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Block Chain in Real Estate Management

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Abstract

The commercial real estate market makes up a significant economic global segment both in terms of asset base as well as transactional activity. According to an MSCI report, the size of the professionally managed global real estate investment market increased from $7.4 trillion in 2016 to $8.5 trillion in 2017. The investment market for real estate, while immense, has been dominated by a relatively closed network of firms and organizations able to shoulder big, chunky, illiquid investments. It is also hindered by a significant amount of transactional friction and opacity. While there have been improvements in the digital age – especially as it relates to information flow and transaction set up and completion – we are only at the initial few steps in terms of digitization. There is still a significant amount of improvement that can be made in real estate when it comes to the use of digital technology and the representation of physical assets in digital forms. This advancement will be driven largely by the digital securitization of real estate properties (also known as "tokenization") and improved transaction processing that make it easier to buy and sell properties and/or shares of properties, process revenue streams, and record and perfect property transactions. The future of real estate is one where purchases and investments become much more liquid, much more available, and far more easily documented and managed. These changes will be driven largely by block chain technologies. These technologies include decentralized and immutable transaction ledgers, asset tokenization, and owner entity and land title registries and, as a result, the benefits will open up markets for new investors and let a greater number of parties manage ownership, liquidity, and risk much more effectively.

Key Words:
Transactional Fiction, Digital Age, Digital Securitization, tokenization

Real Estate Management

Property management starts with the property purchase idea (idea of acquiring/ building/ purchasing or simply having a property) of the users and investors. Generally, there are two main areas in property management. They are, property portfolio management. property assets management.

Property portfolio management is dealing with strategies of formalizing and monitoring of an organization's property so as to achieve the maximum portfolio return and minimum portfolio risk. Hence, this mainly deals with the financial and investment decisions in connection with real estates (land and landed properties) at the strategic level of organizations. For instance, critical decisions relating to properties such as acquiring, constructing, changing the uses and users, and demolishing or selling properties etc. are highly expensive for organizations. And also, implications of such decisions for the entire organizational activities are very high. Therefore, such decisions are usually taken by the top management as they are strategic level decisions.

"Property asset management" is about the use of properties in maximum level. Therefore, it deals with the objectives of increasing the life span of properties together with the contribution to economic worth of the assets. Hence, through property assets management, organizations expect to ensure proper care and attention of benefits of properties. Thus, property assets management functions deal with the operational decisions. These decisions are usually taken by the middle and lower level managers of organizations.

In case of properties of private sector organizations, it is expected to have separate property management plans along with the corporate business plans of organizations. As far as the management of the public sector properties are concerned, there may be some approved laws relating to the respective public sector agency. Sometimes, necessary regulations and circulars are issued time to time and strategic level and operational level decisions are taken accordingly.

Decisions according to circulars are not rational as it does not always concern the professional requirements rather than administrative requirement.

Definition of Real Estate Management

(1) Real Estate Management is simultaneously a generic description of a broad range of activities and a specialist technical discipline (Stapleton, 1986).

(2) Property is simply one that consists of several resources of an organization, which need specific skills to manage (property-oriented management skills).

(3) According to the RICS policy review in 1974, the Estate Management (The generic activity) is considered as "All facets of case, development and Management of urban land, including the sale, purchase and letting of residential, commercial and industrial property and management of urban estate and advice to clients to planning …

(4) As Thorn croft pointed out, Estate Management (the specialist activity) is defined as "the direction and supervision of an interest in landed property with the aim of securing the optimum return; this return need not always be financial but may be in terms of social benefit, status, prestige, political power or some other goal(s)

(5) Arnison has recommended 03 personals in connection with the real estate management such as;

- Skilled practical person to give services of valuing,
- Managing or disposing of everyday property interest and property problems.
- A smaller group to manage more complex problems.
- A small group providing the innovation, the critical appraisal and reappraisal methods, techniques and attitudes which ensure the vitality and adaptability of a profession.

Some issues relating to the increasing real estate assets of organizations

- Rapid changes in technology: This is beneficial as it paves the way for innovations, highest and best uses etc. At the same time, it is a challenge as it leads to a heavy cost and functional obsolesce of properties etc.
- Variety of social needs: Since social needs and wants are rapidly changed, adoptability of properties is an expensive task.

- Unforeseen expensive maintenance problems: This may collapse property functions interrupting all operations of organizations.
- Continuous management needs: To minimize the above risk, it incurs heavy cost for overall property management.
- Having properties without interested parties/ clients/ demand this pushes organizations to be bankrupted due to unbearable property cost.

