REflexions

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Foreword

Dear readers,

Avid readers will have noticed that we skipped our usual April edition; the reason for this is very simple. We had literally just entered lockdown, a phrase which has now become synonymous with the pandemic, and were adjusting to what we all now refer to as the New Normal. On the plus side, this edition features more articles than usual for you to enjoy.

In keeping with our quest to include our readership, we feature an interview with Louise Ellison, Head of Sustainability at Hammerson delving into a topic that despite its three letter acronym - ESG - is making waves across the entire asset management industry and not just real estate. Interestingly she notes that our industry has not yet fully embraced the concept, and although many firms are at the acceptance stage, some firms are still in denial. We also spoke to Reisa Bryan, Managing Director and Global Chief Operating Officer at Nuveen about the current challenges and opportunities in real estate asset management. She believes that as as buildings do not yet meet the challenges of market expectations in the transition to a low carbon economy or sufficiently resilient towards the physical effects of climate changes, the rise of the ESG-focussed investor will spur on positive change.

Sadly nowadays it is not possible to attend a virtual conference or immerse yourself in a publication like ours without any references to COVID-19, the sanitary and economic crisis whose growing scale and cost very few people have ever witnessed or could realistically have imagined. Literally overnight, we had to reimagine our modus operandi in its most granular set-up, both from a human and technological perspective. Business contingency plans were stress-tested in such dramatic fashion to their limits but to date the global economy and capital markets are dealing with the shock without market failure, albeit at a cost to businesses and employees in the most exposed sectors (including travel, hospitality and retail).

In fact, today more than ever, in this New Normal of digitalisation and innovation, Charles Darwin's quote is more apt than ever "It is not the strongest of the species that survives, but rather that which is adaptable to change." Drawing inspiration from this, we examine the UK market and the double edged sword it currently faces, that of COVID-19 coupled with the full impact of Brexit which is now just 10 weeks away. We also consider the previously mentioned New Normal and look towards The Workplace 2.0, a hybrid of the way we used to work and the way we operate today to create tomorrow.

We all know that Singapore is often called Asia's largest global REIT platform, but how many of us have considered the potential of S-REITS, which are evolving from predominantly locally based assets to those which are globally and sectorally diverse? What about the impact of technological change - conversational AI, geo-processing or even proptech? How many of us really understand these innovations and what they mean for our industry? The answers, hopefully, lie within these pages.

We hope you enjoy this 11th edition of Reflexions.

Benjamin Lam
EMEA Real Estate Funds Co-Leader

David Brown
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NEW RULES OF THE GAME:

CHALLENGES AND OPPORTUNITIES IN THE LIGHT OF COVID

Interview with **Reisa Bryan**
Managing Director, Global Chief Operating Officer, Nuveen

REISA BRYAN

MANAGING DIRECTOR,
GLOBAL CHIEF OPERATING OFFICER, NUVEEN

The pandemic has affected financial markets more deeply and extensively than initially expected. Real estate asset management is likely to take its share in the short run. However, with the crisis accelerating change, for example in digitalisation, and confirming structural trends that are shaping the industry, such as ESG (Environmental, Social and Governance), the long term outlook for the industry is positive.

Deloitte Managing Director John D'Angelo talks to Reisa Bryan, Managing Director and Global Chief Operating Officer at Nuveen, for an update on the challenges and opportunities in real estate asset management.

Reisa is Managing Director, Global Chief Operating Officer for Nuveen Real Estate which consists of approximately $125 billion in real estate equity and debt assets under management across the globe. In her current role, she leads all business planning, business management, and business project coordination globally. Reisa is a member of the Global Executive Leadership and the Americas Executive Leadership teams, serves as the Chief of Staff to the Global Head of Nuveen Real Estate, and is the central point of contact for senior leaders.

In prior roles, Reisa has served as Head of Business and Investment Operations where she led investment governance and operations and supported the planning, coordination, and execution of the US investment business processes. Prior to that, she was Head of Human Resources for Nuveen Real Estate Americas.

Reisa graduated with a B.A. in Communications from Hofstra University, an M.B.A. in Finance from the University of Phoenix, and a certificate of financial planning from Queens College.

What has been the impact of COVID on your day-to-day operations?

Changes in operations since the onset of COVID have come about mostly because we have been immobile for many months. For obvious reasons everything needed to be conducted remotely. As an organisation, we're slowly allowing investment teams to go out and conduct in-person due diligence and interact in appropriate ways. But this interaction needs to overcome a high bar: it needs to be business-critical and our colleagues who travel need to be comfortable doing so. By and large, the office is pretty much closed, with a handful of exceptions. Maybe somewhat surprisingly, we adapted fairly seamlessly to remote working. Like so many others, we had to adjust quickly in the first weeks, and secure printing was an issue, but we were better prepared than I think we expected. At first there were very frequent touch points with asset managers and property managers / JV partners to get a pulse on what was happening / what we were seeing in our properties, but the frequency of those touch points has reduced now that we have a better sense of activities and trends. We don't need to take a pulse check so often. Of course, we have people who are anxious to return to the office, and they will do so on a large scale when it's appropriate and we can be assured that our people are safe.

Have you made changes in your investment strategy as a result of COVID?
How do you see this playing out over the next 12 / 18 months. Do you expect changes?

Our investment strategy hasn't really changed as a result of COVID. We have a growth strategy, focused on logistics, multifamily and alternatives, and we don't expect that to change in any meaningful way over the next year to 18 months (or even in the foreseeable future). We're having to play defence on our existing retail portfolio, which has been under obvious stress. Office is hard to predict, but there will be a pervasive need for office. In general, businesses want to get back to the office, but at least in the near- to mid-term the office is going to be different from the office that people left. We're likely to see some reconfiguration of open plan with an increasing focus on providing a safe environment for people to work in.

Medical office is certainly on our radar as well as storage, which were already part of our strategy, are seeing huge demand as supply chains have shifted and continue to shift.

What's changed in last 12 years? Do Limited Partners (LPs) understand better? How about retail investors?

Institutional investor due diligence has been very similar to what we experienced before the pandemic, with investor focus shifting a little with respect to valuations and the deal / transaction pipeline. For obvious reasons, there has been a significant increase in scrutiny of valuations. And since we're in unusual times, we're seeing more interest in our transaction pipeline. Overall, investors are cautiously optimistic: they still need to put money to work and have an allocation to real estate. With respect to how the current environment is different from during the global financial crisis, there is a substantial difference in the amount of liquidity in today's market. Whereas liquidity dried up significantly during the GFC, debt is readily available in the current market.

Do you have a view on positive impacts / opportunities?
What will be the main challenges for asset managers?

One thing that hasn't changed is the question about how we find value in the current environment. Because there is still dry powder and liquidity, and bargains haven't started showing up (at least not for property sectors that fit our investment strategy).
With respect to the main challenges facing asset managers, a new thing is the focus on healthy buildings. This isn't such a big deal for industrial, but for our other sectors, it's a new area of focus for us. Not because we didn't care prior to the pandemic, but now the challenge is very different and we're very serious about our fiduciary duty as owners who use it to keep people who use our real estate safe. And it's not as though there was an established playbook and set of protocols to follow, so our asset managers have been hard at work in collaboration with property managers and JV operating partners to design and implement appropriate cleaning and safety protocols.

> We won't achieve our sustainability vision unless everyone in our business has sustainability as a core part of their role, so supporting and enabling our colleagues across the business to develop their knowledge and understanding further will continue to be at the centre of our approach.

Shifting to sustainability – one of the mega trends in real estate, and also other industries.
According to Abigail Dean, Nuveen's Head of Sustainability, sustainability "is part of your DNA.

What sets us apart is that sustainability is integrated within our investment decision making and isn't something that is just dealt with by the sustainability team – and that's really important to us. One of the practical steps we have taken to achieve this is to introduce a process for assessing sustainability at acquisition –this is documented in a sustainability paper presented to Investment Committee and is a requirement or every acquisition that we make. However the integration of sustainability goes much deeper than this. We have developed bespoke ESG strategies for all our funds: we have set a target to improve the energy efficiency of our global portfolio by 30% by 2030 (based on a 2015 baseline year), and we are on track to meet that. We provide training on sustainability for all investment professionals and we conduct annual reviews of business plans to incorporate sustainability items. The sustainability performance of our partners, such as property managers, operating partners and development managers, is also critical. We won't achieve our sustainability vision unless everyone in our business has sustainability as a core part of their role, so supporting and enabling our colleagues across the business to develop their knowledge and understanding further will continue to be at the centre of our approach.

Why is sustainability important to you as investors? Why do you think it should be important to all real estate investors?

Over the next few decades, the transition to a low carbon economy and the physical effects of climate change will have an impact on real estate values. Buildings that aren't resilient to climate change and aren't able to meet market expectations for net zero carbon are at risk of obsolescence. Buildings that are ahead will have the potential to benefit from greater demand from tenants and investors. Sustainability is therefore good asset management and it plays a critical role in our job of protecting and enhancing value for our clients. Having a deep understanding of how the pace of change will vary across affect different real estate sectors and regions will enable us to deliver performance alpha. That's ultimately why it should be important to all real estate investors.

How do you think initiatives / actions on sustainability are likely to change (or not) in the future?

The COVID-19 outbreak seems to have accelerated a trend that was already emerging for a greater focus on the social aspects of sustainability. The fact that enhancing environmental performance can protect value was already quite well established, but the focus on the role of real estate in the community and the socio-economic value that a building can have is a more recent emerging area. I foresee greater expectations from investors for the total impact of a building –economic, social and environmental – to be recorded, reported and managed. I also think that we will see tenants starting to demand buildings that are designed for climate change and that help them meet their own environmental commitments, by being net zero carbon. I expect that will become a standard for many tenants over the next decade.

THE UK REAL ESTATE MARKET

SPINNING THE WHEEL OF BREXIT AND COVID

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Market review: Spinning the Brexit and COVID wheels

There are now less than three months to go until the end of the transition period and, at the time of writing this article, substantial differences are reported between the UK and the EU with regard to agreeing a trade agreement.

As we stand at the end of October, the UK and EU have so far failed to reach agreement, but discussions are on-going after a stall in negotiations in mid-month. Both sides are calling for compromise from the other side on the key issues of fishing and state aid against a deadline that appears to be more flexible than feared.

COVID-19 has eclipsed Brexit in the headlines. The pandemic has compelled countries around the world to implement restrictions on people's movement that were barely imaginable at the beginning of 2020. Indeed, the International Labour Organisation (ILO) estimates that 2.7 billion workers, representing 81% of the world's workforce, were affected by these measures.[1]

From retail to offices, the way we work and live changed immeasurably, with a profound impact on real estate in the short term and inevitably 'game changing' over the longer term. Here we give thought to the potential impact of Brexit and COVID for the main commercial sectors, from a UK perspective.

Several key issues remain including:

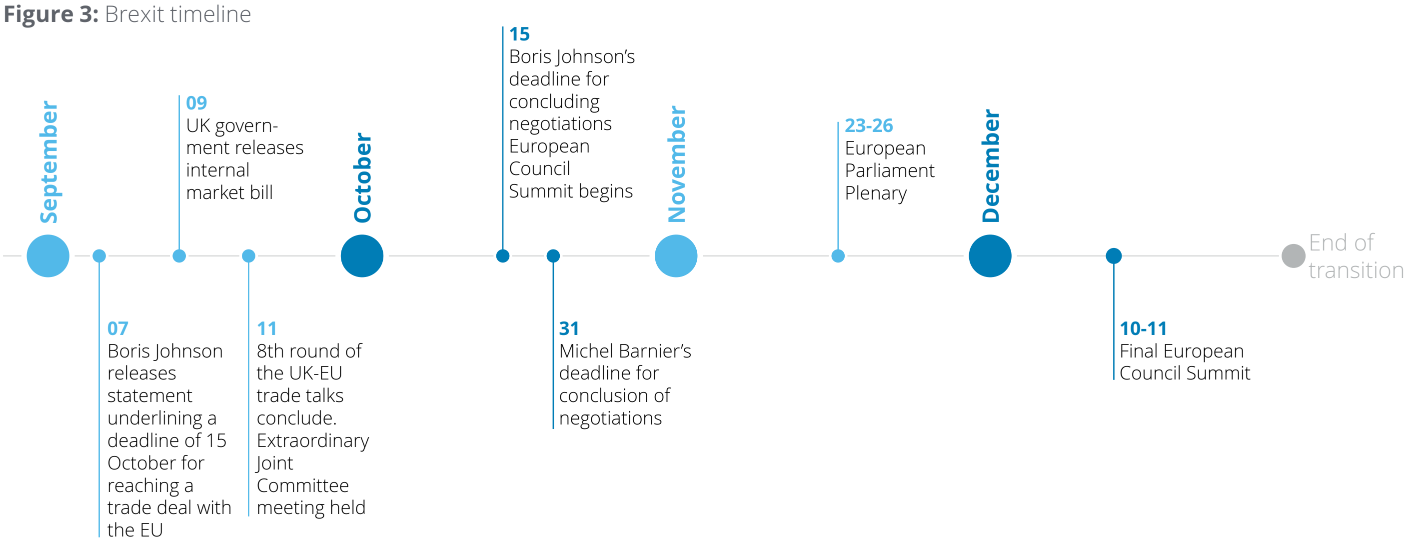
- Structure and governance of the agreement
- State aid rules
- Security
- EU access to UK fishing.

