

Unlock the Possibilities in PropTech

An Overview and Lessons from UrbanLab

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Executive Summary

UrbanLab (城越), Mainland China's first corporate property technology ('PropTech') accelerator, was launched to capture the massive potential of technology, that would result from a collaboration between three corporate giants: Ping An Urban-Tech (PAUT), JLL and Swire Properties in Mainland China. The goal is to:

- collaborate with innovative tech companies
- lead the property industry in tapping into the knowledge and value of innovative technology solutions
- build a sustainable digital ecosystem for the real estate industry

This report aims to explain the background behind UrbanLab, introduce the technology companies selected for the first cohort, and examine the results and lessons from this initiative so far.

The programme has not concluded with the 'graduation' of the first cohort, but rather leads to long-term partnerships. The three founders and the twelve graduate companies will work together to build an industry ecosystem, in order to share platforms, resources, scenarios and case studies with each other, in the hope of contributing to the real estate and smart-city innovation.

Together on this journey, we hope to involve more partners and collaborators, in order to unleash the power from the technological transformation of the real estate industry.

The three founding members are working to launch Cohort 2. We are just getting started, so stay tuned.



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1. Background: PropTech in Mainland China

Real estate is the largest asset class in the world, and yet most successful corporations have been slower to adopt the latest technology trends compared to other industries such as finance or healthcare. This is due to traditional mindsets, conservative decision-making and long product-development cycles. This reluctance to trial experimental technology has changed rapidly in the last 5-7 years.

1.1 What is PropTech?

PropTech is technology that enhances or changes the way we analyse, design, build and transact property. (See figure below)

Figure 1: PropTech Definition



In Mainland China, the development of PropTech can be categorised into the following stages:

In the early days, PropTech was mainly a B2C tool for posting residential listings online in order to rent or purchase. For example, Mainland China's largest listing website Lianjia.com was established in 2001, with the support of Vanke and Sunac China, and quickly gained more than half of the market share among brokers in Beijing.

The last few years witnessed the rapid growth of B2B digital solutions for the industry's upstream and downstream, covering architectural design, transaction workflow and smart home technology. For example, CREAMS, a SaaS building management platform based in Hangzhou and AMTT, a data analytics company commonly used in the hotel industry.

Today, PropTech aims to realise technological empowerment through cutting-edge technologies such as artificial intelligence (AI), blockchain, big data, digital twins, unmanned aerial vehicles and robotics. For instance, Smart Twin, one of the digital twin startups in Mainland China and UBTech, which develops customer-service robots using AI.Looking ahead, driving forces may also come from the real estate companies that establish a corporate structure with a designated budget and talent for digital innovation and implementation; thereby further contributing to the accelerated growth of PropTech in Mainland China.



Background: PropTech in Mainland China

1.2 PropTech in Mainland China

In many ecosystems (e.g. North America, Europe), PropTech innovation was born out of tough competition in the private sector, driven by firms looking to differentiate and increase margins. In Mainland China, the rise of PropTech is part of a bigger picture; a national policy framework to drive technology development and adoption across different industries, from the top down.

Real estate, in particular, is intertwined with the government's drive to create 'Smart Cities', urban hubs with a high degree of digital and physical connectivity, encompassing tech-driven smart transportation, payments, city infrastructure, new retail and mobile telecom – just to name a few areas. In Mainland China, PropTech must be viewed as just one part of the larger Smart Cities strategy, and this creates unique opportunities.

According to a report published by IDC, spending on Mainland China's smart cities initiatives is expected to exceed US\$38.92 billion by 2023, growing from US\$20.05 billion in 2018. Up to 2015, Mainland China has 296 localities including cities, districts, counties and townships, each with their own smart-city initiatives. According to the Financial Times, last year 500 of the 1,000 smart cities being built globally are in Mainland China. The central government's five-year plan expects public and private investment of US\$74 billion by 2020.

In this context, the potential for PropTech in Mainland China is massive. The combination of mass urbanisation, abundant public and private investment, and a vast resource pool of technology infrastructure, production/distribution capacity, and talent mean that PropTech can be developed and adopted at a scale and pace the world has not seen before.

