



# KPMG China

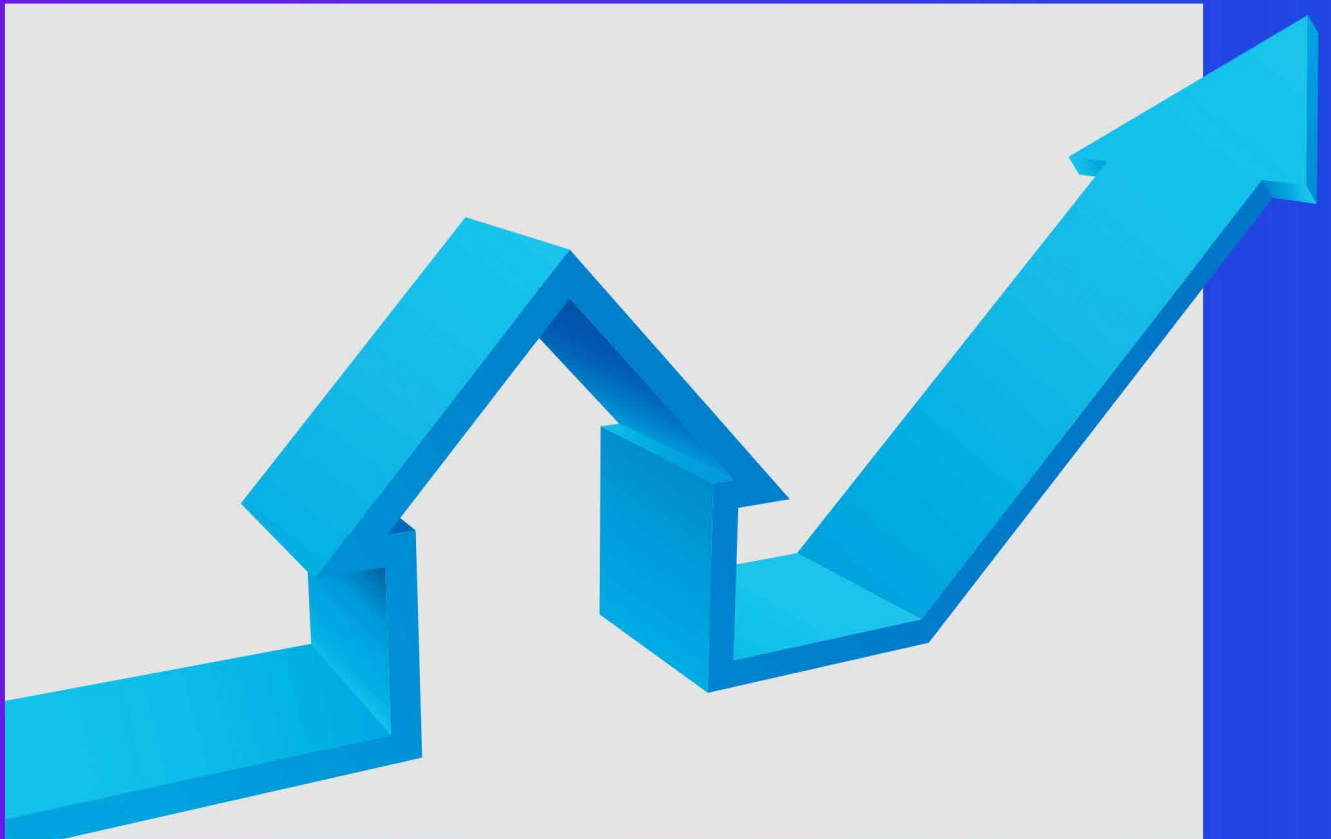
## 2022 China Leading PropTech 50



毕马威中国未来行业50榜单系列  
KPMG China Future Sector 50 Ranking Series



地产科技  
PropTech



KPMG China  
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# Foreword

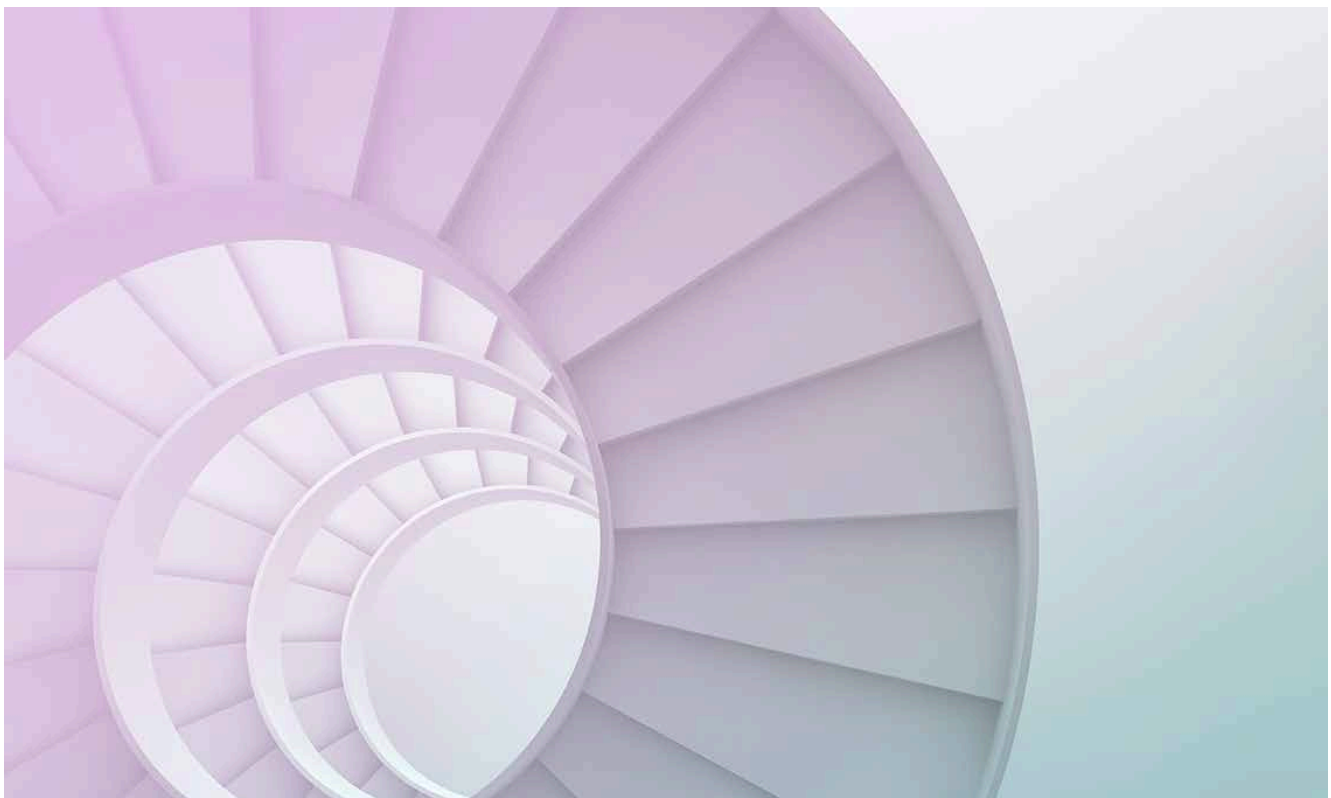


**Michael Jiang**

Head of Markets  
KPMG China

China's real estate industry has evolved in sync with the economy. It is subject to and reflects policy changes. As the industry enters a new phase characterised by stronger regulation, industry players will also refocus their core operations on the real economy to promote the people's longing for good housing conditions. A two-pronged approach that places equal weight on leasing and selling was mentioned in the Report of the 20th National Congress of the Communist Party of China. The report also outlined the direction for the real estate industry, aiming to support people's well-being by improving the quality of housing. Industry players should align themselves with these policies to contribute to a stable and healthy real estate market; while getting actively involved in reform initiatives, such as affordable housing programs and smart communities. Meanwhile, they should leverage PropTech to unlock the value of existing assets and transform their business models with digital technologies to capture new sources of growth.