More tangential but nonetheless important points requiring resolution including:

- Rules of origin regulations
- Mutual recognition of professional qualifications
- Short-term work provisions
- Data control.

> COVID-19 has eclipsed Brexit in the headlines. The pandemic has compelled countries around the world to implement restrictions on people's movement that were barely imaginable at the beginning of 2020.

Figure 3: Brexit timeline



Source: Deloitte

Offices

Notwithstanding the periods this year of zero/reduced occupancy, the office sector has so far remained relatively resilient from an investment value perspective, with MSCI reporting a comparatively modest 3.4% fall in capital value in the year to July 2020.[2] Structural changes – prompted or accelerated by either COVID and/or Brexit – have emerged however that will affect the fortunes of some sub-sectors of the market more than others.

COVID impact

As the impact of COVID has evolved it is natural that businesses have where possible deferred decisions regarding new or additional occupational requirements. COVID has promoted universal trialling of working from home by a majority of office workers. Early results regarding the use of technology by home workers are positive, but the longer-term impact on the ability of the office to facilitate collaboration, foster learning, promote the development of networks and support peoples' wellbeing remains to be seen.

While occupational transactions across the market have taken place during lockdown, a not unexpected consequence of COVID is that businesses are reassessing both the size of their footprint as well as the nature of their future office requirements. This inevitably includes reviews of occupancy ratios and applying social distancing measures to reconfigure existing spaces, with enabling technologies to reduce costs.

An RICS survey in Q2 2020 found that 93% of respondents expected businesses to cut back on their office space requirements to some extent over the next two years. Additionally, 64% thought that demand for office space in suburban locations may displace the demand across urban centres.[3]

Supply is responding to this period of reduced demand. Deloitte's 2020 London Crane Survey reported a 17% reduction in the pipeline over the next two years, revealing a gradual reduction in future supply levels in the London office market.[4]

A range of future occupational strategies are possible, including 'hub & spoke' approaches as well as a recast mix between home and office working. Moving forward it is quite conceivable that occupiers' demands will become more exacting, precipitating a flight to quality in terms of specification, layout and location. Some organisations may decide they no longer need to return to an office: this is expected to be the minority rather than majority.

To determine what the future office footprint might look like, investors and occupiers can profile Minimal Viable Footprints (MVF). Recently, Deloitte Real Estate has produced guidance notes on how to assess the physical footprint and determine the MVF,[5] to meet operational efficiency and staff well-being needs as well as regulatory requirements.[6 7]

Brexit impact

Since the referendum in 2016 and up to 2019, the UK and especially the central London office market witnessed sustained demand for new and refurbished office space, somewhat counter to Brexit expectations. In 2018 take-up was 30% higher than the 10-year average. Although much of the financial services industry has considered contingency plans for moving operations to EU countries, the originally estimated outflows have yet to materialise.

The Deloitte 2019 London Crane Survey found that the number of jobs transferred to European cities such as Frankfurt, Dublin and Paris has been considerably lower than originally expected.[1] The short to medium-term position on access to talent and business centricity appears to be placing London at the forefront for service sector occupier demand.

Brexit uncertainty itself has so far this year had limited market impact on office investment trading activity, but the potential to weigh more heavily on sentiment is present as we approach the end of the transition period – particularly if currency fluctuations re-emerge and influence cross-border appetite and pricing requirements.

Industrial and logistics sector

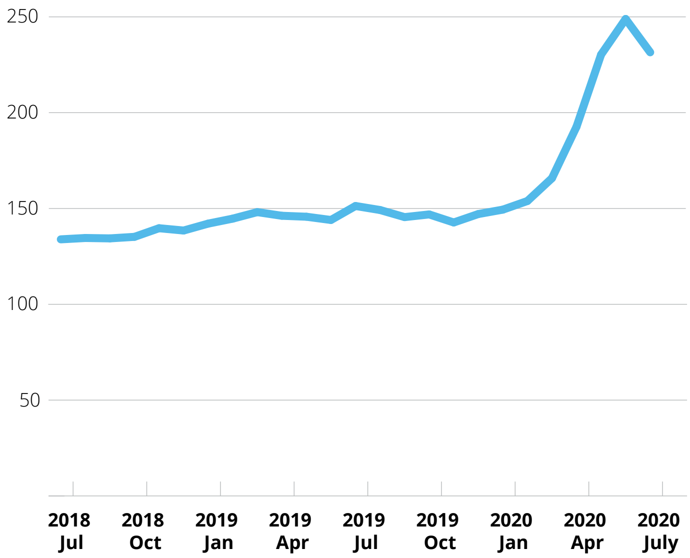
The industrial market has performed strongly compared to other commercial property sectors, with real estate values remaining broadly stable. Industrial-focused REITs and property company stock prices have recovered or, in some cases, exceeded the March 2020 highs.

The relative out performance of the industrial and logistics sector has been driven by COVID-19 related lockdowns accelerating the existing long-term trend of towards increased online retail spending.

According to Office of National Statistics, online retail's share of total retail spend increased from approximately 20% in February to almost 33% in May. The proportion of online sales declined in July to approximately 29% of all retail sales but online sales remained over 50% higher than pre-lockdown.[8]

Figure 4: Online retail sales levels remained strong despite a decline on the month

Value sales, seasonally adjusted, Great Britain, July 2018 to July 2020



Source: Office for National Statistics – Monthly Business Survey – Retail

This increased online retail spend is translating into high take-up of Logistics and distribution space as retailers and 3rd party logistics companies seek to meet demand.

According to Cushman and Wakefield, take-up reached over 35 million sq ft in the first nine months of 2020, which already exceeds take-up for the entirety of 2019.

Strong take-up has driven rental growth for logistics assets with average industrial rents growing 2.3% in the year to July 2020 according to MSCI whilst investment pricing has remained broadly stable with modest weakening limited to more secondary assets.

COVID impact

The increase in online retailing, equating to approximately ten years' of growth in a matter of weeks, is likely to result in increased occupational footprint requirements from online retailers, traditional retailers expanding their online offering, supermarkets and third-party logistics companies.

It is reported that Amazon alone will lease close to a further 10 million sq ft of logistics space by the end of 2020 (compared to 2019 when they took approximately 3.5 million sq ft).[9]

It has also been reported that Tesco is to make permanent 16,000 temporary jobs created during the lockdown, to support their rapid growth in online grocery sales. Hermes is adding 10,000 new jobs and DPD plan to increase their workforce by 6,000.[10]

The overall net effect on demand for industrial and logistics space will also be driven by the experiences of the manufacturing and traditional industrial sectors. Further national or local lockdowns have the potential to halt operations, disrupt supply chains and have a negative impact on demand for manufactured goods. The potential weakness of demand from traditional manufacturing tenants could temper the positive influence of logistics demand on the sector, from a rental growth and yield perspective.

Brexit impact

The potential effects of Brexit differ between logistics and manufacturing. From the logistics perspective, real estate assets are a key part of a supply chain that will be heavily affected by Brexit. The movement of goods between the EU and the UK will become more complex irrespective of the outcome of negotiations. There are several key issues that will affect the flow of goods between the EU and UK, including border delays, road haulage operations and the working time directive restrictions.

- Border delays are likely due to the introduction of customs inspections and the requirement to complete export and import declarations and safety and security declarations.
- Road haulage will face several practical challenges such as the need for European Conference of Ministers of Transport (ECMT) permits to drive through the EU in the event of a no-deal Brexit which are limited in supply and the EU no longer recognising UK driving licences.
- Working time directive restrictions mean that the time drivers spend in border delays counts towards the maximum driving time permitted before a rest.

The UK has announced some measures to mitigate potential border delays, such as a phased implementation of checks. In any event, companies may seek to stockpile goods and could therefore need additional storage requirements, particularly near to the key border entry points.

From a manufacturing perspective, the potential effects of Brexit include the same issues facing the logistics sector but with several additional challenges:

- Supply chains face potential strain from border delays, and manufacturers will face new costs of complying with customs and safety declarations.
- Tariffs could become an issue for manufacturers, because if a trade deal is not agreed, the UK will trade with the EU on WTO rules. Tariffs will be 10% on vehicles moving between the UK and EU and 6% to 12% on some raw materials, clothing and textiles.
- Rules of Origin regulations will need to be complied with by manufacturers which means typically 50-60% of a product's inputs will need to be from the UK or EU.[7,8]

These issues have the potential to reduce further the profitability of manufacturing firms and in turn affect both the occupational requirements and covenant strength of tenants.

Like COVID-19, Brexit may affect logistics and manufacturing tenants and markets differently. Demand for logistics may see some short-term positives or minimal effects, whereas manufacturing demand may be affected adversely for the reasons set out above.

Retail sector

The retail sector retained its unenviable crown as the worst performing commercial real estate sector in the past year. According to MSCI, average retail rents fell by approximately 7.5% in the year to July 2020 which, coupled with an increase in investment yields by about 100 basis points on average, led to a fall in value of almost 20%.[10]

The ongoing structural changes within the retail sector have been exacerbated and accelerated by COVID-19. There has been a record high number of retail CVAs or insolvencies including Laura Ashley, Debenhams, Oasis and Warehouse, DW Sports, Bensons Beds, Go Outdoors, Poundstretcher Properties, Monsoon and Brighthouse. According to the Centre for Retail Research, as at 5 August 2020, 49 retail companies had failed in the year to date, accounting for over 3,000 stores and employing over 60,000 people.[11]

COVID impact

The 'lockdown' from 23 March 2020 required all retail outlets to close unless they were providing 'essential' goods and services such as pharmacies, grocery stores and post offices. This legal requirement was in place until 15 June 2020 when opening was then subject to social distancing precautions and subsequently the use of face coverings.

The impact on the retail sector was an unprecedented loss of footfall for the majority of retail occupiers for nearly three months. Footfall gradually recovered as lockdown restrictions were lifted but according to Springboard it was still approximately 30% below normal levels in mid-August.[11]

The impact on footfall varied widely between markets. Whilst coastal and historic towns performed relatively well due to 'staycations', some markets performed significantly worse. For example, footfall in London's West End was still approximately 60% below normal as at August 2020, due to a combination of reduced international tourism and widespread continued working from home.

Lockdown has also resulted in a very large increase in online sales as a proportion of total retail spending. This has accelerated a trend already under way pre-COVID, and only intensifies the structural challenges facing the sector. Growing levels of vacancy appear inevitable in the near term, and the challenges facing the sector are also precipitating a comprehensive re-think of the leasing and rental model.

Brexit impact

Brexit will have wide ranging implications for the retail sector regardless of the outcome of the trade agreement negotiations:

- Supply chain risks for the retail sector include the potential for stock shortages from border delays; increased costs from complying with post-Brexit import declarations for customs and safety which retailers may find difficult to pass on to consumers, and the requirements to train staff and upgrade existing systems to cope with the new rules.
- Tariffs may further affect retailer profitability as trading under WTO rules could give rise to payments of import duties that may be difficult to pass on to the consumer. Further, market access arrangements between the UK and third countries may change due to the UK losing the benefit of trade agreements between the EU and those countries.
- Staffing: free movement of people will end on 31 December 2020. EU/EEA citizens resident in the UK before this date will retain their rights to settle in the UK and access services under the EU settlement scheme. The UK has announced a new points-based immigration system from January 2021 including a salary threshold of £25,600, the requirement to have a job, be educated to an A-level standard and speak English. This may reduce the pool of relatively low-skilled and low-cost labour that the retail industry relies on and over the medium to long-term this could lead to an increase in staffing costs.

All these issues have the potential to present further challenges to a sector already facing unprecedented headwinds.[9]

Leisure and hospitality sector

In recent years this sector has endured a number of challenges in adjusting to increases in the National Living Wage, higher import costs due to sterling weakness and business rate rises. These have been exacerbated by COVID, with the loss of international tourism from March 2020, the collapse of business travel and the forced closure of restaurants, pubs, hotels and other leisure venues.

Unsurprisingly, this has translated into widespread financial stress for tenants, with many of the UK's most recognised restaurant brands entering into CVAs or administration, including Pizza Express, Byron Burger, Carluccio's, the Restaurant Group (Frankie & Bennys, Wagamama), Prezzo, Azzuri Group (Ask, Zizzi), Pret a Manger and Casual Dining Group (Bella Italia, Café Rouge, Las Iguanas).

MSCI has reported falls in capital value of approximately 17% in the year to July 2020 for leisure properties, with rents falling by approximately 2% and investment yields weakening by 100 basis points.[12]

COVID impact

The leisure sector was affected by the same lockdown restrictions as retail. It has since been subject to a phased reopening with restaurants, pubs and cafés permitted to open from the same date as retail premises; but bowling alleys, indoor skating rinks, indoor play areas, casinos and exhibition halls were required to remain closed until 15 August. As at the date of writing, nightclubs are still closed.

The sector has therefore effectively earned no revenue for almost three months during the lockdown period. Data from Open Table shows that the percentage of restaurants opening rose from a low of approximately 10% of available covers in the first week of July to 90% in the final week of August. Of those that did open, seated covers rose from approximately 65% in the first week in July to 100% by the first week in August.[13]

As well as dealing with revenue losses, operators have had to adapt to government social distancing guidelines, which has increased costs. The government sought to support the sector with its successful 'Eat Out to Help Out' scheme which delivered strong restaurant visit numbers, but only through August.

