SHKP incorporates innovative technology into its vertically-integrated business model to reinforce the quality and service efficiency of its property business

The Group has a Central Project Office (CPO) atop the High Speed Rail West Kowloon Terminus, facilitating collaboration between the project participants and the Group's construction teams
集團在高鐵西九龍總站上蓋大型商業項目設「中央辦公室」，方便參與項目者的合作夥伴與集團的建築團隊交流

The Group introduces Cave Automatic Virtual Environment (CAVE), utilizing 3D projection screens and motion-sensing devices, making every aspect of project management more precise and effective
集團引入虛擬實境互動系統（CAVE），透過立體投影屏幕和體感操作設備，令項目管理的各環節更加精準便捷

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The Group showcases its recent innovative research and achievements in construction at the Construction Innovation Expo
集團近年積極研發與建築相關的創新科研，圖為在「建造創新博覽會」展示研發成果

As technology continues to advance globally, leveraging innovative technology for service enhancement has become a vital strategy in many industries. The Group puts into practice its long-standing belief in Building Homes with Heart by proactively adopting innovative technology in project design, construction and facility management to enhance product and service quality, optimize operational efficiency and foster sustainable development, thereby realizing maximum value for stakeholders.

Building Information Modelling (BIM) technology to fully optimize project design, construction and facility management

Given its strong dedication to advance with times, the Group adopted BIM technology as early as 2012, which is now applied in breadth and depth in its property development business from over a decade of exploration and development. BIM serves as a 3D modelling platform for architectural simulation, which unifies all project data and information, allowing the construction teams to comprehensively analyze and anticipate diversified situations at the outset of project, thus avoiding the necessity of ad hoc changes during project commencement to ensure an effective asset lifecycle, as well as achieving time and efficiency gains. After years of application, the Group has combined BIM technology with its vertical development business model. From land acquisition to planning, project design, construction and property management after completion, all procedures are arranged by the Group, which is one of the Group's core advantages. Different project teams can maintain effective interaction and communication at all time, which not only streamline the cooperation process, but also save time and cost.

In recent years, the Group has promoted the full deployment of BIM technology in its main projects. The 98 How Ming Street development showcases the Group's investment to introduce BIM technology. A high-precision 3D geometric model system was created to stream project planning, design and coordination across pipelines to ensure project efficiency and site safety. In addition, on the back of BIM, the project established a smart building operation system, which utilizes the Internet of Things (IoT), augmented reality (AR), virtual reality (VR) and artificial intelligence (AI) to monitor and adjust the electromechanical, air quality and air-conditioning systems in real time to achieve optimum energy savings and provide pre-emptive maintenance information for the systems. Bolstered by the systems and respective initiatives, the project's overall electricity consumption has been reduced by 15%, which is equivalent to an annual reduction of over 21,000 tons of carbon dioxide emissions, or about the amount of carbon dioxide absorbed by 900,000 trees in a year, as well as a 10% reduction in peak electricity consumption. By utilizing efficient fixtures and fittings, the project can further reduce indoor water use by 50% annually.

Innovative technology to enhance construction efficiency

In recent years, the Group has proactively introduced multifaceted innovative technology into its construction works, resulting in a significant enhancement in construction quality and reducing the environmental impact. The YOHO Hub in Yuen Long is a pioneering construction project in Hong Kong, which utilizes the Rotational Bridge Launching Method. Leveraging Design for Manufacture and Assembly (DfMA) technology, the team precisely engineered the bridge's rotating system, allowing it to rotate the 1,300-ton bridge structure 180 degrees from the construction site to the designated location within a short time. This enabled the successful, seamless linking of both ends of the bridge to The YOHO Hub and Yuen Long Station on the Tuen Ma Line, whilst significantly reducing construction time by over 60% to maximize efficiency and minimize disruption to the surrounding traffic and residents.

The Group also utilizes AI technology to safeguard construction quality and optimize resource management. For instance, the Group was the pioneer developer in Hong Kong to introduce an AI-based, glass-inspection robot, with an AI-based human perception defect prediction engine with fused visual and geometric features, a laser illuminated multi-surface scanning system, and digital record system that traces the flaw-checking record. All these functions have significantly enhanced the standard of construction quality monitoring.

Fostering a digital and sustainable workplace unlike traditional construction sites

In 2019, the Group secured a mega integrated commercial project atop the High Speed Rail West Kowloon Terminus. Given its scale, the project participants involve several globally acknowledged architectural firms, engineering consultants and the SHKP teams. To enhance efficiency, the construction team established a 7,000-square-foot Central Project Office (CPO) on the construction site, which is connected to the site office, eliminating time wasted commuting back and forth. The CPO provides a green, flexible, cozy office space, featuring diversified semi-open conference rooms to foster collaboration across project teams, as well as green walls and plants to inspire creativity whilst beautifying the environment.