As a professional services provider, KPMG is committed to promoting the healthy growth of PropTech in China and supporting PropTech companies through these challenging times. Through this year's Leading PropTech 50 selection, we explore what lies ahead for the industry aiming to contribute to the ongoing development of China's economy and the real estate industry.



**Jacy Li**

Head of Real Estate  
KPMG China

As a cornerstone of economic development, China's real estate industry is intricately linked to people's livelihoods, consumer habits, and investment trends. For this reason, the sector's ups and downs over the past two years have drawn attention from all walks of life, and the competitive landscape of the industry has undergone tremendous changes. There is no doubt that traditional residential property developers as well as developers and space operators handling other real estate assets have experienced unprecedented challenges during this round of macroeconomic controls and pandemic prevention measures. The pressure on businesses to not only survive but also transform has driven them to make changes to their strategies and tactics, including embracing digital, smart and green transformation.

To navigate these turbulent times, PropTech ecosystem players should have patience, resolve and confidence.

As the industry's rapid growth comes to an end, real estate companies need to commit to refining their management practices in order to foster quality growth and cultivate the patience for long-term results. Meanwhile, companies should apply effective digitalisation to their knowledge of business drivers and management practices across various types of real estate assets and business scenarios, so as to continue to progressively drive the standardisation and agility of products and services.

When it comes to industry consolidation, progress goes hand in hand with disruption. Real estate enterprises should commit themselves to embrace the disruption of traditional operational and management processes. Going forward, real estate companies should leverage digital tools to challenge traditional business practices, strengthen data governance, revitalise their data assets, and pursue innovation to deliver more customer-oriented products and services.

In order to grow, the seeds of technology need to be sewn with self-confidence. Software-as-a-Service (SaaS)-based digital infrastructure, which offers a higher degree of specialisation, has been widely recognised by the industry and should boost the industry's future growth. Talented professionals who boast extensive experience in both the real estate and technological sectors will enable the industry to flourish. Meanwhile, new iterations of product and service capabilities in the PropTech sector energise China's PropTech industry and allow it to further mature. This year, we have created a list of emerging PropTech players which aims to identify promising start-ups across the country and help them develop.

We believe these different elements, when combined together under the right conditions, will help to bring new vitality to China's PropTech sector.



**Ryan Li**

Partner  
Management Consulting  
KPMG China

As China's Central Government sets the tone and introduces policies to discourage speculation in the real estate market, the industry entering a few phase of development. Under the new regulations, real estate companies are shifting to a new phase focused on long-term growth. They are moving away from their old business model under which they mainly build houses on purchased land, to one that focuses on asset management and operations. Efficiency is now key to their development. As information technology is integrated into production and human life, there has been increased integration between the real estate sector and emerging industries including 5G, the Internet of Things, big data and artificial intelligence. Digital tools can provide opportunities for industry players to transform their business models and refine their management and operating practices.

The PropTech sector is catching up with the manufacturing and retail industries on its digitalisation journey. Improved information infrastructure has put it in a better position to explore new application scenarios. For example, most real estate companies have applied artificial intelligence (AI), building information modelling (BIM), augmented reality (AR), virtual reality (VR), blockchain and other advanced technologies in real-life business scenarios. They are also exploring intelligent applications to improve the underlying digital strength of the industry. Two examples include BIM and geographic information systems (GIS) which are being leveraged to set up smart construction sites. As management of construction projects becomes leaner, this is a positive step that will better enable the effective monitoring of progress, safety and quality on construction sites.

The government is promoting a multi-supplier and multi-channel housing system that places equal weight on leasing and selling, and is improving the housing security system featuring public rental housing, affordable rental housing, and shared ownership housing. PropTech can be leveraged to develop smart communities and prefabricated and green buildings to enhance the quality of these types of housing. This can not only help move China to move more in line with international trends, but also help the country move towards its vision of creating more livable communities.

In the midst of the current volatile market environment, PropTech players are continuing to focus on market-leading innovations. This strong commitment to innovation will play a key role in the healthy ongoing development of China's real estate industry in coming years.



**George Wong**

Head of Real Estate  
Southern Region  
KPMG China

The past two years have been challenging and transformative for China's real estate industry. In response to the Central Government's call to ensure the delivery of housing projects that are vital to people's livelihood, some creditors are taking over relevant projects. In addition, more and more construction companies and local government financing vehicles at different levels are actively participating in the development of high-value comprehensive projects, such as urban zones and industrial parks. These new players attach great importance to the risk management and financial security of the projects they invest in. In turn, they are often more willing to invest in business operations and financial risk management and strengthen their automation and intelligent management capabilities to improve security and generate higher returns. This trend will create new opportunities for PropTech companies and serve as a counterbalance to lost business caused by the downsizing of traditional residential developers.

In order to seize these new opportunities, PropTech enterprises should actively attract technology professionals, develop talent with both business and technology expertise, explore application scenarios for innovative technologies, and be ready to scale up as the real estate industry recovers.





**Susana Gao**

Head of Real Estate  
Northern Region  
KPMG China

This is the second year for KPMG to organise the China Leading PropTech 50 selection. We are pleased to see a more diversified range of businesses participating this year. Those making the list are from a number of segments, including architectural design, construction engineering management, architectural technology, digital marketing, digital operation, space operation, on-line agency platforms, property management service, and urban operation management. They are engaged in asset classes ranging from residential apartments, commercial real estate and office buildings to industrial parks, logistics parks and hotels. A wide variety of technologies have been adopted by PropTech players, including artificial intelligence and machine learning, big data, blockchain, natural language processing, BIM, 5G, cloud computing, the Internet of Things, and virtual/augmented reality. The participation of Hong Kong-based PropTech start-ups this year has also enabled us to take a closer look at the current PropTech landscape there.

We have learned during the interviews that though the real estate industry faced challenges over the past year, PropTech companies are still sought after in the capital market and are keeping up the momentum. We will conduct further studies and analyses on PropTech-related areas in the hope of bringing vitality to China's PropTech sector and enabling it to grow in a healthy and sustainable manner.



**Alan Yau**

Head of Real Estate  
Hong Kong  
KPMG China

As an important asset and investment category, real estate has been creating huge wealth for holders for a long time, and therefore given rise to lots of innovative and entrepreneurial efforts. However, the real estate industry is still a technological laggard in digitalisation. Data on real estate transactions, investments, financing and operations are often incomplete and opaque, and management tools need to be further automated.

Today, digital infrastructure is being built rapidly while consumer behaviours are changing constantly. We believe that technology will reshape the approaches real estate companies use to do business and construct their industry ecosystems, which will enable users to live, study, work, and play in ways that are more comfortable and accessible, safer and greener. Meanwhile, these new capabilities will allow operators to provide services and products in a more intelligent and caring fashion, and investors to invest, manage assets and recycle their capital through more efficient and targeted approaches.

Going forward, PropTech products and services will further facilitate automation and flexibility during remote working, and unleash innovative powers. PropTech innovations will enable stakeholders across the sector to jointly create a stable and successful future.



# KPMG China

## "Future 50" Ranking Series



金融科技  
Fintech



汽车科技  
Autotech



生物科技  
Biotech



消费科技  
Retailtech



芯科技  
Chiptech



医疗健康  
Healthcare



地产科技  
PropTech



新国货  
Emerging Consumer Brands

Business markets are just like arenas, and industries the race tracks on them. KPMG China's "Future 50" ranking series, which cover industries such as finance, automotive, biotechnology, retail, chips, healthcare, and real estate, have been released to serve as a lighthouse to help enterprises make strategic development decisions based on where they are in their respective life cycles, and enable industries and investors to identify the enterprises on the rise. We have also put forward the "Future 50 Tracks" concept to continuously explore competitive opportunities for enterprises.

Since KPMG launched its "Future 50" ranking series, we have been striving to create and maintain a professional and fair platform to help extend various industry networks internally and externally for greater overall values of the industry ecosystems. In our selection process for these rankings, KPMG assembles a selection committee consisting of internal and external experts, which is tasked with assessing enterprises in an open, just and fair manner from multiple perspectives, such as teams, technology, products, markets, and financing.

