

SMART VISION 智城

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**把握創科潛力
實現智慧及電子醫療**

ABUNDANT OPPORTUNITY FOR
SMART AND ELECTRONIC HEALTHCARE

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About Us 關於

Smart City Consortium (SCC) 智慧城市聯盟

The Smart City Consortium (SCC) comprises a group of professionals from different corporations and organizations with the aim to provide opinions and suggestions to the Government for formulating related policies and standards in the development of Hong Kong as a world-class smart city. We encourage worldwide collaboration with different stakeholders to create the right ecosystem, which fosters innovation and sustainable economic growth for Hong Kong.

智慧城市聯盟（SCC）匯聚一群來自不同公司和機構的專業人士，為香港發展成為一個世界級的智慧城市，在政策和標準層面提供專業意見和建議。我們鼓勵與全世界不同的持份者合作以創造合適的生態系統，促進香港創新及經濟的可持續增長。



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Messages to Public

給公眾的話

醫療改革一直是社會十分關心的公共議題，現時本港的醫療系統正面對醫護人手不足，以及因人口老化所帶來的安老服務資源匱乏等難題。有見及此，政府《香港智慧城市藍圖》中的「智慧生活」，提及長者及殘疾人士支援措施和支援醫療服務，包括2018年資助10億元，為「安老及康復服務單位試用及購置科技產品」、「試行智慧醫院模式」，以及分階段推行電子健康紀錄互通系統等，期望以科技支援醫療系統，緩解香港龐大的醫療及安老服務壓力。

智能科技方案可以提升醫療服務的預測性和預防性。如透過安裝室內外物聯網網絡，實時感知個人健康狀況、生物辨識測量和生活習慣等變化，所收集的健康數據可整合至智能家居設備，還能連接到個別診所和醫院，為病人提供全面而個人化的健康數據管理，也增加病人對自身健康的認知。同時，隨著電子健康紀錄互通系統進一步擴大授權範圍，增加遠程診症的可行性，讓醫護能為在家生活的慢性病患者問診，免卻他們定期覆診的舟車勞頓。

Health care reform has been one of the issues on which the public have most concern. The Smart Living area in the Hong Kong Smart City Blueprint has included “Support for the Elderly and Persons with Disabilities” and “Support for Healthcare” with multiple measures. For example, the Government had a launch of “a \$1 billion funding scheme in 2018 to support trial use and procurement of technology products for elderly and rehabilitation service units”; started “adopting a smart hospital approach”; and commissioned “the Stage Two Electronic Health Record Sharing System (EHRSS) in phases by 2022”, etc. Technology is expected to be one of the solutions to the massive pressure on the healthcare system.

Intelligent technology solutions can predict and prevent disease. To illustrate, indoor and outdoor internet of things (IoT) network can detect real-time changes of personal health conditions, biometric measurement, and living habits, etc. The collected health data can be integrated with smart living equipment, even connect to specific clinic and hospital. Therefore, it can provide a comprehensive and personalized health data management service for the patients, and increase their awareness of health. In addition, the EHRSS can allow authorization of access to other parties



Mr. Gary Yeung, MH
楊文銳先生，榮譽勳章

President
會長

人口老化乃是全球議題，安老服務需求龐大，香港無可避免。有見及此，智慧城市聯盟計劃與仁濟醫院和沙田婦女會共同籌建智慧安老院，示範以嶄新科技協助管理安老院，便利醫護的工作流程，並以智能機器協助老人復康等。

聯盟一直積極推動香港全面實行智慧城市。展望未來，香港醫療體系可引入更多創新科技，以解決醫護人手不足、資訊不通等問題，以及提升行政效率。不久將來，我們可望全面普及並利用物聯網、遠程醫療系統、健康數據監測等技術，紓緩醫護人手壓力，實現理想中的智慧生活、智慧城市。

which makes long-distance medical consultation possible. As a result, chronic disease patients can seek medical consultation at home, which saves their time and energy.

Ageing population is one of the global issues. Hong Kong inevitably needs to face the massive demands of elderly care services. In this regard, SCC is planning to cooperate with Yan Chai Hospital and Shatin Women's Association to construct a Smart Elderly Home so that we can demonstrate how to manage the elderly care home with the aid of innotech, such as facilitating healthcare workers' job and assisting elders' rehabilitation with intelligent machines.