Putting the future course of the pandemic to one-side, the future direction of the sector depends on how consumers respond once government support is withdrawn, both in the short term (with the ending of the 'Eat Out to Help Out Scheme' on 31 August 2020) and also in the medium term with the withdrawal of furlough support at the end of October 2020 which could lead to increased job losses and dent consumer confidence.

Brexit impact

The impact of Brexit on the sector is hard to assess. The sector will face many of the same challenges as the retail sector, with potentially higher import prices for raw materials and food products, and a reduced staff pool with the ending of free movement.

A no-deal Brexit could however see sterling weaken against major currencies, making travel to the UK more attractive (subject of course to COVID restrictions).

Conclusion

The combination of COVID-19 and Brexit is inevitably creating many more "moving parts" within the real estate market to address and consider. Notwithstanding, since the Covid-19 related market "shock" in March, the majority of sectors have not necessarily witnessed particularly erratic adjustments, rather an acceleration and heightening of trends that were already in train – an exception being within certain of the Alternative markets where value is predicated upon trading levels. The situation continues to evolve as the implications of COVID-19 and Brexit develop. From a COVID-19 perspective, the race towards improved track-and-trace, treatment and ultimately a vaccine in due course will all have the potential to influence the markets – particularly those where value is most exposed to trading performance as well as occupier confidence. Brexit negotiations are equally at an important point, yet it would arguably – and perhaps cynically - have been somewhat surprising for agreement on the new trading relationship to have concluded early. Considering the deadline pressures there is an inevitability to the brinksmanship currently being observed as of the date of this publication and we will all watch with interest as the deadline approaches....and passes.

In this article we have attempted to capture impact of Brexit on a few sectors; however there is a requirement to monitor all sectors' trade nuances and the impact of COVID-19 over the coming weeks and months.

PROPTECH:

A DISRUPTIVE FORCE IN REAL ESTATE?

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The current state of the real estate industry

With nearly $9 trillion in global assets, commercial real estate is larger than any other class of financial services assets.[14] Add to that global residential real estate assets, which are many times greater in value than commercial real estate, and you are talking about an enormous asset class that historically has created much wealth and attracted considerable entrepreneurial activity. Ownership of real estate is broad-based – owners include individuals, governments, institutions, funds, corporations, and publicly traded entities such as Real Estate Investment Trusts.

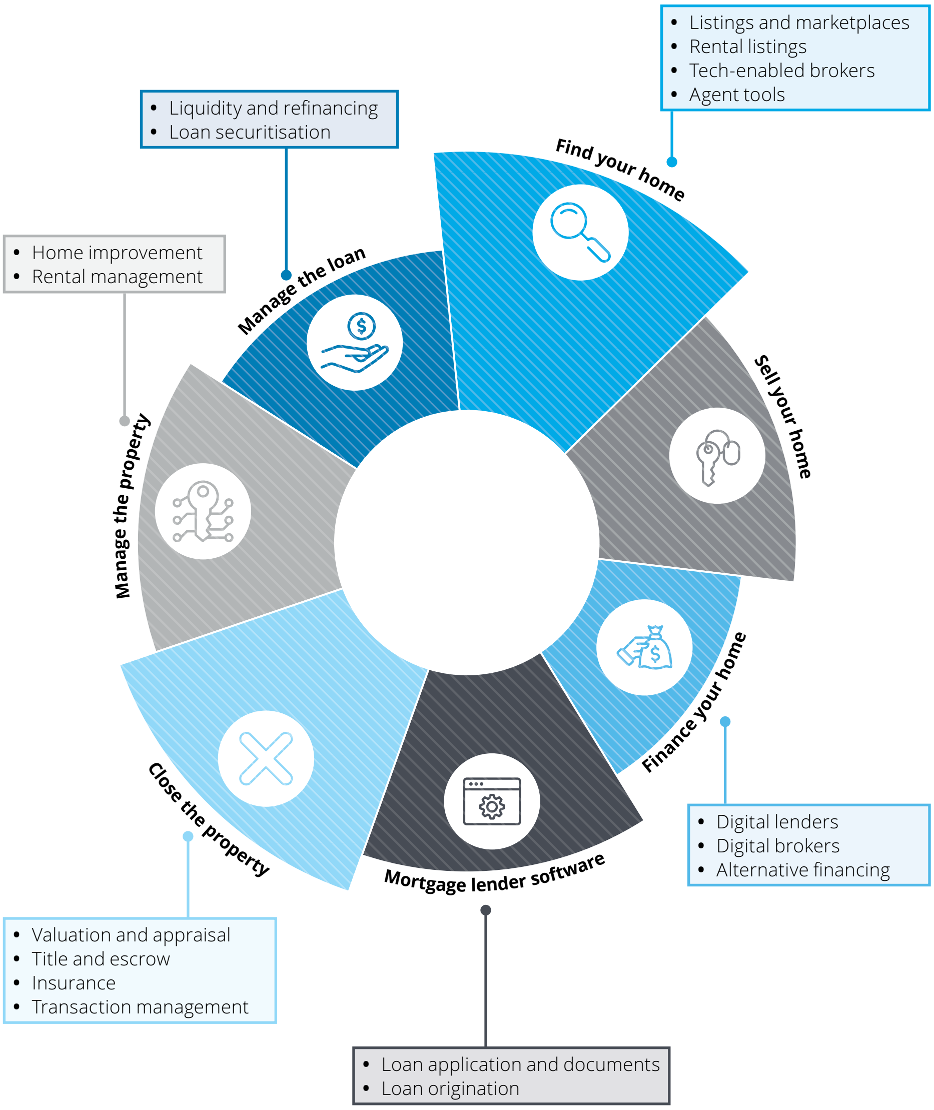
However, real estate lags behind most asset classes in digitization and the adoption of technology. There are numerous intermediaries in the industry, and real estate transactions tend to be intensely negotiated and are not standardized. Data about real estate transactions, financing and operations tends to be incomplete and lacking transparency. Real estate as an industry is therefore less efficient and transparent than almost any comparable industry and would appear ripe for disruption. The global COVID-19 pandemic is already accelerating this disruption, given some of the challenges of executing real estate transactions and operating properties remotely, as well as the impact the pandemic will have on how real estate is used in the future.

A dynamic and diverse number of start-ups and growth companies, collectively known as PropTech, have emerged in the past few years and are attempting to transform and disrupt all aspects of real estate through digitization. Will they be successful? Increasingly, venture capitalists, private equity investors and existing participants in the real estate industry are becoming convinced that at least some of them will, and they are investing significant amounts of capital in PropTech.

The global COVID-19 pandemic is already accelerating this disruption, given some of the challenges of executing real estate transactions and operating properties remotely, as well as the impact the pandemic will have on how real estate is used in the future.

In 2018 Nima Wedlake and Brad Crist of Thomvest Ventures mapped out PropTech ecosystems in both the residential and commercial real estate areas,[15] capturing the broad range and ever-growing numbers of PropTech players, and the pervasive role they could play in future real estate markets. Figure 6 and 7 detail the residential and commercial PropTech landscape-based on Wedlake's and Crist's work:

Figure 6: Residential PropTech landscape



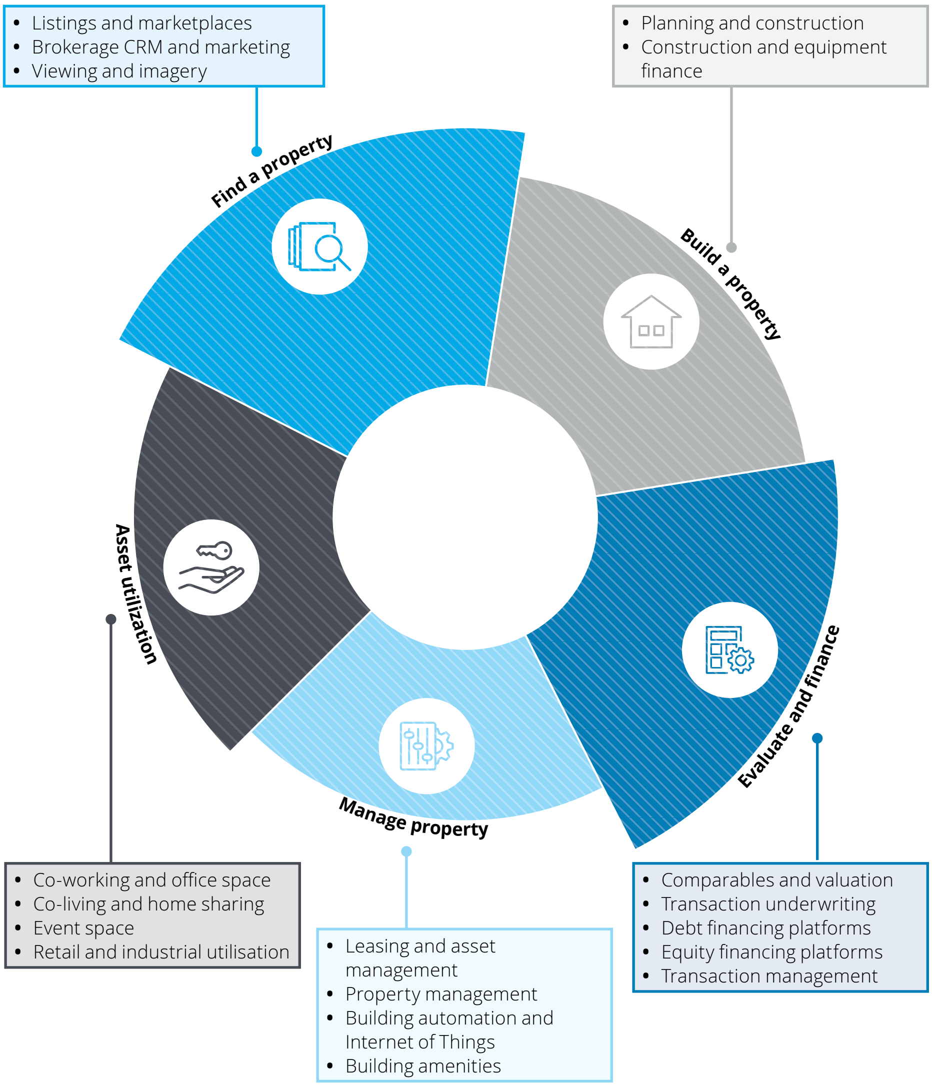
Source: Thomvest Ventures Real Estate Tech Review, Fall 2019[16]

What is PropTech?

PropTech is widely understood to consist of an ecosystem of start-ups and emerging growth companies that offer technology-enabled and/or innovative products, services and business models across various aspects of the commercial and residential real estate markets. It is applied to a wide range of processes and transactions, including how real estate is:

- Identified for investment or leasing
- Planned and designed
- Developed and constructed
- Bought and sold
- Underwritten and financed
- Valued
- Leased
- Managed and operated
- Utilised.

Figure 7: Commercial property PropTech landscape



Source: Thomvest Ventures Real Estate Tech Review, Fall 2019[17]

Many PropTech applications have large addressable markets, in both commercial and residential real estate. A wide variety of market participants – institutional investors, developers, building management companies, transaction and leasing brokers, and companies providing market data, as well as homeowners – are searching for ways to make real estate markets more transparent, less analog and more digital, and to improve the utilisation of real estate.

The real estate industry has been slow to leverage technology: decisions have been made (and often still are made even today) based on instinct and experience, rather than being data-driven. Given the huge size of the industry, it is not surprising that entrepreneurs and venture capitalists see a big opportunity for disruption, and the number of PropTech start-ups and the amount of venture capital funding them have grown substantially in recent years.

Venture capital investment in real estate tech companies globally hit a record high of US$31.5 billion in 2019, an increase of 227% over 2018.[18] Between 2015 and 2019, the nature of venture capital investments evolved from focusing mainly on early stage PropTechs in 2015 to mostly mid-stage and late stage enterprises in 2019.[19] Companies in workplace sharing, residential brokerage, construction technology and real estate finance received some of the largest investments in 2019.

What will be the future of PropTech? First and foremost, we see real estate investors and owners becoming more data-driven in their approach, leveraging internal and external data to make investment and operating decisions, both at a property and portfolio level. Increasingly, they have become better at capturing data, storing it, and leveraging increasingly sophisticated analytic tools for decision making. PropTech supports this evolution in a variety of ways, providing data, developing tools such as sensors and other technology to capture internally-generated data, and establishing analytic capabilities to utilize data to make intelligent decisions.

The impact of PropTech on the real estate market

There are many examples of how this PropTech-enabled, data-driven revolution is having an impact on the real estate industry, including:

- Obtaining and utilizing market data to screen and evaluate development, investment, leasing and home purchase opportunities
- Managing the investment underwriting process, and evaluating post-investment performance to assess the original underwriting
- Disintermediating the property purchase and sale process, including facilitating the execution of real estate transactions remotely
- Supporting the leasing process and lease administration
- Providing additional insights about tenants and how they utilize their space, to enhance tenant relationships and the value equation for tenants – the return to work from the COVID-19 pandemic provides a unique opportunity for landlords to provide tenants with these insights and perspective
- Operating buildings and homes more efficiently and in a more sustainable way, with sophisticated building and home management systems, utilising sensors to capture data and analytic tools to predict occupant needs, whether for health/safety, lighting, security, elevator usage or heating/cooling.