Going forward, we hope that KPMG's "Future 50" ranking series will generate more opportunities for enterprises, support industry innovation and reform, and provide insights on future industry trends.

# Overview

## Introduction to KPMG China's Leading PropTech 50

Over the past few years, many PropTech start-ups have emerged, growing to more than 9,000 PropTech enterprises worldwide. This shift mainly results from the development of the digital economy and the goals of sustainable development that are changing the requirements of consumers and society. In addition, the rising inflation and capital and material costs, coupled with business model upgrades, are forcing industries to strongly pursue innovation. KPMG International has launched its seventh International Real Estate Innovations Overview (REIO) to provide insights into how technological innovations are reshaping the industries.

In line with the overall challenges in China's real estate sector, China's PropTech industry has faced headwinds to produce breakthrough successes in the past year. In addition to the geopolitical and economic factors mentioned, comprehensive domestic market regulation and the downward economic pressure due to the COVID-19 pandemic subjected the real estate market to dramatic impacts unseen in a century, making some enterprises unable to repay their debts. As a result, technological investments in the industry experienced fluctuations, and so did the technology enterprises along the industry chain. How to maintain stability and high quality development and improve lean operations in the times of uncertainty has become the core concern of the entire industry, and the adoption of technology is an area for enterprises to explore on their road to stability and growth. More and more new technologies are being applied in real estate business scenarios. In addition, the emergence of the metaverse and the diversification of the ecosystem have created new uncharted territory for the real estate industry.

KPMG China has continued its Leading PropTech 50 selection in 2022 had expanded our coverage, aiming to work with all parties in the industry to jointly open up new opportunities in PropTech, with the ultimate aim of helping industry explore new models of real estate development, so as to meet people's growing expectations for a better life. Special thanks to Hong Kong PropTech Association to collaborate with KPMG China to tap into Hong Kong-based PropTech start-ups.

Note: The Leading PropTech 50 selection is for sole purpose of promoting the healthy development of the PropTech, and does not assess the compliance and investability of the assessees. During the selection process, we did not interpret any regulatory policies, nor did we charge any fees.

## Scope of participating enterprises

The types of enterprises that are eligible to participate include:



Enterprises/  
start-ups  
pursuing  
PropTech  
innovations



PropTech enterprises  
exploring innovative  
application of  
technologies in real  
estate businesses



Enterprises that  
use innovative  
technologies  
to provide city  
operations, property  
services and other  
related services

The above-mentioned enterprises that have been operating for at least nine months in the following fields were eligible to participate:



**Project investment decision-  
making / urban real estate data**



**Real estate sale and lease  
transactions**



**Project process management**



**ESG / sustainable development**



**Construction techniques and  
design**



**Asset management,  
operations and services (for  
residence, offices, commercial,  
logistics, hotels, cultural  
tourism, etc.)**



**Real estate digital marketing  
and membership management**

### **Core assessment dimensions:**

- Innovations in technologies and business models
- Transformation and empowerment of the traditional real estate industry
- Financial health and growth levels
- Degree of market recognition and development potential of subsectors
- Degree of capital market recognition
- Team abilities and innovation mechanisms of enterprises

### **Composition of the selection committee**

Our selection committee consists of a number of KPMG partners and industry experts.

### **Selection process**

The judges interviewed and surveyed candidate enterprises on-site to obtain first-hand information in a comprehensive and detailed manner and ensure the objectivity, fairness and rigour of the process.



## Selection methodology

### Field research

KPMG's selection team identified potential leading players in the PropTech space based on our industry observations.

### Field interviews

The selection team conducted field visits to the candidate enterprises and interviewed their founders and senior management teams.

### Expert interviews

We interviewed industry insiders, such as senior management of industry leading enterprises, industry experts, and investors focusing on the real estate sector, to gather their knowledge and insights on the sector and its subsectors.

### Data analysis

We performed evaluation by making reference to our proprietary Startup Insight Platform (SIP).

# Distribution of enterprises in KPMG China's Leading PropTech 50 by core business

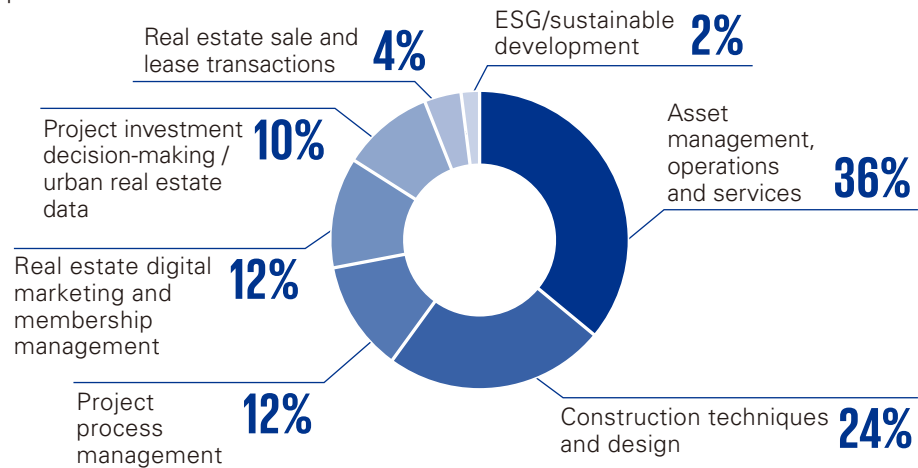


# Analysis of enterprises in KPMG China's Leading PropTech 50



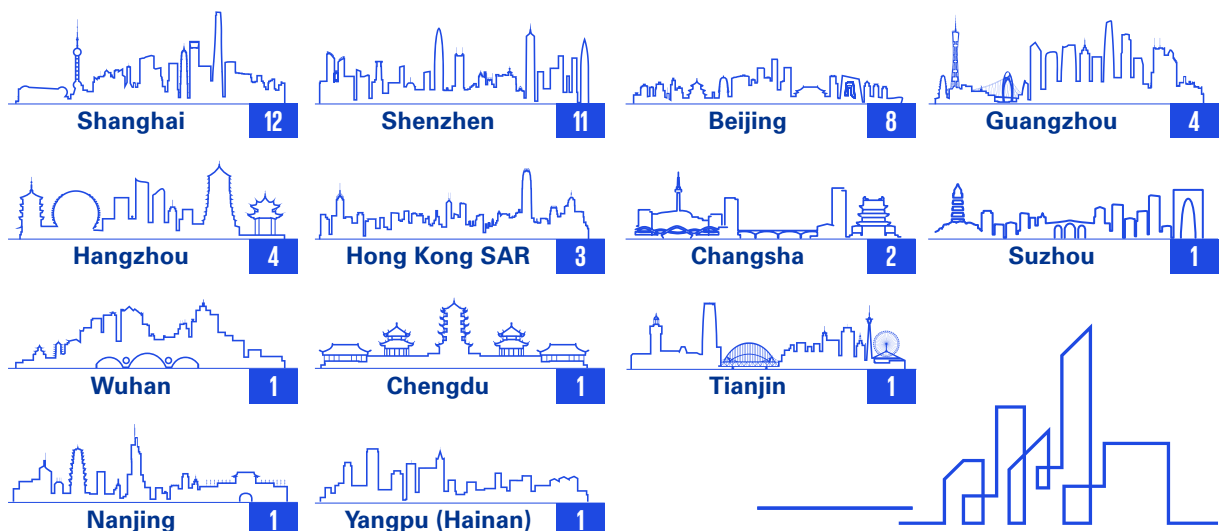
## Distribution by core business

In this year's list, enterprises engaging in asset management, operations and services (for residence, parks, offices, hotels, logistics, etc.) account for 36 percent, the largest proportion, followed by construction techniques and design enterprises, which account for 24 percent. Enterprises that specialised in project process management and digital marketing and membership management rank third, with 12 percent each.