For the three UrbanLab partners, Mainland China is and has been a core growth market. As such, all three saw an urgent imperative to both tap into and support this ecosystem.

There are certain challenges that come with this huge opportunity. Most significantly, Mainland China has a uniquely separate ecosystem due to different tech infrastructure, tech standards, policies, regulations and even culture that is often disconnected with foreign ecosystems. This separate tech environment can pose challenges to cross-border companies, including more difficult software integration, connectivity, data migration, finding the right talent, etc.

Another challenge comes from less reliable public information from less mature sources, which may impede research and international business, demanding a reliance on relationships and personal connections.

Ultimately, these unique characteristics create both a need and an opportunity to foster and develop local PropTech solutions from within Mainland China.

As a result of these opportunities and unique challenges, and their commitment to the Chinese market, all three founding partners saw a clear need for a dedicated PropTech strategy and pipeline in Mainland China to source cutting-edge local technology.



2. Recap: UrbanLab Accelerator Programme

A corporate accelerator that aims to attract, trial and validate tech within a fixed time frame, to allow fast testing and adoption of new technology. In mid-2019, with no existing corporate PropTech accelerator in Mainland China, Ping An Urban-Tech, JLL and Swire Properties saw an opportunity to build a dedicated tech-sourcing pipeline for the Mainland China ecosystem.

It is meant to be an accelerator program that helps solve challenges for corporates, quickly test new technology to provide more agility when facing industry challenges and promote open innovation and collaboration.

2.1 The Founding of UrbanLab

The three partners each saw clear reasons as to why starting a PropTech accelerator in Mainland China was in line with their business needs and values:

Figure 2: UrbanLab Accelerator Model





2.2 Selection Criteria: UrbanLab Accelerator

On 19 July 2019, JLL, Swire Properties and Ping An Urban-Tech jointly announced the official launch of the UrbanLab Accelerator programme in Shanghai. The selection criteria for the technology companies are:

- Mature products and services that focuses on PropTech, including but not limited to:
- Smart City
- Construction Tech
- Blockchain

- Workflow Platforms
- Al
- Building Operations & Management
- IoT
- Energy Management & Sustainability
- Data Analytics
- New Retail
- Existing customers and implementation in Mainland China
- Clear business models
- Sales, engineering, and operational capabilities

2.3 Mapping Mainland China's PropTech Ecosystem

After screening over 300 technology companies, UrbanLab received 116 business plans. These PropTech company candidates have the following characteristics:

Figure 3: Characteristics of UrbanLab Candidate Companies



Source: UrbanLab Database (2019)

Figure 4: UrbanLab Ecosystem (2019)



2.4 UrbanLab Cohort 1 Companies

After several rounds of interviews, assessment of business proposals and product demonstrations, the three Partners selected 12 startups based on their product/solutions, team background, existing clientele and business potential.

Figure 5: Selection Process of UrbanLab Cohort 1 Companies



3. Insights: PropTech in Mainland China

Through in-depth analysis of the 116 startups, who applied to UrbanLab ('UrbanLab Candidates'), we have identified five key characteristics regarding the status of real estate innovation in Mainland China:



In recent years, the transformation of the real estate market in Mainland China has led real estate developers to focus on providing better management services and improving the customer experience. Using technology to reduce costs and create value has become a strategic direction for real estate developers, which has accelerated the development of PropTech.



The geographical distribution of the UrbanLab Candidates is consistent with the distribution of Mainland China's top-listed real estate developers – the main clusters are Shanghai, Beijing, Shenzhen and their respective surrounding metropolitan areas. These first-tier cities have provided fertile ground for the growth of PropTech due to industry clustering, talent pool, policy support and innovation network.



Trend

disrupt the real estate industry in many different ways in Mainland China, indicating an evolving PropTech landscape. The top tech applications of UrbanLab Candidates are "Big data analytics", "robotics" and "VR/ AR/MR" as these technologies can be applied in different aspects of the real estate lifecycle, enabling industry-wide applications.

