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
集团在高铁西九龙总站上盖大型商业项目设"中央办公室",方便参与项目的合作伙伴与集团的建筑团队交流

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
集团引入虚拟实境互动系统(CAVE),通过立体投影屏幕和体感操作设备,令项目管理的各环节更加精准便捷

The Group showcases its recent innovative research and achievements in construction at the Construction Innovation Expo
集团近年积极研发与建筑相关的创新科研,图为在"建造创新博览会"展示研发成果

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
建筑团队引入混合实境技术，令施工更加准确高效

Augmented reality (AR) technology has brought revolutionary changes to property management, enhancing comprehensive management quality
扩增实境技术为物业管理业带来崭新改变，全面提升管理质量

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
集团是香港首个使用转体式桥梁装嵌技术的发展商，成功搭建连接元朗 The YOHO Hub 与屯马线元朗站的天桥

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.

集团将创新科技融合垂直发展业务模式　提升物业品质及服务效益

随著全球科技的蓬勃发展，通过创科来提升品质服务，成为不同产业的关键策略。集团秉持"以心建家"的精神，从项目规划、建筑以至物业管理，均积极引入创新科技。作为集团一大优势，将垂直发展业务模式融合创新科技，优化产品和服务质量、提升运营效益，同时兼顾可持续发展，以此为各利益相关方创造更大的价值。

运用 BIM 技术　全面优化规划、施工到管理流程

凭著"与时并进"的信念，集团早于2012年已开始应用建筑信息模型（BIM）。经过十多年时间的不断探索和发展，BIM 应用层面已愈来愈广泛和深入。BIM 是一个三维模型的建筑模拟平台，统一项目所有资料和数据，令建筑团队早在项目发展初期，便已有效全面分析和预见不同状况，避免在施工时才临时修改，以提高整个资产生命周期的生产力，达致节省时间、提升效率的目的。经过多年的应用，集团已将 BIM 技术结合垂直发展业务模式，将土地并购与规划，项目设计，建筑及落成后的物业管理，均由集团包办，形成集团其中一个核心优势。项目团队之间，可随时保持高效的互动合作及沟通，不但可以精简合作流程，更可以节省时间及成本。

近年集团发展的主要项目，都已全面运用 BIM 技术。以巧明街98号项目为例，集团投资引进 BIM 技术，构建高精确度的立体几何模型系统，优化了规划、设计和不同环节的协调工作，从而提高效率和工地的安全水平。此外，BIM 可同时帮助项目建立智能大厦管理系统，利用物联网、扩增实境技术、虚拟实境技术及人工智能系统，实时监察和调校项目内的机电系统、空气质量及空调系统，以达到最佳的节能效果，并作出预测性系统维护建议。通过相关系统和措施，令项目整体用电量下降

15% ，相当于每年减少逾21,000吨二氧化碳排放量，即大约90万棵树一年所吸收的二氧化碳量；高峰用电量则会减少10%。项目还可利用高效的装置和配件，使每年的室内用水减少50%。

以创新技术提升建筑效益

近年，集团积极在建筑层面引入不同创新科技，不仅大大提升施工质量，同时也减少对环境的影响。元朗 The YOHO Hub 是香港首个使用转体式桥梁装嵌技术（Rotational Bridge Launching Method）的私人发展建筑项目。团队运用装配式建筑（DfMA）技术精准设计出桥身转动系统，再通过该系统将重达1,300公吨的的桥身结构，从工地于短时间内转动180度至预定位置，让桥的两端连接 The YOHO Hub 与屯马线元朗站，完成装嵌。此技术大幅缩短60%以上施工时间，提高施工效率，成功将对周边交通和居民的不利影响减至最低。

此外，集团也利用人工智能技术来保证建筑质量，并优化资源管理。例如集团是香港首家引入人工智能玻璃检测机械设备的发展商，该设备具备融合视觉和几何特征的人类感知瑕疵预测引擎、激光照明多层扫描系统及记录瑕疵检查纪录的数字化系统等功能，大大提高了建筑质量监测水平。

The Group proactively introduced a smart management system in its newly developed and completed projects, thus achieving optimal energy savings
集团积极在新发展和已落成项目引入智能管理系统，以达到最佳节能效果

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号项目引进BIM技术，构建高精确度的立体几何模型系统，优化了规划、设计和各环节的协调工作

缔建数码化与绿化工作环境　打破传统工地写字楼形像

集团于2019年投得高铁西九龙总站上盖大型商业项目，由于项目规模庞大，参与者包括多个国际著名建筑师事务所、工程顾问以及新地团队。为使工程更　顺畅高效，建筑团队特别在项目工地设立面积约650平方米（7,000平方呎）的"项目中央办公室"，与工地建筑办公室相连，免除团队费时往返工地和办公楼。项目中央办公室提供绿化、灵活、舒适的办公空间，不仅设有大小不同的半开放式会议室，鼓励团队交流合作；同时增添绿化植物墙及种植盆栽，以绿化环境启迪创意。

有别于传统工地用货柜组装而成的办公室，全新的中央办公室采用现代化设计和数字化技术，包括虚拟实境互动系统（CAVE），通过立体投影屏幕和体感操作设备，让工作团队可以视察、操控工地的虚拟实景，对比施工图则，令项目管理的各环节更加精准便捷。该办公室另设有多部轻触式屏幕，团队可以直接上传资料，方便开会讨论及修改。

