Colliers Insights

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TAME OR TRANSFORMATIONAL?

ASSESSING BLOCKCHAIN'S COMMERCIAL REAL ESTATE IMPACTS IN ASIA

EXECUTIVE SUMMARY

Blockchain technology allows all information relating to a series of transactions to be distributed across a network of computers known as nodes. Blockchain creates digital track records that are shared, transparent, rapidly updatable and very difficult to hack. Furthermore, blockchain eliminates the need for a central authority to approve transactions and verify identities.

Real estate is ripe for blockchain-based disruption due to the complexity of the typical transaction. Moving land registries, for example, on to blockchain promises to create tamper-proof records, enhancing the clarity and security of property ownership. This advantage ought to make blockchain attractive to governments; and the fact that developed markets like Sweden and Japan are taking the property applications of blockchain seriously is a positive sign. That said, we anticipate resistance to adoption of blockchain by more traditional governments and regulators, and perhaps also by vested interests like the legal profession. We suspect that adoption will be faster in emerging markets where there is a greater motivation to enhance transparency and tackle corruption.

In combination with the spread of artificial intelligence and other technological trends, we expect that blockchain will lead to lower staff requirements in back and middle offices and to reductions in office sizes (or at least to greater efficiency in office use). Blockchain should thus help accelerate a decentralisation process in the financial sector in particular, and to increase demand for flexible workspace.

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A RAPID RISE

Barely a decade old, blockchain has become part of the basic vocabulary of many industries. The technology is typically associated with finance, as the platform behind cryptocurrencies like bitcoin. However, blockchain has been promised to transform everything from farming[1] to online dating.[2]

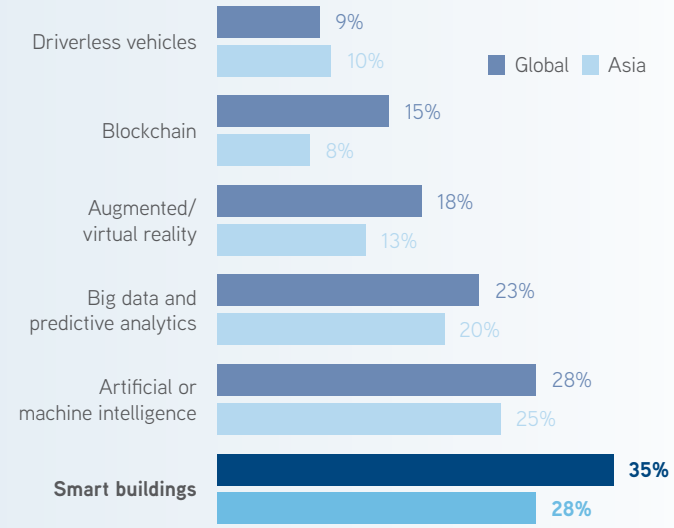
Real estate is no exception. The authentication and security possibilities opened by blockchain are thought to be of particular relevance for the property industry, and across Asia examples are already emerging of the technology being applied in the field. These include startups using blockchain to digitally 'break down' and sell real estate assets, as well as full-blown 'blockchain hubs' in office towers, in Singapore;[3, 4] new platforms to connect homeowners with financing in China;[5] and tamper-proof land registries in India.[6]

That said as in other sectors, the adoption of blockchain in real estate remains nascent and its practical implications are not always clear. Blockchain has already reached the "trough of disillusionment" on the Hype Cycle established by research firm Gartner – the period in which initial experiments repeatedly fail to deliver.[7] One recent survey showed only a small minority of property firms in Asia are convinced of its disruptive potential.[8]

This report will examine blockchain in the specific context of the commercial real estate (CRE) sector in Asia, exploring how it is likely to be used; where its impacts may be felt first; and the potential benefits and challenges associated with blockchain implementations. Drawing on research and the views of Colliers and external experts, it will attempt to answer whether the technology is poised to deliver what it promises for owners and occupiers, and how the industry can best position itself to seize on blockchain's momentum.

ASIAN PESSIMISM

% of respondents who think these technologies will disrupt the commercial real estate industry



Source: Altus Group; Singapore Business Times

[1] How Adoption of Blockchain Technology Will Disrupt Agriculture, Inc42, January 2018
[2] Matchpool brings the blockchain to online dating, SiliconANGLE, January 2017
[3] Mega blockchain hub sets up in Singapore, Marketing Interactive, March 2018
[4] Leveraging blockchain technology to democratize the real estate industry, Enterprise Innovation, January 2018
[5] Blockchain platform targets property financing opportunities in China, Fintech Innovation, July 2016
[6] Indian states look to digitize land deals with blockchain, Reuters, August 2017
[7] Top trends in the Gartner Hype Cycle for Emerging Technologies 2017, Gartner, August 2017
[8] Proptech is all the buzz, just not yet in Asia, The Business Times, January 2018

FROM IDEA TO IMPACT

Before looking at how blockchain applies to real estate, it's first important to understand what it is and how it works – independent of the cryptocurrency networks that tend to dominate the headlines.

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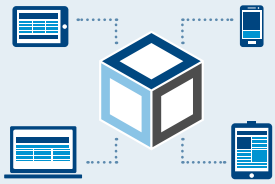
Each 'block' in blockchain represents a transaction – anything from a purchase to the updating of an online record – that rather than being stored centrally is distributed across a network of computers known as 'nodes'. This means that no single party has control over the data, and that any changes are visible across the entire network immediately. Furthermore, it means that all documents become shared, and therefore visible to all parties to a transaction at the same time.

Security comes from every computer on the network being able to verify the identity of the party behind the transaction, and whether the transaction is valid. If approved the transaction is added to a 'chain', creating a digital track record that is permanent and supposedly virtually impossible to alter, due to the complex cryptography that underpins exchanges on the network.