Unlike traditional site offices that are assembled from containers, the new CPO boasts a modern design and digital technology, including the Cave Automatic Virtual Environment (CAVE). Through the use of 3D projection screens and motion-sensing devices, the project teams can inspect and monitor a virtual 3D model of the construction site by comparing it to the actual construction drawings, making every aspect of project management more precise and effective. The office is also equipped with multiple touch screens, allowing the teams to directly upload data for discussion and modification more easily during meetings.

The construction team introduced mixed-reality technology, allowing construction to become more accurate and efficient
建築團隊引入混合實境技術，令施工更加準確高效

Augmented reality (AR) technology has brought revolutionary changes to property management, enhancing comprehensive management quality
擴增實境技術為物業管理業帶來嶄新改變，全面提升管理質素

The Group is a pioneering developer in Hong Kong in utilizing the Rotational Bridge Launching Method, ensuring successful, seamless linking of both ends of the bridge to The YOHO Hub and Yuen Long Station on the Tuen Ma Line
集團是香港首個使用轉體式橋樑裝嵌技術的發展商，成功搭建連接元朗 The YOHO Hub 與屯馬線元朗站的天橋

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Incorporating smart technology to leverage the quality of property management

Kai Shing Management Services Limited (Kai Shing) and Hong Yip Service Company Limited (Hong Yip), two of the Group's property management subsidiaries, have leveraged multifaceted technology to keep enhancing service quality, safety standards and operational efficiency. About 90% of their managed properties are integrated with smart technology, including IoT, big data and cloud computing, which have been applied to a wide range of facilities to allow real-time monitoring of the respective systems.

To embrace the latest trends in smart property management, Kai Shing has continuously introduced new technologies available on the market for service enhancement and proactively established partnership with local start-ups to apply new innovative initiatives in its managed properties. The introduction of the smart washroom system in Metroplaza two years ago is a successful showcase. Kai Shing has also upgraded its existing facilities with new technology to optimize management efficiency. Taking V Walk in West Kowloon as an example, by introducing an automated equipment management system, along with chiller plant energy optimization technology and IoT applications, the property saves over four million kWh of electricity annually. Kai Shing also set a target of reducing electricity consumption by 13% in major properties under its management by 2030, making a contribution to reducing carbon emissions.

Hong Yip also keeps abreast of the latest technology development trends and successfully developed a value-added service platform, VR

Goes Everywhere. The team spent six months making the best use of 3D panoramic technology to provide customers with value-added services, including the provision of navigation services in residential estates and shopping malls through unique 3D panoramic guide technology, as well as designing interactive games for shopping malls. It will also be available for virtual property tours, keeping track of decoration status, and other multi-purpose applications, such as synchronous teaching and hosting virtual exhibitions.

To further leverage smart living, Hong Yip and Kai Shing have proactively developed and launched mobile applications exclusively for their clients, providing one-stop property management services. Residents can easily utilize their smart home systems, making clubhouse reservations and paying property management fees, for example. Both property management companies also introduced various smart robots to handle disinfection and food delivery in clubhouses.

Following the key national strategies outlined in the 14th Five-Year Plan to clearly support Hong Kong to develop into an international innovation and technology hub, the Group will continue to accelerate its development of innovative technology and contribute to Hong Kong's further integration into the national development plan. It will also proactively invest resources in research and development of innovative technology to enhance property management quality and service efficiency, creating long-term value for its stakeholders.

集團將創新科技融合其垂直發展業務模式 提升物業質素及服務效益

隨著全球科技的蓬勃發展，透過創科來提升品質服務，成為不同產業的關鍵策略。集團秉持「以心建家」的精神，從項目規劃、建築以至物業管理，均積極引入創新科技，作為集團一大優勢，垂直發展業務模式融合創新科技，使集團可優化產品和服務質素、提升營運效益，同時兼顧可持續發展，藉此為各持份者創造更大的價值。

運用 BIM 技術 全面優化規劃、施工到管理流程

憑著「與時並進」的信念，集團早於 2012 年已開始應用建築信息模型（BIM）。經過十多年時間不斷探索和發展，BIM 應用層面已愈來愈廣泛和深入。BIM 是一個三維模型的建築模擬平台，統一項目所有資料和數據，令建築團隊早在項目發展初期，已有效全面分析和預視不同狀況，避免在施工時才臨時修改，提高整個資產生命週期的生產力，達致節省時間、提升效率之目的。經過多年的應用，集團已將 BIM 技術結合其垂直發展業務模式，由土地併購與規劃，項目設計，建築及落成後的物業管理，均由集團包辦，成集團其中一個核心優勢。項目團隊之間，可隨時保持高效的互動合作及溝通，不但可以精簡合作流程，更可以節省時間及成本。

