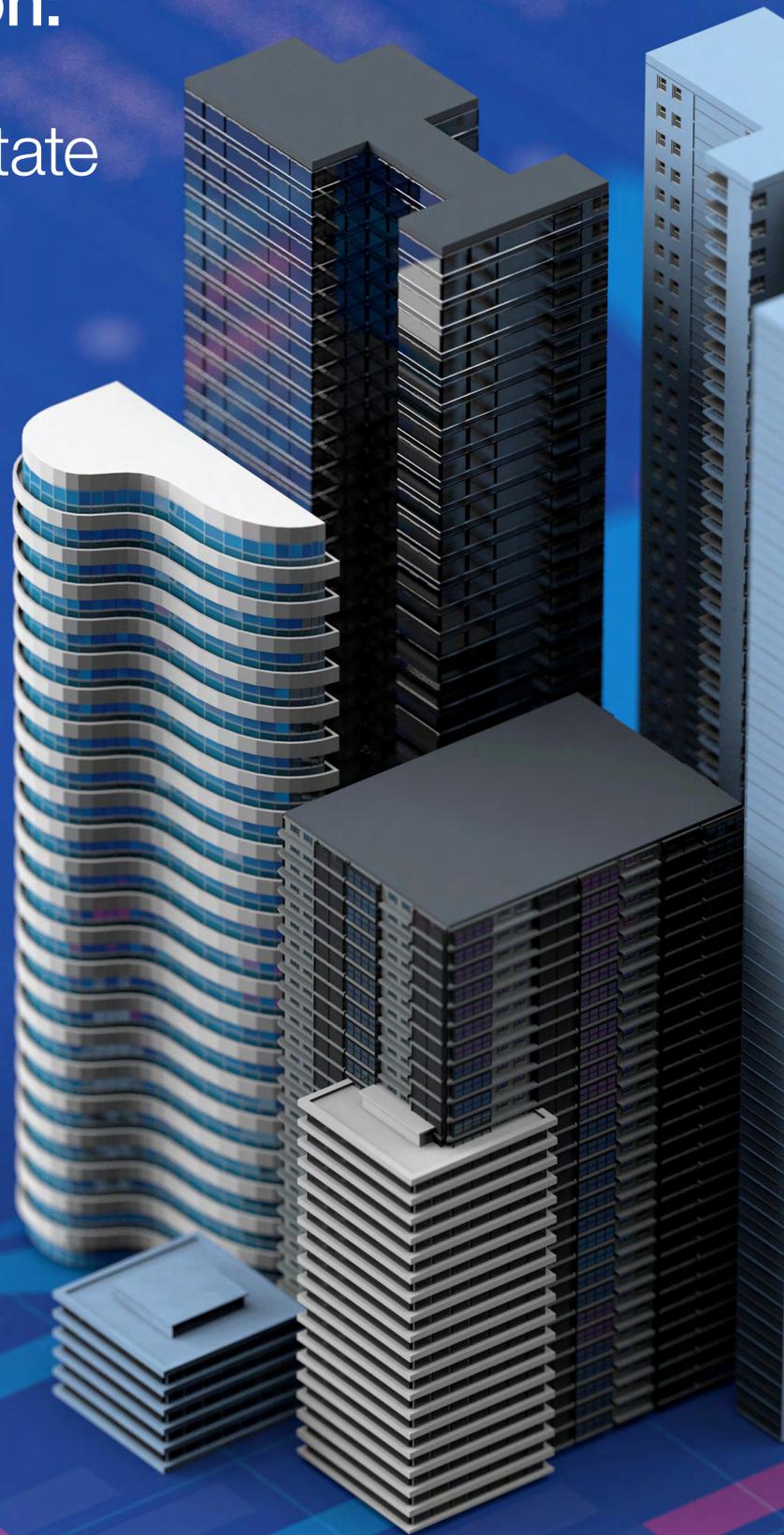


Driving Digitalization: Value Creation for Commercial Real Estate

BRIEFING PAPER

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Introduction

The COVID-19 pandemic has deeply impacted how we use space and our expectations of it. As stakeholders across the real estate value chain look to the future, there is a growing acknowledgment that buildings must be [liveable, sustainable, resilient and affordable](#). To deliver on that vision, digital tools are essential.