In essence, blockchain eliminates the need for a central authority to approve transactions and verify identities, or for intermediaries to manage aspects of the transaction process; the parties involved can simply deal with each other in confidence. This has potentially profound implications for the speed, simplicity and transparency of transactions across multiple sectors – and CRE in particular.

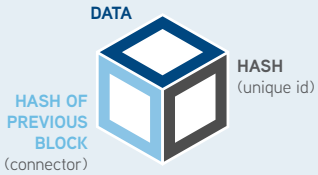
HOW BLOCKCHAIN WORKS

A transaction is requested (cryptocurrency, contracts, records, etc.)

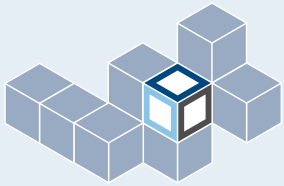


The transaction is represented as an online block, which is broadcasted to an encrypted P2P network of computers known as nodes

The nodes **validate the transaction** and the user's status



Once approved, **new transactions are combined to create a block** for the ledger



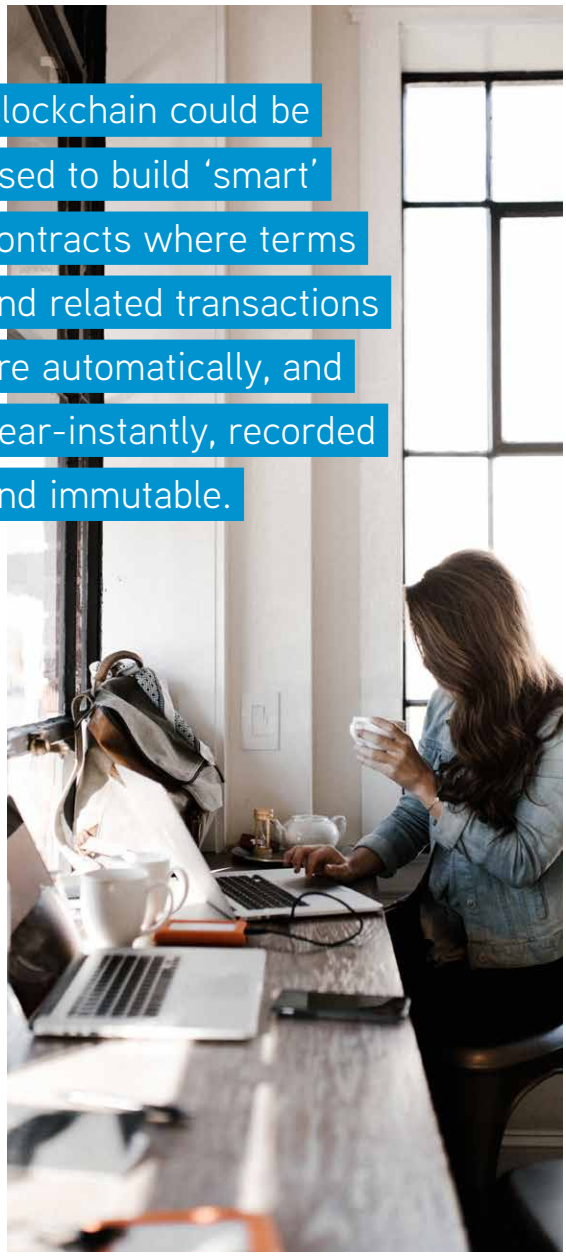
The block is added to the existing blockchain, it's unique, permanent, and unalterable

The transaction is complete


Blockchain eliminates the need for a central authority to approve transactions and verify identities, or for intermediaries to manage aspects of the transaction process; the parties involved can simply deal with each other in confidence.

MEETING THE NEED FOR SPEED

CRE is especially ripe for blockchain-based disruption because of the complexity of the typical property transaction. The list of parties involved in many deals extends well beyond owner and occupier (or buyer), to brokers, banks, law firms, governments (via stamp duties or land registries), utility operators – the list goes on.



Blockchain could provide a secure platform for all these parties to verify each other's identities – as well as the history of and data on the real estate asset being bought or leased. And when a deal is finally struck, blockchain could be used to build 'smart' contracts in which terms and related transactions are automatically, and near-instantly, recorded and immutable.

Smart contracts open the possibility for transactions to be triggered by an enshrined set of preconditions without the need for human involvement; a deposit, for example, could be transferred automatically from an occupier to an owner when both parties have digitally 'signed' an agreement. Any such transactions would also be logged and added immediately to the 'blocks' of information on the given property asset.

This could substantially speed up some of the processes in a typical real estate deal. Standard payments processed by a bank can take a day or more to clear, for example, whereas the regular transaction time on the bitcoin blockchain is 10 minutes.[9] As the University of Oxford notes, this is probably too long for the average stock market trade, but would be considered quick in the property context.

Perhaps even more importantly, some processes could be eliminated altogether. Instant, distributed verification of a property's ownership would ease the need for drawn-out title searches, for example. In many transactions deposits or payments are placed in escrow until processes like due diligence are completed. These payments could instead be included in a smart contract and prompted automatically by the deal reaching a defined stage, replacing the escrow function (and escrow agent).