The above mentioned are general challenges for any organization. Organizations can only be able to face these challenges by applying proper management. Similarly, organizations have to deal with some common macro-economic issues when managing properties.

Why do we need to know property management?

- To ensure the maximum use of scare resources at the minimum cost. Inefficient uses may be due to the lack of financial discipline. For instance, mismatching the income and the cost of occupation. Therefore, efficient and effective management can reduce the cost of occupancy.
- Real estate is an industry, which generates resources and the wealth of the economy. For the purpose of achieving this broader function of real estate, efficient and effective management is essential.
- Real estate effects on the economic life of all individuals. Hence, for the wellbeing of individuals, management of property is a must.
- Real estate effects on land use pattern and vice versa. Therefore, in order to maximize the use of scarce land resource, management of property is a prerequisite.
- Effective real estate management requires clear knowledge and understanding of the needs and wants of owners of real estate and owners can fulfil their objectives.
- Only the competent manager can manage the property, refurbish and redevelop (sale/ lease out) in the most desirable way.

Real Estate Industry – The Present

Let us try to understand a typical property buying process:

- An individual looking to buy property will visit a online website or r a real estate broker in person or broking website.
- Based on the individual's requirements, these intermediaries suggest some sellers who are selling properties matching buyer's criteria.
- These intermediaries then contact the seller to discuss the details of the deal and negotiate.

Blockchain as an enabling technology

One of the benefits of block chain technology, and security tokens in particular, is that it offers a way to buy and sell properties in more granular pieces. A property, for example, can be divided into individual investment units each identified and embodied via a security token. These tokens will identify ownership, provide a mechanism for transactional processing, and serve as the property identifier to allow for trading on regulated secondary markets.

It's all too common to hear that block chain technology "will change everything" but in this case we believe it is not far from the truth – especially when one views the technology as a complete transactional recording and processing system – and along with the generous passage of time. At its core, a block chain is essentially a shared and distributed database or ledger. Transactions are processed and bundled in blocks and the blocks encrypted and cryptographically linked in a chain. The processing takes place within a network of nodes – either public or private – with a consensus design intended to decentralize authority such that no single source is the sole decider of transactional integrity. Rather authority is decentralized across the operators of the nodes, with each node validating and maintaining verified copies of the ledger. By recording and combining transactions into a decentralized, secure ledger, a block chain network creates a "chain" of chronological data that no one party has control of or can change and such that each block and individual transaction can be verified via cryptography. The transaction records are further protected by the replication of the data across nodes allowing for multiple and verifiable sources of truth. The value, therein, lies in the system's ability to authenticate and track transactions in real time without the use of a centralized third party, such as a single corporation, bank, clearing house, government entity, or other sole source of authority. The network, the linked transactional records,

and the cryptography all serve to provide the decentralized "authority" to effectively establish, record, and serve up a verifiable and trusted source of transactions.

Blockchain as a disruptive force

The benefits of Block chain– increased liquidity, more open markets, and reduced friction – all become magnified when one looks at it across cities, state, and country borders. Establishing a common language around real estate property registration and securitization and providing for mechanisms for digital purchase will reduce a tremendous amount of overhead and special knowledge needed in order to participate in real estate transactions across the world. By utilizing smart contracts, the whole agreement can be automated, and payments can be sent and received instantly. A smart contract (deployed on a decentralized block chain network) can make it possible to write, authenticate, and audit agreements in real-time. This can be done on a global scale and without the need for intermediaries, thus keeping the value between the main parties involved in the deal. Within the smart contract (which is typically publicly available for anyone) the instructions and dependencies are clearly defined so payment can only be executed as long as these conditions are fulfilled. This gives greater transparency to the parties involved and theoretically reduces the number of disputes. Smart contract processing also has the potential to reduce the risk of fraud, as digital identity verification will be a step in the process and only allowed parties can interact with them using their private keys. Every node within a block chain network is continually validating all transactions in the block chain thereby reducing the likelihood of a fraudulent transaction.

A final note here is that block chain transactions are processed 24/7, with no business hour or holiday cut-off times and transactions are also confirmable in a matter of minutes. While this continual and near-real time process poses some challenges for traditional business and banking practices, it does eliminate trading biases imposed by geography markets and in the nature of block chain and crypto currency brings the world a bit closer and more universal.