The capital-intensive, siloed nature of real estate – along with varying financial expectations and timelines – has contributed to slower adoption of technology. Yet a combination of trends, including those accelerated by COVID-19, subsequent evolving tenant demand and continued pressure to deliver on environmental, social and governance (ESG), is now increasing the focus on digital solutions.

To help address barriers to technology adoption and ease uptake of digital solutions in commercial office operations, the World Economic Forum's Future of Real Estate initiative launched a Taskforce on Digital Transformation in January 2021.

Taskforce convenings underscored the myriad challenges – from financing to data interoperability – that can impede digitization of the real estate industry. Real estate companies can also vary significantly in terms of their digital maturity and organizational capacity. These obstacles are further exacerbated by gaps in understanding and communication barriers between the real estate community and technology service providers.

To address these communication issues and chart a course for progress, the taskforce sought to (1) help clarify the key business drivers behind technology decisions; (2) provide examples of how digital solutions can advance business objectives; and (3) outline the top areas where action is needed to unlock the full potential of digital transformation.

The following insights are based on interviews and meetings with over 30 stakeholders, including taskforce members and experts from the real estate and technology industries.



This document is for stakeholders across the entire real estate value chain along with technology service providers.

Core Business Drivers

Income generation and asset appreciation broadly represent the ultimate business drivers behind the purchase and development of new technology in real estate. More specific drivers directing technology decisions lie a layer beneath. These include (1) health and well-being, (2) sustainability, (3) occupant satisfaction, (4) space utilization, (5) brand recognition and loyalty, (6) risk reduction, (7) cost reduction and

increased efficiency, and (8) data aggregation.

Each business driver appeared to be of significant importance and is presented in no specific order. Proper understanding and validation of these drivers can enable better communication across the real estate value chain and ensure delivery on stakeholder expectations.

1.1 Health and well-being

COVID-19 has influenced stakeholders to re-evaluate the connection between the built environment and mental and physical health. These concerns were cited as being especially top of mind for both landlords and tenants emerging from the pandemic with renewed attention on indoor air quality and ventilation, disinfection, touchless applications and a better understanding of space use and density.

Another aspect of well-being brought to the fore during the pandemic is in-person socialization and collaboration. Both landlords and tenants

are rethinking design to facilitate planned and unplanned interactions, while offering enough overall attractiveness to merit commuting.

Digital solutions can support healthier spaces and the competitiveness of buildings while enabling a safer return to the office. For example, real-time monitoring of temperature, lighting, noise and air quality can ensure occupant comfort and help landlords resolve issues swiftly. As noted by Gensler, improved air quality and design that facilitates better human connection are considered key differentiators of buildings.¹



An example of how to calculate the value from technology aimed at improving health and well-being would be demonstrating a direct correlation between technology that improves air quality and reduced absenteeism.

1.2 Sustainability

For both landlords and tenants, curbing operational and embodied carbon emissions is a top driver along with an increased focus on ESG. Investor pressure, legislation and consumer demand have further raised stakeholders' ambition on sustainability.

Office spaces on track to meet net-zero carbon and other climate targets are viewed more favourably and have been shown to fetch higher rents. Research conducted by JLL indicated that sustainable buildings in central London have rental premiums of 6% to 11%; and that at both 12 months and 24 months after completion, vacancy was lower in buildings with an Outstanding/

Excellent BREEAM rating compared to those that were rated Very Good.² Interestingly, experts cited that return on investment (ROI) from sustainability-related technology varies widely based on firm size and shareholder expectations.

Green buildings can simultaneously meet demands for health and well-being. This is evident by a Harvard study where occupants from certified green buildings showed a 26.4% increase in cognitive test scores, a 6.4% improvement in sleep quality and a 30% reduction in sick building syndrome symptoms compared to occupants from non-certified buildings.³



An example of how to calculate the value from technology addressing sustainability would be demonstrating direct correlation to the reduction of operating costs.

1.3 Occupant satisfaction

Increasing demand for flexible lease terms and the prospect of permanent remote and hybrid work models have left tenants with more choice on how much space they need to lease, when their workforce uses the office and the design of space to optimize value.