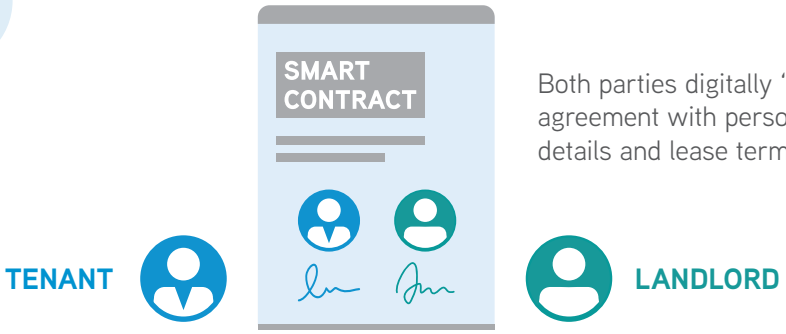
Buyers and sellers are already experimenting with blockchain-based smart contracts in North America and Europe, albeit mainly in the residential context. In late 2017, for example, an apartment in Kiev, Ukraine was purchased remotely via the blockchain network set up for the cryptocurrency Ethereum.[10] The industry in Asia seems more cautious in this regard – although Propy, the decentralised property registry that facilitated the Ukraine transaction, expects Asian buyers to be active in blockchain real estate given that it represents a possible route around capital controls in markets like China.

[9] PropTech 3.0: The future of real estate, University of Oxford, May 2017

[10] Propy announces world's first real estate purchase on Ethereum blockchain, PR Newswire, October 2017

A SAMPLE RENTAL 'SMART CONTRACT' IN ACTION

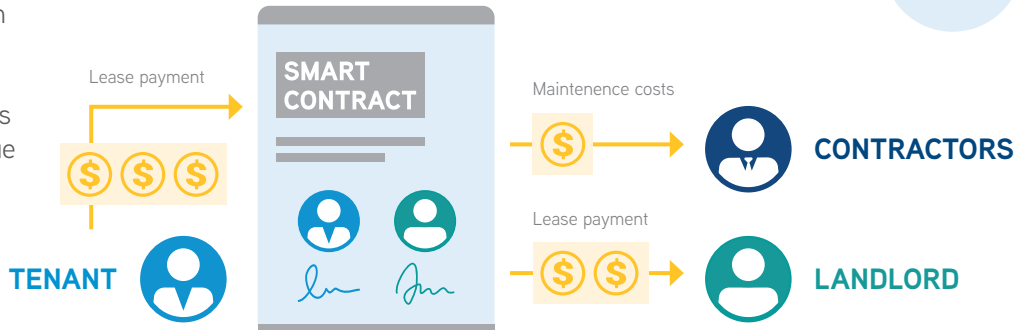
1



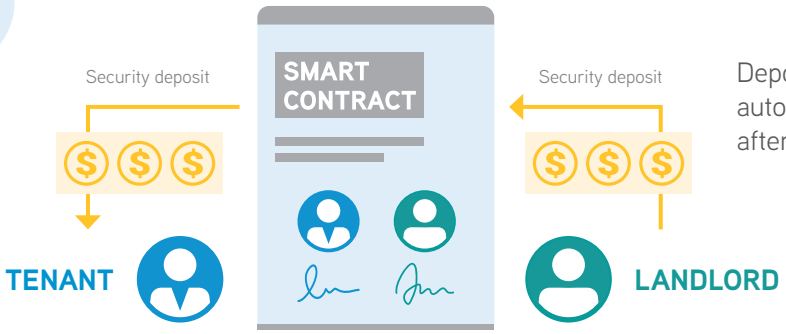
Both parties digitally 'sign' agreement with personal details and lease terms

2

Payments are sent automatically from tenant to landlord when certain contract conditions (such as a rent due date) are met



3



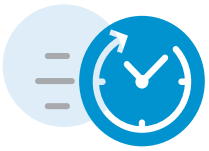
Deposit is returned automatically to tenant after the lease is concluded

Benefits

Instant settlement and management of cash flows

Simplified property management

Legally enforceable contracts



Faster reconciliation of payments

Source: Deloitte; Colliers

ENHANCING TRANSPARENCY

Blockchain could also play a role in boosting the security and transparency of real estate markets – particularly those where data quality or availability is at times lacking, as is the case throughout much of emerging Asia.

One of the applications generating the most excitement is in land registries, which in their current form are often out of date, incomplete and/or prone to manipulation. Moving land registries on to the blockchain promises to create automatically updated, tamper-proof records, ultimately enhancing the clarity and security of land and property ownership.

Sweden's government has emerged as one of the first to test blockchain to record property deals at the national level.[11] The concept has also taken hold in Asia. Japan is reportedly set to unify the country's disparate real estate databases on the blockchain to enhance visibility of ownership and transactions and encourage sales and redevelopment, after a survey found 6.6% of landowner records in big cities, and over a quarter in small and mid-sized cities and remote areas, had not been updated for 50 years or more.[12]

The University of Oxford has noted developing markets may have the opportunity to "leapfrog" their developed counterparts in establishing blockchain registries to reduce title registration costs and corruption. In India, where bribes paid to land registrars are estimated in the hundreds of millions of dollars, the governments of states such as Andhra Pradesh are building blockchain-based registries to tackle fraud.[13]

As Japan's government is betting, using blockchain to ensure that all property-related information is accurate, current and accessible in one place could unlock more assets and encourage activity as the confidence around transactions grows.[14]