## Distribution by region

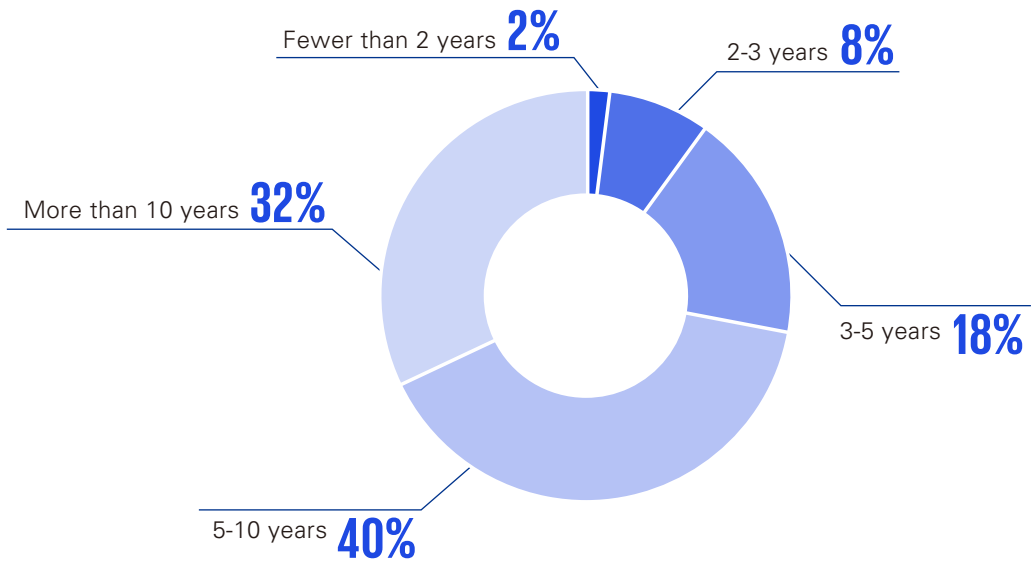
Over 60 percent of the enterprises in this year's list are located in Shanghai, Shenzhen and Beijing. At the same time, cities such as Hangzhou and Changsha, which boast unique location advantages linked to the huge market of core first-tier cities, have increasingly attracted PropTech enterprises. In addition, technology enterprises from Hong Kong were selected for the first time, increasing the regional coverage of this year's list.





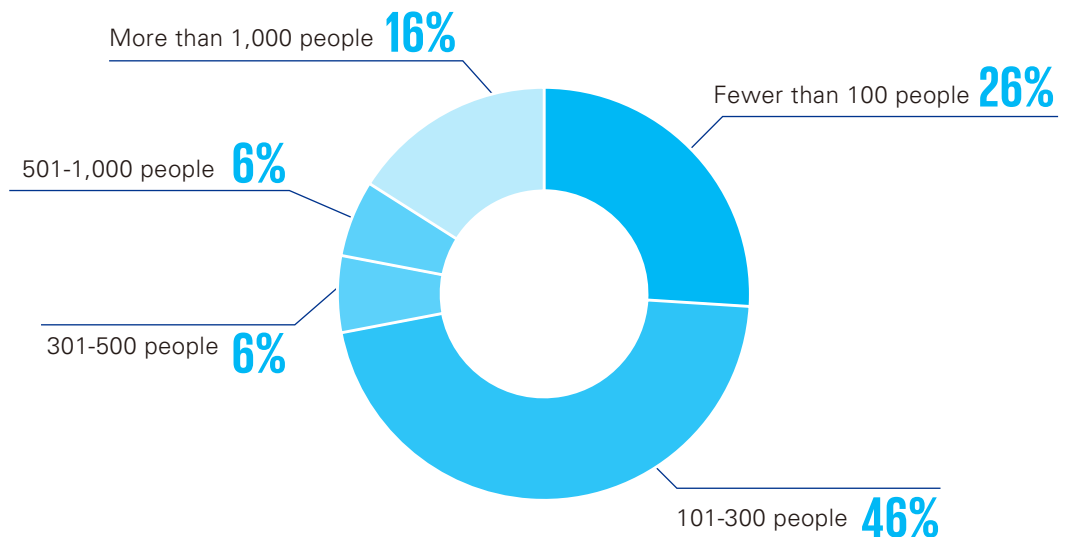
### Distribution by years in operation

On this year’s list, 72 percent of the selected enterprises have been in operation for more than five years, which has increased from 56% of the 2021 list. PropTech enterprises with a stronger foundation continued to demonstrate a robust resilience even amid the downturn of the industry.



### Distribution by company/team size

72 percent of the enterprises that have been included in the list for 2022 have a company size or team of fewer than 300 people, decreasing from last year’s 86 percent. On the other hand, more enterprises with more than 1,000 people participated in the selection, and they comprise 16 percent of the rankings, a significant increase from 2 percent last year.

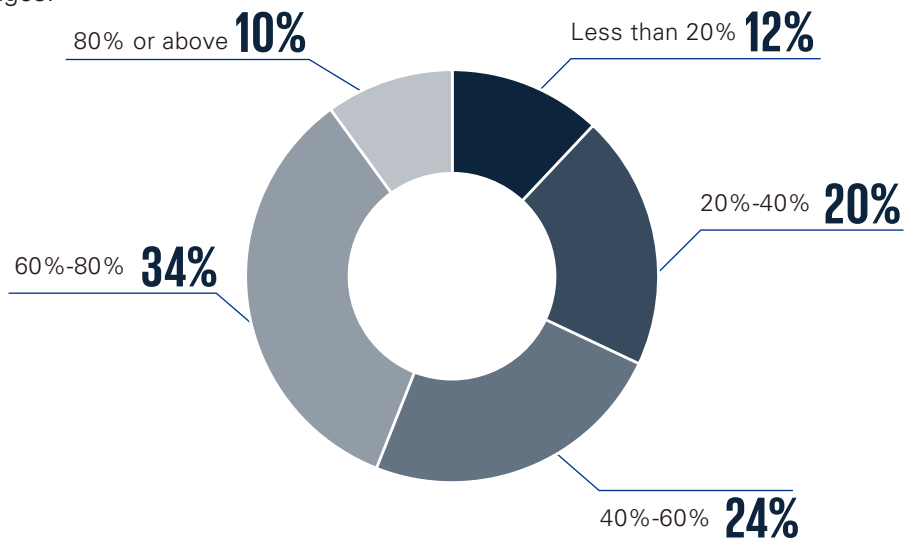






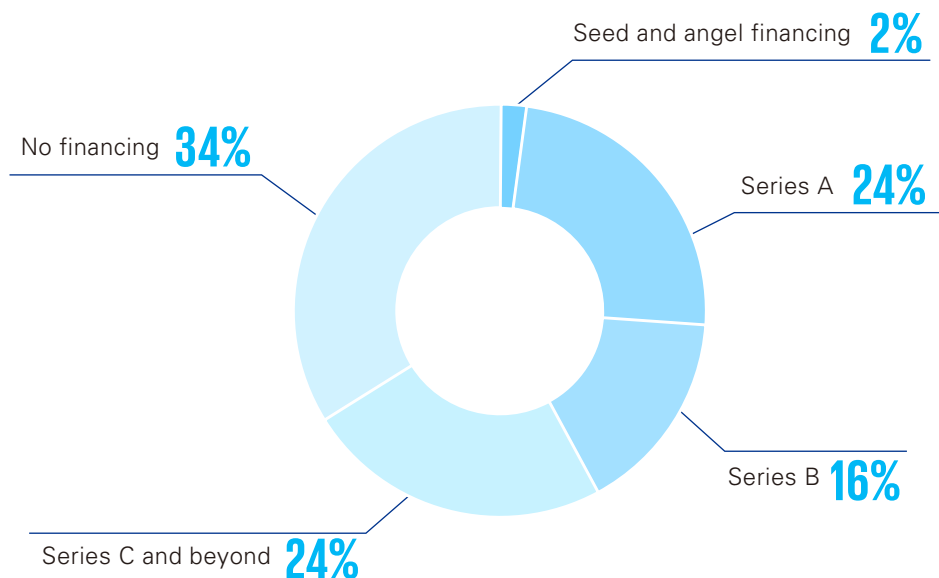
### Distribution by proportion of technical personnel

For nearly 70 percent of the enterprises that have made it onto the list, technical personnel account for more than 40 percent of their total staff. The proportion of those where technical personnel account for over 80% of their total staff has declined year-on-year from 30% to 10%. Undoubtedly, technical personnel are crucial resources across the PropTech industry. Participating enterprises are sourcing an increasing number of technical personnel from large technology enterprises, some of whom have previously served as CTOs or assumed other related managerial duties. On the other hand, technical personnel are working more closely with operational personnel to explore business scenarios, further driving organisational structure changes.



