QUESTIONS AND ANSWERS ABOUT USING BLOCKCHAIN TECHNOLOGY IN REAL ESTATE PRACTICE

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Real estate transactions are steeped in traditions that have hardly changed over hundreds of years. Today, as computer-based property recording systems are prevalent in our cities but roll out at a snail’s pace in rural areas (often hindered by strained municipal budgets), and e-signatures are little used (due to legitimate fears of fraud), arguably the real estate closing process has lagged in its use of computer aided technology. Yet other aspects of real estate ownership have been transformed by the internet: smart home technology to remotely control heating and lighting and monitor security; Airbnb which increases the value of real estate ownership and disrupts the hotel industry; and the real estate brokerage community’s design/photographic/communication technology to list and virtually show properties. Now add to our brave new world blockchain, a cloud-based decentralized ledger system that could offer speed, economy and improved security for real estate transactions. Will the real estate transaction industry avoid or embrace it?

WHAT IS BLOCKCHAIN?

Blockchain is best-known as the technology behind bitcoin, however bitcoin is not blockchain. Bitcoin is an implementation of blockchain technology. Blockchain is a data structure that allows for a digital ledger of transactions to be shared among a distributed network of computers. It uses cryptography to allow each participant on the network to manipulate the ledger in a secure way without the need for a central authority such as a bank or trade association. Using algorithms, the system can verify if a transaction will be approved and added to the blockchain and once it is on the blockchain it is extremely difficult to change or remove that transaction. A blockchain can be an open system or a system restricted to permissive users. There can be private blockchains (for ownership records or business transactions, for instance) and public blockchains (for public municipal data, real estate records etc.). Funds can be transferred by wires automatically authorized by the blockchain or via bitcoin or other virtual currency. Transparent, secure, frictionless payment is touted as one of blockchain’s many benefits.
HOW DOES A BLOCKCHAIN DIFFER FROM A
RECORD KEPT BY A FINANCING INSTITUTION
OR A GOVERNMENT AGENCY?
In a blockchain, there is no third-party intermediary
verifying the veracity of the transaction, rather it is
verified by "nodes." A "node" is a transaction between
computers. Each node contains the history of a trans-
action down to the "genesis block" or beginning
block. Once a command is made to execute a trans-
action, the node will trace through the history of the
blockchain all the way to the genesis block to confirm
that the new transacting party is "cleared" to join the
block. The new block can then be added to the chain,
which creates an indelible and transparent record of
transactions.

HOW IS A BLOCKCHAIN TRANSACTION MORE
SECURE THAN ANY OTHER TRANSACTION?
In theory, blockchain is tamper-proof because it is
decentralized and not controlled by one party. All
the nodes maintaining the same database will be
involved in verifying the transaction which is a check
on the veracity of the system. The system is analogous
to creating a unique digital fingerprint (or "hash") for
each transaction that is stored in the database by each
member of the blockchain. The hash is validated by
algorithms and only can be changed if the utilized
consensus mechanism verifies that the transaction
is legitimate. This assures secure and authenticated
transactions. Is blockchain inviolable? Time will tell.

HOW WIDELY IS BLOCKCHAIN USED?
During the past three years, over $1.4 billion in venture
capital has been invested in blockchain research and
development and more than 2,500 patents have been
filed. A consortium of over 90 corporations is working
to design and apply distributed ledger technologies
(DLT) to global financial markets. See The future of
financial infrastructure: An ambitious look at how block-
chain could change the way real property trans-
sactions. Is blockchain inviolable? Time will tell.

One issue proponents of blockchain technology face
is that members of the block chain must agree on a
common network protocol and technology stack. To
date, there is an uncertain and unharmonized regula-
tory environment as well as no formal legal framework
in which to conduct transactions. There are also many
lingering questions about privacy and security. None-
theless, blockchain seems to be the nascent next gen-
eration of transformative financial services infrastruc-
ture. See Avi Spielman, Blockchain: Digitally Rebuilding
the Real Estate Industry, Massachusetts Institute of

But how might Blockchain affect the real estate indus-
try and the practice of real estate law?