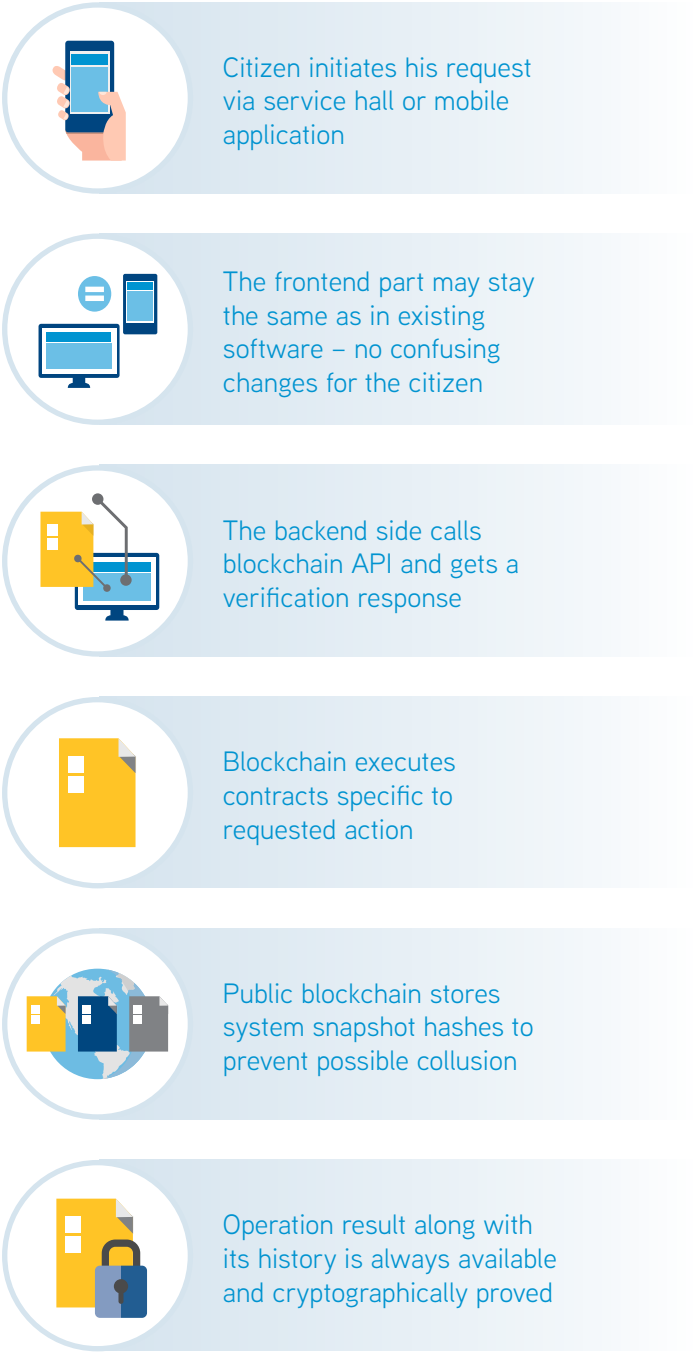
"As soon as you can manage ownership of assets like land or property and have these titles on the blockchain, it becomes a lot more efficient, and a lot faster and cheaper, to transfer ownership," says Dr. Heiko Aydt, senior researcher and coordinator for the Responsive Cities research cluster at the Future Cities Laboratory in Singapore. "This could lead to entirely new ownership models that are maybe now possible legally speaking,

but not possible in reality because they're too inefficient, complicated or take too long."

In creating a permanent, consistently updated 'audit trail' of the transactions associated with an individual asset, blockchain registries and smart contracts will also generate more reliable, real-time and granular market data , with interesting implications for both owners and occupiers.

Along with greater visibility into market trends, this information will open new possibilities for data capture and analysis. As the consultancy Deloitte noted in a recent study, by acting as the "connective tissue" between the parties involved in real estate transactions, blockchain's shared databases could be mined with data analytics to identify patterns or anomalies in areas like turnover rates, compliance and defaults.[15] The records associated with particular assets will become engines of insight that support owners' planning and decision-making.