SCC has been actively promoting a comprehensive implementation of smart city in Hong Kong. In the foreseeable future, we can utilize technologies such as IoT, telemedicine systems, and disease surveillance to tackle issues such as shortage of medical manpower, and at the same time improve efficiency in elder's support and interoperability of information. Thereby, we can achieve the vision of the Smart Living, Smart City.

Abundant Opportunity for Smart and Electronic Healthcare

把握創科潛力 實現智慧及電子醫療

香港擁有全球最有效率的醫療系統，根據「2018年彭博健康護理效率指數」（Bloomberg Health-Care Efficiency Index），香港醫療系統冠絕全球，排名第一，而且在臨床服務、醫學教育及研究方面均達世界級水平，是香港的競爭優勢之一。然而，今天香港醫療系統面對不少挑戰，市民對醫療服務的需求持續上升，但醫護人員供不應求，同時更有人口老化及慢性病呈上升趨勢等壓力。不過，現時資訊科技發展一日千里，不單大大提升醫療系統效率，更可改善診症的準確度、醫患間的溝通、各種治療間的相互影響，以及公共衛生的監察。

政府近年在醫學科研上投放了不少資源，並在2017年發表的《香港智慧城市藍圖》「智慧生活」一節中，勾畫出智慧及電子醫療的發展方向。醫院管理局（醫管局）發展得相當成熟的臨床醫療管理系統，配合政府推動的電子健康紀錄互通系統（「醫健通」），為今後的發展奠下基石。而在2020年或之前，政府開始為新的醫院項目試行智慧醫院模式，醫管局也按《藍圖》規劃設立大數據分析平台，整合醫療數據，協助本地醫療科技研究，推動香港醫療科學可持續發展。

今期《智城》邀請了香港大學李嘉誠醫學院臨床助理教授衛家聰醫生、香港大學護理學院副教授黃婉霞博士、仁濟醫院顧問局永遠顧問馮卓能先生、東華三院資訊科技總主任劉延禧先生以及Asiabots Limited聯合創始人岑潮輝先生，介紹香港智慧及電子醫療發展、分析該如何發揮新科技的潛力，以及本地醫院和資訊科技業界如何以創新科技應對龐大的醫療需求，改善市民的生活質素。

Hong Kong has one of the most extensive healthcare systems in the world. According to 2018 Bloomberg Health-Care Efficiency Index, Hong Kong healthcare system is the best in the world. Its clinical services, medical education and research are at world-class levels, which has become one of the competitive strengths of Hong Kong. Having said that, Hong Kong healthcare system is facing lots of challenges today: the number of healthcare staff cannot cope with the increasing demand of medical services brought by the aging population and increasing trend in chronic diseases. The rapid development of information technology nowadays not only can greatly enhance the efficiency of healthcare system, but can also improve the accuracy of diagnosis, doctor-patient relationship, impacts of treatments and the supervision on public health.

In recent years, the Government has devoted massive resources into medical scientific research. It also outlined the future direction of smart and digital healthcare in the Smart Living section of *Hong Kong Smart City Blueprint* published in 2017. The Hospital Authority (HA) has developed a rather mature Clinic Management System (CMS) to collaborate with the Electronic Health Record Sharing System (eHRSS) launched by the Government. The smart hospital operation mode for new hospital projects will also be tested in or before 2020. In the meantime, HA plans to set up a big data analysis platform for integrating medical data to facilitate local medical scientific research, so as to motivate and sustain the development of Hong Kong's medical science.

Smart Vision has invited Dr. Abraham Wai, Clinical Assistant Professor at HKU Li Ka Shing Faculty of Medicine; Dr. Janet Wong, Associate Professor at HKU School of Nursing; Mr. Clement Fung, Permanent Adviser of Yan Chai Hospital Advisory Board; Mr. Edward Lao, TWGHs Principal Information Technology Manager; and Mr. Chris Shum, Co-founder of Asiabots Limited, to introduce the development of Hong Kong smart and electronic healthcare, to analyze how to grasp the abundant opportunity of innovative technology, and to discuss how local hospitals and IT industry can utilize innovative technologies in response to the massive medical demands and to improve citizen's quality of living.