Block Chain in Real Estate

Real estate is the largest asset class in the world. Commercial enterprises and real estate professionals are recognizing the transformative impact of block chain technology to optimize retail and commercial property sales, streamline payments, and increase access to real estate funds and investment opportunities.

Block chain technology has recently been adopted and adapted for use by the commercial real estate (CRE) industry. CRE executives are finding that block chain-based smart contracts can play a much larger role in their industry. Block chain technology can potentially transform core CRE operations such as property transactions like purchase, sale, financing, leasing, and management transactions.

Real estate hasn't escaped block chain disruption either. Previously, transacting high value assets such as real estate exclusively through digital channels has never been the norm. Real estate transactions are often conducted offline involving face-to-face engagements with various entities. Blockchain, however, opened up ways to change this. The introduction of smart contracts in block chain platforms now allows assets like real estate to be tokenized and be traded like cryptocurrencies like bitcoin and ether.

As per Fortune, London-based real estate advisor Savills tallied up the value of all global property, including commercial and residential property and forestry and agricultural land. By their calculations, the total global real estate valuation comes a whopping $217 trillion total and residential property makes up about 75% of the total value.

Yolande Barnes, head of Savills world research, said, "To give this figure context, the total value of all the gold ever mined is approximately US $6 trillion. This sum pales in comparison to the total value of developed property by a factor of 36 to 1."

There was a critical conclusion that Savills made from their study. As Barnes puts it, "Real estate is the pre-eminent asset class which will be most impacted by global monetary conditions and investment activity and which, in turn, has the power to most impact national and international economies." In simple terms, real estate has and will continue to play a huge role in the global economy.

The Biggest Problems with the Traditional Real Estate Industry

1. Not open to everyone

Real estate has long been the investment choice of the rich. Very few assets manage to provide the same degree of passive income and capital appreciation. The problem is that the barrier of entering the real estate market has always been extremely high. These barriers could be citizenship, international bank accounts, Credit Score, financing, cash requirements, accreditation, and having accessibility to the right sponsors and fund managers.

If you are planning to invest in another country, you will have to make at least one international trip and to visit the property. You will have to spend a lot of time and go through several middlemen to invest in the property of your choice.

2. Severe lack of transparency

The Panama Papers controversy showed us the depth of corruption and dishonesty in the real estate business. A higher degree of transparency can combat corruption, tax evasion, and money laundering. According to the United Nations, $800 billion – $2 trillion USD is laundered globally every single year. A significant amount of it is laundered through real estate. The UN Office on Drugs and Crime estimated this figure to be in the region of $1.6 trillion in a single year.

To understand why this is a big problem, think about this – According to Global Financial Integrity, almost 80% of the estimated $1 trillion which leaves developing countries in these illicit financial flows, could be taxed to provide revenues for public spending on global challenges such as infrastructure and climate change.

3. High fees

If you are investing in international real estate then here are some of the fees that you will have to pay – exchange fees, transfer fees, broker fees, attorney fees, taxes, investment fees, etc. Because

of the sheer number of middlemen involved, foreign real estate investment can be an expensive process. Also, you need to keep in mind that you will need to consult lawyers and accountants as well to make sure that your tax returns are in order.

4. **Lack of Liquidity**

Now we come to one of the most significant problems with real estate. They are notoriously difficult to liquidate. Liquidity is defined as how quickly an asset or investment can be converted into cash. Liquidity of an asset is directly proportional to the supply of the buyers. The problem with real estate buyers is firstly, the barrier for entry is very high when it comes to real estate. They aren't looking to buy any property which is far away from where they live (except in the case of international real estate). Real estate dealings have loads of third parties involved so the transactions are bogged down by fees and regulations. This discourages potential buyers. Even if you do find some buyers, you will be locked up in a lengthy transaction process, and the chances are high that it will end in failure.

5. **Pricing Commitments**

Real estate investment requires a lot of capital up front. More often than not, investors have to look at expensive alternative methods of financing. Also, when it comes to international real estates, having an excellent credit score in your native country won't carry over to the country that you want to invest in.

6. **Transaction Speed**

Real estate transactions can be extremely slow. According to Juwai Chinese Consumer International Travel Survey, 56% of Chinese investors spend over one year finding their ideal US investment property. In general, it can take you six months to find a property and another six months to fulfil all the formality needed to acquire it. Keeping all these factors in mind, you can see why the real estate industry is prime for disruption. This is where the block chain comes in.