Owners of commercial real estate portfolios are finding that leveraging the capabilities of PropTech can add value to their portfolios and operations, and differentiate market performance, benefitting investors, tenants, employees and the wider community. Homeowners are finding that PropTech can improve their ability to buy, sell, finance and manage their homes, enhancing their comfort and in many cases their affordability.

Many owners of commercial real estate are developing better insights about the experiences with their properties of business tenants and their employees and customers. They can then utilise those insights to improve tenant relations and value for tenants. For example, owners of retail real estate are leveraging PropTech technologies to capture information about traffic and movements of shoppers, to understand better their needs and patterns of behavior. Property owners and managers can then use this information 'scientifically' in leasing space, to enhance the traffic flow of shoppers, generate more sales for tenants, and create a positive shopping experience.

In addition, we see PropTech entities seeking to disrupt how real estate properties are planned, designed and constructed, leveraging new technologies such as artificial and cognitive intelligence, virtual augmented reality, drones, and technology-enabled design and construction. These enhancements are accelerating the construction process, reducing waste, improving quality, safety and procurement, and driving down the overall costs of construction.

PropTech is also playing an increasingly important role in the financing of commercial and residential real estate, using ways to disintermediate the process of obtaining debt and equity financing. Some PropTech companies have launched crowdfunding platforms to connect individuals looking to invest with companies wanting to raise debt or equity capital. Others have developed platforms to accelerate the application and approval process for real estate mortgages or provide tools and data to enhance the transparency and liquidity of the real estate financing markets.

PropTech has also played a visible role in enhancing the utilization of real estate through home sharing and shared office and industrial space. Technology is being leveraged to offer products and services that appeal to individuals and businesses looking either to access more space or to use their existing space better. Data is a key value component of these business models, enabling predictive solutions for fulfilling consumer needs, while also driving better use of space.

Leveraging PropTech capabilities

The rapid increase in the number of PropTechs, the competition between them, and the breadth of their involvement in the real estate sector make it difficult for real estate owners and managers to decide which to utilise and support. Many PropTechs have excellent technology but lack insight into how it can impact a real estate business – much like the proverbial hammer in search of a nail. Players in the commercial real estate industry have an opportunity to evaluate carefully which PropTechs show the most promise; and they may wish to collaborate with others in the industry to help promising PropTechs develop their tools to optimise their effectiveness.

PropTechs will have an increasing impact on the real estate sector in the future, with the potential to disrupt one of the world's oldest and largest industries. We should expect to see many new PropTechs emerge, and eventually there is likely to be some consolidation as PropTechs combine their resources and capabilities to become more influential in the real estate industry. Like any area of start-ups, the PropTech space will have winners and losers, and the active involvement by real estate investors and operators will help determine who the winners will be.

CLIMATE RISK HAS ARRIVED – ARE YOU READY?

ESG IN THE SPOTLIGHT

Deloitte Partner **Philip Parnell** talks to **Louise Ellison**, Group Head of Sustainability at Hammerson, Chair of the Better Buildings Partnership and EPRA's Sustainability Committee about the Environmental, Social and Governance (ESG) agenda in real estate today.

LOUISE ELLISON

GROUP HEAD OF SUSTAINABILITY AT HAMMERSON, CHAIR OF THE BETTER BUILDINGS PARTNERSHIP AND EPRA'S SUSTAINABILITY COMMITTEE

Environmental, Social and Governance (ESG) challenges have risen exponentially up priority action lists across the financial services and real estate sectors. As both a physical asset with a real and tangible 'footprint' as well as an investment medium subject to ever closer social and governance scrutiny, real estate is an asset class synonymous with the breadth of the ESG agenda. The pace of change is unrelenting, with commitments to the drive towards zero carbon status embedded within many asset owners' strategies and the reaction to the prevailing COVID-19 pandemic only serving to heighten focus on such a profoundly important global imperative.

Louise Ellison is the Group Head of Sustainability at Hammerson, where she is responsible for sustainability strategy, target setting, implementation and reporting for Hammerson's retail property portfolio.

Prior to joinining Hammerson, Louise held similar positions at M&G Real Estate and Quintain Estates. She is a Chartered Surveyor with experience in academic and research roles as well as the commercial sector.

Philip Parnell:
How has the 'Head of Sustainability' role changed in recent years?

Louise Ellison:
I am not sure the role has changed that much – we are still there to carry out the basic business function of setting a strategy to improve the sustainability of our assets in a way that supports the business. What has changed is the way the industry and many of our colleagues view us and interact with us. This has made the job easier in some respects – change is easier to deliver if you have agency within a business – but also harder in that demands have increased.

We are being sought out rather than having to knock down so many doors. Development teams, asset management teams – they are looking for support to make sure their assets perform.

The most recent change has been investor and boardroom interest particularly in response to the TCFD[20] recommendations. The past 18 months have seen a significant change in the numbers of ESG-focused Investor Relations meetings. Knowledge within that community varies widely from high levels of experience and expertise to some with a way to go before they give climate risk the respect it deserves, but there is clear movement.

If you think of it in 'stages of grief' terms: denial-anger-bargaining-depression-acceptance, I would say we are at the bargaining stage, not quite at acceptance yet. And of course there are many businesses that are still in denial!

Philip Parnell:
Hammerson were early adopters of a sweeping ESG commitment... going further than 'net zero' to become 'net positive' by 2030. That must have been a challenging commitment to make! Can you share the overriding drivers for taking this step and the most significant barriers you encountered along the way?

Louise Ellison:
Drivers are relatively easy – Hammerson has understood for a long time the importance of sustainability. As a long term holder of assets it's obvious that we will be affected, therefore we have to manage the risks early and well. The direction of travel for carbon emissions targets in response to rising climate challenges was clear – much bigger reductions are needed than have been achieved before. Given the strength of our existing sustainability strategy we felt able to set really game-changing targets so we did. It has lots of co-benefits in focusing the attention of colleagues on delivery. Sustainability has been very important to the culture of the business for many years, but Net Positive provided a new enthusiasm from my colleagues.

Philip Parnell: ...And having made the commitment, are there any issues that are proving materially more challenging to address than you anticipated?

I don't think we were under any illusions about how difficult hitting this target level was going to be. To some extent I have been surprised by the amount we have managed to do. Reducing scope 1 and 2 carbon emissions from over 30,000 to under 12,000 tonnes since 2016 is significant and I don't think we would have done it without setting that target. What has been interesting is the speed with which the market is moving. When we put these targets out it was just us and two others who were talking about Net Positive within our sector. Four years later, Net Zero is everywhere. Slightly different phrase but essentially the same thing.

But of course we aren't yet where we want to be. Two areas that are developing quite rapidly are carbon offsets and energy procurement. In terms of energy procurement, in a country with a developed clean energy market simply switching to a clean electricity contract does not reduce carbon emissions. To count against any robust targets your energy procurement strategy has to bring new additional clean energy into the market. This requires a power purchase agreement with a developer, and this brings a whole set of challenges. However, we are seeing changes in attitudes to procurement and this market is definitely developing. I see it as an important means of reducing carbon emissions for the real estate sector in the not-too-distant future and an interesting business opportunity.

Carbon offsetting is another market that is developing fast. We have always been clear that we will have to offset emissions to get to net positive – you can't operate real estate without emitting carbon. But we have also been clear that offsetting is the last option we will turn to. Having made that commitment we are now looking at what our carbon offsetting strategy will be.

Philip Parnell: What have been the reactions of your investors to your commitment?

Louise Ellison:

Our commitments have placed us in a great position to respond to increasing investor concerns about ESG and climate risk. Investors who were already engaged have been really positive, interested and supportive. Those who have been less engaged in the past are rapidly working out a position, and so are interested in finding out more about what we are doing. They are sometimes surprised at what we have achieved and are planning. All are generally reassured that we have been responding early to the pressures of climate risk. And I think that is the critical point: climate risk is just like any other risk. We know it is coming, so we need not just to acknowledge it but also to manage and prepare for it in a way that is positive for the business.

Philip Parnell: There are now 25 real estate investor/owner signatories to the Better Building Partnership's Climate Commitment to achieve net zero carbon by 2050. What have been the key challenges in securing commitment from organisations?

Louise Ellison:

The idea for the climate commitment emerged from a dinner with business partners back in January 2019. Being a response to a call from those leaders, getting sign up has never really been an issue. Many more organisations have signed up than we initially anticipated. This is interesting in itself and I think was indicative of a growing demand for a clear framework against which real asset owners can set a path for change. There are many frameworks out there but a specific one that reflects the nuances of real asset investment, ownership and management was missing, and this seems to have filled that gap.

Philip Parnell:
2050 may sound a way off, but 'pathways' are due to be published this year with regular progress reports due from then on. Given everything that 2020 has thrown at us, is this on track/realistic?

Louise Ellison:
Yes it is. We will certainly be publishing ours. 2020 has of course been incredibly difficult and made worse for many by extreme weather events. A number of the BBP members are already quite advanced with their thinking on their pathways. This is the power of signing up to something so public with a follow-up mechanism that will be published – it has triggered work within those businesses that would otherwise have been unlikely to happen. That work will support businesses in reducing carbon emissions and addressing climate change.

Real estate is fundamentally a long-term asset class with significant environmental impacts – both positive and negative. This makes it essential for us to respond right now.

Philip Parnell:
There is a lot of market talk currently that the COVID-19 pandemic is only serving to heighten the importance of accelerating the transition to improved ESG performance. 'Build back better' is an increasingly common turn of phrase. Do you believe this is truly achievable and how do you see this happening in practice?

Louise Ellison:
It's not just achievable, it's essential. This is not the moment to slow down our response to climate change, it's the moment to accelerate. The recovery needs to be a clean one: this will bring opportunities for businesses that are ready, risks for those that are not. There will be significant investment internationally and those funds will increasingly come with climate risk strings attached – whether they are private or public funds. And with that comes innovation and opportunity. Not taking this opportunity would be highly irresponsible in my view, and I don't think I am alone.

Real estate is fundamentally a long-term asset class with significant environmental impacts – both positive and negative. This makes it essential for us to respond right now. Hammerson and businesses like us are currently designing buildings that will be developed over the next ten years and will be expected to be on the planet for at least the next 50 years, hopefully longer. We are therefore thinking now about how comfortable those buildings will be in 2030, 2050 and beyond, how much power and water they will need, how they will be repaired and maintained as well as how much carbon will be used in their development now. Even if your own investment horizon is a short one, apart from it being unacceptable not to understand your responsibilities as a business, if you are not reflecting these concerns, the assets you produce will become increasingly difficult to trade in a climate-aware market.

There also undoubtedly needs to be a collective, coherent global response, particularly on biodiversity and resources. We can deliver change at a personal, corporate, sector and even industry level, but there also has to be delivery at the level of international institutions.

Philip Parnell: Notwithstanding the increasing recognition and acceptance of the importance of the ESG agenda, what do you see as the key barriers (or hurdles) to progress?

Louise Ellison:

Many, many things, ranging from the human capacity to ignore risks we know are going to affect us – 'Grey Rhinos' as Michele Wucker terms them – to the sheer scale of the challenge. One unifying theme is distance – both physical and temporal. Businesess, even in a long-term asset class like real estate, are still tied to near-term return expectations. That these might be at the expense of longer-term returns is still hard for mainstream investors to accept, particularly when they themselves are judged on an equally short-term basis.

As humans we seem to find it hard to respond to a threat that is both a long distance and a long time away. It is interesting that once David Attenborough brought the plastics in the oceans problem into our living rooms via Blue Planet II, and we saw that it was happening now, we were moved to do something about it immediately. Climate change remains something that feels distant in time, and the worst consequences, even though they are being felt now, seem far away. We are not forced to act or invest now, so we don't. We know it will be harder and more expensive later, but we still do nothing. Humans are hopeless!

My less philosophical, more specifically real estate-focused answer would still be short-termism. As an industry we remain driven by short-term returns. Until we can get past that we will continue to make sub-optimal decisions from an ESG point of view.

Philip Parnell: From your position as one of the market's most pre-eminent sustainability and ESG experts, what do you believe is required from various stakeholders to accelerate the changes that few would disagree are required within the real estate investment and development arena?

Louise Ellison:

- From government....leadership. She says, trying to work out whether to laugh or cry. Without it, businesses will ultimately step in given the scale of the challenge we are facing, but with clear government leadership, national and international, change will happen. Our attitude to loss of biodiversity is one of the biggest problems here and a classic tragedy of the commons. We are still fundamentally wringing our hands rather than acting to stop it.

- From our professional bodies... ESG being expressed explicitly within standards. If the fundamental role of professional bodies is to establish and police a set of standards that ensure their members can be relied upon by anyone using them, then ESG needs to be central to those standards. The recent changes to RICS Valuation Guidance are an example of this. It will bring more information to the market and in doing so enable the market to evolve. We need more of this sort of change from professional bodies across the sector. It can't be a voluntary code, it needs to be an expectation.

- From advisors... expertise. Advisers are central to the functioning of the real estate markets, from agents and lawyers to valuers, architects and quantity surveyors. It really is incumbent upon them to bring sustainability expertise to their clients. The traditional response has been that clients don't ask for it, but that really isn't good enough now. This links back to the professional body issue – if they are setting those standards, advisers will follow them.