A BLOCKCHAIN LAND REGISTRY



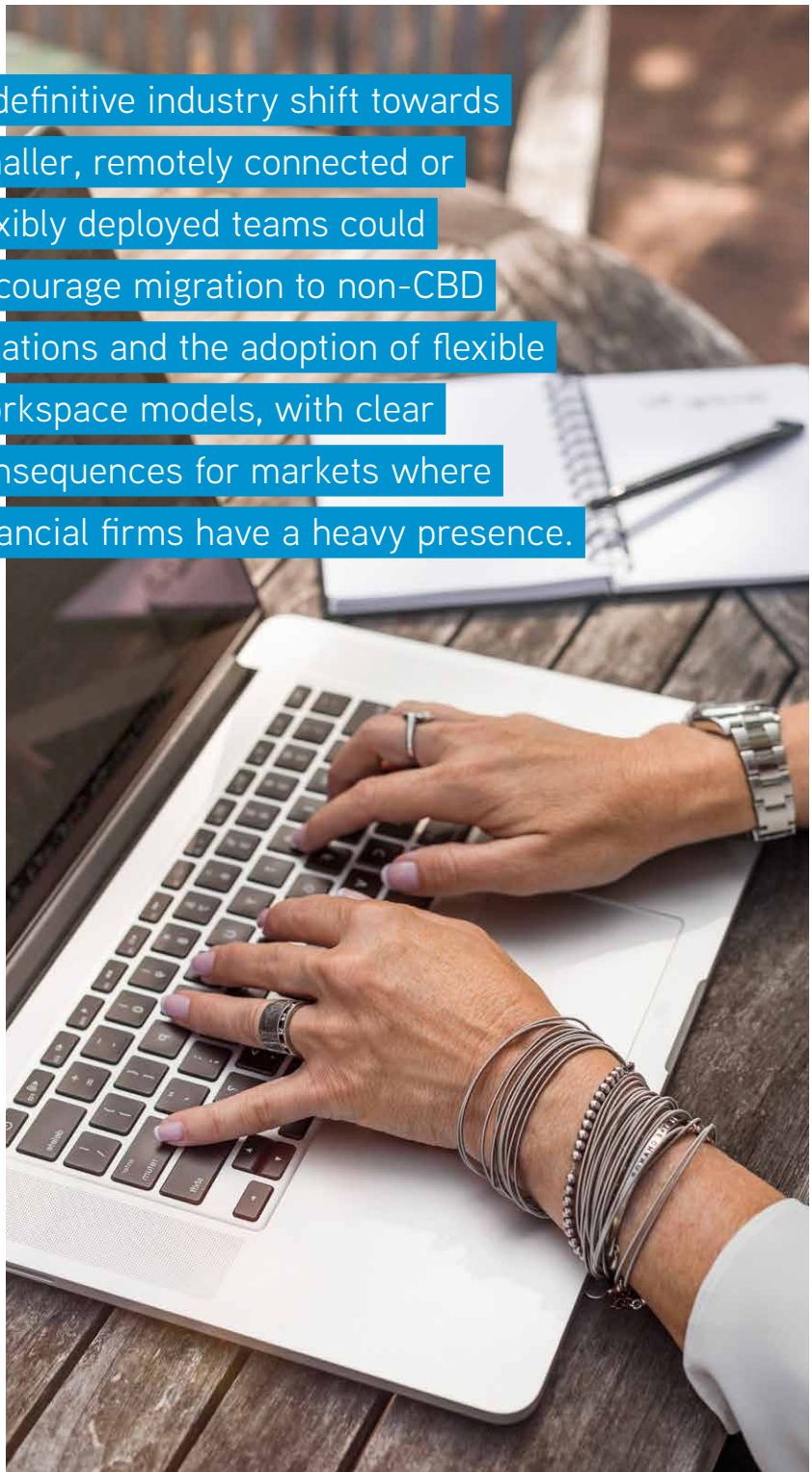
Source: Exonum; Colliers

[11] Why Sweden is taking a chance on blockchain land registry, Coindesk, April 2017
[12] Japan to tidy up scattered property records, Nikkei Asian Review, June 2017
[13] An Indian state wants to use blockchain to fight land ownership fraud, CNBC, October 2017
[14] Can blockchain technology be an answer to India's land governance woes? Livemint, October 2017
[15] Blockchain in commercial real estate, Deloitte Center for Financial Services, 2017

DRIVING DECENTRALISATION

Beyond its direct technological applications, blockchain may have wider consequences for how CRE assets are traded and managed, and the broader structure of property markets in the region.

A definitive industry shift towards smaller, remotely connected or flexibly deployed teams could encourage migration to non-CBD locations and the adoption of flexible workspace models, with clear consequences for markets where financial firms have a heavy presence.



There are already examples in Asia of blockchain-based platforms being used to support the fractional ownership of CRE through platforms issuing digital certificates to multiple investors that are used to verify ownership and the transactions they execute. In India, the Bangalore-based startup PropertyShare has placed more than 75,000 sq ft of commercial real estate available up for fractional ownership, effectively opening the market to retail investors.[16] If adopted more widely, this model has the potential to significantly change the dynamics of markets that have until now been the near-exclusive domains of major landlords, like those in Hong Kong and Singapore.

The flexible workspace sector is already seeing rapid growth throughout Asia as more occupiers look to provide staff mobility and reduce fixed real estate costs. Blockchain could accelerate this trend as faster, more automated smart contracts would prove particularly useful for properties with a high number of tenants on relatively standardised, short duration leases, and hence greater turnover.[17] One Dutch startup, Primalbase, is using blockchain to allow clients to use, sell or rent flexible workspaces via digital tokens, and has plans to expand to Singapore in late 2018.[18]

The 'pay per use' model that many flexible workspace operators apply to utilities and facilities like meeting rooms or food and beverages would also benefit from a blockchain-based platform for the automatic registration and recording of related transactions, and again a pool of near real-time data that operators could use to identify usage patterns or issues, deploying resources when and where they are most needed.

Ultimately by making the management and usage of flexible workspaces more streamlined and transparent, blockchain could boost the appeal of the flexible workspace model to owners and occupiers alike. This may help build the case for the application of blockchain in other segments of the market as comfort levels with the technology grow.

Taken even further, similar technology and principles could underpin the management of city services – a scenario being explored in places like Dubai, where the Land Department uses blockchain to log all real estate contracts and connect them with agencies overseeing utilities like electricity and telecommunications.[19]

Blockchain is also poised to reshape the occupier base, particularly in the 'early adopter' sectors of financial services and technology. As more firms move processes and identity management onto the blockchain, resource needs may be reduced and more functions feasible to perform remotely.

Already many voices in the finance sector are predicting a significant reduction in human resources needs as a result of technologies like blockchain and AI.[20] The trend could be especially apparent in markets such as China, which has already overtaken many developed countries in terms of financial services technology adoption.[21]

A definitive industry shift towards smaller, remotely connected or flexibly deployed teams could encourage migration to non-CBD locations and the adoption of flexible workspace models, with clear consequences for markets where financial firms have a heavy presence , such as Hong Kong, Singapore, Shanghai and Beijing. The financial sector (especially commercial banks and investment banks) accounts for 40-50% of leased office space in the CBDs of all these cities; and a decentralisation process involving transfer of back and middle office functions to areas with lower rents is already noticeable in Hong Kong in particular. Conversely, flexible workspace operators and technology and media companies have been leasing new office space in city centres.

"The question is, if we don't need that much manpower in finance because a lot of things will be replaced by smart contracts and blockchain apps, then who's going to occupy all those office towers?" says Dr. Aydt. "In the long run city planners will have to take into consideration that there may be entirely new requirements. Asian cities develop very fast, so I think we'll see a lot of this happening in Asia first."