Human capital costs are by far tenants' largest expense and space needs to support staff productivity, health and well-being, talent attraction and retention. As a result, landlords are more focused on tenant satisfaction and ensuring the

office experience outweighs remote options and competing offerings.

Increasingly, technology is being viewed as a means to improve the overall occupant experience, support retention and attract new tenants. For instance, digital tenant engagement services, which make it easier to pay rent and renew leases along with streamlining communications between landlords and tenants, are growing in popularity. Tenants are increasingly seen as expecting an "Amazon-like experience" – and landlords are working to respond.



An example of how to calculate the value from technology aimed at improving the occupant experience would be demonstrating increased lease renewals.

1.4 Space utilization

The ambiguity of remote and hybrid work has left both tenants and owners asking for better data on how space is used at a nuanced level. From mitigating contagion to planning for future leases, tenants want specific information about space use, such as:

- Occupancy rates: Understanding the flow of people through offices, duration of use and type of space preferred (e.g., desk space vs communal areas or conference rooms)
- Office designs: Understanding the design and layout of offices to fully meet occupant needs on both collaborative and individual focused work

- Space effectiveness: How can offices be optimized to deliver continuous value to different users and owners

Landlords and owners also want such insights to adjust and improve their offerings and support tenant needs in a more bespoke way.

While organizations can develop different strategies to understand space utilization, technology can help to report the flow of people instantly and continuously within and across spaces to better inform decision-making.



An example of how to calculate the value from technology that used occupancy data to optimize services such as the management and control of HVACs, lighting, cleaning and maintenance services would be demonstrating lower operating costs in each of these areas.

1.5 Brand recognition and loyalty

Tailor-made solutions for building occupants are moving from "nice to have" to "must have". Offices with digital offerings are also more likely to attract tenants and protect brand reputation compared to offices lacking the same degree of digitization.

Coupled with demand for more flexibility and shorter-term leases, real estate companies are likely to invest more in branding and building customer loyalty by improving the tenant experience across their portfolios.



An example of how to calculate the value from technology aimed at improving brand recognition and loyalty would be demonstrating increased lease renewals.

1.6 Risk reduction

The calamitous nature of the public health crisis also renewed awareness for tangential threats. Risks such as cyber attacks, asset obsolescence,

declining occupancy rates and other economic threats are influencing many landlords to re-evaluate their risk mitigation and preparedness processes.



An example of how to calculate the value from technology aimed at risk mitigation would be demonstrating direct correlation to lower insurance premiums.

1.7 Cost reduction and increased efficiency

Initial costs required to create tenant-centric spaces, support well-being and sustainability, combined with the potential impact of waning demand, have left stakeholders searching for ways to reduce costs and preserve and improve margins.

Increasing efficiencies with technology, particularly solutions that can assist in observing and optimizing operations, inventories, coordination and other activities using artificial intelligence (AI), is becoming a necessity for stakeholders.



An example of how to calculate the value from technology aimed at increased efficiency would be demonstrating a direct reduction in hours spent on maintenance.

1.8 Data aggregation

While data is an enabler to deliver on the business drivers discussed thus far, it appears that data aggregation is also becoming a driver on its own. High-quality, reliable data is needed to deliver

business solutions and can potentially help identify new revenue sources through innovative products and services.



An example of how to calculate the value from data aggregation would be demonstrating a reduction in overall operating costs or an increase in new revenue enabled by data insights.

Case Studies on Measuring Value Creation

Demonstrating direct ROI of technology is critical to drive adoption as well as determining other areas of value beyond the scope of the traditional

property valuation process. The following use cases provide an example of how to clearly demonstrate quantifiable value.