- From occupiers... collaboration and expectation. The traditionally commercial, rights and obligations basis of the owner-occupier relationship is a barrier to change. Many times we have a good sustainability outcome delayed our stopped by our desire for change being used as a negotiating point by an occupier or often by their lawyer or adviser. It's going on right now. That sort of behaviour really needs to stop where matters of climate change are involved. Greater collaboration, and an expectation of collaboration from both sides, would trigger a lot of change. The BBP has an Owners and Occupiers Working Group that is building on the themes we explored, so there are ways to get involved but this is always one of the hardest elements of our work.

Philip Parnell: There has been much discussion regarding the potential for ESG to influence market pricing levels... have you seen any evidence of this?

Louise Ellison:

Pricing levels are a product of many, many things so attribution to something as hard to quantify as ESG is impossible. One can analyse and theorise but it remains implicit within the numbers. The major change since we started researching the relationship between sustainability and pricing, some 15 or more years ago, is the availability of environmental data – particularly on energy and climate risk. And inevitably, once data is available the market looks to turn it into information. There is now a growing expectation of an assessment of an assets ESG profile when informed investors are looking to acquire. The BBP Acquisitions Toolkit sets out these requirements. The latest RICS guidance requires information on the ESG profile of an asset to be included within a valuation report. These are all adding to the information that goes into the pricing mix, and ultimately assets that are seen as exposed to higher levels of ESG risk will be less attractive.

Philip Parnell: Some readers may wish to engage more fully in the ESG agenda but feel ill-equipped from a knowledge perspective. What would be your guidance to them?

Louise Ellison:

- Start – don't delay. If your business isn't addressing this issue it needs to get on with it so whatever your role, do your best to get ESG on the agenda. You don't need to have all the answers to raise the question – quite the contrary, there are specialists to help with that. But it must be acknowledged as an issue in the same way as any other business management issue. There are also great training programmes around if you want to improve your own skills, and I would also advocate upskilling your senior team. Once they see the scale of the challenge, they are much more inclined to address it. We use the Cambridge Institute for Sustainability Leadership for this which also has great cross-sector resources available.
- Use the sector specific resources and information that is already out there. For real estate I would obviously direct everyone to the Better Buildings Partnership website and resources. We have published practical toolkits and guidance, written by and for industry practitioners specifically designed to support industry colleagues without sustainability expertise.
- Remember that you know your business – any ESG or sustainability strategy has to be right for your business. Once you start to understand the issues you will start to see the risks and opportunities it presents for you.
- Treat climate change with the respect it deserves – it is arguably the biggest challenge the global economy is facing. Our response has to go way beyond getting a certificate or label for a building. While useful, drivers, indicators and incentives won't solve the problem. It requires long-term thinking, creativity, ambition and leadership alongside investment. These are all characteristics that our sector has so we should be really influencing if not leading the debate. That's an opportunity worth taking.

FUTURE OF WORK

TOWARDS THE NEW NORMAL

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Lessons learnt from COVID

The COVID pandemic and the lockdowns that followed in many countries pitched most organisations into an unplanned, working from home pilot study for almost every office-based employee.

Since then Deloitte has been engaging with many leading corporates to help them think through what they have learnt from this experience and how they might want to adapt their workplace in the future.

Three key themes are beginning to emerge from the surveys that we have seen.

The first is a generally positive sentiment towards remote working, and maintained or increased productivity has held up consistently through the initial lockdown period and beyond. Much of this positive sentiment is due to the elimination of commute times and less distractions in the working day. Working remotely has also shown improved outcomes for employee mental health, physical health and work-life balance, but not universally or over a prolonged period, and steps need to be taken to address those whose well-being has suffered.

The second key theme is a recognition that the response to lockdown was driven out of necessity, but it needs to be made more sustainable for the longer term. The initial response focused on maintaining safety, business continuity, maintaining client relationships and immediate financial performance. This has been effective in responding to immediate needs; however it is becoming clear that the arrangements put in place initially are not sustainable for the long term. Key challenges that are emerging include impact on well-being and work-life balance, capacity and capabilities of IT infrastructure; facilitating effective collaboration and meetings; lost social interactions and sense of community, as well as ensuring the learning happens especially for junior talent and those newer to the organisation.

The third theme is that a longer-term sustainable approach can bring a range of opportunities, but requires focus. Strategic initiatives are required around rethinking digitising client interactions, technology upgrades and reimagining talent models. With forecast downturns in global economic conditions, getting the right prioritisation and focus of spend will be key.

In general, organisations are concluding that there is much to be learnt from the remote working experience and that many positives should be retained. A fully remote model is unlikely to be the answer, but nor is returning to a pre-lockdown world. What is emerging is a desire for a hybrid way of working which balances remote working and working in the office.

Shaping the New Normal

The first step on moving to this New Normal involves identifying the transformation goals and their implications for the organisation and its workforce, to enable robust decision making. This is done by:

Setting an ambition

The organisation needs to set out the scale of its ambition (is it looking to adopt more flexible ways of working, or to make a transformational change?) and the benefits this is expected to bring (such as increase in employee choice, operating model efficiencies and / or real estate savings). The ambition must be set and endorsed at the senior executive level within each organisation.

Understanding the strategic choices

The strategic choices for achieving this ambition need to be clearly understood. They should cover the impact on customer and client experience, employees' experience, operational efficiency and risk & regulations. . The choices affect sections of the workforce differently, so job types should be segmented and assessed accordingly.

Setting the strategic direction

A detailed analysis of the strategic choices will give visibility to the trade-offs required to meet the ambition. These trade-offs are then analysed to ensure benefit of making each choice outweighs the cost. Once these trade-offs are made, a clear strategic direction can be set that will inform the transformation of the organisation's workforce, operating model and real estate footprint.

Most believe a fully remote model is not the answer, but nor is returning to a pre-lockdown world. What is emerging is a desire for a new, hybrid way of working which balances remote working with working in the office.

Work, worker, workplace

Much of the current focus is on flexible ways of working and the impact this will have on the physical workplace. However, the workplace is just one aspect of the Future of Work that needs to be considered, alongside the work performed by the organisation and the workers needed to undertake the work.

Currently many organisations have simply moved work away from the office and to the home of their employees; but to make a transformational change, organisations need to consider how, in the new normal, work will become more asynchronous; how they measure the value of work and productivity, and what technologies are required to support the new types of work task.

To do this, organisations need to define the work necessary for the business to thrive in the future and align these work outcomes with their business strategy. They need to assess whether future demand for outputs affect whether working practice needs to change, be redesigned or remain as is, and how the supply of resources is matched to demand. Finally, they need to consider what work will be augmented by technology, or completely replaced and 'phased out'.

As work practices change in the future, so will the workforce. It will need to become more diverse in backgrounds, capabilities and working arrangements. The trends we already observe will continue: workers will look to evolve new skills and capabilities throughout their career; they will be flexible and agile in how they work; and they will demand, and will expect work to align to their professional goals and personal preferences. Leading and managing them will be more complex.

To transform their workforce, organisations will need to think through their plans for managing fluctuations in demand, cultivating and leveraging different talent. They will need to identify what re-skilling is needed to pivot towards the new types of work, and where there are opportunities to re-deploy the workforce and consider work-sharing options.

Workplace 2.0

A consistent message we hear from organisations is that there is an enduring need for the physical workplace. People want a hybrid model, with a choice to work remotely or in the office, depending on their preferences and the tasks they have to do.

The feedback from employees is they value the social interaction that the physical workplace gives them, the opportunities to collaborate, and the serendipitous meetings that occur. The physical workplace also has an important role to play in reinforcing brand, culture and relationship building.

The future workplace will need to support collaboration and social interactions. The employee experience, customer and client experience must be at the heart of its design. However, it also needs to reflect diversity and provide traditional workspaces to enable employees who do not have adequate facilities at home to work effectively or who find that remote working adversely affects their well-being.

Increasingly flexible

We believe that the old real estate mantra of 'location, location, location' will be replaced with 'flexible, flexible, flexible' when it comes assessing the attraction of a building. We believe there will be a shift from space allocated to functions to far more unallocated space that allow cross-functional teams to form quickly and work together and to promote opportunities for people to meet and connect by chance.

We expect a shift away from traditional desks towards far more touch down space, team tables, informal meeting space, phone booths and quiet areas where people can focus on 'thinking' tasks. There should also be a substantial reduction in the demand for physical storage space, as employees will need to store documents digitally (rather than in hard copy) so that they can access them wherever they choose to work.

Over time, we expect the flexibility offered by the diversity of on-floor work-setting to evolve into one that can be reconfigured on-demand through the use of flexible partitioning and work settings.

This flexibility should extend into how people plan and design space. Traditionally organisations have taken a long time to design their workplaces and then set these designs in stone. We believe that workplace planning has a lot to learn from product design thinking: it needs to put users at the centre of the design process, and develop ideas and roll out prototypes for testing. Once proven these can then be implemented, but with an understanding that the development and design of the workplace 'product' is never finished – it will continue to evolve through a cycle of ideas, prototypes and implementation, as the needs of the users at its centre continually evolve. We also expect greater use of flexible space alongside traditional leased or owned core space, which will allow organisations to scale its footprint up or down quickly, depending on the demand.

Increasingly smart

Smart buildings, that utilise IOT sensors and other emerging workplace technologies, will be essential in managing the allocation of space (and its recharge), as this will become ever more complex as different teams access different areas on different days. This technology is also likely to be essential in delivering the experience that employees will demand.

We see this operating across three distinct layers:

- a "**connected**" layer which supports building operations, security and access.
- a "**productivity**" layer that includes location-based services, traffic sensing, occupancy analytics, interactive walls, digital assistant and telepresence.
- a "**engagement**" layer helps employees personalise their space, collaborate and communicate.

Delivering this will need every-closer working across the Workplace, Technology and HR teams to ensure a seamless experience for users.

Challenges ahead

We see three issues in implementing this new hybrid workplace.

The first is: How to drive inclusivity and productivity when teams are split between the office and remote locations? We know from experience that employees can work productively if they are all in the office and, as shown by lockdown, when they are all out of the office, but does the same hold true in a hybrid model?

The choice is between investing in technology and workplace solutions that enable seamless working and interaction between office based and remote team members, or continuing to use the lockdown solutions with office-based staff participating in calls and meetings as if they were working remotely.

The second issue is: Who comes into the office and when? Is it an employee's choice or will access be managed? Allowing employees to choose where they work will maximise the employee value proposition, but reduce the scope for real estate savings. The alternative is to limit and manage access through teams, pre-booking or on a first-come-first-served basis. This limits employee choice, but maximises the opportunity for real estate savings. The right option for an organisation will depend on its culture and the benefits it is seeking to achieve.

The third issue is the speed at which the footprint can be re-sized. One option is to do this in line with lease expiries, but this risks a drift back to the pre-COVID model. The alternative is to reduce space quickly but this may trigger potentially large restructuring costs. Again, the right option will depend on the benefits that will be delivered and the demand from workers to move to this new model.

Conclusion

The COVID-related lockdown dispelled a lot of myths and proved that remote working on a large scale could be both productive and popular. Organisations are looking to see how these benefits can be incorporated into a hybrid model that offers their employees the opportunity to work either in the office or at home. Implementing this hybrid model is not without challenges, but organisations should embrace the opportunities it offers in moving towards a new normal.

UNLOCKING THE POTENTIAL

SINGAPORE'S MARKET FOR REAL ESTATE INVESTMENT TRUSTS (S-REITS)

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Since 1999 when it first established a regulatory framework for real estate investment trusts (REITs), Singapore has evolved rapidly into a major global market, attracting interest from owners of real estate assets and sponsors, as well as REIT investors.

What gives Singapore its name as 'Asia's largest global REIT platform'? One reason is the wide diversity of asset portfolios, across both international borders and asset types. Another is that the Singapore market meets the requirements of many fund managers and owners of real estate assets, to benefit from the rising value of their assets while still earning regular income from them. It is also a vibrant channel for secondary fundraising activities, to finance further expansion of portfolio assets.

REITs and Property Trusts (S-REITs) make up a large part of Singapore's stock market. Collectively, they represented 12 percent of the stock market's total capitalization as at the end of May 2020 and generated an average distribution yield of 7.2 percent.[21]

As at July 16, 2020 there had been 54 S-REIT IPOs, raising approximately US$18 billion (S$25 billion) in new funds and with a combined total initial portfolio value of over US$49 billion (S$68 billion). Through mergers, acquisitions and de-listings, Singapore now has 44 listed S-REITs with a market capitalization of about US$74 billion (S$103 billion) and a total asset portfolio value of more than US$119 billion (S$166 billion).