Dr. Janet Wong, Associate Professor at HKU School of Nursing (Left) and Dr. Abraham Wai, Clinical Assistant Professor at HKU Li Ka Shing Faculty of Medicine (Right)
香港大學護理學院副教授黃婉霞博士（左）和香港大學李嘉誠醫學院臨床助理教授衛家聰醫生（右）

醫健通擴大應用 邁向真正互聯互通

說起香港的電子醫療發展，不得不提政府於2016年推出的香港醫療改革基建平台——醫健通。在獲得病人授權下，公私營醫護人員可透過醫健通互通和取閱病人的健康紀錄，讓病人得到更適切和一致的健康護理，減少重複的檢查和治療。同時亦減少醫護人員因紙張紀錄而出現手民之誤，並有助改善監測疾病和公眾衛生的工作，令病人、醫護人員和整個社會三方均能得益。現時，已有超過100萬名市民及1,700間公私營機構參與了醫健通。

除了市民的支持外，業界的參與和配合亦相當重要。其中東華三院便積極投入，由2016年至今，已有超過80個醫療和社區服務中心參與。為了配合醫健通進行數據傳送，東華三院資訊科技處更自行開發醫療護理資訊系統，就大腸癌篩查先導計劃的數據傳送，提供予醫健通所需的界面。

醫健通雖有諸多好處，但現時仍未能大規模互通資料。這是由於政府並無硬性規定參與，對私家醫院或診所又缺乏誘因，以致病人紀錄在公私營醫療系統之間並不相通，妨礙病人於兩個醫療系統間的流轉，對長期病患者尤其不便。

港大的衛家聰教授指出：「若輸入電子病歷的系統界面更方便醫生使用，加上政府在技術和經濟層面加以輔助，以及在公私營醫療系統上設立協調機制，再配合宣傳推廣，相信會有更多醫生樂於參與。」

同時，衛教授期望進一步擴大醫健通的應用範圍，令醫護人員可從同一醫療平台收集病人健康行為數據，如吸煙、飲

Extending eHRSS Application - Real Interconnection and Intercommunication

In talking about the development of digital healthcare in Hong Kong, the healthcare reform infrastructure – the eHRSS launched by the Government in 2016 must be mentioned. With the consensus of the patient, public and private medical service providers can provide better and coherent treatment services to the patient by interconnecting and accessing the health records of the patient via eHRSS. Repetition of examinations and treatments is minimized. The chance of medical blunders due to paper records will also be reduced. It is beneficial to patients, medical staff and the society as it improves the disease surveillance and monitoring on public health. Currently, over a million citizens and 1,700 public and private institutions have joined the eHRSS.

Apart from the support of citizens, the participation and collaboration of the healthcare sector are also fundamental. Tung Wah Group of Hospitals (TWGHs) has played an active role. There are over 80 medical and community service centres having joined the eHRSS since 2016. In order to collaborate with the eHRSS for data transmission, TWGHs Information Technology Branch has developed a healthcare information system to provide the interfaces for the data transmission of Colorectal Cancer Screening Pilot Project.

Although the eHRSS has lots of advantages, its current scale is still limited. Since the participation is on a voluntary basis, the inducement for private hospitals and clinics to join is not significant. It leads to the disconnection of medical records between the public and private healthcare systems which makes it difficult for patients to swap between public and private systems. This is rather inconvenient to chronic patients.

酒、運動及飲食習慣、工作性質及時間等資訊，並按此推算不同疾病的風險，使患者可減低甚至預防慢性病。此外，因應病人資訊互通，發展更以人為本的服務模式，從而提升整體醫護服務的效率和質素。

「病人平台」鼓勵市民健康自主

「作為一位醫生，我們心目中的健康不單是沒有疾病，更是不論身體、精神及社交方面都獲得全面的照顧。」衛家聰說。港大的黃婉霞教授也很認同，她補充說：「醫療系統的責任除了治療疾病，還要提醒市民注意自己的健康。」無疑，醫生和護士要為病人的健康把關，但更重要的是病人要重視自身的健康。

政府計劃在2022年或以前分階段推行第二階段醫健通，包括開發「病人平台」，衛家聰和黃婉霞均表示支持，亦希望盡快推行。「若能透過平台輕鬆獲得健康與疾病資訊，以及了解和管理自己的健康狀況，還能獲得個人化的醫療建議，相信可鼓勵市民關注個人健康，亦能提高市民對醫療服務的認知。」黃婉霞說。