CASE STUDY

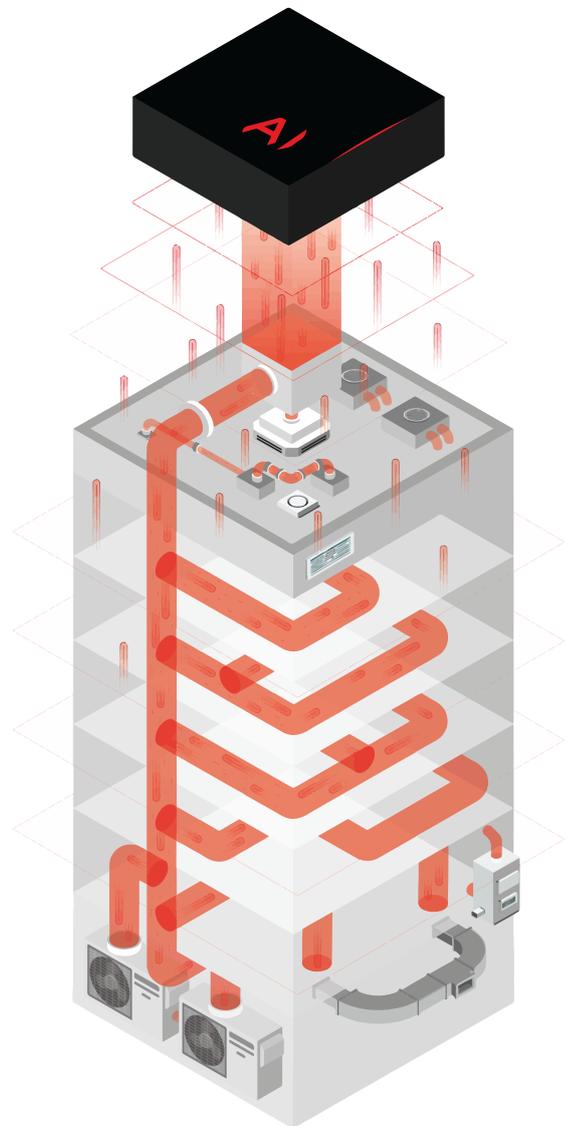
AI for energy cost savings

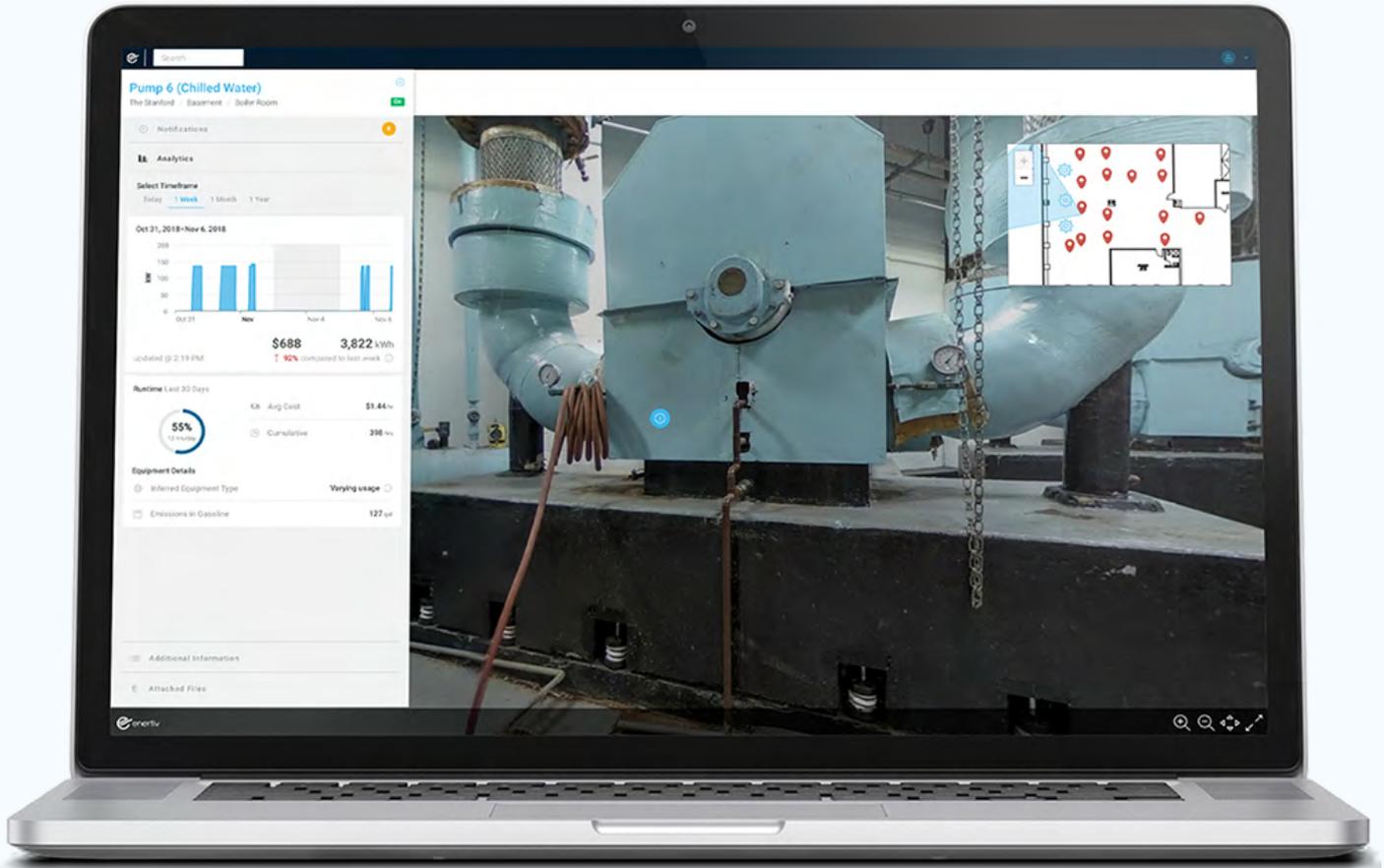
A 34-storey, mixed-use building in Montreal built in the 1960s, comprised mainly of commercial office, sought to reduce operational expenses, decrease emissions and improve operations without significant investment or changing its Delta Controls HVAC system.