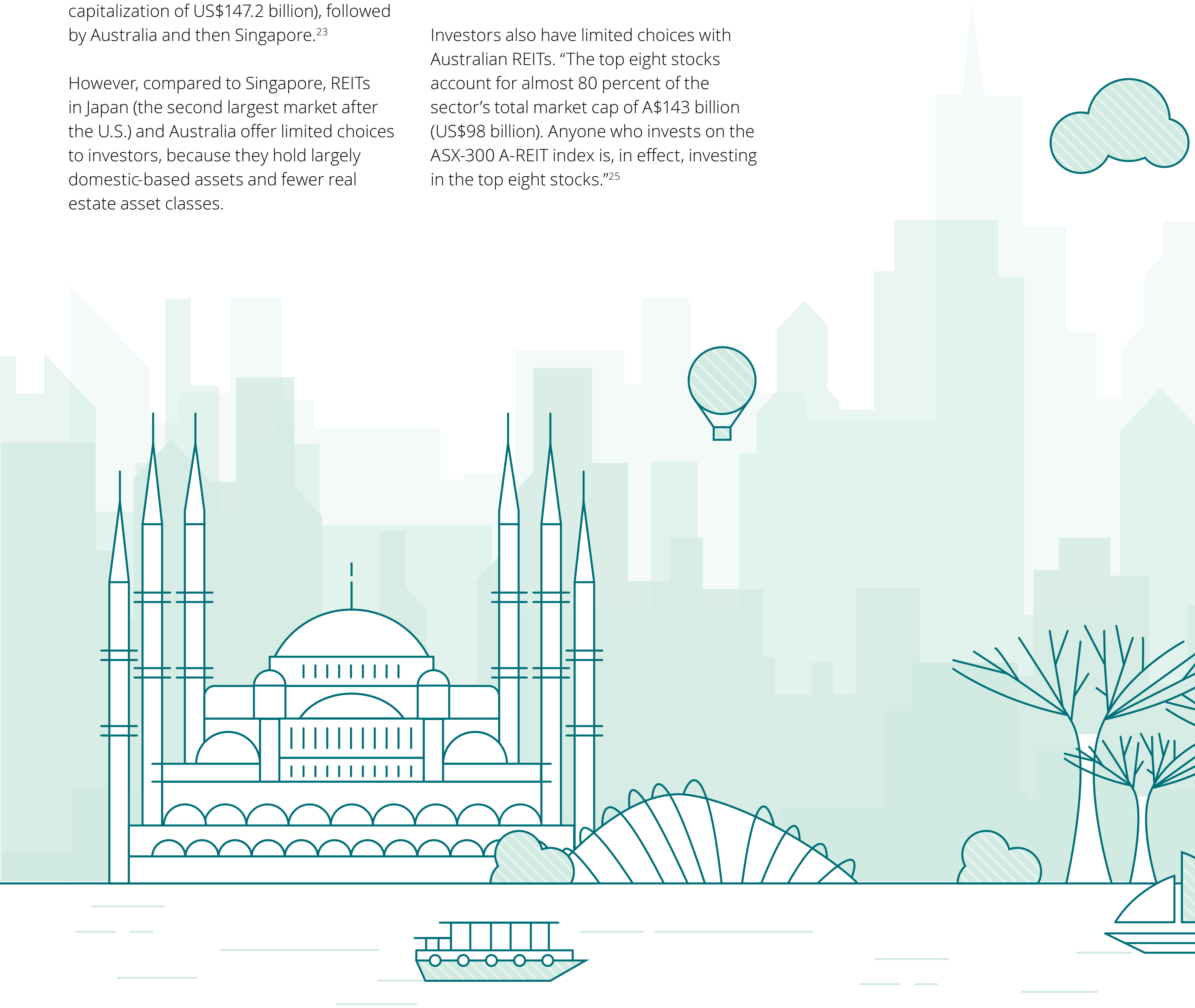
INTERNATIONAL STANDING

The total worldwide market capitalization of REITs has increased substantially, and stands at around US$1.7 trillion today.[22] The Asia-Pacific markets have contributed to this rapid growth. According to Savills, Japan has the largest REIT market in Asia-Pacific (63 REITs with a total market capitalization of US$147.2 billion), followed by Australia and then Singapore.[23]

However, compared to Singapore, REITs in Japan (the second largest market after the U.S.) and Australia offer limited choices to investors, because they hold largely domestic-based assets and fewer real estate asset classes.

Japan REITs still hold few overseas investments. Japan revised its laws and regulations in 2013, removing restrictions on ownership by J-REITs of overseas real estate holding companies; but so far, only three J-REITs have acquired overseas real estate/property investments.[24]

Investors also have limited choices with Australian REITs. "The top eight stocks account for almost 80 percent of the sector's total market cap of A$143 billion (US$98 billion). Anyone who invests on the ASX-300 A-REIT index is, in effect, investing in the top eight stocks."[25]



COVID-19 has accelerated digital transformation significantly. Forced into the new normal of telecommuting and e-commerce for safety and survival, businesses realize the gravity of possessing high quality and stable digital infrastructure. These S-REITs have simply assimilated that fact earlier and are leading the pack in post-pandemic recovery.

SINGAPORE'S REIT EVOLUTION: DIVERSITY OF ASSETS

In contrast, Singapore's REIT market has evolved from one that consisted predominantly of local-based assets, into one with assets that are both globally and sectorally diverse.

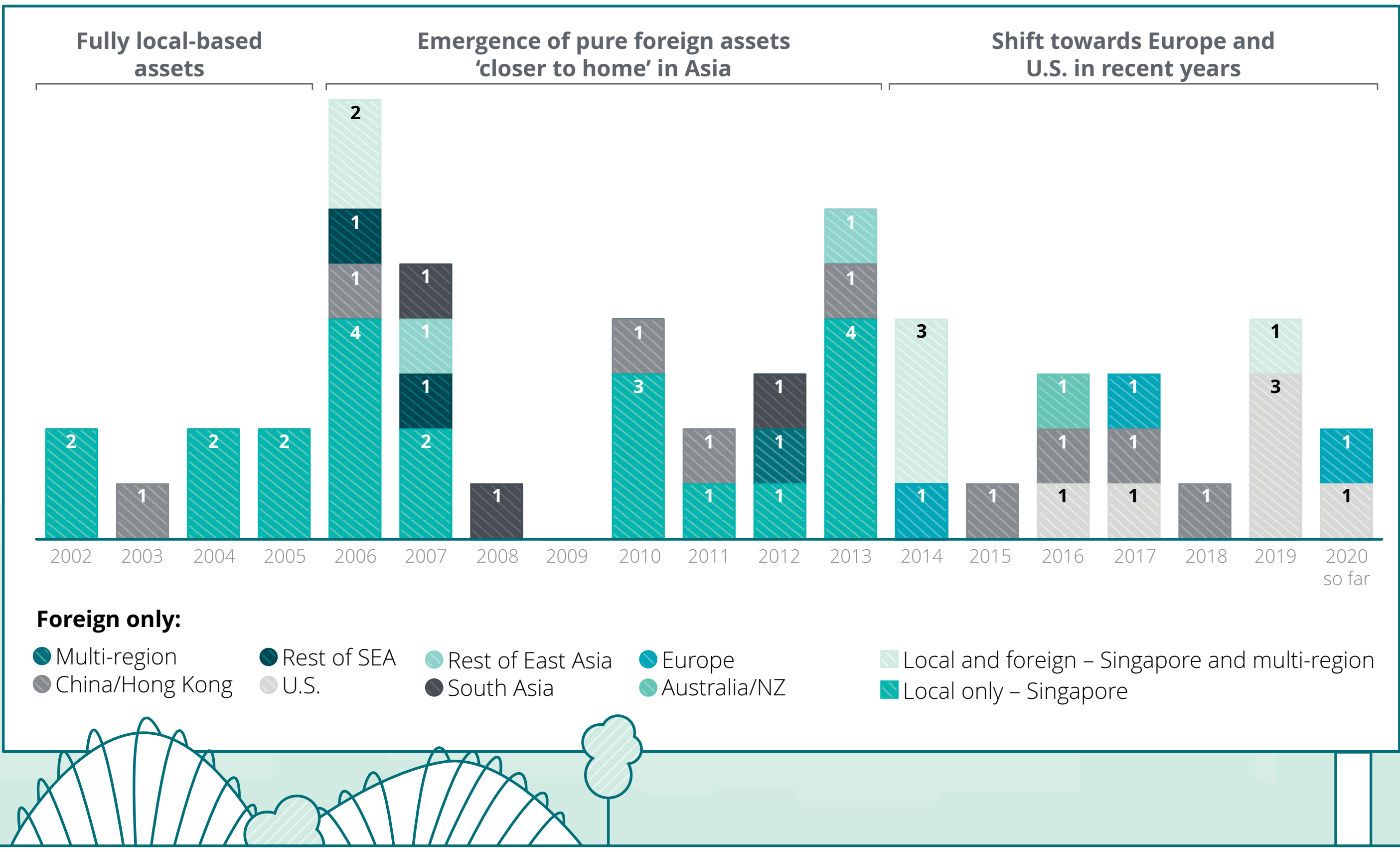
Geographical diversity

The initial assets of six of the first seven S-REITs that listed on the Singapore Exchange (SGX) between 2002 and 2005 were all local-based. For domestic investors who were new to the idea of REITs, local assets were perhaps the most familiar and safe investments at the time, and the market provided them with what they wanted. Appetites have changed however: none of the 18 S-REITs listed since 2014 had a fully local asset portfolio (Figure 1).

Over time, S-REITs comprising only foreign assets have listed on the Singapore market. Initially the market attracted REITs with assets 'closer to home', in Asian countries like China, Indonesia, India and Japan. In recent years, Singapore has also attracted S-REITs with assets in Western countries. Since 2014, six U.S.-based, four China -based, three Europe-based, and one Australia-based S-REITs listed on SGX: in 2019, there were three listings of S-REITs with 100 percent U.S.-based assets within the space of just three months.

Today, 39 of Singapore's 44 S-REITs own at least some offshore assets across Asia-Pacific, South Asia, America and Europe. Although 19 of the 44 had fully local-based assets in their initial portfolios, 13 of these have since diversified and acquired foreign assets. This trend is likely to continue.

Figure 1: S-REITs: initial IPO portfolio assets over the years, by IPO count[26]



*Total 54 S-REITs listings (including those delisted) as at July 16, 2020.
*Rest of East Asia includes Japan and South Korea, South Asia includes India and the Maldives, and Europe includes the U.K.

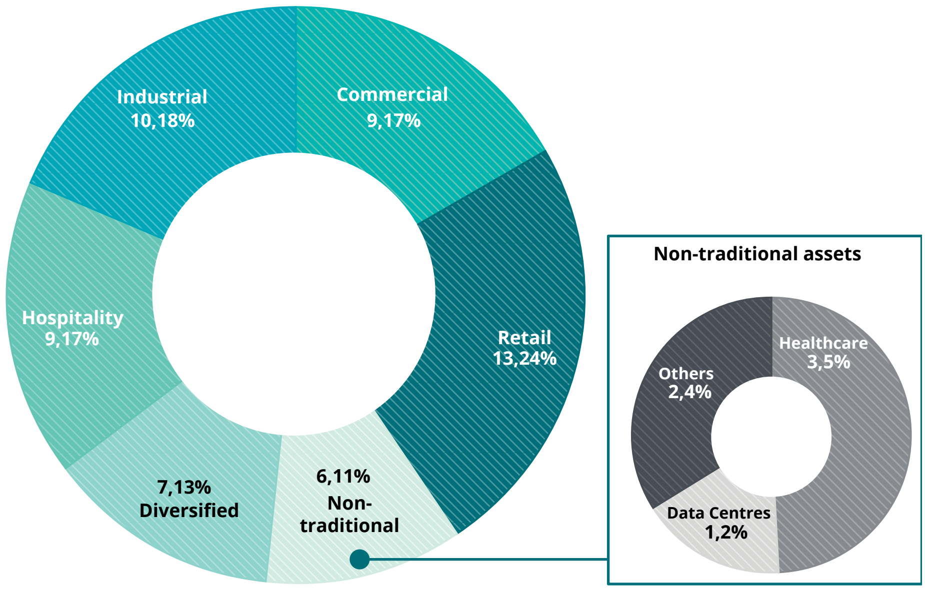
Source: Deloitte research, Respective IPO prospectuses.

Diversity of asset types

REITs have also been acquiring non-traditional types of real estate assets, in addition to traditional assets in the retail, industrial, hospitality and commercial property segments.

The inclusion of non-traditional asset types is likely to continue to grow in future. For example, the two S-REITs listed this year are (i) a pure U.K.-based commercial property REIT, owning properties that are more than 99 percent leased to the U.K. government's Department of Work and Pensions; and (ii) a U.S. grocery anchored and necessity-based retail and self-storage properties REIT.

Figure 2: S-REITs: initial IPO portfolio asset types, by IPO count[27]



*Commercial refers to office properties with/without retail space; others refer to the two most recent S-REITs listed as at July 16, 2020 with properties based in the U.K. and U.S.

Source: Deloitte research, Respective IPO prospectuses.

THE ATTRACTION OF S-REITS TO SPONSORS AND ASSET OWNERS

What is it that Singapore can offer to asset owners and fund managers?

Realizing capital gains and increasing assets under management (AUM)

S-REITs are externally managed by a REIT manager. This is usually the sponsor group that puts owned or managed properties into the S-REIT's initial portfolio, and benefits from recurring fees such as management fees (both base and performance fees), and acquisition and divestment fees.

There are two types of S-REIT sponsors – (1) asset owners looking to 'cash in' by transferring title to ownership of their real estate assets to their REITs, and (2) sponsors (fund managers) that persuade external asset owners to sell assets to the REITs the sponsor manages. Both types of sponsors pursue an 'asset-light' strategy, yet seek to maintain and/or grow their assets under management (AUM).

Unlock asset values at fair market valuation

Another attraction of S-REITs for asset owners is that, based on market observations, they are often able to sell their properties to a REIT at or near market valuation, without significant discount.

For five of the nine most recently listed S-REITs, the purchase consideration came within the range of two independent market valuations. For the other four, the purchase consideration was agreed at a slight discount of less than 10 percent to market valuation.

Factors that may affect price negotiations include the market's perception of the value of the assets based on their location, as well as quality and reputation of the sponsor.