「病人平台」鼓勵市民病向淺中醫，而且可舒緩前線醫護人員的壓力和減少治療的總成本。但是不少人諱疾忌醫，期間的症徵變化往往紀錄不全。若「病人平台」可以讓使用者更新健康資料和病況，甚至讓病人輸入自己的服藥紀錄，包括醫生的處方、自行購買或其他療法的藥物和服用時間，醫護人員便可更了解病人的情況。

衛家聰亦期待「病人平台」的分析功能可提供更個人化的健康教育，以及藥物和手術的資料，讓病人在決定治療方案前掌握更多資料。同時，透過輸入的病徵資訊，數據分析功能可就疾病的緩急輕重向病人提醒觀察要點、關注事項等，避免延誤醫治；平台亦可給醫生提示，以免匆忙間誤判病情，錯失治療的黃金時機。



Dr. Abraham Wai, Clinical Assistant Professor at HKU Li Ka Shing Faculty of Medicine
香港大學李嘉誠醫學院臨床助理教授衛家聰醫生

"If the input interface can be more user-friendly to the doctors, while the Government provides more assistance on technical and economic aspects, and better coordination between public and private healthcare systems, plus more promotion and publicity, I believe there will be many more doctors willing to join." Professor Abraham Wai of HKU said.

He also hopes the applicable area of the eHRSS can be further extended. For example, a single information platform covering patients' smoking, alcohol consumption, exercise and eating habits, job nature and time, etc. will make it much easier for medical practitioners to analyze health behaviour and risk. In this case, patients' risk of different diseases can be estimated which helps reduce or even prevent chronic diseases. With the interconnection of systems, a more people-oriented service mode can be developed, thereby enhancing the overall efficiency and quality of healthcare services.

Patient Platform - Manage Your Own Health

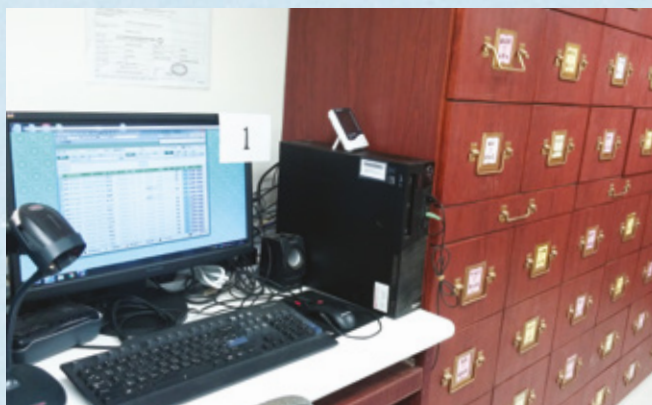
"As a doctor, the ideal 'health' in our minds is not only without any disease, but also to receive full and comprehensive care regardless of physical, mental and social health." Abraham said. Professor Janet Wong of HKU also agreed with it. She said, "Apart from curing diseases, the responsibility of the healthcare system also includes reminding the citizens to be aware of their own health conditions." Undoubtedly, doctors and nurses assume the role of being the guardians of patients' health. However, it is more important for patients to look after their own health more proactively.

The Government plans to launch the second stage of eHRSS in phases by 2022, including developing a Patient Portal. Both Abraham and Janet expressed support and hoped it can be launched as soon as possible.

"If the public can access health and disease information more easily through the platform, and be able to manage and learn more about their own health conditions, plus the chance of personalized medical consultation, I believed that it may encourage the public to be more aware of their personal health, and increases their knowledge about healthcare services." Janet said.

The Patient Portal encourages patients to seek medical advices during the early stage of illness. It can mitigate the stress on frontline medical staff and reduce the total cost of treatments. Since patients may be reluctant to seek help from doctors, the record of changes in the symptoms is always incomplete. If Patient Portal allows users to input updated health information and the patient's condition, or even allow the patient to input data and timing of medications he has taken, then the healthcare staff can know more about the patient's condition via all these data.

Abraham also looks forward to the Patient Portal's consolidating personalized information on health education, medication and surgery via data analysis function, thereby the patient can have more information before choosing treatment options. In the meantime, data analysis can remind the patient about major observations according to the priority of illnesses after scrutinizing the details of symptoms. It can also notify the doctors to conduct appropriate risk management to prevent misjudgement of illness or missing the golden opportunity of early medical treatment.