[16] Fractional ownership and blockchain make buying primes property in India easier than ever, January 2018

[17] Blockchain in commercial real estate, Deloitte Center for Financial Services, 2017

[18] www.primalbase.com

[19] Blockchain and cryptocurrencies herald the demise of traditional banking, The National, October 2017

[20] 30% of bank jobs are under threat, CNN, April 2016

[21] China leads global fintech adoption while Hong Kong lags, Computerworld Hong Kong, July 2017

PRACTICALITIES AND CHALLENGES

For all its potential, the actual adoption of blockchain technology in CRE in Asia remains limited to a handful of test cases. Wider-scale implementations may be years away, and like most new technologies, blockchain will confront several challenges in its journey to de-facto industry standard. These include:

REGULATION

Policymakers in Asia are still assessing the possible impacts of blockchain and regulation will inevitably lag the technology's adoption, potentially leaving real estate applications in a grey area or thwarted, if, for example, registries or digital identities aren't able to garner official recognition. This will be complicated by the fact that many elements of the property transaction process involve crossover with heavily regulated industries such as banking or public utilities. Regional regulators like the Hong Kong Monetary Authority (HKMA) have also expressed concerns about blockchain's potential privacy and security risks.[22]

Blockchain's association with cryptocurrencies may at times be counterproductive in this regard. In Singapore, for example, authorities have linked blockchain-based property platforms with criminal activity.[23]

As stressed earlier, blockchain makes legal title easier to verify, and easier to transfer. In theory, this advantage should make it attractive to governments; and the fact that governments in developed markets like Sweden and Japan are taking blockchain seriously in the property field is a very positive sign. That said, we anticipate resistance to adoption of blockchain by more traditional governments, reflecting both fear of the unknown and perhaps concerns about losing control of the transaction process, making it, more difficult, for example, to collect stamp duty.

"Governments in Asia and elsewhere need to find a balance between not killing off the innovation and at the same time having some control over it," Dr. Aydt notes. "As long as there's no regulatory framework in place, it's not easy to run a business with blockchain as it involves additional uncertainty due to the risk of unexpected moves by regulators."

STANDARDISATION

While distributed ledgers have positive implications for data quality, for blockchain to become broadly (and internationally) applicable a certain amount of common ground will need to be established around processes like data exchange so information or transactions can be carried across ledgers. Developing shared standards will be a particular challenge in Asia given the region's diversity of assets, markets and regulatory regimes.

VESTED INTERESTS

There is no denying that blockchain-based solutions could simplify, eliminate or replace some of the roles or tasks currently performed by agencies or legal professionals, such as title searches or the registration of transactions. Concerns about obsolescence or redundancies may discourage adoption in some segments of the market. We would highlight possible resistance to blockchain from the legal profession, since blockchain greatly simplifies the process of transfer of title and so impinges on an area that has traditionally been lucrative for the sector.

INFRASTRUCTURE LIMITATIONS

Even blockchain solutions that work 'out of the box' will not necessarily interface easily with legacy systems, meaning many end-users will need to invest substantial time and funds to support a transition. More fundamentally, the energy, networking, computing and human resources that blockchain-based applications may demand will not always be readily available.

None of these challenges is insurmountable, and as Dr. Aydt says, "there are already solutions in the making." Regional regulators appear to be adopting a more supportive stance; the HKMA, for one, is testing the application of blockchain in property financing.[24] As more companies – and governments – experiment with blockchain in real estate, these efforts are likely to gain momentum.

Rates of adoption across the region are unlikely to be even. On the one hand, relatively deep, transparent real estate markets with solid technological infrastructure – such as Singapore, Hong Kong, Australia, and top-tier cities in mainland China – would appear prime candidates for early adoption. However, we believe a comparable lack of legacy systems and vested interests to contend with, as well as less defined regulation and a greater motivation to enhance transparency and tackle corruption, will see developing markets lead the way – a view that has also been voiced by institutions like the Asia Development Bank.[25]

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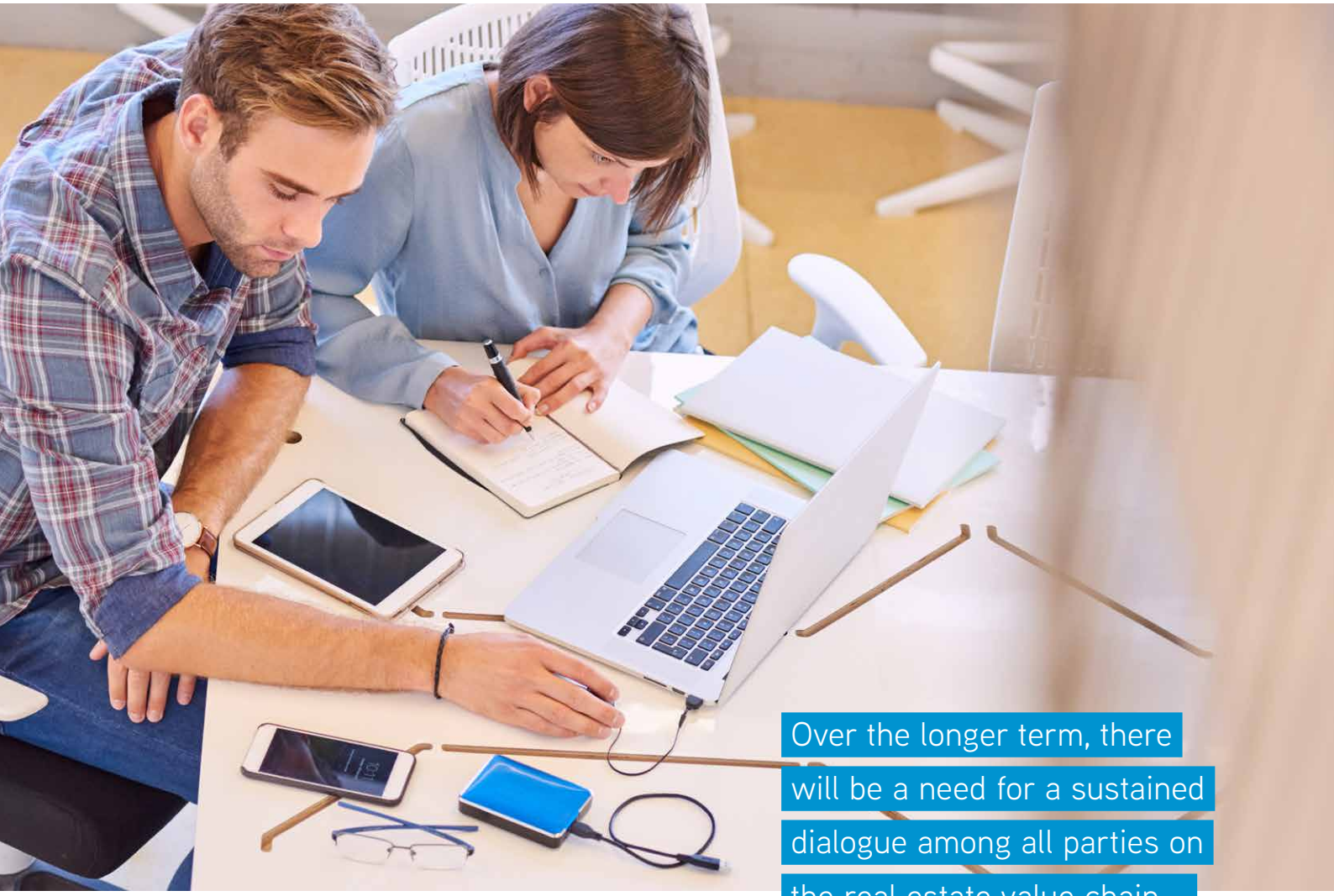
[22] Blockchain technology offers potential but poses privacy and laundering risks, says regulator, Hong Kong Lawyer, November 2016