At present, technology is being used to



Sector Focu

Many of the UrbanLab Candidates' solutions focus on digitising the "Operations & Maintenance" phase in the real estate value chain. Technology is being used in value-added services, property management, and advertising & promotions to further improve the tenant and customer experience, and create new value in physical assets through services, data and experiences.



The UrbanLab Candidates are mainly early-stage. At the moment, investment in PropTech is diversified with no focus area. However, real estate firms tend to invest in startups that bring strategic value, while top venture capital firms tend to invest in startups that meet industry-wide technological needs.



3.1 Industry Transformation



The last decade witnessed a slowing growth in Mainland China's real estate market. On the one hand, the rate of land sales and home purchases have decelerated, and the supply of stock in many Chinese cities have peaked. On the other hand, deleveraging policies continue while the country undergoes a demographic transition. As a result, compound growth rate of residential floor area sales in Mainland China has decreased to less than 10% in the last two years.

GDP contributed by the real estate industry has been slowing down, as well as residential floor area sales.

Figure 6: Growth Trend of Mainland China Real Estate Market



China Residential Floor Area Sales (2009 – 2018)



80% of the UrbanLab Candidates were founded in or after 2013, when the real estate industry in Mainland China was going through a structural change. The industry transformation fostered the emergence of PropTech in Mainland China.

Chinese real estate firms are looking for effective ways to drive digital transformation.





Insights: PropTech in Mainland China

3.2 Geographic Location



Among top 150 public-listed real estate companies in Mainland China, nearly 70% of the them have headquarters in Beijing, Shanghai, Shenzhen, Hangzhou and Guangzhou. Similarly, nearly 70% of the UrbanLab Candidates are headquartered in these five cities. The metropolitan areas – the Yangtze River Delta, Greater Bay Area and Beijing-Tianjin-Hebei, have become destinations for a large number of PropTech startups to establish their businesses. In the context of digital transformation in the real estate industry, the geographical cluster of these real estate companies has brought many business opportunities to PropTech startups, creating rich application scenarios and cooperation opportunities.

Most of the UbanLab Candidates are headquartered in Shanghai, Shenzhen, and Beijing and their surrounding metropolitan areas, showing similar geographic distribution with top public-listed real estate companies in Mainland China.

Figure 8: Geographic Location of UrbanLab Candidates



Top 5 Cities of HQ Choices by UrbanLab

Candidates

Shanghai

Shenzhen

Beijing

Hangzhou

8

Hong Kong

5

Policy support, talent pools and innovation networks have also led PropTech startups to choose to headquarter in first-tier cities. Through in-depth interviews with UrbanLab Candidates, we found that besides the location advantage of being in close proximity to real estate companies, first-tier cities have emerged as the destinations for establishing PropTech startups due to their innovation and entrepreneurship ecosystem.

Insights: PropTech in Mainland China

Data: Thomson One, UrbanLab Database (2019)

3.3 Technology Trend



The UrbanLab market map has shown "Big Data Analytics", "Robotics" and "VR / AR / MR" are the technologies with the most application scenarios. These technologies stood out due to 1) a wide range of uses and 2) policy support.





The top three tech application of UrbanLab Candidates are "Big Data Analytics", "Robotics" and "VR/AR/MR" Technologies.

From a practical perspective, "Big Data Analytics", "Robotics" and "VR / AR / MR" technologies can be applied in different aspects of the real estate lifecycle, enabling industry-wide applications. Prolific usage has resulted in the popularity of these technologies in PropTech.