業界範本 東華拓中醫資訊系統

東華三院的慈善形象深入人心，服務範圍主要有醫療、教育、社會福利三大方面，但大家未必知道，東華其實百多年前是以中醫起家。時至今日，東華研發的「中醫醫療資訊系統」是香港首個中醫藥專科門診系統，更是首個獲醫管局總藥劑師辦事處採納的中藥共同編碼系統。

東華的劉延禧先生指出，自2000年起中醫開始普及，他們從零開始自行研發系統，過程可謂極具挑戰性。劉延禧續說：「我們與醫管局總藥劑師辦事處、廣華醫院及東華三院各前線團隊及內地中醫師等緊密溝通，並據西醫配藥『三核五對』的風險管理概念，以國家標準中醫病症分類與代碼為編碼藍本。」

由構思到系統推出，前後不足5年時間，系統已涵蓋病者到診健康評估、中醫師處方化驗單列印、臨床行政工序、配藥及藥物存倉、對沖藥提示等的多元化功能。當中的智能排隊管理系統有效幫助中醫中心管理配發處方藥膏的工作，亦配合中心呼叫求診人診症、敷藥及取藥等。劉延禧指出，此系統除了於東華三院轄下的所有醫院及診所應用外，也捐贈予醫管局及香港大學專業進修學院作開發中醫門診應用系統的參考範本。隨着科技瞬息萬變，東華三院資訊科技處更開發集中中醫診症預約、輪候、取藥的一站式手機應用程式，進一步便利市民大眾。



Mr. Edward Lao, TWGHs Principal Information Technology Manager
東華三院資訊科技總主任劉延禧先生

Templates for the Sector - Tung Wah Developed CMCIS

Tung Wah Group of Hospitals (TWGHs) is a well-known charity. Its services cover three main areas: healthcare, education and social welfare. It is little known that Tung Wah was starting initially on Chinese medicine a hundred years ago. Nowadays, the Chinese Medicine Clinical Information System (CMCIS) developed by Tung Wah is the first Chinese medicine clinic system in Hong Kong. It also became the first Chinese medicine joint coding system adopted by the HA Chief Pharmacist's Office.

Mr. Edward Lao of TWGHs stated that the challenging process of developing this system began as Chinese medicine started to become popular since 2000. "We maintain close communication with the HA Chief Pharmacist's Office, Kwong Wah Hospital, frontline teams of TWGHs and CMPs in Mainland, etc. We used the 'Three Checks Five Rights' principle from western medicine prescription, and follow the national standardized Chinese medicine disease classification and codes to form the coding blueprint." Edward said.

It only took five years or so from the initial conception to the launch of the system. It already covers diversified functions such as patients' health assessment, CMPs prescription slip printing, clinical administration procedures, prescription and medicine storage, drug incompatible notification, etc. Its smart queuing management system efficiently helps the CMPs Centre to manage dispensing prescription ointments, and to notify patients for consultation, dressing and drug collection. This system has not only been applied to hospitals and clinics under TWGHs, it has also been donated to the HA and HKU SPACE as a reference template for the development of Chinese medicine clinic application system. What's more, in the age where technology is rapidly changing, TWGHs Information Technology Branch has developed a mobile application with the integration of CMPs consultation reservation service, queuing and drug collection for the convenience of patients.

Following the Smart Hospital of CUHK, TWGHs hopes to gradually achieve the redevelopment of Kwong Wah Hospital and the establishment of Chinese medicine wards and hospitals in 2021 and 2025 respectively. The projects will adopt advanced innovative technology and equipment, such as utilizing IoT technology with bluetooth positioning technology and RFID, so as to provide simultaneous navigation, registration and consultation information for patients once they seek service at the hospital. In the smart wards, bedside information kiosks can provide communication and entertainment services for the patients. Mobile medical workstations can assist distant monitoring of patient's vital sign and enable smart nurse call system, etc. With a series of forward-looking medical information system, patients' safety can be assured as medical blunders will be reduced.