[23] MAS advises caution on property related blockchain platforms, Propertyguru, July 2017

[24] Whitepaper on distributed ledger technology, Hong Kong Applied Science and Technology Research Institute/Hong Kong Monetary Authority, November 2016

[22] Blockchain pilots making waves in developing Asia, Asian Development Bank, July 2017



Over the longer term, there will be a need for a sustained dialogue among all parties on the real estate value chain – including owners, occupiers, financial and legal services firms and regulators – on standardising blockchain rules and data practices.

BECOMING BLOCKCHAIN-READY

As experimentation with blockchain in CRE progresses, its limitations will become more apparent. It is already clear blockchain is no cure-all for the industry's inefficiencies, and that human participation will always be vital at certain stages of the typical transaction process to secure trust or meet regulatory requirements. Deloitte has warned that if blockchain is not implemented in the right way it can actually increase costs.[26]

This means all segments of the industry in Asia will need to think carefully about how to exploit blockchain's potential, without buying into the inflated expectations that at times accompany emerging technologies, or assuming every problem is waiting for a blockchain-based solution.

For owners, occupiers and governments, an initial step may be identifying the processes or assets where blockchain is likely to have the most initial applicability, and where implementation may be relatively straightforward in terms of alignment with existing processes, systems and regulation.

As noted in this report, this would seem to favour areas where speed and security are a priority and there is a relatively high degree of standardisation, such as building registries (which are in many markets already electronic or partially automated, and follow defined formats) or shared workspaces, which have multiple tenants on similar contracts. Successful smaller-scale blockchain applications could build appetite for more ambitious projects later, such as delivering and billing for building services.

Owners and intermediaries will also need to consider how the blockchain may impact their resourcing needs. While it has the potential to reduce headcount in some areas, companies may also need to source more skilled technology talent as they move to enhance their blockchain capabilities. In addition, occupiers should examine the potential impact of blockchain on their real estate strategies, and whether it may support a more decentralised, flexible and cost-effective structure.

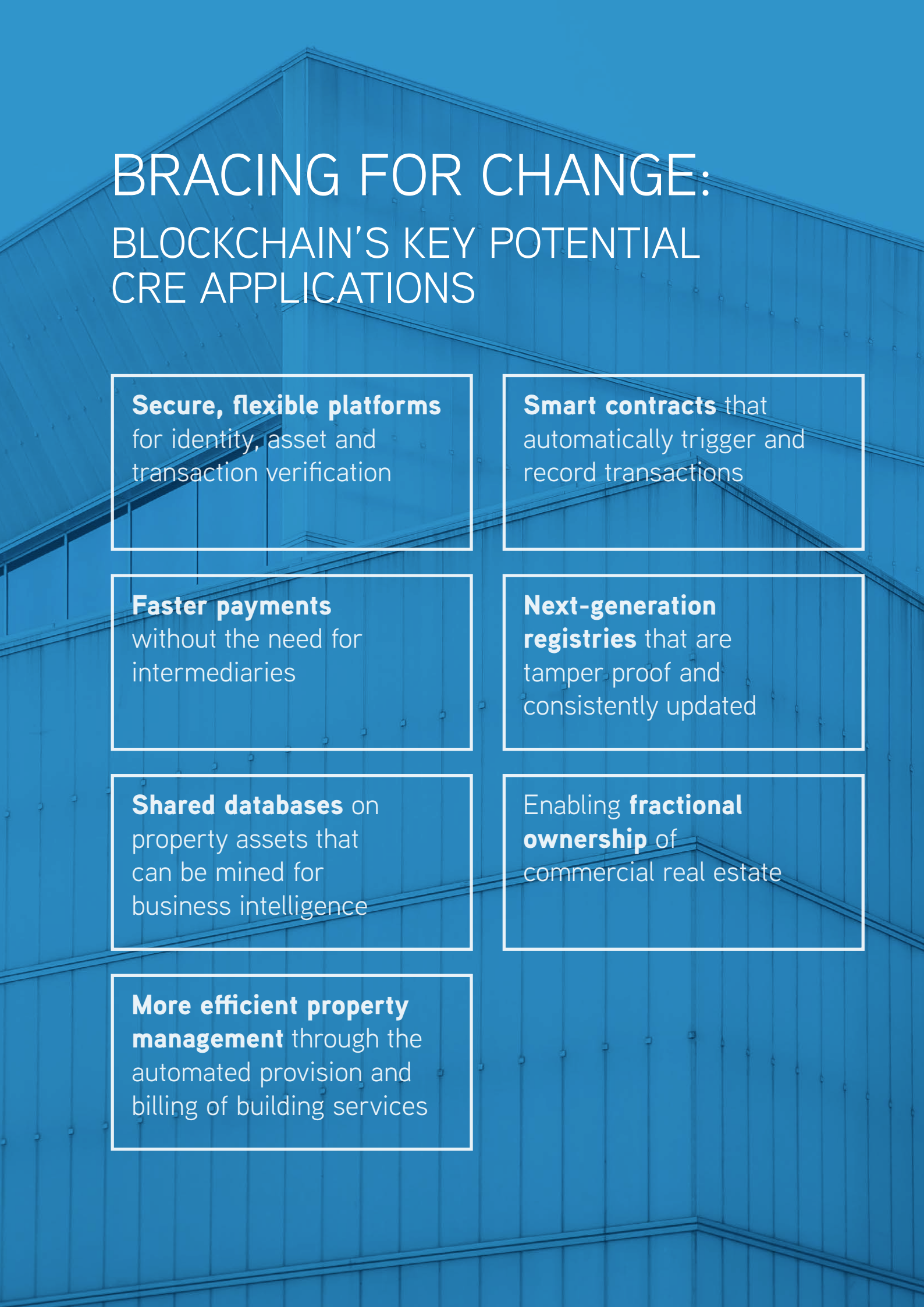
Over the longer term, there will be a need for a sustained dialogue among all parties on the real estate value chain -- including owners, occupiers, financial and legal services firms and regulators -- on standardising blockchain rules and data practices. As various parties race to build private blockchains, there is a risk that these will become a series of islands rather than a network where information can be seamlessly shared or transactions easily executed, preventing the creation of the more universal ledgers that represent one of blockchain's greatest selling points.