Figure 10: Top 3 Applications in PropTech

	Big Data Analytics	Robotics	AR/VR/MR
Planning & Design	Site Selection Scenario Design Demographic Analysis	3D Printing Laser cutting	Model Display Real-time Design Review VR Remote Presentation
Construction	BIM Cost Optimization Supply Chain Management	Drone Brick-laying Robot Exoskeleton	Project Quality Assurance Project Progress Tracking
Sales & Leasing	Property Valuation Precision Marketing User Portrait	Smart Chatbot Room Showing Robot	Online VR Room Showing VR Furniture Layout
Operations & Maintenance	Energy Efficiency Space Optimization Security & Fire Prote	Delivery Robot Cleaning Robot Patrol Robot	MR Workflow Guidance Remote Assistance

Data: UrbanLab Database (2019)

From the policy perspective, Mainland China has set favourable policies which help accelerate the growth of PropTech. For example, national-level policies Made in China 2025 and Action Outline for Promoting the Development of Big Data, which were issued by the State Council in May and September of 2015 respectively, aim to use high-tech fields such as like robotics and big data to comprehensively upgrade the manufacturing capabilities of Chinese industries, and turn them into technology-intensive powerhouses. In December 2016, the State Council issued the 13th Five-Year National Informatization Development Plan, which considers virtual reality a key technology in terms of information and communications development. As a result, the regulatory environment has provided support for the development of the above-mentioned technologies.

Insights: PropTech in Mainland China

3.4 Sector Focus



UrbanLab Candidates' products and services cover four major phases in the real estate value chain, enabling technology to disrupt the whole industry. These products and services include, but are not limited to the following real estate verticals:

UrbanLab Candidates' solutions cover the entire real estate value chain – planning & design, construction, sales & leasing, and operation & maintenance.

Planning & Design	Construction	Sales & Leasing	Operation & Maintenance
Site Selection & Data-Driven Decision Making Design & Modelling Decoration Rendering & Display	Project Management Machine & Material Procurement Construction Engineering & Design	Marketing & Sales Investment & Financing Marketplace & Brokerage	Property Management Value-Added Service Advertising & Promotion

When the real estate market is in the incremental stage, the traditional commercial real estate's key performance indicators and business model centre around "location" and "transaction" (including site selection, property management and leasing), and thus the value of physical assets is directly reflected.

However, when the real estate market enters the stock stage, evolving consumer demand and space-as-a-service will push real estate companies to create additional value in the physical assets using technology to meet the future demands of consumers and tenants.

Figure 11: Real Estate Lifecycle of UrbanLab Candidates



Among UrbanLab Candidates, more than half of their products and services are focused on the operation & maintenance phase of the real estate lifecycle, indicating that real estate companies have started to shift focus from building to managing assets, and are using technology to help upgrade their services and improve operational efficiency.

Through in-depth analysis of UrbanLab Candidates, we found the operation & maintenance phase can be further segmented into property management, value-added services, and advertising & promotion.

Each phase has incubated different tech applications. In addition to rent, these applications have started to create additional value in terms of physical assets via service, data and experience.

Property Management	Value-added Services	Advertising & Promotion
Energy Consumption Management Building Data Visualisation	Interactive Robot Space Management	Offline Interactive BI Marketing Data Analysis
Cleaning Robot Fire Detection Patrol Robot	Delivery Robots Indoor Localisation & Navigation Smart & Connected Home	Smart Chatbot Precision Advertisement User Portrait
Utility Payment System	Smart Vehicle Charging	Virtual Reality Display Promotion
		Data: UrbanLab Database (2019)



3.5 Investment Vertical



Top-tier venture capital firms have started to invest in PropTech in Mainland China. Such as GGV Capital, Northern Light Venture Capital, Matrix Partners China, Zhen Fund, etc.





The UrbanLab Candidates are mainly early-stage. Among them, "big data analytics", "energy management" and "robotics" have garnered the most financing.

From the investment method perspective, different types of companies will invest in PropTech based on their respective needs and mainly in the following two ways:

Strategic investment: Real estate companies tend to make strategic investments in startups which have products and services that seek to enhance synergy or expand the investor's existing businesses.