繼中大的智慧醫院後，東華三院亦期望廣華醫院重建成智慧中醫病房及醫院，並計劃分別在2021年及2025年逐步完成。有關項目將採用先進的創科技術及設備，如物聯網，加上藍牙定位技術與無線射頻辨識系統，當病人進入醫院，即能同步為他提供導航、登記及初步診治等服務。而在智慧病房方面，床邊會設資訊站為病人提供通訊和娛樂，而移動醫生及護理工作站則實施遠端生命體徵監察和智能護士呼叫系統等。一系列具前瞻性的醫療信息系統，有望減低醫療失誤及加強保障病人安全。

打造智慧安老院 仁濟推動健康老齡化

醫療服務的另一大挑戰是人口老化，然而此一議題並不新鮮。事實上，早在2003年發表的《人口政策專責小組報告書》，已指出香港很快面對人口老化的巨大壓力。而根據政府統計處的推算，至2036年，長者人口將佔整體人口百分之三十一，如何推廣長者健康生活，促進老齡健康也是箇中關鍵。在安老設施使用更多科技應用是一大妙法，仁濟醫院旗下的安老院和長者社區中心將採用一系列創新資訊科技及設施支援長者，藉此提升長者生活質素。

仁濟醫院的馮卓能先生說：「我們致力打造一所兼具智慧營管概念及創新科技應用設施的優質院舍，在香港賽馬會慈善信託基金捐款支持下，仁濟醫院賽馬會護理安老院已於2018年完成設施改善計劃工程。」安老院分兩層，合共提供60個宿位。院舍內空氣清新全因採用獨特而先進的NCCO納米過濾空氣淨化系統，是首間獲得環境保護署發出「卓越級」室內空氣質素檢定證書的院舍。另外，每位院友均配備智能手環，一方面可提高派藥精準性，另一方面配合防遊走功能的離床感應器及智能定位儀，有效偵察長者在院舍的行蹤。

仁濟社區安老服務單位更配備多種高端復康儀器和認知訓練樂齡科技產品，包括「SODA & ME-SODA 樂活認知訓練系統」和「VR System」等，為長者提供訓練。「VR System」是政府資訊科技總監辦公室「長者數碼外展計劃」中的重點項目，讓長者在安全的情況下，置身於虛擬的熟悉環境，如懷舊的「港式士多」、「家居廚房」中，進行有趣簡單的任務，如模擬購物、煮食等。這些活動其實是認知能力訓練，也有強身健體並增強復健的效果。訓練過程所收集的數據更會即時上傳至雲端系統，讓治療師能掌握長者的情況及進度，並分析成效，以便日後調整復康內容。

此外，仁濟旗下的三間長者鄰舍中心推行「賽馬會e健康電子健康管理計劃」，採用電子健康管理系統，透過科技關顧長者身心健康狀況。中心均設有綜合身體檢查機，可量度體重、身高、BMI、血壓計等，所得資料會以射頻識別



Mr. Clement Fung, Permanent Adviser of Yan Chai Hospital Advisory Board
仁濟醫院顧問局永遠顧問馮卓能先生

Smart Elderly Homes - Yan Chai Motivates Healthy Aging

Another major challenge of healthcare service is the population aging, although it is not a new topic anymore. In fact, *Report of the Task Force on Population Policy* published in 2003 has already pointed out that Hong Kong will soon have to face the massive pressure of aging population. According to the projection from the Census and Statistics Department, in 2036, the percentage of elderly population in the total population will be 31 percent. How to promote healthy living for the elderly and achieve healthy aging will be crucial. Applying more technology in elderly care facilities will be a good idea. The elderly's homes and District Elderly Community Centres (DECC) under Yan Chai Hospital adopted a series of innovative information technology and facilities to support the elderly in order to enhance their quality of living.

Mr. Clement Fung of Yan Chai Hospital shared with us the latest development. He said, "We made strides in developing premium homes equipped with advanced smart management concept and innotech application facilities. With the donation from The HKJC Charities Trust, the facility enhancement construction of Yan Chai Hospital Jockey Club Care and Attention Home have been accomplished in 2018."

The Home has two levels, which provides 60 places in total. The Home has adopted the unique and advanced NCCO Air Sanitizing System to ensure fresh air indoors. Therefore, it became the first home to be awarded the Excellent Class in the IAQ Certification Scheme issued by the Environmental Protection Department. In addition, every resident in the Home is equipped with a smart bracelet for digital distribution of medicines, so as to increase the accuracy. The smart bracelet can also collaborate with the bed sensors for preventing patients wandering around, and the smart positioning system for tracing of the elderly when necessary.