### Distribution by series of financing

On this year's list, more than 40 percent of the enterprises have completed Series B and subsequent series of financing, and 34 percent of the enterprises have not yet sought financing experience.



# KPMG China Emerging PropTech Enterprises

 **Asset management, operations and services**





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 **Construction techniques and design**

 **Metaverse**





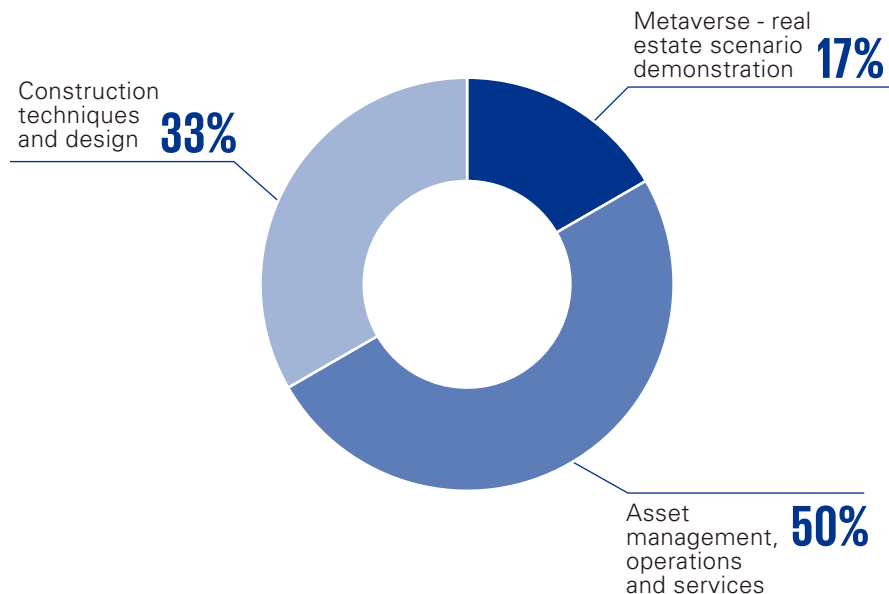


This year, we have also selected emerging technology enterprises, so as to inspire PropTech start-ups exploring cutting-edge technologies for subsectors. The statistical analysis of the selected emerging enterprises is as follows:



## Distribution by core business

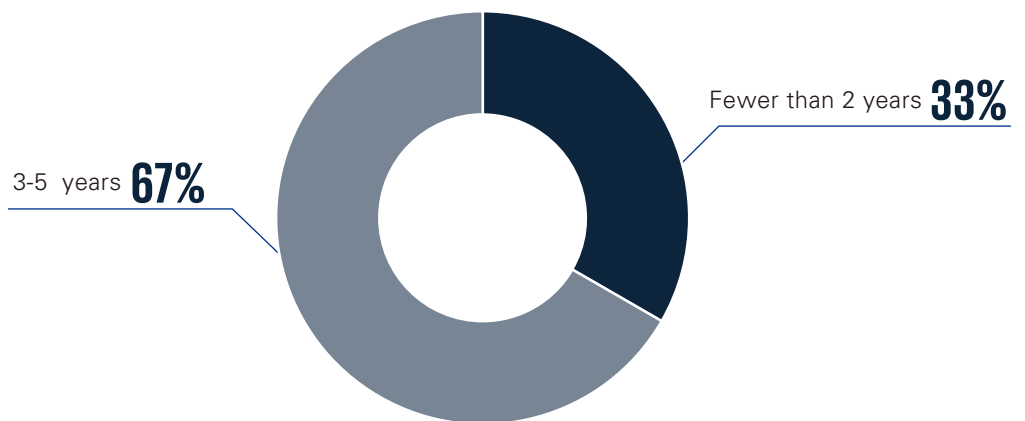
During the selection of emerging PropTech enterprises, we are delighted to see that they have proposed innovative technology solutions on real estate valuation and scenario demonstration for original core businesses. Their products and business models are quite novel, and some of them have never been seen before in the Chinese market. We believe that technology and product innovations will continue to translate into market opportunities for the PropTech industry.





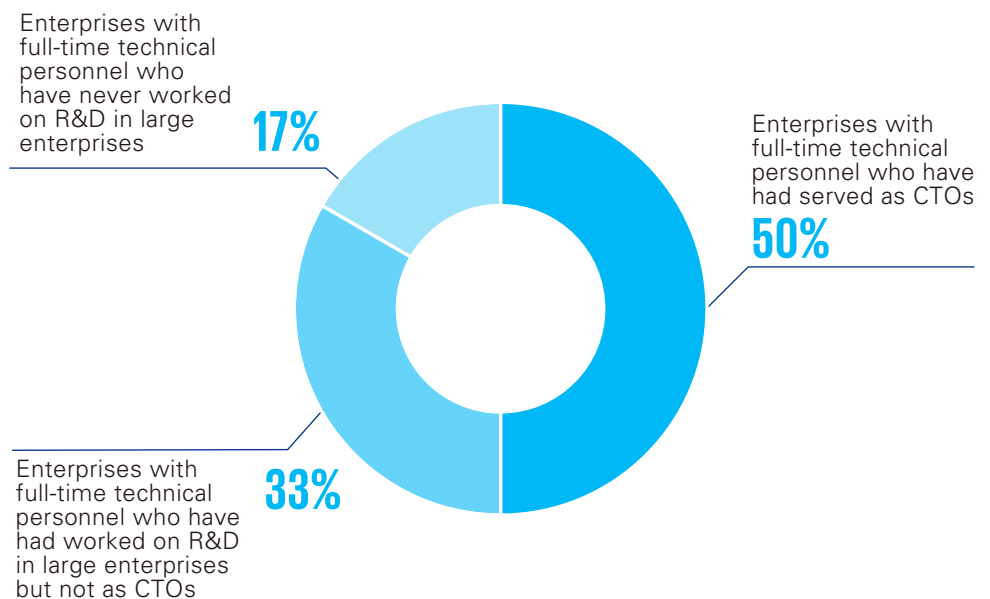
### Distribution by years in operation

All the enterprises selected this year have a history of five or fewer years, and for 33% of them two or fewer years.



### Technical personnel

Full-time technical personnel is a key element for an enterprise’s future success in the subsectors. Although over 60% of the selected emerging PropTech enterprises have fewer than 100 employees, while technical personnel account for over 50% of the total staff for more than 80% of them. In addition, all the selected emerging enterprises have established a dedicated technical team. More than 80 percent of their technical personnel have had worked on R&D in large enterprises before, and 50 percent of the teams also boast professionals who have had served as CTOs.



# Key PropTech Trends in China

## 1 PropTech will not only assist in risk management across a project lifecycles in a more effective way, but also increase investment confidence and safety

More stringent regulation of China's real estate industry in recent years has slowed down the real estate industry, and consequentially many residential property developers have experienced operating difficulties and are unable to repay their debts. These situations could have been resulted from their corporate strategies or from a lack of effective cash flow management.

Usually, investors hope to invest in a variety of properties at a more reasonable price when the market goes down, with primary focuses on the selection of investment targets, the ability of the investees to sustain business and the safety of funds. They also underline the enterprises' capabilities to manage risks throughout the entire life cycle of a real estate project, including their capabilities to conduct feasibility studies and investment calculations before acquiring land, project budgeting after acquiring the land, cost management during the development process, marketing/leasing management after the project is brought to the market, daily operation management of the assets held for investment, and continuous tracking of project budget appropriation. According to our observations, all the real estate companies with relatively higher stock prices have a good market reputation in risk management, and they are making extensive use of technologies to manage various important processes, thereby reducing the impact from the industry downturn.