近年集團發展的主要項目，都已全面運用 BIM 技術。以巧明街 98 號項目為例，集團投資引進 BIM 技術，構建高精確度的立體幾何模型系統，優化了規劃、設計和不同環節的協調工作，從而提高效率和地盤的安全水平。此外，BIM 同時幫助項目建立智能大廈管理系統，利用物聯網、擴增實境技術、虛擬實境技術及人工智能系統，實時監察和調校項目內的機電系統、空氣質素及冷氣系統，以達到最佳的節能效果，並作出預測性系統維護建議。透過相關系統和措施，令項目整體用電量下調 15%

，相當於每年減少逾 21,000 噸二氧化碳排放量，即大約 90 萬棵樹一年所吸收的二氧化碳量；高峰用電量則會減少 10%。項目亦可利用高效的裝置和配件，使每年的室內用水減少 50%。

以創新技術提升建築效益

近年，集團積極在建築層面引入不同創新科技，不僅大大提升施工質素，同時也減少對環境的影響。元朗 The YOHO Hub 是香港首個使用轉體式橋樑裝嵌技術（Rotational Bridge Launching Method）的私人發展建築項目。團隊運用裝配式建築（DfMA）技術精準設計出橋身轉動系統，再透過該系統將重達 1,300 公噸的橋身結構，從工地於短時間內轉動 180 度至預定位置，讓橋的兩端連接 The YOHO Hub 與屯馬線元朗站，完成裝嵌。此技術大幅縮短 60% 以上施工時間，提高施工效率，成功將對周邊交通和居民的不利影響減至最低。

此外，集團也利用人工智能技術來確保建築質素，並優化資源管理。例如集團是本港首家引入人工智能玻璃檢測機械設備的發展商，該設備具備融合視覺和幾何特徵的人類感知瑕疵預測引擎、激光照明多層掃描系統及記錄瑕疵檢查紀錄的數碼化系統等功能，大大提高了建築質量監測水平。

The Group proactively introduced a smart management system in its newly developed and completed projects, thus achieving optimal energy savings
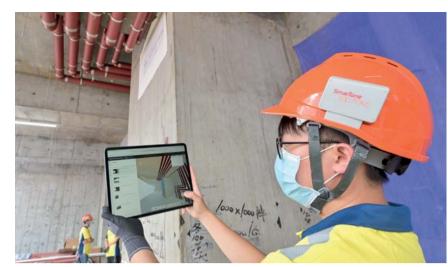集團積極在新發展和已落成項目引入智能管理系統，以達到最佳節能效果

The Group's project at 98 How Ming Street uses BIM technology and a high-precision 3D geometric model system to stream project planning, design and coordination across pipelines
巧明街98號項目引進BIM技術，構建高精確度的立體幾何模型系統，優化了規劃、設計和各環節的協調工作

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締建數碼化與綠化工作環境　打破傳統工地寫字樓形象

集團於2019年以投得高鐵西九龍總站上蓋大型商業項目，由於項目規模龐大，參與者包括多個國際著名建築師事務所、工程顧問以及新地團隊。為令到工程更暢順高效，建築團隊特別在項目地盤設立面積約7,000平方呎的「項目中央辦公室」，與地盤建築辦公室相連，免除團隊費時往返地盤和寫字樓。項目中央辦公室提供綠化、靈活、舒適的辦公空間，不僅設有大小不同的半開放式會議室，鼓勵團隊交流合作；同時增添綠化植物牆及種植盆栽，以綠化環境啟迪創意。

有別於傳統地盤由貨櫃組裝而成的辦公室，全新的中央辦公室採用現代化設計和數碼化技術，包括虛擬實境互動系統（CAVE），透過立體投影屏幕和體感操作設備，讓工作團隊可以視察、操控地盤的虛擬實景，對比施工圖則，令項目管理的各環節更加精準便捷。該辦公室亦設有多部輕觸式屏幕，團隊可以直接上傳資料，方便開會討論及修改。

結合智能科技　提升物管質素

集團旗下的兩間物業管理公司啟勝和康業，多年來積極引入不同創新科技應用，不斷提升服務質素、安全標準和營運效率。當中兩間公司約九成轄下物業已在管理上結合智能科技，包括把物聯網(IoT)、大數據和雲端運算等數碼解決方案應用於不同的設施上，以便實時監測相關系統。

為迎接物業管理智能化的大趨勢，啟勝除了不斷引入市場上的新科技，以提升管理服務質素，更積極與本地初創企業合作，在旗下物業應用嶄新創科項目，當中兩年前在新都會廣場引入智能洗手間，就是其中一個成功例子。啟勝也透過新科技提升現有設

備，以優化管理效益。例如西九龍 V Walk 引入自動化設備管理系統及「優化冷凍水機組能源效率」技術，連同物聯網的應用，物業一年可省下逾400萬度電。啟勝更訂下目標，力求在2030年前為其負責管理主要物業的耗電減少13%，為減排出一分力。