Startup	Tech Vertical	Investor*
shuidiguanjia.com	Property Management SaaS	Ping An
qiaofang.cn 近 丙房	Leasing Transaction SaaS	58.com, Oriental Fortune Capital, Huadao Investment, Beijing Kunlun, Xiyu Capital, EH Capital etc
WZ Group 网筑集团 WZ GROUP	Construction Materials Marketplace	Green Town, Sequoia China, E-House China etc.
3vjia.com	Smart Interior Design and Decoration	SoftBank China, GF Xinde Investment, Red Star Macalline , Alibaba etc.

*Strategic investors are in bold.

Industry Investment: top VC firms tend to invest in areas that have industry-wide applications, such as big data analytics and professional services platform.

Figure 13: Financing of UrbanLab Candidates by VC Funds



Data: UrbanLab Database (2019)



During UrbanLab, the three Partners each collaborated with four cohort companies based on their internal business needs:

Figure 14:UrbanLab Cohort 1 Proof-of-Concepts





4.1 PoC Cases: JLL



Kuban develops IoT software and hardware-based smart-office solutions.

Modai provides spatial data visualisation platforms for developers.

PoC: Kuban applied the concept of Urban Ecosystem by JLL to connect occupier, operator and employee via a platform of Al+IoT+SaaS.



PoC: Modelo visualised JLL PAM (Property Asset Management)'s IoT product called Command Centre. It also developed one of the first 3D office-leasing platforms for JLL Shanghai's Office Leasing team.



QuantUrban is a solution provider that delivers data services to real estate companies and governments.

PoC: Based on its location analytics product (MapMiao), QuantUrban and JLL's Strategic Consulting Department worked together on HBU (Highest and Best Use) analysis and automated report generation.



Turing Video provides AI video analytics and self-driving robot solutions in smart-security and smart-property management.

PoC: Working with JLL's PAM team, Turing developed a PoC in an office building and shopping mall, to solve the pain point of daily patrolling by property managers.

4.2 PoC Cases: Swire



GIGA is a software and standards company that focuses on incentivising healthy and sustainable interior spaces and building environments.

PoC: Giga tested its AQI sensors to create an air quality leader board for tenants at HKRI Taikoo Hui.



Jingteng Tech develops Mixed Reality solutions across industries. PoC: Jingteng Tech added AR elements to Swire's new show suite at Taikoo Li Qiantan.



E-Sign is China's largest electronic signature electronic contract platform.PoC: Swire's team at HKRI Taikoo Hui worked with E-Sign to use e-signatures for leasing documents.



Zhen Robotics develops and manufactures mobile robots. PoC: Swire tested Zhen Robotics' robot, which patrolled HKRI Taikoo Hui's premises.

4.3 PoC Cases: Ping An Urban-Tech



XKool Technology focuses on the application of a self-developed artificial intelligence design engine for the construction industry.

PoC: Kuban applied the concept of Urban Ecosystem by JLL to connect occupier, operator and employee via a platform of AI+IoT+SaaS.



Hongwa Technology specialises in intelligent BIM modelling and component platforms. PoC: PAUT tested Hongwa's BIM Modelling and BIM Component Platform to enrich its Ebuild's database.



Kiwi Information develops digital products for construction and engineering management.

PoC: PAUT partnered with Kiwi to add drone services for construction progress monitoring in Ping An EPACONEX.



Palmap is a leading indoor-map service provider and indoor-navigation solution provider. PoC: The two companies co-developed a construction worker real-time positioning system based on three scenarios: equipment management, worker management and project mapping.



5. Survey: PropTech Companies

In order to obtain a more comprehensive picture of the overall PropTech scene in Mainland China, a survey was given to the 116 UrbanLab Candidates. Based on 50 valid results from the founders and executives of these technology companies, the following conclusions may be drawn regarding overall market sentiment:

Confidence running high in the market; PropTech companies actively search for windows of opportunity in the real estate vertical

- More than 60% of respondents expect rapid growth of PropTech businesses in Mainland China.
- Approximately 70% of respondents think that by directly engaging or participating in the ecosystem created by real estate leaders results in more business opportunities.



Figure 15: Business Outlook for PropTech Companies

Industry events such as forums and exhibitions that focus on technological applications in the property sector may further expand business opportunities. • 70% of respondents received business opportunities through peer referrals; 66% of them attended forums or exhibitions to meet clients from the real estate industry.