THE USE OF BLOCKCHAIN TO RECORD
REAL PROPERTY INSTRUMENTS
Blockchain could change the way real property trans-
fers and encumbrances are recorded in the United
States. Currently, the local recorder’s office (typically
on a county by county basis) records and maintains
property records such as deeds, mortgages, easement
and covenants and restrictions. According to the U.S.
census Bureau, as of 2013, there were a total of 3,143
counties (and county-equivalents) in the nation. Spiel-
man Thesis, supra, page 6. Consequently, the U.S. real
property recording system is disconnected and decen-
tralized because each state government and each
local government has a role in local real estate owner-
ship and has latitude to create its own laws, recording
requirements and fee structures. This fragmented and local nature of real estate is why local state counsels are necessary to close multi-state real estate transactions.

Notably, in 2016, the Cook County Recorder's office in Illinois announced that it will experiment with the use of blockchain technology for transferring and tracking real property titles and other public records. The Cook County Recorder's Office, which handles real property transactions in Chicago, is the second largest recording office in the U.S., and is the first in the country to try out blockchain technology. Specifically, the office will test blockchain applications of property title transfers and a system for filing liens, compatibility between a blockchain and a traditional, server-based setup, fraudulent use prevention and conveyances of vacant property in Chicago. See Kyle Torpey, Chicago's Cook County to Test Bitcoin Blockchain-Based Property Title Transfer, Bitcoin Magazine (Oct 6, 2016). Earlier in 2016, the government of Vermont released a report regarding the potential use of blockchain technology for public record keeping. See James Condos, William H. Sorrell and Susan L. Donegan, Blockchain Technology: Opportunities and Risks (January 15, 2016), http://legislature.vermont.gov/assets/Legislative-Reports/blockchain-technology-report-final.pdf. Although local municipalities are recorders only and do not warrant the accuracy or correctness of what is recorded, the Illinois and Vermont projects seem to indicate a desire to further secure and streamline those states' existing systems of land ownership records. Further, it is reported that Sweden, Honduras, The Republic of Georgia, and Ghana have all implemented blockchain-based systems for recording real estate ownership. See Luke Parker, City of Rotterdam to use a blockchain for lease agreements (December 12, 2016), http://brave-newcoin.com/news/city-of-rotterdam-to-use-a-blockchain-for-lease-agreements.

PREVENTION OF FRAUD
The recording systems in use today are susceptible to abuse by fraud. Although the variety of fraudulent schemes is as broad as the imagination, some involve identity theft, others, fraudulent manipulation and filing of false documents. An all-too-familiar example: fraudster knows that a home is owned by an absent or elderly individual; fraudster files a forged deed based on documents openly available on the county website and then sells the property, pocketing the purchase price, and leaving behind a tale of woe. Because blockchain relies on encryption to validate transactions by verifying the identities and obtaining the consent of all parties involved, “false” transactions cannot be added to the blockchain. Accordingly, proponents argue that blockchain could resolve many of the fraud issues arising from identity-theft and fraudulent-payment schemes. However, many types of real estate fraud do not involve filing false documents and those schemes may not be prevented by the use of blockchain.

Blockchain technology relies on a public key and a private key—passwords effectively—held by the party in-putting information. Currently, if a private key to the blockchain is lost or stolen, there is no recourse available under existing blockchain technology. In a worst case scenario, the loss or compromise of a private key is tantamount to loss of control over all of one's transactions within the blockchain. A malevolent party could pose as the user until the private key is deactivated in the same manner a thief could continue spending on a stolen credit card until it is canceled. See Spielman Thesis, page 37. A blockchain network cannot distinguish between transactions performed by a legitimate user or a malevolent actor with unauthorized access to the legitimate user's private key. So long as protocols are properly followed, bad data can be input, accepted and added to the blockchain. See James Condos, William H. Sorrell and Susan L. Donegan, Blockchain Technology Opportunities and Risks (January 15, 2016), http://legislature.vermont.gov/assets/Legislative-Reports/blockchain-technology-report-final.pdf, citing Luciana Duranti and Corinne Rogers, Trust in digital records: An increasingly cloudy legal area, 28 Computer Law & Security Review, 522-531 (October, 2012). Like other databases, blockchain is susceptible to the principle “garbage in, garbage out.” See Spielman Thesis, supra, page 57. Nonetheless, except where there is illicit system/key infiltration, blockchain should significantly reduce low level, less sophisticated fraud. Like so much of blockchain’s architecture, the cybersecurity elements continue to evolve.

HOW MIGHT BLOCKCHAIN AFFECT THE ROLE OF TITLE INSURANCE COMPANIES?
Today, it is standard practice in most transactions for a purchaser to order a title search, which at closing, after payment of a premium, becomes a title insurance policy. Many advocates of blockchain technology believe that someday it will eliminate the need