Blockchain – Why Ethereum?

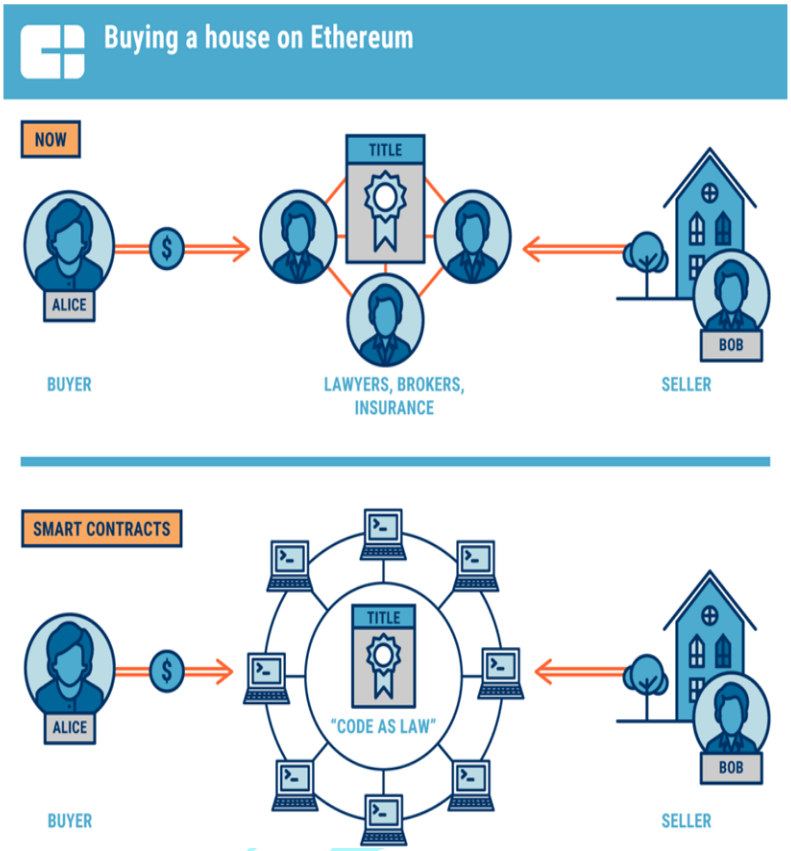

*Figure 1: Ethereum & Real Estate** *Source: Investopedia*

Block chain technology was initially mostly associated with Bitcoin, understandable because Bitcoin was the first digital currency issued on the block chain. The creator of Ethereum, VitalikButerin, started his block chain journey through an initial interest in Bitcoin back in 2011. He studied and made several attempts to build applications on top of the Bitcoin block chain without being successful. He realized that building an application on the Bitcoin block chain is only possible when one would build an entire original block chain for each application, as this is highly complicated he realized that core elements of the block chain had to be changed. And so the Ethereum block chain came to life (from the specifications on paper in 2013 to launching the block chain itself in 2015). Simply put, Ethereum is a decentralized platform that has all the advantages of block chain technology yet in addition allows for the creation of decentralized applications (DApps). Similar to Bitcoin, Ethereum also has its own currency (called Ether) which can be mined, bought, traded and sold just like Bitcoin. Although they seem similar they have

different purposes, goals and capabilities. As an example, Bitcoin was created as a digital currency with the ultimate goal to replace conventional fiat currency. Ether, on the other hand, is much more than just a digital currency, it enables developers to create decentralized applications (DApps) through the use of smart contracts.

There are many reasons why entrepreneurs, builders and developers chose to build on Ethereum, some key reasons are:

- There is already a very high degree of decentralization, once the change to proof-of stake happens this will only increase
- An estimate of over 200,000 developers is actively working on many real live products with many important tools / frameworks in place
- Ethereum is under continuous development by the open-source community, a good example is the upcoming Constantinople upgrade
- The Ethereum core dev team are working on implementing "Casper" which aims to make transactions more efficient
- With a market capitalization of more than US $13B, Ethereum is the 2nd largest block chain network in the world (liquidity is important).