Although there are many technology-focused forums and exhibitions taking place every year in Mainland China, very few focuses on the application of technology in the real estate vertical. The "2019 China PropTech Forum & Exhibition," hosted by JLL in Shanghai and Beijing, was the first attempt to build a platform that focuses on digital innovation for the real estate industry.



Figure 16: Source of Business Opportunities for PropTech

- 70% of respondents think that their real estate clients use technology to solve existing pain points in the property industry. Only 30% of these PropTech companies think that their product or solution is being used to fulfil strategic requirements for the company. This observation indicates that for most real estate companies in Mainland China, the journey towards digital innovation or technological transformation has merely started.
- Due to uncertainty in the market and lack of strategic direction in technological transformation, many real estate companies in Mainland China face problems identifying their business pain points. The constant shift in clients' requirements has become one of the biggest challenges for many technology startups in Mainland China. Other challenges, when working with large and complex organisations such as real estate companies, include: cumbersome administrative procedures, long decision-making and payment timeframe.

Channels for partnership between real estate and technology companies have yet to be established in Mainland China.



Figure 17: Challenges of Digital Transformation in Mainland China's Real Estate Industry

Figure 18: Scalability of Emerging vs. Mature Technologies in Real Estate



- Emerging technologies nowadays are highly exposed across industries. Many real estate companies express their interests in applications but also emphasise the need for traits such as: ability of handing various asset types and business scenarios, scalability in a short timeframe, and the potential for integration among products or solutions by different vendors. Consequently, PropTech standards or guides are highly sought after.
- 70% of the respondents think that without standards, it will be challenging for these technologies to scale up. For instance, comparing emerging technologies such as AI, AR and VR, to mature technologies such as cloud, IoT, and big data, the latter enjoy much higher market share thanks to the level of standardisation.

Source: JLL Research

6. Outlook: Open Innovation in Mainland China's Real Estate Market

As the real estate industry undergoes digital transformation, UrbanLab was founded on the premise of providing an open innovation mechanism by forming partnerships among key industry players. This report aims to share our experience in open innovation in Mainland China's real estate industry:

6.1 Collaboration Among Industry Leaders Is Key

Innovation in the property industry is hard to achieve alone, as the concept of "real estate + tech" is still foreign to many real estate companies. It will take the entire industry to come together and build a sustainable ecosystem – which not only provides mechanisms or infrastructures to share real-world business scenarios with technology counterparts, but also to foster cooperation among these companies, startups and education institutions – and accelerate the pace of digitisation and transformation. We have identified the following collaboration models of open innovation for the real estate industry:



Corporate Accelerator: By working with internal or external accelerator programmes, real estate companies can seek, test and refine innovative technology solutions, to address specific pain-points or demands. This model not only allows participants to dive deep into business cases or scenarios, but also discover suitable startups for such collaborations.

Academic-Industry-Research Network: By consolidating resources from the academic world and industry, multi-disciplinary research has been tested and deployed in real-world business scenarios. For example, the Massachusetts Institute of Technology has formed the MIT China Future City Lab to enable knowledge exchange and cooperation in terms of urban-focused innovations; by consolidating academic, industry and government resources in the U.S. and Mainland China.

Digital Ecosystem: Real estate companies can leverage R&D capabilities by establishing long-term strategic partnership with technology giants. By sharing business insights with technology counterparts, both parties will be able to gain from a sustainable and harmonious digital ecosystem.

6.2 Effective Communication Is Key



Looking at the current PropTech environment, real estate executives generally don't believe in technology empowerment. On the other hand, most technology companies lack access to and a full understand of the real estate industry. It is therefore important to facilitate in-depth and effective communication between business units and technology companies, in order to identify pain points and solutions together.