For competitive, security and privacy reasons some degree of separation between proprietary blockchains will need to be maintained, but at the very least there should be standard protocols that will allow these to interface when required to pave the way for transactions or, for example, to update property registries swiftly. Encouragingly, industry bodies like the Open Standards Consortium for Real Estate (OSCRE) are already making efforts in this regard.[27]

These issues will eventually need to be tackled on the regional level, considering the number of parties in Asia who own, sell, manage or occupy real estate assets throughout the region. How such an ambitious effort will unfold in practice remains to be seen, but given the pace of technological change there is a clear argument for considering all the promises and challenges around blockchain now. As with past transformative technologies, the early movers will be shouldering the biggest risks – but are also likely to be first in line for the rewards.

[26] PropTech 3.0: The future of real estate, University of Oxford, May 2017

[27] OSCRE blockchain initiative, Open Standards Consortium for Real Estate



BRACING FOR CHANGE:
BLOCKCHAIN'S KEY POTENTIAL CRE APPLICATIONS

Secure, flexible platforms for identity, asset and transaction verification

Smart contracts that automatically trigger and record transactions

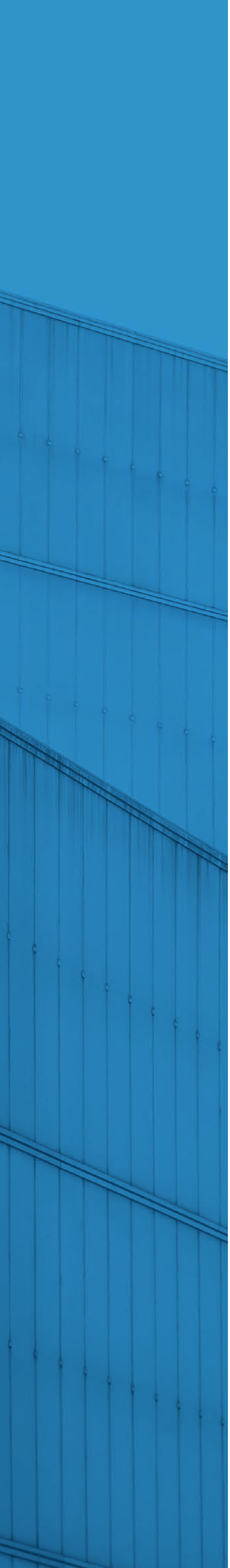
Faster payments without the need for intermediaries

Next-generation registries that are tamper proof and consistently updated

Shared databases on property assets that can be mined for business intelligence

Enabling **fractional ownership** of commercial real estate

More efficient property management through the automated provision and billing of building services



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Colliers International Group Inc. (NASDAQ & TSX: CIGI) is an industry-leading real estate services company with a global brand operating in 69 countries and a workforce of more than 12,000 skilled professionals serving clients in the world's most important markets. Colliers is the fastest-growing publicly listed global real estate services company, with 2017 corporate revenues of $2.3 billion ($2.7 billion including affiliates). With an enterprising culture and significant employee ownership and control, Colliers professionals provide a full range of services to real estate occupiers, owners and investors worldwide. Services include strategic advice and execution for property sales, leasing and finance; global corporate solutions; property, facility and project management; workplace solutions; appraisal, valuation and tax consulting; customized research; and thought leadership consulting.

Colliers professionals think differently, share great ideas and offer thoughtful and innovative advice that help clients accelerate their success. Colliers has been ranked among the top 100 global outsourcing firms by the International Association of Outsourcing Professionals for 13 consecutive years, more than any other real estate services firm. Colliers has also been ranked the number one property manager in the world by Commercial Property Executive for two years in a row.

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