The building implemented a cloud-based AI solution that enables seamless communication with the building management system and real-time optimization of the HVAC. Ultimately, the technology permitted the existing infrastructure to become predictive and self-adaptive, while significantly reducing energy consumption and emissions. The prediction models are built using the long short-term memory (LSTM) deep-learning structure to accurately predict temperatures, by adding third-party sources (e.g., weather, occupancy and utility tariff structure) to the internal dataset.

Dramatic cost savings on both gas and electric bills occurred in just two months after the integration of the AI engine in July 2019, enabling a quick payback period. In September and October of that year, 27% and 33% energy savings were achieved respectively, amounting to approximately \$30,000 in savings and over 320,000 kWh of reduced consumption.

(Source: BrainBoxAI)





CASE STUDY

Sensors for prevention and maintenance cost savings

The owners of a 230,000 square foot office complex in southern California sought to reduce the frequency of repairs, equipment replacements and overall maintenance and energy costs. The owners also feared a potential increase in vacancy if repair issues continued to cause disruption for tenants.

To start, the daily workflows of the on-site teams were digitized so that, instead of clipboards, operators were managing routine inspections and preventive maintenance on a mobile app. Going a step further, a series of sensors was installed to track performance of 43 pieces of critical equipment. Within the first several weeks, the sensors had collected enough data to compare the building's operations against a dataset of 14 billion hours of similar data captured in other

commercial assets and began sending notifications of equipment malfunctions.

In addition to automated notifications, the on-site team was provided with a number of optimizations. These insights included recommendations derived from human-trained AI algorithms, such as distributing the runtime hours of condenser water pumps by alternating which pumps operate from a cadence of continuously for several months to every two to three weeks.

The maintenance insights coupled with energy-saving optimizations from the system yielded over \$75,000 in annual savings, generating a 440% return on the first-year cost of the system.

(Source: Enertiv)

Areas for Strategic Action

Technology can and has delivered ROI but determining value must incorporate a thorough understanding of the drivers behind the need for technology. In addition, to fully capture value through the digitalization of real estate, there are some areas that require strategic planning

and should be accommodated in any digital transformation strategy. The most often cited areas were around (1) data access and transparency; (2) standardization; (3) legacy systems; and (4) capacity building and evolving the industry mindset.

3.1 Increasing data access and transparency

While plenty of valuable data exists, it is extremely difficult to access. Data is often captured in silos, not translated in the right context for different stakeholders, and is typically incomplete. Necessary data may also sit at the tenant level and is largely inaccessible for landlords. GDPR rules add important privacy considerations although can further complicate data sharing, and there are no data disclosure requirements for any parties, both of which can delay innovation and service delivery.

As real estate digitalizes, establishing strategies, as well as privacy standards, to understand data both at the asset and enterprise levels is crucial to identify opportunities and gaps. Although not all data will be valuable, consolidation of information and minimizing data stored in paper formats across teams will increase visibility.