至於康業亦緊貼科技發展的新趨勢，成功開發了「VR 生活停不了」增值服務平台。團隊花半年時間，利用3D全景掃描技術，為客戶各種相關增值服務：包括透過市場獨有的「3D全景帶路」技術，在屋苑和商場提供導航服務；亦可用於為商場設計互動小遊戲。此外更適用於線上睇樓、追蹤裝修情況，甚或進行同步教學和舉辦虛擬導覽等，用途十分廣泛。

為了進一步打造智能化生活，康業和啟勝同時積極開發及推出客戶手機應用程式，提供一站式物業管理服務。住戶可透過手機應用程式，輕鬆操控住所配備的智能家居系統、預約會所設施以至繳交管理費等。兩間物管公司亦引進各類智能機械人應用，處理清潔和會所送餐等不同工作。

隨著國家「十四五」規劃明確支持香港建設國際創新科技中心，集團亦將繼續配合，全速推展創科，融入國家發展大局，並將積極投放資源研發創新科技，提升旗下物業質素及服務效益，為廣大持份者締造長遠價值。

Supported by the 5G network, Building Information Modelling is used at the construction site allowing engineers to easily review the design, layout and the materials used, as well as the quality of the works
透過5G網絡，地盤採用建築信息模擬(BIM)模型時，可即時呈現高像真度的建築模型，方便工程人員審查設計佈局、材質、施工工藝等

Smart Helmets, which monitor the real-time heart rate, body temperature and location of workers, are equipped with an emergency button, which sends a signal if a worker feels unwell or falls down
智能頭盔可實時監察工人的心跳、體溫及位置，同時備有緊急按鈕，若工人有不適或意外跌倒便可及時發出警報

SmarTone keeps abreast of the times by utilizing 5G & smart technology for innovative applications
數碼通與時並進 善用5G及智能科技推動創新應用

SmarTone, one of the Group's subsidiaries, has been leading the market with its premium networks and cutting-edge technology, and has been dedicated to prioritizing customer needs and fostering strong customer relationships. By outlining marketing strategies targeting diversified clients and providing unique service plans and value-added service, SmarTone successfully meets the diverse needs of its customers, thus reinforcing its customer-centric leadership position in the mobile communications industry in Hong Kong.

As 5G technology is increasingly prevalent, SmarTone proactively leveraged its strengths to develop related solutions, namely SmartWorks, as early as in 2019. Based on 5G, cloud and IoT technology, the smart site management system enhances worker safety and operational efficiency by employing image analysis, artificial intelligence and machine learning. SmarTone incorporates various site-safety features, including Smart Helmets, SmartHealth Station, a large-machine safety-alert system, access control and an environmental station to prevent accidents and safeguard the safety of construction workers, and allow supervisors to optimize management efficiency through its one-stop integrated platform.

SmartWorks exemplifies the Group's innovativeness. For example, its commercial project The Millennity in How Ming Street, Kwun Tong, was the first in Hong Kong to deploy the SmartWorks solution, winning wide acclaim in the industry. The solution was awarded first prize in Construction Safety in the CIC Construction Innovation Award and was selected on a pre-approved list for the Construction Innovation and Technology fund.

集團旗下附屬公司數碼通向來以優質網絡及領先技術領導市場，用心了解客戶需要，建立優越的客戶關係。透過針對不同客戶群的市場策略、獨特的服務計劃及增值服務，數碼通成功滿足不同客戶的需求，鞏固本港流動通訊業中以客為本的領先地位。

隨著5G科技愈趨普及，數碼通積極發揮相關優勢，致力發展相關應用方案，早於2019年已開發「SmartWorks智安建」系統。該系統以5G、雲端和物聯網技術為基礎，配合影像分析、人工智能及機器學習，推行地盤全面化智能管理。該系統加入許多保障地盤安全的功能，包括智能頭盔、健康監察站、大型機械的安全預警系統、進出管制、環境監察站等，預防意外發生，提升建築工人安全，管理人員更可透過一站式綜合平台提升管理效率。

「SmartWorks智安建」系統充分體現集團的創新精神，而旗下位於觀塘巧明街的商業項目 The Millennity 更是香港首個引入「SmartWorks智安建」的建築地盤，備受業界讚賞和肯定。該系統更曾獲「建造業議會創新獎」中的建造安全組第一名，亦是建造業創新及科技基金的預先批核方案。

Invited by the Construction Industry Council, SmarTone promotes "SmartWorks" at the Construction Innovation and Technology Fund Smart Site Safety System Scheme Launching Ceremony
數碼通早前應建造業議會的邀請，在建造業創新科技基金的智能工地安全系統計劃啟動禮上推廣「SmartWorks智安建」系統

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