Some creditors have opted for debt for equity swap and become shareholders of the groups or project companies of real estate developers who have been unable to repay their debts, or have sought priority of compensation for their investments made to continue project construction as debts of common interest.

On the other hand, enterprises not specialised in real estate development, such as local government financing vehicles, have chosen to step up their investments in real estate projects at auction to expand their market share. These enterprises are paying more attention to the risk management capabilities of the investees or target projects that can enhance the security of these investments and guarantee reasonable returns amid the current industry downturn. Through investing in companies of other industries, they have gained an understanding of how important digital technologies are for risk management, and therefore have been more willing to invest in digital management.

Among the selected companies, quite a few are providing digital services to facilitate real estate investment decision-making and process management. We believe that while the real estate market remains in the current bottoming stage, traditional real estate enterprises need to make digital and intelligent investments for business operations and financial risk management, so as to drive management goals regarding process standardisation, efficiency improvement, and cost savings, as these investments will help more accurately measure, control and supervise the use of project funds, strengthen investment safety management, and reduce risk. This allows real estate companies to regain investors' confidence and prepare to quickly seize growth opportunities when the market turns upward.

## 2 Intelligent construction, which promotes the progressive adoption of BIM in real estate development, will advance standardisation and digitalisation across the construction industry

In January 2022, China's Ministry of Housing and Urban-Rural Development issued its "14th Five-Year Plan for the Development of Construction Industry", which named the coordinated development of intelligent construction and construction industrialisation as one of its main tasks during the 14th Five-Year Plan period. The Plan calls for the application of the Building Information Modeling (BIM) technology throughout the life cycles of projects and also vigorously promotes the use of prefabricated buildings. It also requires local authorities to implement specific measures accordingly. Many provinces and cities have actively responded to this plan by issuing a series of supporting policies and rules. Based on the goals stipulated in the Plan, some leading real estate enterprises have shifted to intelligent construction, increasing investments in R&D of BIM technologies, and adopting a construction pattern characterised by "standardised design, factory production, on-site assembly, integrated interior construction, and information management" in pilot projects to gradually cover entire project lifecycles from design, bidding, procurement and construction to operation and maintenance.

The establishment of a BIM-based library of standardised parts and components is fundamental for the production of prefabricated components. We have noticed that a number of enterprises have established such libraries in line with their standards, and have gradually added information about the design, cost, raw material and construction of parts and components to these libraries, so as to steer coordinated development across the industrial chain through standardisation and promote the application of modular parts to building construction and prefabrication technology to different projects. Furthermore, enterprises are also developing and implementing automated construction machinery, construction robots and other equipment that support prefabricated building construction. By collecting machine and equipment

data and on-site construction data, they are able to digitalise the construction process to show the quality, output, efficiency, and other elements in an intuitive manner. At the same time, they are leveraging big data modeling and analysis to improve their production efficiency, building quality and construction safety. Cloud and AI applications have also made real-time and remote monitoring a reality.

Driven by the requirements of the real estate industry for technological transformation, optimisation and upgrading, a variety of PropTech companies are leveraging BIM as a core technology to develop proprietary application software covering the entire life cycles of real estate projects. These patented software applications aim to provide a domestic alternative to foreign-sourced software solutions and enable digital synergy in design, measurement, bidding, procurement, and construction. These integrated professional services can help real estate developers improve their cost-effectiveness. Undoubtedly, lots of challenges still need to be tackled in order to adopt BIM across the industry. It will take time to unify standards, generate return on investments, and bridge gaps between parties in the ecosystem. Only then can the benefits of widespread usage of BIM be realised.

Looking forward, advancing BIM-based intelligent construction as promoted by the 14th Five-Year Plan to simultaneously drive R&D and design, production and processing, construction and assembly and operations, will serve as an important lever for construction enterprises, real estate enterprises and assembly enterprises to improve product quality, control construction costs and strengthen construction safety, which are all vital to their core competitiveness.

### 3 SaaS has become more widely accepted, and the market has further developed

With China's continued emphasis on digitalisation initiatives in the past few years, online services have continued to proliferate across various industries, contributing to the growth of the country's software as a service (SaaS) industry. The industry has entered a rapid development lane since 2015 when it started to draw extensive attention from the capital market. In this period it maintained a compounded annual growth rate of 35-40% in terms of market size, despite the ongoing pandemic. This further indicates that SaaS has been highly recognised in the market.

Despite the real estate industry downturn, we have found in this year's survey that SaaS remains booming in the industry. We have also noticed that the SaaS solutions launched by various service providers for the real estate industry are becoming increasingly sophisticated and diverse covering core business functions along the value chain, such as marketing, bidding, procurement, supply chain, commercial operations, leasing, and property management services.

As the real estate industry has become less speculative in nature, real estate enterprises are shifting from extensive to intensive management. Specifically, companies are refining their operations to more efficiently manage projects; strengthening the governance of existing data to explore value from existing clients; building integrated supply chain ecosystems to reduce procurement costs; accurately drawing traffic to make client acquisition more cost-effective; and dipping deeper into proprietary channels to develop product and brand loyalty. Similar to what we have observed in other industries, areas such as client operations, marketing, and data management are considered the best starting points

of digital transformation in the PropTech industry. In terms of types of applications, CRM, smart customer services, live streaming, and co-working have become the main verticals where SaaS has achieved robust growth. For example, with CRM, a maturing ecosystem covering various types of traffic such as private domain traffic and live streaming traffic is driving dramatic growth of marketing SaaS in recent years.

As SaaS has become more useful in facilitating development of the real estate industry across different scenarios, it has become the preferred choice of the industry for digital client operations, digital marketing and data asset management in the course of digital transformation. As SaaS is highly integrated, cost-effective, and readily accessible by nature, it has helped the real estate industry achieve comprehensive digital empowerment, ecosystem-wide value integration, and new business exploration and incubation.

Meanwhile, SaaS service providers have stepped up investments in data security protection. Most interviewed enterprises have either obtained or applied for MLPS Level 3 certification to provide customers with better security.

In short, as SaaS gains broader recognition, it is expected to further penetrate the real estate industry.

## 4 Improving digital capabilities for different business scenarios across property types will improve online-to-offline service delivery and customer experience

The business landscape of different types of properties, such as commercial, residential and office properties, has changed as pandemic prevention and control persisted over the past three years, and digitalisation is playing a prominent role in these transformations. PropTech companies have been improving their capabilities across different business scenarios in multiple property types in order to deliver better digital services.

- **Commercial properties: connecting online and offline marketing**

Offline retail has faced facing unprecedented challenges as digital retail channels have grown in popularity during the pandemic. Commercial property operators are now struggling with changing consumer habits and preferences, lower retail traffic, and increased operating costs. Offline commercial property operators are placing more emphasis on digital operations. By using digital tools to connect online and offline, retailers can encourage consumers to make purchases on offline channels in addition to online, helping to revitalise traditional commercial properties. Retailers have employed methods such as big data analysis and smart marketing to segment consumer groups to enable more targeted digital marketing. Throughout this process, big data analytics can not only help retailers conduct more effective marketing campaigns, but also assist them in designing interactions with consumers and customising content, helping to boost traffic to commercial properties and drive sales. Commercial property operators will continue to increase their investments in digitalisation to attract customers and enhance their business competitiveness through digital transformation.

- **Residential properties and apartment and hotel services: improving service quality while reducing costs**

Amid the pandemic, residents are more closely connected to property and community services. Most residential property and apartment service providers have established digital platforms and are continuously exploring service scenarios based on these platforms to improve their service quality and efficiency while reducing costs. Though providing similar services, they are looking to differentiate with service experience. Therefore, how to enhance the experience of residents while effectively controlling costs has become the focus of most companies. During our selection process, we have noticed that many leading PropTech companies specialising in property services are dedicated to innovating and exploring digitalisation in a number of areas such as community safety, community retailing and community-based elderly care to make community property management services safer and more convenient.

As labour costs continue to rise in coming years, enabling employees to provide property services more efficiently has become one of the top priorities for many property management service companies. According to our observation, SaaS platforms can improve the work efficiency of property management service companies through more appropriate job assignment and staff management.