卡電子存檔並上載至雲端，並由長者安居協會護士監察情況，一旦察覺異常便會主動慰問長者並通知中心跟進。馮卓能希望此舉能鼓勵生活於社區之長者建立起管理自我健康的良好習慣，期望最終達致社區安老。

Asiabots 開拓人工智能的潛力

香港亦有不少創科企業以專業技能與知識，協助推動香港智慧醫療的發展，本地初創企業Asiabots便是其中之一。創辦人岑潮輝先生聯同三位拍檔黃梓豪、林凱豪和黃文彪成立的Asiabots，主力開發人工智能應用，所研發Clinicbot與「Dr. Care隨行醫生」，以自然語言處理系統（natural language processing）配合即時通訊軟件和聊天機械人（chatbot）使用，在醫療服務上發揮人工智能的威力。

Clinicbot是供診所使用的病人關係管理系統，用戶預約診症可透過即時通訊軟件或致電診所，亦可直接以廣東話語音輸入預約時間。岑潮輝指出，獨有開發的中文語意理解系統不單能準確明白用戶的說話，並會列出相應的時間予用戶確認登記或預約。智能客服又可以回覆一般病人的大部分查詢，而真人護士則可以從幕後監察，省卻繁複的工作。系統還能提醒病人覆診及到診時間，為患者提供貼心服務。

Yan Chai community elderly service units are also equipped with various high-tech rehabilitation equipment and cognitive training gerontechnology products, including SODA & ME-SODA Training Devices and VR System, etc., in order to provide rehabilitation training for the elderly. VR System is a recent project in the OGCI's "ICT Outreach Programme for the Elderly". It enables the elderly to return virtually to a familiar environment of the old Hong Kong. The seniors can carry out simple but interesting tasks such as simulated shopping and cooking, etc. in simulated environments such as Hong Kong style store and home kitchen. The impact on the elderly such as training cognitive ability, keeping fit and rehabilitation can be accomplished via various interactive VR games. The game data will be collected and uploaded to the cloud system after the training for the therapists to monitor the elderly's training condition and progress, so as to analyze the impact and readjust the content of rehabilitation.

In addition, three Neighbourhood Elderly Centres (NECs) under Yan Chai are running Jockey Club Community eHealth Care Project with adopting eHR management system to monitor the physical condition of the elderly through technology. The Centres also have integrated medical examination devices for measuring weight, height, BMI and blood pressure, etc. The health data will be uploaded to the clouds for the nurses from the Senior Citizen Home Safety Association to check. In case of abnormality, the staff in the Centres will follow up. Clement hopes these community supports can encourage elders to build the self-care habits, and eventually achieve the final goal of community elderly care.

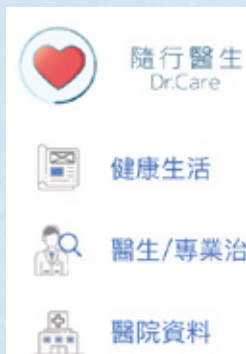
Asiabots Realizes AI's Potential in Medical Services

There are lots of local technology enterprises utilizing their own strengths and knowledge to support the development of smart healthcare in Hong Kong. Asiabots, a local startup is one of them. Mr. Chris Shum Chiu-fai, Co-founder of Asiabots established the company with three partners: Thomas Wong, Ryan Lam and Issac Wong. The company mainly focuses on developing artificial intelligence (AI) applications. It



(From left) Mr. Chris Shum, Mr. Ryan Lam, Mr. Thomas Wong and Mr. Issac Wong, Co-founders of Asiabots Limited

(左起) Asiabots Limited 聯合創始人岑潮輝先生、林凱豪先生、黃梓豪先生和黃文彪先生



智慧搜尋搵醫生 / 專業治療

所有西醫、牙醫、中醫、專業治療師等

普通科；觀塘



「Dr. Care隨行醫生」是Asiabots另一研發重點，這一站式醫療諮詢服務網上平台好像小助手般，為用戶提供醫療建議。岑潮輝舉例：以往查詢居家附近診所大都只靠鄰里口碑，而Dr. Care則有全港最齊全的醫療數據庫，不單能搜尋出就近的診所，也有營業時間、地址和服務範圍等資訊，方便用戶尋找合適的醫生；而且用戶可以透過chatbot與Dr. Care即時直接對話。只需要輸入例如病徵等簡單資料，Dr. Care便能夠快速推算用戶可能患上的疾病，並羅列出成因和預防方法，全方位照顧病人需要。Dr. Care還提供公私營醫療的最新消息，如急症室實時輪候時間。為了令用戶關注個人健康，Dr. Care也會定期發放疾病病理、新治療技術、健康膳食和營養食譜等多元化資訊。

