions;

HI (HB1481) - "blockchain", a novel peer to peer networking and distributed data storage technology that shifts the primary locus of control from centralized services to individuals or key holders.

IL (HB5553) - "Blockchain" means an electronic record created by the use of a decentralized method by multiple parties to verify and store a digital record of transactions which is secured by the use of a cryptographic hash of previous transaction information.

NE (LB694 and LB695)- Distributed ledger technology means an electronic record of transactions or other data which is: (a) Uniformly ordered; (b) redundantly maintained or processed by one or more computers or machines to guarantee the consistency or nonrepudiation of the recorded transactions or other data; and (c) validated by the use of cryptography;

NJ (A3613 and S2297) - distributed databases and ledgers protected against revision by publicly-verifiable open source cryptographic algorithms, and protected from data loss by distributed records sharing, colloquially called "Blockchain"

NY (A09862 and A08780) - "Blockchain technology" shall mean distributed ledger technology that uses a distributed, decentralized, shared and replicated ledger, which may be public or private, permissioned or permissionless, or driven by tokenized crypto economics or tokenless. The data on the ledger is protected with cryptography, is immutable and auditable, and provides an uncensored truth.

⁷ Both bills were amended to define blockchain as “a mathematically secured, chronological, and decentralized ledger or database of transactions or other data.”

TN (HB1507 and SB1662)- "Distributed ledger technology" means any distributed ledger protocol and supporting infrastructure, including blockchain, that uses a distributed, decentralized, shared, and replicated ledger, whether it be public or private, permissioned or permissionless, and which may include the use of electronic currencies or electronic tokens as a medium of electronic exchange;

WY (HB0070)- chronological, consensus-based, decentralized and mathematically verified in nature, especially relating to the supply of units and their distribution;

Appendix B - Smart Contract Definitions in State Legislation

IL (HB5553) - "Smart contract" means a contract stored as an electronic record which is verified by the use of a blockchain.

NE (LB695) - For purposes of this section, smart contract means an event driven program or computerized transaction protocol that runs on a distributed, decentralized, shared, and replicated ledger that executes a contract or any provision or provisions of a contract by taking custody over and instructing transfer of assets on the ledger.

NY (A08780) - "Smart contract" shall mean an event-driven program that runs on a distributed, decentralized, shared and replicated ledger and that can take custody over and instruct transfer of assets on that ledger.

TN (HB1507) - "Smart contract" means an event-driven computer program, that executes on an electronic, distributed, decentralized, shared, and replicated ledger that is used to automate transactions, including, but not limited to, transactions that: (A) Take custody over and instruct transfer of assets on that ledger; (B) Create and distribute electronic assets; (C) Synchronize information; or (D) Manage identity and user access to software applications.

Appendix C - Cryptocurrency Definitions in State Legislation

AZ (HB2601) - "Virtual Coin" means a digital representation of value that can be digitally traded and that functions as a medium of exchange, unit of account and store of value.

NY (A09899) - "Cryptocurrency" means a digital currency which encryption techniques are used to regulate the generation of units and currency and verify the transfer of funds, operating independently form a central bank.

NY (A09782) - "Cryptocurrency" means any form of digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank including but not limited to, bitcoin, ethereum, litecoin and bitcoin cash.

WY (HB0070) - As used in this section, "open blockchain token" means a digital unit which is: (i) Created: (A) In response to the verification or collection of a specified number of transactions relating to a digital ledger or database; (B) By deploying computer code to a blockchain network that allows for the creation of digital tokens or other units; or (C) Using any combination of the methods specified in subparagraphs (A) and (B) of this paragraph. (ii) Recorded in a digital ledger or database which is chronological, consensus-based, decentralized and mathematically verified in nature, especially relating to the supply of units and their distribution; and (iii) Capable of being traded or transferred between persons without an intermediary or custodian of value

Report Written By:
Mark Lesswing
Chief Technology Officer
mlesswing@realtors.org

If you have questions, contact:
Adriann Murawski
State & Local Government Affairs
Representative
amurawski@realtors.org



NATIONAL
ASSOCIATION *of*
REALTORS®



500 New Jersey Avenue, NW
Washington, DC 20001-2020
800-874-6500

www.nar.realtor • www.realtorparty.realtor