Blockchain – Changing Real Estate

Given the block chain's disruption of financial services, it's hard to find a segment that has not been influenced by the technology. Cryptocurrencies have made a strong impact on payments, remittances, and foreign exchange. Initial coin offerings (ICOs) have challenged stock investing, startup loans, and venture capital. Real estate hasn't escaped block chain disruption either. Previously, transacting high value assets such as real estate exclusively through digital channels has never been the norm. Real estate transactions are often conducted offline involving face-to-face engagements with various entities. Block chain, however, opened up ways to change this. The introduction of smart contracts in block chain platforms now allows assets like real estate to be tokenized and be traded like cryptocurrencies like bitcoin and ether. Trading real estate this way varies. Here are six ways block chain is changing the real estate game.

1. **Platforms and Marketplaces**

Real estate technology has mostly been concerned with listing and connecting buyers and sellers. However, the block chain introduces new ways to trade real estate and can enable trading platforms and online marketplaces to support real estate transactions more comprehensively. For example, ATLANT – which recently launched its own ICO - is developing a platform that uses block chain technology to facilitate real estate and rental property transactions. By tokenizing real property, assets can then be traded much like stocks on an exchange and transactions can be done online. ATLANT allows sellers to tokenize assets, essentially handling it like a stock sale, and liquidating that asset through a token sale using the platform. The collected tokens can be exchanged for fiat currency, with buyers owning a percentage stake of the property.

2. **No Intermediaries**

Brokers, lawyers, and banks have long been part of the real estate ecosystem. However, block chain may soon usher in a shift in their roles and participation in real estate transactions. New platforms can eventually assume functions such as listings, payments, and legal documentation. Cutting out the intermediaries will result in buyers and sellers getting more out of their money as they save on commissions and fees charged by these intermediaries. This also makes the process much quicker as the back-and-forth between these middlemen gets cut

3. **Liquidity**

Real estate has long been considered an illiquid asset since it takes time for sales to conclude. This isn't the case with crypto currencies and tokens since they can readily be traded for fiat currencies through exchanges. However, as tokens, real estate can be readily traded. A seller doesn't have to wait for a buyer who can afford the whole property in order to get some value out of their property.

4. **Fractional Ownership**

By allowing fractional ownership, the block chain also lowers the barriers to real estate investing. Typically, investments would require significant money upfront in order to acquire property. Alternatively, investors could also pool their money to acquire bigger ticket properties. Through the block chain, investors would simply have to access a trading app to buy and sell even fractions

of tokens as they see fit. In addition, fractional ownership would also help them avoid managing the properties themselves such as maintenance and leasing.

Upkeep alone can add up to significant costs and dealing with tenants may be a troublesome effort. This also affects related activities such as lending where property owners often have to put their properties as collateral for loans in order to get quick access to cash. Depending on the terms, property owners may also continue enjoying use of their property.

5. Decentralization

Block chain commands trust and security being a decentralized technology. Information stored in the block chain is accessible to all peers on the network making data transparent and immutable. One only has to go back to the housing bubble crash a decade ago to see how greed and the lack of transparency in the part of institutions can have catastrophic consequences. A decentralized exchange has trust built into the system. Since information can be verifiable to peers, buyers and sellers can have more confidence in conducting transactions. Fraud attempts would also be lessened. Smart contracts are increasingly becoming admissible records with Vermont and Arizona passing such legislation. As such, smart contracts would have more enforceability beyond the technology itself.

6. Costs

This transparency can also trim down all associated costs with real estate transactions. Beyond the savings in cutting out intermediaries' professional fees and commissions, there are other costs such as inspections costs, registration fees, loan fees, and taxes associated with real estate. These costs even vary depending on the territory that has jurisdiction. Like intermediaries, these can be eliminated from the equation as platforms automate these processes and make them part of the system.

7. Towards True Peer-to-Peer

Global real estate is worth $217 trillion but is dominated by the wealthy and large corporations. Through the block chain, more people will be able to access the market where transactions can now be made more transparent, secure, and equitable. Real estate transactions may soon become truly peer-to-peer activities with block chain-powered platforms doing most of the work.

Blockchain in Real Estate – The Process

The Real Estate process on Block chain can be as follows:

1. **Step 1: Property Marketplace**

Lessor and the lessee will meet at the online marketplace where verified information about the property is available to everyone transparently, including owners' details, geo-location, chain of custody, the area covered, and more. The marketplace will be integrated with the government systems to ensure the authenticity of the information.

2. **Step 2: Identity Verification**

A separate Block chain based identity verification solution will be integrated with the marketplace. This may involve third-party verification companies, government agencies, banks, investors, and more, who will verify the identities. The solution will validate the information from multiple sources, such as bank transactions.