Access to a large pool of international funds

According to SGX, the Singapore stock market has in total US$2.3 trillion (S$3.3 trillion) of AUM, with 78 percent of the money originating from global investors around the world, and 83 percent invested in overseas assets: this demonstrates Singapore's ready access to international capital. With a pool of money looking for investment opportunities, high-yielding REITs are on top of the list.

The growing and active international investor base supports Singapore's vibrant secondary fundraising market, enabling REIT sponsors to obtain financing to increase the size of their portfolio. Size confers reputation and status.

S-REITs have grown in size largely through acquisitions and mergers. It was reported that S-REITs spent US$16.9 billion (S$23.1 billion) on asset purchases in 2019, three times the previous peak achieved in 2014.[28]

Acquisitions are commonly financed through secondary fundraising activities, such as placements and rights issues. SGX reported that in 2019, 19 S-REITs raised US$3.9 billion (S$5.22 billion) in placements and US$1.8 billion (S$2.44 billion) in rights issues, representing 88 percent and 84 percent respectively of these fundraising activities on SGX in the year.[29] In total, this was an 85 percent increase over 2018 and the largest amount raised in any of the past ten years since 2010.

Mergers are creating larger S-REITs. They are a way for REITs to create a larger asset portfolio, strengthen their market position and diversify risks, bolstering reputation, market presence, and capacity to procure additional funding. Extracting these synergies make headway for future opportunities.

Since 2018, there has been four successful mergers of REITs. More recently, two other mergers have been proposed, one of which would create the largest S-REIT and Asia-Pacific's third largest, with a combined property value of US$17 billion (S$22.9 billion).[30]

Tax efficiency

Another feature that may appeal to REIT sponsors is the simplicity and clarity of Singapore's tax framework and its exemptions for REITs.

As a general rule, S-REITs enjoy tax transparency on specified income from Singapore properties if their trustees distribute at least 90 percent of their taxable specified income to unitholders in the same year in which the income is earned by the S-REITs, subject to meeting qualifying conditions. Tax exemptions also apply to qualifying foreign-sourced income derived from overseas properties and received by S-REITs or their wholly-owned Singapore resident subsidiaries.

With tax planning, structuring and methodology, the tax affairs of both REITs investors and sponsors can also be managed efficiently.

RESILIENCE IN THE FACE OF GLOBAL UNCERTAINTIES

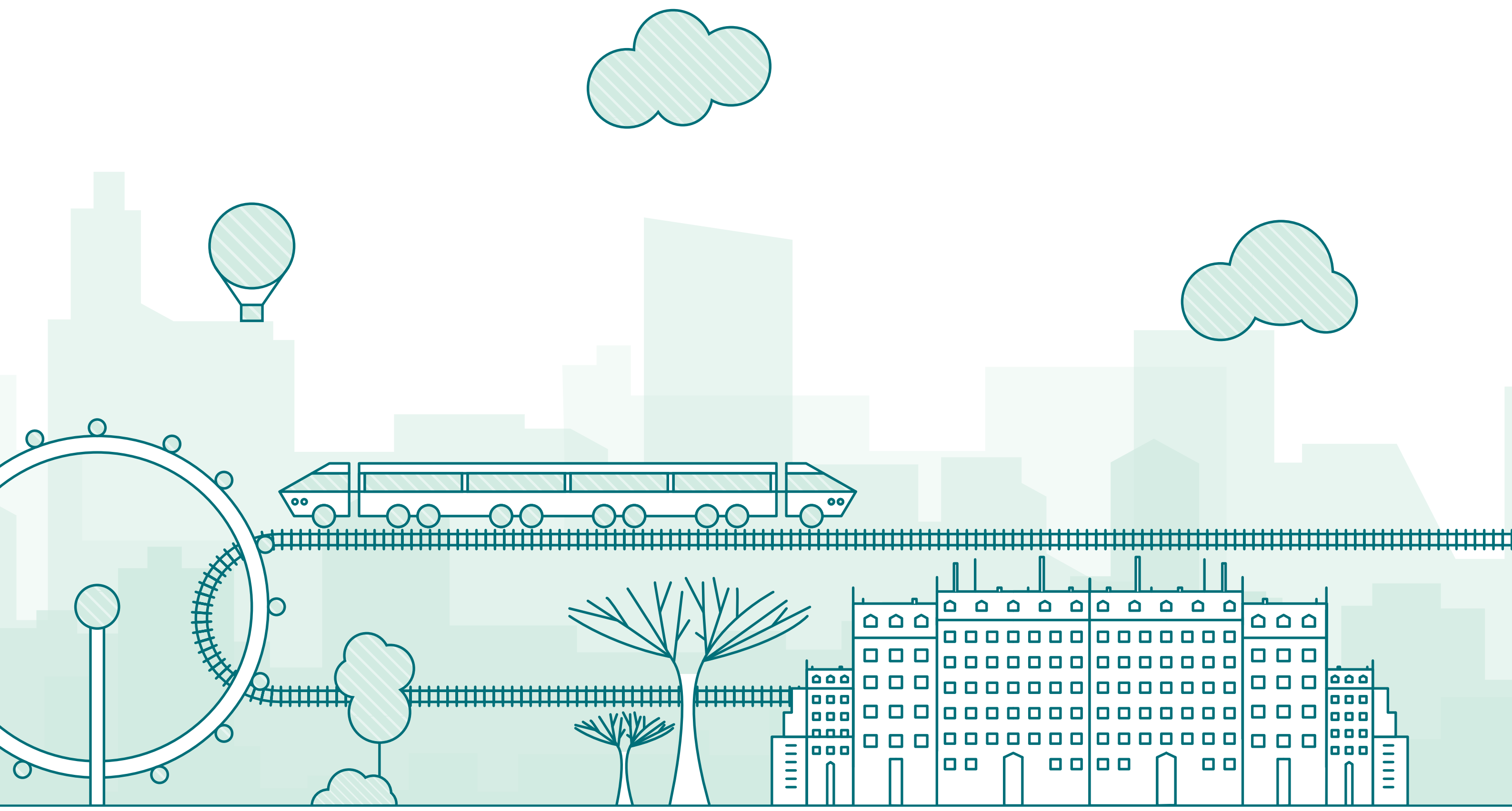
2020 has been a trying year for the world. Large parts of global economic activity are disrupted by the COVID-19 pandemic, and at certain periods even halted. Naturally, the global REITs market was not spared, as evident in the FTSE EPRA Nareit Global Index dropping 21.00% year-to-date (as of July 24, 2020) in total return. Phillip Securities Research (Singapore) also reported a 40 percent average decline in S-REITs' prices between end February 2020 and end March 2020 (when Singapore banned all short-term visitors), at the peak of market sell-off in Singapore.[31]

In spite of these uncertainties, Singapore recognizes the cruciality of REITs to its market, and the Singapore government announced several measures in support of S-REITs. Regulatory bodies extended the deadline for distribution of financial year 2020's taxable income to help S-REITs manage their cash flows, while raising leverage limit to allow them to raise more funds. Given time and with the right support, S-REITs can recover and continue to thrive.

In fact, some players in the industrial and the up-and-coming data center sectors have already shown promising progress. Taking advantage of higher leverage limits and lower interest rates, an environment conducive for REITs to seek out "good deals", two S-REITs have acquired logistics assets in Australia while two others announced substantial stakes in data center assets in Europe and the U.S.

COVID-19 has accelerated digital transformation significantly. Forced into the new normal of telecommuting and e-commerce for safety and survival, businesses realize the gravity of possessing high quality and stable digital infrastructure. These S-REITs have simply assimilated that fact earlier and are leading the pack in post-pandemic recovery.

In such times of crisis, it is crucial for REITs to build earnings resilience. Global diversity and the ability to adapt continually to market circumstances and investor demands have been vital to the evolution of Singapore's REIT market so far. Looking ahead, it seems like this path will continue to guide S-REITs to reshape their asset portfolios to cater to the evolving needs of tenants and reduce dependency on a single market or sector, cementing Singapore's reputation as one of the leading REITs hubs in the world.



REAL ESTATE ASSET MANAGEMENT

THE FUTURE IS DIGITAL

Hendrik Aholt
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Current situation

Digitalisation is not new anymore. For quite some time, industries such as retail, transport and industrial manufacturing have embraced the potential of digital technology and new ways of collaboration. Those sectors have all undergone disruption to some extent. In the real estate asset management industry too, there was hype surrounding digitalisation some years ago, but attention and interest are now less than they were.

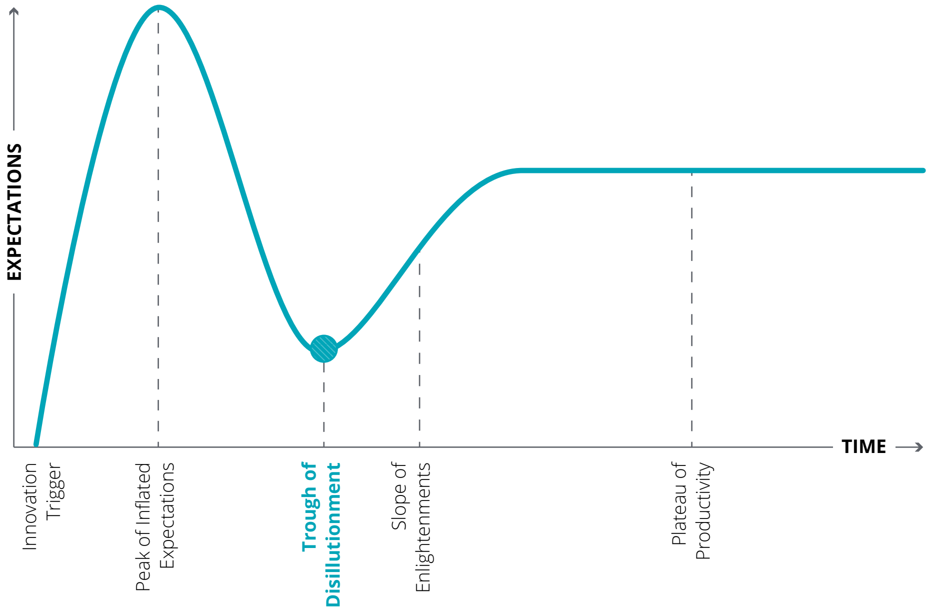
A reason for this is that many experts in digital technology did not understand the business of real estate management. Often, the concepts for digitalisation in real estate were based on ideas that worked well for industries like banking and finance, where data (e.g., in the form of indices, stock values, currency exchange rates and interest rates) is widely available and the need for real-time information was an obvious use case for data-driven technology.

In real estate, the situation is different. For example, real estate asset managers currently do not feel the need for real-time energy consumption figures (although this may change in response to new regulation, like the upcoming amendment to the EU Energy Efficiency Directive (EED)).

Rental contracts are mostly stable and do not change unexpectedly overnight. Transactions are not executed in real-time and are not made in response to rapidly-changing information. Therefore, many initial ideas for digitalisation that were adopted from other industries did not meet the requirements of the real estate market.

As a result there has been some disillusionment about the unfulfilled promises that were claimed for digitalisation. As just one example, there is now much less excitement about the possibilities of blockchain technology, according to an assessment by the Foundation for International Blockchain and Real Estate Expertise (FIBREE).

Figure 5: Use of blockchain technology in real estate in Germany, the Netherlands, Canada and the USA



Source: FIBREE industry report 2019

According to the Gartner Hype Cycle Theory of the stages in the life cycle of technology, following the current 'Trough of Disillusionment', a time will come when new ideas emerge that are thought through much better and are more market-ready (the 'Slope of Enlightenment'). The rise of tokenised asset platforms to offer a more direct and efficient way of investing in real estate assets may be an example of this, when they can deliver on the promise of greater efficiency and lower costs, and the people running the platforms have the relevant industry know-how to select and manage the assets.

Another reason why digital transformation in real estate asset management is not as advanced as in other industries is that there are more external parties involved (for example, property managers, facility managers, valuers, due diligence providers, brokers) and ownership of data is widely dispersed. Therefore it is not as easy to create a digital ecosystem, which is often a key feature of successful digitalisation.

Nonetheless, some actual use cases have emerged, many of them around automated communication and research supported by the latest AI technology. These are targeting an easier, faster and better execution of real estate core processes and the smarter use of data.

How conversational AI is boosting service excellence with intelligent and customer-centric automation

The real estate industry is facing major changes as digital technology and offerings increasingly change the way people live and work. Tenant expectations for more real-time and high-quality services are a major challenge. While chatbots are already in use, current versions offer only limited functionality and little technical sophistication. What is needed instead are so-called 'intelligent virtual assistants', which are built for purpose, have a rich set of capabilities and are integrated into the end-to-end processes of the enterprise, while simultaneously acting as an interface within the entire real estate ecosystem.

What we are seeing in the market is a new approach to customer experience as digitalization is taking capabilities and requirements to an enhanced level. Client-centric services and valuable customer experiences have always been drivers for success, but the alignment of technology and business models with customer needs is increasingly a key factor.
A customer's choice of a product or service is still based largely on personal experience, but personal contact is no longer the major success factor in many processes; and easy and simple contact channels, 24/7 availability, fast response times and a low error rate are more relevant customer requirements in the digital age.