Establishing appropriate leadership and improving communication across teams and divisions can help determine the right data format, languages, practices, expertise and granularity of detail needed to drive varying goals.



The digital technology to capture core data has been around for more than 20 years. In the past, this was seen as an engineering practice [which was] not exposed to the asset and finance world, [and there was a] massive disconnect in the language they used. You almost need a translator in between because they are both talking about energy but in very different contexts.

Hugh Lindsay, Strategy Director and Global Segment Architect, Schneider Electric

Another aspect of data is its ability to potentially deliver unknown value over the long term. Digital technologies can provide a holistic view of commercial activities, observing and aggregating a wide range of information (big data) into a centralized platform, which can be analysed automatically for different purposes.

Companies such as Amazon, Starbucks and Netflix have used “big data” to find a competitive edge, grow their customers and boost their branding.^{4,5} Similar considerations and strategic planning can support current real estate activities and help identify new ways to generate revenue. Even if the immediate ROI is unclear, real estate can look to other industries for direction.

3.2 Advancing standardization

The potential benefit for standardizing data and practices to establish consistency for aggregation can be significant. Especially when managing portfolios, standardization combined with automation can assist stakeholders to create a structured approach to benchmarking, making property performance and service provision comparisons, as well as understanding risk exposures.

Other industries such as healthcare have had to create data and security standards and privacy-preserving policies to allow easier sharing and analysis of information, and nothing currently exists for commercial real estate. Much of the current data

capture is still done through Microsoft Excel and is presented in unique formats. Standardization can also make it easier to adopt technologies.

Legislation can help advance the potential benefit of digitalization for the real estate sector. The private sector can play an important role in supporting policy-makers to craft appropriate legislation and standardization processes. For instance, the industry can work with policy-makers to encourage consistent reporting and data disclosure, as well as ensure data security and privacy protection to minimize future risks and establish trust between parties as part of that standardization.

3.3 Modernizing legacy systems

Another potential area to address is legacy systems. Two thirds of buildings that exist today will still remain in 2050,⁶ which requires the current building stock to transition digitally.

Modernizing these systems can be costly without a clear understanding of returns. Many legacy systems may remain critical for day-to-day operations but can delay business activities without an upgrade. Prioritizing legacy systems early will become key to mitigate risks and avoid unintended costs.

3.4 Building capacity and evolving the industry mindset

In order to make informed technology decisions and run implementations, organizations need proper leadership and human capital. Technology adoption is likely to be successful when it is driven from both the top down and bottom up.

Upskilling staff, acquiring talent and finding champions who can work with technology providers and transfer in-depth knowledge and skills to teams across an organization is an important component to evolving the organizational mindset on technology.



In digital transformation, managing the people and their skills is more important than even identifying the technology. When certain people take the lead to implement everything, that adoption rate really changes. Especially when different teams interact, with different leaders from different segments of the business take a lead and come together.

Alec Wang, Founder, Tana Investment Group

Changing the “industry mindset” was also considered key for technology adoption. The fragmented, slow and risk-averse tendencies of real estate in some ways conflict with the quickly evolving and disruptive nature of technology.

Real estate has made some transition towards digitalization, but a stronger bridge is still required across the value chain. Looking ahead, stakeholders must have the appropriate dialogues to make progress in the Fourth Industrial Revolution.

Conclusion

As the built world contends with the rapid pace of modern change, digital transformation will be a key enabler to real estate's evolution. Understanding the business motivations behind technology adoption and the primary areas requiring action are necessary initial steps to better connect stakeholders throughout the ecosystem.

And change can drive value, specifically value delivered by technology that can address those underlying motivations as shown by the use cases. While not ubiquitous to every technology implementation, it is reasonable to expect a clear ROI from digital transformation and both the real estate and technology industry have important roles to play in delivery.

But no industrial revolution is without complexities and specific industry challenges. Real estate actors must develop digital transformation strategies that anticipate key hurdles such as data access and capacity building and work to circumvent speed bumps as fast as possible.

What is abundantly clear throughout interviews and group discussions is that the industry is on the brink of transformation and tremendous opportunity exists for those that make the leap.



Acknowledgements

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Endnotes

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