3. **Step 3: Immutable Agreements**

Once both parties decide to go ahead and enter into the agreement, the terms and conditions of the agreement will be recorded in the Smart Contract.

4. **Step 4: Autonomous Pay-outs**

Based on the T&C stored in the Smart Contract, the lease pay-out will get credited in the accounts of the lessor. All the data will be recorded on Blockchain with the timestamp and can be utilized for real-time data analysis.

Future Outlook

It is a common saying in the tech community that technological progress is overestimated in the short-term and underestimated in the long term. This is likely the case here as blockchain technology is more than just a single technology – and in fact – it is more than just technology in that it is a movement from centralized processing to decentralized process and consensus. New protocols and layers plus new economic and business models in combination with this shift in authority will take time to propagate through industries and with consumers. It's not unlike the Internet 1.0 and the calls for the demise of newspapers and magazines. It has finally happened (or

is far along its way) but it certainly took a decade or more after the initial projections. The same with predictions on the paperless office in the 1990s. Only much much later than originally forecast have digital documents and forms taken precedence. Paper still had a long run, much longer than the digital adherents had foretold. When the shifts in the technologies above started happening, though, they were quick and significant. The reasons are many, but a big part is that it takes multiple technologies along with significant work in adapting to new approaches. Getting news on your mobile is vastly different than getting it from a newspaper or magazine. The timeliness, the sources, the format – all are drastically changed. Tokenization of real estate assets may seem far-fetched to those not firmly seated in the blockchain space. We firmly believe, however, that blockchain networks and blockchain technologies will alleviate many of the issues and barriers standing in the way of the average investor, and significantly open up new investment paths for real estate developers. The safety, security, liquidity, and earning potential unlocked by these tokens will greatly increase the opportunities for those who wish to benefit from having real estate investments in their portfolio. Just like the Internet opened up a new way to transact and communicate, blockchain networks and technologies promise to transform real estate property funding, development, ownership, and investment management.

Conclusion & Findings

Decentralization via blockchain can help disrupt the lengthy and interwoven, people-heavy property purchasing procedure. The real estate industry could stand to benefit as much as potential property owners. They could increase profits with all the saved time, fewer hired contractors, lower legal fees, and less risk for loss due to rampant wire transfer fraud.

Distributed ledger technology can help build trust less frameworks for the real estate industry to streamline the multiple and intensive steps to homeownership from listing to closing. All players in the real estate field are victim to data inaccuracies, trust-based transactions, and time-heavy paper contract creation and verification.

There is much to be gained in efficiency from how records are stored and record to brokering international deals. While some real estate companies and brokers might fear that blockchain

technology can make them irrelevant, it will actually allow them to close more deals than ever before and offer improved services to clients.

The real estate industry is notorious for lagging in new technology adoption. Hopefully, decentralization will be the exception to the rule. If the real estate industry chooses to integrate blockchain technologies to improve and pare down payment, escrow, and title, there could be millions in cost savings. Cybersecurity that is a major pain-point for the real estate industry as it exists currently could finally be resolved. There could be a reduction in fraud, better financial privacy, faster transactions, and unprecedented client trust. With so much to gain it is only a matter of time before distributed ledger technology and decentralized platforms redesign the real estate industry.

References

Akash Takyar, 2019, Blockchain Real Estate Process to Revolutionize Leasing Property, LeewayHertz, https://www.leewayhertz.com/blockchain-real-estate-process/

Anon, 2018. Blockchain in Real Estate, Enterprise Ethereum, ConsenSys, https://consensys.net/enterprise-ethereum/use-cases/realestate/

Bastiaan Don, Dharma Rajah, Stephan Ott & Ken Fromm, 2019. Real Estate Use Cases for Blockchain Technology, Enterprise Ethereum Alliance – Real Estate Special Interest Group, https://entethalliance.org/wp-content/uploads/2019/05/EEA-Real-Estate-SIG-Use-Cases-May-2019.pdf

Jacob Dunn, 2018. 5 blockchain real estate startups shaking up property investment, Espeo Blockchain, https://espeoblockchain.com/blog/blockchain-real-estate-startups/

Joe Liebkind, 2019, How Blockchain Technology is Changing Real Estate, Investopedia, https://www.investopedia.com/news/how-blockchain-technology-changing-real-estate/

Rajarshi Mitra, 2019, Blockchain Real Estate - How Will Blockchain Change Real Estate? https://blockgeeks.com/guides/blockchain-real-estate/