The hospitality industry has also faced significant challenges during the pandemic as well, with hotel owners and operators coping with a substantial reduction in the number of business travellers and tourists, increased costs of compliance with pandemic policies, and rising energy prices. In order to weather these difficulties, a growing number of hotel operators are deploying advanced technologies to make their hotels smarter. By applying intelligent service systems across the check-in process, guest services, energy management activities and other areas, they are able to improve service quality and guest experience in a more efficient and environmentally sustainable way. In addition, managing members more accurately through operations of public and private traffic, as well as leveraging data mining to facilitate informed business decision-making and enable owners and brand operators to access more revenue, are particularly important in the current competitive landscape.

- **Logistics parks, industrial parks and office properties: expanding service coverage via digital platforms**

Companies running logistics parks, industrial parks and office buildings are now subject to stricter regulations in the wake of the pandemic. We have noticed that these companies are extending their services from property leasing and management to planning and design, energy management, carbon emission management, safety management, traffic management and other areas, and introducing value-added services such as shared offices and space services. A lot of companies are also acting as business facilitators of tenants by providing a great variety of value-added services, for example, office supplies procurement, office equipment maintenance, financial management and human resources services, bringing more convenience and better experience to the tenants. In this process, digital platforms, which have been increasing in both quantity and quality, have strongly enabled these companies to further extend their business reach and strengthen their brand.





## 5 The real estate industry is increasingly regarding PropTech as an essential part of effective asset management to maximise value

China's real estate industry has experienced unprecedented challenges over the past two years. Where related to residential properties or properties held for investment, buyers creating their portfolios and sellers optimising their portfolios have faced the same key question: what are the value of real estate assets? In order to maximise returns, it particularly important to capitalise on digital tools to seize opportunities in the current market environment.

Property owners, developers, and management committees are concerned about how to increase the value of properties while driving industrial development through property operations. Since the outbreak of the pandemic, the market has increasingly required operators to have comprehensive asset management capabilities. As a result, PropTech providers specialising in specific or all asset categories are winning trust due to their unique ability to define scenarios, deliver technical solutions and iterate products. In this context, closed-loop SaaS products that are agile in deployment, user-friendly, and cost-effective are gaining market traction. As such, PropTech companies are increasing their R&D investments to further strengthen their capabilities to explore business potentials and scenarios. We believe that PropTech will be more widely adopted as efforts are increasingly focused on addressing the real estate industry's current liquidity crisis.

In our 2021 KPMG China Leading PropTech 50 report, we predicted that the entire PropTech industry would increasingly shift its focus from management to customers. That has been reflected in this year's interviews. We have found that PropTech companies have been talking more about how to create more value for their customers (space operators) in terms of the end-users' (end-customers who use the space) experience. The deconstruction and reshaping of various operational processes, the redefinition of process data labels, the real-time delivery and

intelligent judgement of operational process data, and the interpretation of operational result data and performance tracking are capabilities that many PropTech providers are constantly developing. These capabilities, coupled with professional service capabilities they have been improving for high-value, low-frequency business scenarios (e.g. property sales) and high-frequency, high-value business scenarios (e.g. ongoing services for various types of property), further demonstrates the knowledge-intensive nature of the PropTech industry. Promoting a customer-oriented service philosophy using technological means and delivering digital service capabilities in multiple scenarios will be a necessity for all types of real estate operators and managers as well as PropTech companies. Early responding PropTech service providers in this space will further gain competitiveness in marketing and investment decision-making, project management, leasing management, property management and other niche areas, which will help further accelerate digital transformation across the industry.

We have also noticed that over the past year, PropTech companies have started to offer a broader array of services to corporate real estate enterprises. For example, PropTech companies enabling city data-driven decision-making, prefabricated building and interior construction, and equipment power management are engaging more frequently in various business scenarios to provide services for corporate-owned land and buildings. Common services provided include managing the process of selecting business outlets; interiors for financial institutions, restaurants, office spaces; and monitoring the equipment and power consumption of buildings. We expect the demand from corporate real estate enterprises for these services will continue to increase, which in turn will contribute to overall efforts to drive digitalisation across the real estate industry.

In addition, awareness of green operations is increasing in the building and property sector as China pursues its “dual-carbon” goals and more requirements are raised around the world for continuous disclosure on ESG / sustainability issues. We have seen an increasing number of companies developing carbon reduction roadmaps and programmes for stakeholders. We have also noticed that some technical service providers have achieved a certain level of technological advantage in ESG / sustainability through in-house R&D, while some energy storage technology companies have

been actively partnering with service providers that specialise in ESG data presentation. All these parties are committed to extending their service chains and responding to the needs of the industry with agility, and to collecting and analysing energy consumption data to provide greener services that are more relevant to the long-term investment value of their brands.



## 6 While talent has become more accessible, internal development and retention of talent remains challenging for PropTech companies

The special needs of real estate companies have subjected PropTech companies to talent recruitment challenges. In the past year, restructuring in technology firms due in part to regulatory reforms has increased the supply of talent in the market. This has helped ease the shortage of talent in leading PropTech companies and supported their business expansion.

Although more real estate and technology talent has become available, PropTech companies still mainly rely on internal training and experience accumulation based on business scenarios and product technologies to effectively address the specific needs of the real estate industry. Talent with relevant industry experience is relatively rare, despite the fact that this talent is the major driving force behind the PropTech industry. As PropTech companies are far smaller than traditional real estate companies and internet technology companies in terms of size, PropTech companies need to further adjust their staffing in order to ramp up market development efforts.

We believe that to drive digitisation in the real estate industry, PropTech companies need to commit to and promote a long-term culture of innovation and values, supported by targeted, competitive long-term and short-term compensation packages, to encourage innovation, improve success rate and improve retention. We have also noticed that leading PropTech companies have partnered with universities specialising in related technologies so that technical research and business exploration can benefit from each other to encourage innovation. This will also help PropTech companies access a wider pool of talent.



## 7 The further development of the public REITs market will significantly drive digital management of stock assets

Since its launch more than two years ago, the public REITs market has gained extensive attention, and policymakers have released various supporting guidelines:

- In April 2020, the China Securities Regulatory Commission (CSRC) and the National Development and Reform Commission of the People's Republic of China (NDRC) jointly promulgated the Notice on Promoting the Real Estate Investment Trusts (REITs) Pilot Programme in the Infrastructure Field, which marked the official launch of China's REITs market.
- On 2 July 2021, after the release of the Notice on Further Promoting the Real Estate Investment Trusts (REITs) Pilot Programme in the Infrastructure Field (Fa Gai Tou Zi [2021] No. 958) by the NDRC, more categories of underlying asset products have been introduced for public REITs.
- On 25 May 2022, the General Office of the State Council released the Opinions on Further Revitalising Stock Assets and Expanding Effective Investments, which put forward 24 pieces of opinions from 6 perspectives and highlighted 3 key areas for promoting sound REITs development in the infrastructure field and effectively revitalising stock assets via other methods, with a view to maintain a benign cycle between stock assets and incremental investments.
- On 31 May 2022, the Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) released the Guidelines No. 3 on Public Infrastructure REITs — New Acquisition of Infrastructure Projects (Trial), which clarifies, among other things, three ways to expand the fund-raising scale and relevant arrangements. On 7 July 2022, the NDRC released the Notice of the General Office of the NDRC on Applying for Recommendations of Newly Acquired Projects

for Infrastructure Real Estate Investment Trusts (REITs) to improve public REITs expansion mechanism.

As at 14 October 2022, the 20 approved public REITs products have raised a total of RMB 61.8 billion. In terms of the underlying assets, as at 14 October, public real estate REITs (for warehousing and logistics, industrial parks, and affordable rental housing) accounted for 60% of the total REITs products issued. In terms of valuation (market value/net value ratio) calculated based on mid-October figures, real estate REITs reached a 1.3x valuation, compared to the other REITs' 1.2x.