结合智能科技　提升物管品质

集团旗下的两间物业管理公司启胜和康业，多年来积极引入不同创新科技应用，不断提升服务质量、安全标准和运营效率。当中两间公司约九成辖下物业已在管理上结合智能科技，包括把物联网 (IoT)、大数据和云端运算等数码解决方案应用于不同的设施上，以便实时监测相关系统。

为迎接物业管理智能化的大趋势，启胜除了不断引入市场上的新科技，以提升管理服务质量，更积极与本地初创企业合作，在旗下物业应用崭新创科项目，两年前在新都会广场引入智能洗手间，就是其中一个成功例子。启胜也通过新科技提升现有设备，

以优化管理效益。例如西九龙V Walk引入自动化设备管理系统及"优化冷冻水机组能源效率"技术 ，协同物联网的应用，物业一年可省下逾400万度电。启胜更订下目标，力求在2030年前为其负责管理的主要物业耗电减少13%，为减排出一分力。

至于康业也紧贴科技发展的新趋势，成功开发了"VR 生活停不了"增值服务平台。团队花半年时间，利用3D全景扫描技术，为客户提供各种相关增值服务：包括通过市场独有的"3D全景带路"技术，在住宅小区和商场提供导航服务，还可用于为商场设计互动小游戏。此外，更可适用于线上看房、追踪装修情况，甚或进行同步教学和举办虚拟展览等，用途十分广泛。

为了进一步打造智能化生活，康业和启胜同时积极开发及推出客户手机应用程序，提供一站式物业管理服务。住户可通过手机应用程序，轻松操控住所配备的智能家居系统、预约会所设施以至缴交管理费等。两间物管公司还引进各类智能机器人应用，处理清洁和会所送餐等不同工作。

随著国家"十四五"规划明确支持香港建设国际创新科技中心，集团亦将继续配合，全速推进创科，融入国家发展大局，并将积极投放资源研发创新科技，提升旗下物业品质及服务效益，为广大利益相关方缔造长远价值。
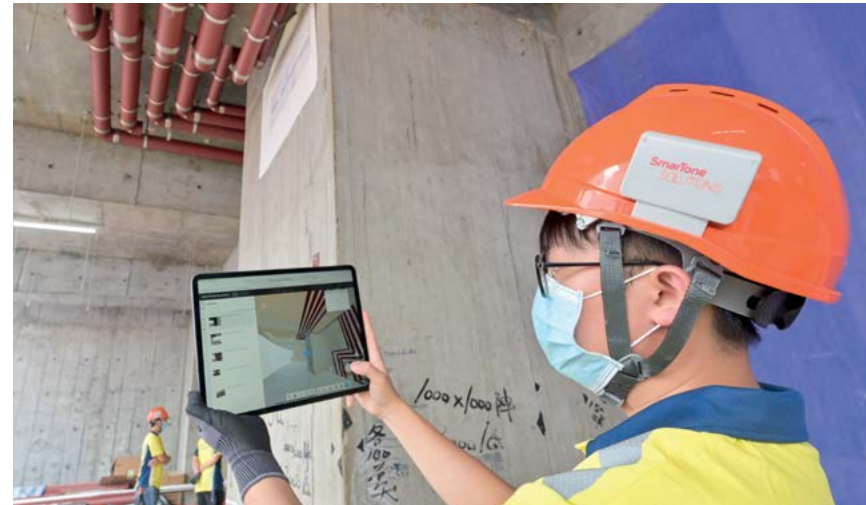
Supported by the 5G network, Building Information Modelling is used at the construction site allowing engineers to easily review the design, layout and the materials used, as well as the quality of the works
通过5G网络，工地采用建筑信息模拟 (BIM) 模型时，可即时呈现高像真度的建筑模型，方便工程人员审查设计布局、材质、施工工艺等

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
智能头盔可实时监察工人的心跳、体温及位置，同时备有紧急按钮，若工人有不适或意外跌倒可及时发出警报

SmarTone keeps abreast of the times by utilizing 5G & smart technology for innovative applications
数码通与时并进　善用5G及智能科技推动创新应用

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.

集团旗下附属公司数码通向来以优质网络及领先技术领导市场，用心了解客户需要，建立优越的客户关系。通过针对不同客户群的市场策略、独特的服务计划及增值服务，数码通成功满足不同客户的需求，巩固其在香港移动通讯业中以客为本的领先地位。

随著5G科技愈趋普及，数码通积极发挥相关优势，致力发展相关应用方案，早于2019年已开发"SmartWorks智安建"系统。该系统以5G、云端和物联网技术为基础，配合影像分析、人工智能及机器学习，推行工地全面化智能管理。该系统加入许多保障工地安全的功能，包括智能头盔、健康监察站、大型机械的安全预警系统、进出管制、环境监察站等，预防意外发生，提升建筑工人安全系数，管理人员更可通过一站式综合平台提升管理效率。

"SmartWorks智安建"系统充分体现集团的创新精神，而旗下位于观塘巧明街的商业项目 The Millennity 更是香港首个引入"SmartWorks智安建"的建筑工地，备受业界赞赏和肯定。该系统还曾获"建造业议会创新奖"中的建造安全组第一名，同时也是建造业创新及科技基金的预先批核方案。

Invited by the Construction Industry Council, SmarTone promotes "SmartWorks" at the Construction Innovation and Technology Fund Smart Site Safety System Scheme Launching Ceremony
数码通此前应建造业议会的邀请，在建造业创新科技基金的智能工地安全系统计划启动礼上推广"SmartWorks智安健"系统