For some time now, service desk automation and conversational AI technology have been able to deliver a valuable experience for users; however, this can only be achieved if the use of AI goes beyond a static Q&A chatbot. It can be used instead as a personalised agent with the ability to perform tasks and trigger events. In some cases, an AI-enabled assistant can act as an intelligent advisor (e.g., providing target group-specific and geo-enabled recommendations). In the future add-on services like these could make a big difference in real estate management, just as they do in online retailing.

Within the real estate industry, some companies have already started to develop conversational AI to provide value-adding experiences, improve tenant satisfaction and collaborate more efficiently with service providers along the value chain. However, many existing conversational AI service solutions still lack maturity or scalability.

Key factors for the successful introduction of conversational AI are a combination of digital and real estate industry knowledge and experience, suitable resources from the diverse technology landscape, and giving proper consideration to the target operating model, existing IT infrastructure and processes of real estate companies. However, in most cases asset managers are not yet fully prepared for implementing or maintaining comprehensive AI offerings.

To meet requirements of the real estate market, virtual assistants and the underlying digital service platforms should be integrated into the real estate ecosystem. The greater the number of relevant stakeholders within the process cycle participate, the better. This becomes much easier if the virtual assistant covers the real estate processes from end to end.

A challenge, however, is the need for a comprehensive understanding of all underlying real estate-specific workflows and tasks. The virtual assistant needs to provide open interfaces for connectivity, for example to ERP systems, individual databases, CRM/ ticketing systems, apps, smart devices and external service providers. With single vendor solutions or 'closed shop' systems, there is a risk of getting stuck in a functional niche, as they might not be flexible enough to integrate with services from an ever-growing universe of micro services, whose relevance to digital systems will increase over time.

With applied conversational AI and intelligent automation, a wide range of suitable and easily-accessible communication channels become available (via the web, app, voice, smart speaker, smart watch and so on) for tenants to get in contact with the responsible property and asset managers. As the number of communications increases, digitalization will be essential to process them speedily and efficiently. It will also free up time for subject matter experts to deal with more value-adding tasks like tenant acquisition and key tenant relationships, while virtual assistants are working on the simpler and more routine tenant matters.

Implementing virtual assistants is an ongoing activity, not a one-off task. It requires robust monitoring and analysis of all interactions with a view to continuous improvements in capabilities, functions and dialogue flows.

Knowing what others don't: Enhanced predictive analytics with transfer learning

In the real estate sector, the availability and interpretation of the right information is critically important, but unfortunately data is widely dispersed and difficult to gather and analyse. Poor data quality and the absence of market data for benchmarking are severe problems that cannot be solved by simple research, and common prediction models cannot close the gaps.

One of the most significant gaps is the lack of data to assess macro- and micro locations. While there is often plenty of available market information for the macro-locations of the world's biggest cities, there is much less data for assessing smaller cities or single city districts. This is particularly relevant for retail assets, where the district or the zip-code-area of a city is insufficiently granular to assess a location as its quality might differ when you simply cross sides of the road.

The solution: Based on market data, industry-specific logic (e.g. conditions and drivers for real estate market rents or purchase prices) and geographical characteristics, it is now possible to create and 'train' suitable prediction models by means of machine learning and AI-technology. AI-based transfer learning can remove blind spots in market data and so can help to predict values where everyone else is missing data. But let's start from the beginning....

During the past years there have been many articles about data and analytics, and their impact on business value. Data is the 'new oil' for many industries and the transparency it provides is key to keeping track on the business and competing within challenging environments.

When it comes to data management in the real estate sector, there are still major challenges. Often, the required data is simply not available, not up-to-date, or is lacking in quality. In addition, access to data can be quite expensive, not of the same standard for every location, and often not 'fit for purpose' (e.g., not sufficiently granular, or in need of further adjustment/ enrichment).

External real estate market data, for example social demographics, rents, purchase prices and geographical points-of-interests (POIs), is used in many different ways, such as valuation, sale/ purchase of properties, contracting, negotiations, risk analysis and planning. However the data is poor quality, it is incomplete, and there are time lags in collecting it.

Therefore, in today's market a key differentiator between real estate managers (and so a key challenge for them) is their ability to select and apply models, processes, methodologies and tools to manage and analyse data and to leverage the insights obtained.

Data analytics cannot fully resolve the problem of poor quality or missing market data, and suitable workarounds often involve ineffective, time-consuming and error-prone manual work. In most cases these additional efforts do not provide much better numbers, or may even create personal bias that weakens the results.

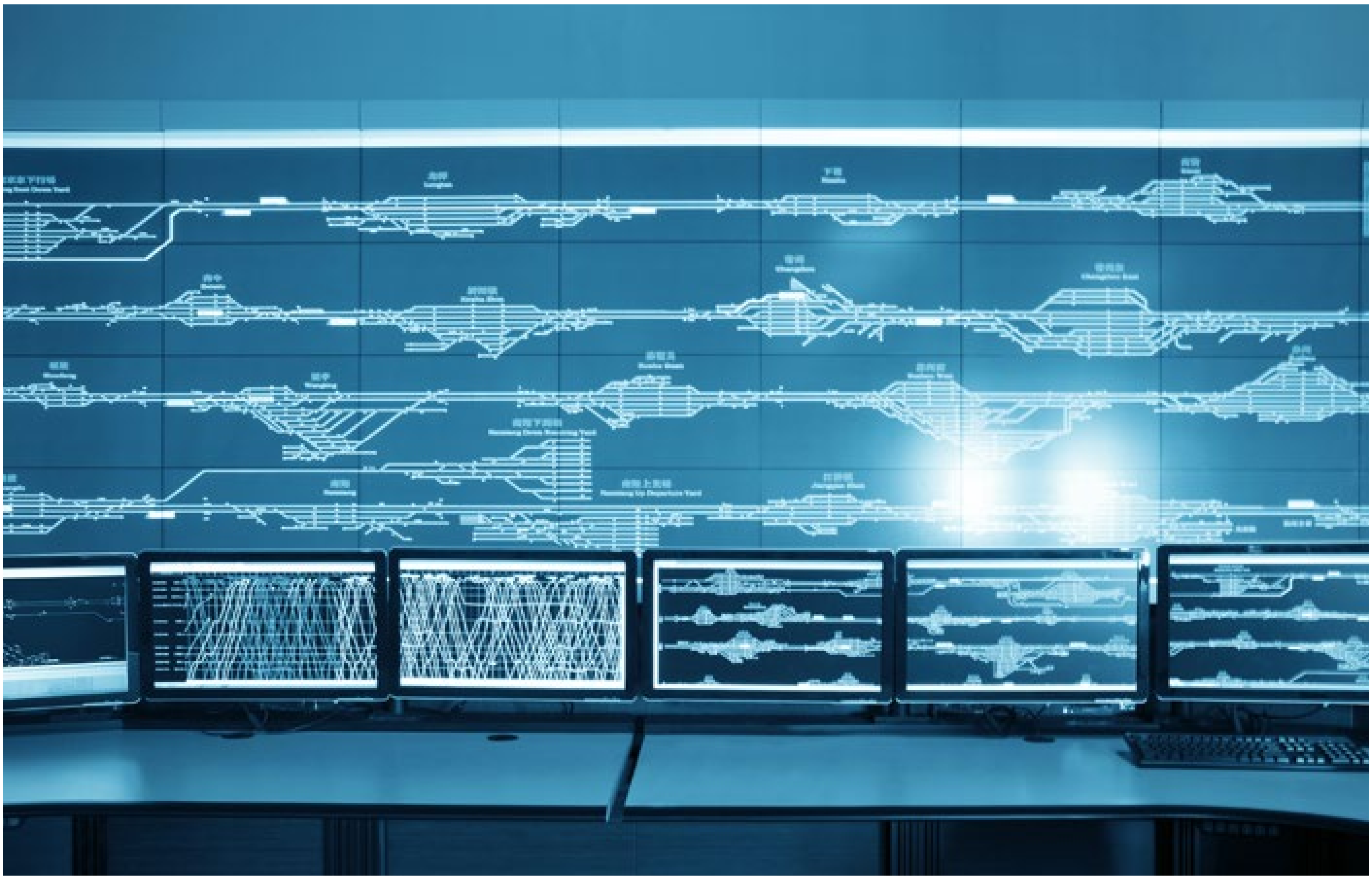
Companies that are mastering this field are using data analytics enhanced with additional geographical features (e.g. digital twins of cities), deep learning capabilities and functional prediction models. In this kind of set-up 'transfer learning' takes predictive analytics to a new level and bridges the gap between the required data quality and traditional research, with all its related efforts and costs.

Transfer learning leverages the knowledge gained while solving one problem and applying it to a different but related problem (e.g., prediction of a target rent and/or environmental parameters for a blind spot without suitable market benchmarks).

But how are data gaps closed and missing values predicted? A key requirement is to gather as much relevant data as possible and make it available centrally, and then to enhance it with a geographical context (i.e., it can now be 'geo-processed'). Digital twins of cities can be created, consisting of both static data (e.g., points of interest, socio demographics, public infrastructure) and dynamic data (e.g., movement patterns, social media, weather data), and enriched with data relevant to specific businesses (e.g., residential, retail or office real estate). State-of-the-art machine learning (deep learning) and prediction models can then be applied to reveal hidden insights with a high level of accuracy.

What does this mean for a common use case like deriving reliable target rents for assets in their micro-location or even their direct immediate area? The prediction model is capable of finding different locations for which similar problems have been solved, and have similar geo/ market characteristics, or can reveal patterns resulting from past data. By means of transfer learning, predictive analytics is able to provide a target rent even for those areas where no sufficient reference data is available. Instead of simply applying the respective comparable rent to the target locations, regional specifics and price levels are also taken into account. For the most efficient use of such prediction models, they can be embedded directly in the relevant asset or real estate fund management software, feed planning or risk models, enrich reports, and create individual visualisations (via APIs), to allow a high degree of re-usage and standardisation.

Enhanced predictive analytics and transfer learning are at an early stage of development and further improvements are needed to unleash their full potential. Eventually however the time- and cost-intensive efforts of gathering data manually or building workarounds should eventually be a thing of the past.



Industry outlook

Real estate asset management is not where many experts once thought it would be. A combination of inflated promises and weak ideas created some disillusionment across the industry.

It is unlikely that there will ever be the same degree of extensive disruption in the real estate market from digitalisation that have occurred in retail, media and passenger transport. Existing PropTechs have gained relevant market share in some sub-markets (e.g., accommodation services), but are far from creating a sufficient market impact to threaten established players. However the real estate industry has an opportunity to find own ways of utilising the potential of conversational AI, predictive analytics and connected digital ecosystems, to deliver a better and more efficient tenant service. Digitalisation will lead to the availability of more and better structured data. Understanding of real estate markets and portfolios will be better and more detailed. Automation of repetitive tasks, like the creation of service charge statements, or additional services such as pay-per-use of assets, are already a reality. Also, it will be easier to provide senior management and investors with more relevant data, including market and portfolio insights.
The steering and monitoring of property managers and other service providers will become easier as real estate is available in near real time and comparability between servicers is facilitated. Data availability combined with machine learning leads to more accurate predictive maintenance.

Digitalisation will lead to more and better structured data availability. Understanding of real estate markets and portfolios will be more accurate and more detailed. Automation of repetitive tasks, like the creation of service charge statements, or additional services such as pay-per-use of assets are already a practical reality. Also, it will be easier to provide senior management and investors with more relevant data, including market and portfolio insights.

Moreover , the steering and monitoring of property managers and other service providers becomes easier as real estate is available in near real-time and comparability between servicers is facilitated. Data availability combined with machine learning leads to more accurate predictive maintenance.

We are now seeing the first 'live cases' beyond small installations of technology silos (apps that deliver one feature, but don't enhance the overall business). It is highly likely that these technologies will gain a bigger market share, because – besides the obvious positive effects on process efficiency and value generation – regulatory needs and investor demands will increase the demand for better-quality information and predictions. In addition, the demand for ESG-friendly assets, investments and companies will lead to a need for better data quality and transparency, and greater data frequency. The EU amending Directive on Energy Efficiency (EED), which will give tenants the right to faster and more accurate information on their energy consumption, is just the next, but surely not the final step in that direction.

Infobox

Conversational AI
Conversational systems which combine natural language processing, AI (artificial intelligence), and machine learning to understand and respond to free-form text or voice – in an engaging and personalised manner.

Chatbot
Computer programs that maintain a conversation with a user in natural language, understand the user's intent and send responses based on the organisations business rules and data. Chatbots use artificial intelligence to process language, enabling them to understand human speech and to mimic conversations with real people.

Deep learning
Subset of machine learning and artificial intelligence that imitates the workings of the human brain in processing data and creating patterns for use in decision making.

Transfer learning
Type of deep learning that leverages the knowledge gained while solving one problem and applying it to a different but related problem.

Digital twin of a city
Comprehensive set of centralised data which provides a digital replica of a city and its geographic environment (e.g., points of interests, infrastructure, real estate, social demographics, movement patterns, etc.)

Geo-processing
Operations and set of geographic information systems (GIS) tools to manipulate and analyse spatial data and related information (e.g., geographic feature overlay, selection and analysis, topology or faster processing).

Functional prediction model
AI-driven set of predictive patterns and logic, that has been designed, built and trained for a specific functional purpose, data analysis or decision process.

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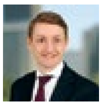

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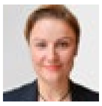

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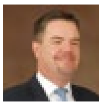

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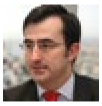

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