In order to prove the value of technology, launching small-scale initiatives such as PoC or MVP may be a quick and easy way to "explain" the technology. Real estate companies in Mainland China have used the following ways to facilitate communication among teams: Tech-Themed Workshops: Companies can provide opportunities for face-to-face communication between startups and internal business units. By running tech-themed workshops, internal teams can be educated on and updated about the most current tech trends and understand how technology creates value for their businesses, while startups are given the opportunity to understand company-specific pain points and unmet needs. For example, the three UrbanLab partners set up a boot camp for the twelve companies to tour the partners' portfolios, as well as meet and communicate with members of their business units.

Corporate Training: In addition to regular job training, companies can set up programmes for middle and senior management to learn about the most prominent tech trends and capture technology's strategic value. For example, Swire's New Ventures team has regularly brought in different startups to showcase digital products and services and industry tech solutions to Swire Properties staff.

Forums & Exhibitions: Corporates can also engage in cross-company or cross-industry communication by participating in conferences or exhibitions to learn about cutting-edge technology and future trends in the industry. For example, JLL held its very first China PropTech Forum & Exhibition in 2019 in Beijing and Shanghai. The event brought together real-estate executives and key technology industry players to showcase new technologies' applications in the real estate industry including: develop and build, transact and manage.

6.3 Top-Down Commitment Is Key

Digital transformation needs commitment from the C-Suite level. The implementation of innovative solutions often requires close collaboration across various functions in large organisations, thus existing procurement procedures may hinder fast adoption. Top-down commitment will expedite the decision-making process and engage employees at all levels to act accordingly. The following suggestions for management can be made when driving internal transformation:



Understand Internal Innovation Needs: In order to garner support for digital initiatives, companies should set realistic digital goals and prioritise these goals based on existing unmet needs and future strategic value.

Build Internal IT Capabilities: Companies should have a clear vision and roadmap for its digital transformation. To set its vision on the right course, companies should also benchmark its legacy systems, data analytics capabilities and competitors' initiatives. Allocating budget and resources to strategically important IT capabilities is also advisable.

Nurture A Digital Culture & Talent Pool: Companies should cultivate a company-wide innovation culture, retain and attract high-calibre digital talents, and set up regular IT literacy programmes. In addition, they can provide opportunities for business line managers to participate in technology-focused conferences to encourage them to embrace new technologies.

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About JLL:

JLL (NYSE: JLL) is a leading professional services firm that specialises in real estate and investment management. Our vision is to reimagine the world of real estate, creating rewarding opportunities and amazing spaces where people can achieve their ambitions. In doing so, we will build a better tomorrow for our clients, our people and our communities. JLL is a Fortune 500 company with annual revenue of \$16.3 billion, operations in over 80 countries and a global workforce of more than 93,000 as of September 30, 2019. JLL is the brand name, and a registered trademark, of Jones Lang LaSalle Incorporated.

About Swire Properties:

Swire Properties develops and manages commercial, retail, hotel and residential properties, with a focus on mixed-use developments in prime locations at major mass transportation intersections. Swire Properties is listed on the Main Board of the Stock Exchange of Hong Kong and its investment portfolio in Hong Kong comprises Taikoo Place, Cityplaza and Pacific Place as its core holdings. In Chinese Mainland, Swire Properties has five completed mixed-use developments in Beijing, Guangzhou, Chengdu and Shanghai, as well as one retail project in Qiantan, Shanghai currently under development. The Company's attributable portfolio in Chinese Mainland amounts to around 9.4 million sq ft.

About Ping An Urban Tech:

Ping An Urban Tech is a subsidiary of Ping An Group, the biggest insurance company in China. The firm is integrating technology into construction, operations and services in the real estate ecosystem. Ping An Urban-Tech created a digital backbone of city space by integrating city spatial and operational data to facilitate digitalized and visualized city planning, operations and management. Ping An Urban-Tech focuses on establishing a collaborative services platform by connecting the real estate industry with the government compliance, approval and services network to empower the entire value chain. As of December 31, 2018, Ping An Urban-Tech had signed smart city-related contracts with 50 cities, launched pilot projects in 20 cities, and developed three model cities in Shenzhen, Sanya, and Wuxi.