Studies have shown that the public REITs market has become a business focus of many public fund managers to unlock what they see as a potential trillion-yuan market. For public fund managers, it is important to not only properly select quality underlying assets and issue public REITs products, but also to manage the products throughout their durations. Therefore, public fund managers need to constantly improve their operation and management capabilities to guarantee the sound and stable operation of underlying assets and achieve better operation results at lower costs, thereby enabling the sustainable development of public REITs.

Public fund managers who rely on sophisticated systems to perform automatic calculations and valuations for traditional publicly offered funds, are now facing various challenges when dealing with REITs regarding real estate and other types of infrastructure. One reason for this is that the infrastructure may be geographically distributed and involve various industrial segments. As the underlying assets differ in terms of business purpose and scenario and public REITs are not yet sophisticated enough, we have noticed that at present public fund managers are engaging professional agencies to carry

out routine management for their underlying assets. But they still have a long way to go to exchange various data with these agencies in real time, given that they are still manually performing basic financial accounting, regular information disclosure and collection and analysis of daily operation data most of the time. On the other hand, although public fund managers in the asset management industry tend to have a higher willingness to adopt automation, digitalisation, and intelligence, more IT resources are still needed.

Amid further development and expansion of the public REITs market, public fund managers can deploy well-proven digital tools available from professional service providers to quickly obtain industry insights into relevant real estate sub-sectors (and other infrastructure industry segments), and improve their core management capabilities. It is our belief that wider adoption of digital technologies to manage underlying assets will help promote the wider digital transformation and management of stock assets.

## 8 How the metaverse will empower and reshape the physical world through customer co-creation

In recent years, the metaverse has drawn extensive attention, and many enterprises are enhancing their investments and exploration in the field in order to develop their metaverse infrastructure. PropTech enterprises are also actively exploring development and construction in the Metaverse. Digital Twin (DT), one of the core underlying technologies of the metaverse, is used to map the real world in a digital environment. Many visualisation technologies previously adopted in the real estate industry are now being applied to the DT field. Based on this data optimisation and smart learning capability enhancements are being carried out to facilitate metaverse development and exploration.

In this year's selection, we noticed that many enterprises engaged in the development of smart cities and smart buildings have adopted DT technology. This technology enables asset owners and operators to view the virtual models of their assets anytime anywhere in order to understand their current operating conditions as well as various

indicators throughout their lifecycles. Based on these models, owners and operators are also exploring value-added digital services, such as visualisation services, and physical and cyber security enhancement with digital and AI technologies. At the same time, PropTech enterprises are conducting further development using such models, helping to enhance users' ability to analyse and interpret real-time data and conditions and make better informed management decisions.

Although the use of DT technology in city operations is still in the early stage, the development trajectory has indicated that more enterprises are likely to embrace this technology in the next few years in areas such as city operations, commercial and industrial park operations, and residential property services. This trend will reshape business models in the digital world and unlock the potential of the technology to drive the construction and development in the metaverse.





## Leading PropTech 50

Beijing AnXinLiRong Co., Ltd.	Onesight Technology (shanghai) Co., Ltd.
Beijing Freedo Technology Co., Ltd.	Passive Edge Tech
Beijing GISUNI Information Technology Co., Ltd.,	RaSpect Intelligence Inspection Limited
Beijing Zhongtou Chuangzhan Technology Co., Ltd.	Shanghai Blue Wall Technology Co., Ltd
Changsha Broad Homes Industrial Group Co., Ltd.	Shanghai HelloTech Information Technology Co., Ltd
Chengdu Wangxiaobao Technology Co., Ltd.	Shanghai MiaoXiang Technology Co., Ltd
China Construction Third Bureau Digitalization Engineering Co., Ltd.	Shanghai Pinlan Data Technology Co., Ltd.
China Golden Lion Security Technology & Innovation Co.,Ltd	Shanghai Wanjian information & technology Ltd.
China Merchants Property Operation&Service Co.,Ltd.	Shanghai Weizhizhuoxin Information Technology Co. Ltd.
Cubic City Service Apartment Group Holdings Limited	Shanghai Yuanquan Network Technology Co., Ltd
Customindz Limited	Shanghai Zhengji Information Technology Co., Ltd.
DOODOD Technology (Beijing) Co., Ltd	Shenzhen Aideshuzhi Technology Co., LTD.
Glodon Company Limited	Shenzhen Ideamake Software Technology Co., Ltd.
GLP ASP	Shenzhen Mingyuan Cloud Technology Co., Ltd.
Greentown Architectural Technology Co., Ltd.	Shenzhen Ridge Engineering Consulting Co., Ltd
Guangdong CON-COM Technology Co.,Ltd.	Shenzhen Segi Information Technology Co., Ltd.
Guangdong Linghui Building Technology Co., Ltd.	Shenzhen VPhonor Technology Co.,Ltd.
Hainan Elmleaf Information Technology Co., Ltd.	Shenzhen Webuild Technology Co., Ltd.
Hangzhou LinHui Network Technology Co., Ltd.	Shenzhen XKool Technology CO., Ltd.
H-World Information Technology Co., Ltd	Shenzhen Zuolin Technology Co.,Ltd.
KE Holdings Inc.	Sino-Hunan Intelligent Construction Co.,LTD
MetroDataTech. Ltd.	Smart Construction Cloud
MyDreamPlus	Tianjin AiForward Science and Technology Co., Ltd.
Nanjing Mallcoo Technology Co. Ltd.	URBANCHAIN GROUP LIMITED
New Windows	Zhejiang Wishare Information Technology Co., Ltd.



## Emerging PropTech Enterprises

According Core	Halo Energy Limited
DeepMirror Inc.	Shanghai Jialiang Digital Technology Co. Ltd.
dZPACE	Varadise Limited

Note:  
The companies are listed by alphabet sequence.

# Contact us



**Jacy Li**  
Head of Real Estate,  
KPMG China  
+86 (21) 2212 2366  
jacy.li@kpmg.com



**George Wong**  
Head of Real Estate,  
Southern Region,  
KPMG China  
+86 (755) 2547 1088  
george.wong@kpmg.com



**Susana Gao**  
Head of Real Estate,  
Northern Region,  
KPMG China  
+86 (10) 8508 5610  
susana.gao@kpmg.com



**Alan Yau**  
Head of Real Estate,  
Hong Kong,  
KPMG China  
+852 2143 8600  
alan.yau@kpmg.com



**Andrew Zhao**  
Partner, Real Estate and  
Transportation,  
Transaction Services,  
KPMG China  
+86 (21) 2212 3585  
andrew.zhao@kpmg.com



**Ricky Gu**  
Tax Partner, Real Estate  
and Infrastructure,  
KPMG China  
+86 (20) 3813 8620  
ricky.gu@kpmg.com



**Amis Ren**  
Partner, Management  
Consulting,  
KPMG China  
+86 (10) 8508 7127  
amis.ren@kpmg.com



**Ryan Li**  
Partner, Management  
Consulting,  
KPMG China  
+86 (20) 3813 8552  
rl.li@kpmg.com



**Ada Shen**  
Head of Financial  
Management  
Consulting and  
Corporate Services,  
KPMG China  
+86 (10) 8508 7092  
ada.y.shen@kpmg.com



**Nikki Shen**  
Partner, Finance  
Consulting and Valuation,  
KPMG China  
+86 (21) 2212 3511  
nikki.shen@kpmg.com



**Joyce Xie**  
Partner, Governance,  
Risk and Compliance,  
KPMG China  
+86 (755) 2547 1261  
joyce.xie@kpmg.com



**Stan He**  
Head of Restructuring  
Services,  
KPMG China  
+86 (10) 2212 3540  
stan.he@kpmg.com



**Brenda Wang**  
Partner, Business  
Reporting and  
Sustainability,  
KPMG China  
+86 (21) 2212 2468  
brenda.wang@kpmg.com



**Paul Pu**  
Head of Forensic  
Advisory,  
KPMG China  
+86 (21) 2212 3780  
paul.pu@kpmg.com



**Ming Liu**  
Partner, Government  
and Infrastructure  
Advisory,  
KPMG China  
+86 (21) 2212 3537  
ming.liu@kpmg.com



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