同時，智慧城市聯盟亦計劃與仁濟醫院和沙田婦女會共同籌建智慧安老院，以科技推動院舍的運作，同時讓長者體驗嶄新科技帶來的生活便利。

「電子醫療的市場潛力非常龐大，不過距離解決醫療系統壓力的目標還有漫漫長路。」衛家聰總結說。期望透過醫學界、學術界、IT界與政府全方位配合和協作，推動智慧及電子醫療普及化，幫助應對未來醫療服務的挑戰，尤其在基層醫療上，令香港的醫療系統能健康地、可持續地發展下去。



developed Clinicbot and Dr. Care which combine the technology of natural language processing or NLP with instant communication software and chatbot. It demonstrates the potential of AI in medical services.

Clinicbot is a Patient Relationship Management System used in clinics. Users can book an appointment via instant communication software or phone calls. Chris stated that the exclusively developed Chinese Semantic Comprehension System supports Cantonese voice commands and can accurately comprehend the statements and questions of the users. It can also list out related time slots to confirm the users' registration and reservation. Smart CS can reply most of patients' questions. Human nurses can monitor the conversation from the backstage, which saves massive amount of administrative work, so as to reduce the pressure on the medical staff. It also provides personalized notifications of consultations and follow-up consultations.

Dr. Care, another major product of Asiabots, is a one-stop medical consultation online platform which provides suitable medical advices for users. Chris mentioned that, in the past, people tended to ask friends and neighbours for suggestions when they needed medical services. Dr. Care now have the most complete medical database to suggest the most suitable one for the users. Users can search for the nearest clinic, and the related information such as opening hours, address and scope of service, etc. Users can also start a conversation with the chatbot by inputting relevant questions and information such as symptoms. Dr. Care can immediately diagnose the underlying diseases and list out the causes and ways to prevent. Latest news from public and private healthcare institutions will be shown, such as the real time updates of waiting time of A&E Units, for users' reference. In order to raise the public awareness of personal health, Dr. Care regularly releases diversified health information from pathologies, new medical techniques, therapeutic diets to nutritional recipes, etc.

In order to support the operation of elderly home with technology and to enable the elders in experiencing the convenience brought by the innotech, SCC is planning to cooperate with Yan Chai Hospital and Shatin Women's Association to construct a Smart Elderly Home.

"The market potential of digital healthcare is very large. However, it is still a long way to accomplish the goal of reducing the stress on healthcare system." concluded Abraham. With the wider adoption of smart and digital healthcare through the full collaboration and support from the healthcare sector, academia, IT industry and the Government, we are able to address the challenges on medical service in the future, especially in primary healthcare services. Hopefully, it can make the development of Hong Kong's healthcare system healthier and more sustainable.

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JUNE



Signing MoU with CityOS Ltd China 與雲栖城市大腦科技簽署合作備忘錄

On 13th June, Mr. Gary Yeung, MH, President of SCC, signed a memorandum of understanding ("MoU") with the CityOS Ltd China. This marked the 34th MoU since the inauguration of SCC.

CityOS Ltd China is the leading company in Hangzhou to operate and manage the urban brain. With their dedication to promote urban brain and related research and operations of the central system, SCC is expecting future cooperation with them to jointly promote smart cities.

智慧城市聯盟會長楊文銳先生於6月13日，代表聯盟與雲栖城市大腦科技簽署合作備忘錄，是聯盟自成立以來簽署的第34份合作備忘錄。

雲栖城市大腦科技是杭州城市大腦營運和管理的主要部門。它致力於推廣城市大腦，以及中央系統的研究和運作。聯盟對於往後的合作、共同推動智慧城市充滿期待。



Fifth China Smart City International Expo 2019 2019（第五屆）中國智慧城市國際博覽會

Dr. Winnie Tang, JP, Founder and Honorary President of SCC and Mr. Gary Yeung, MH, President of SCC joined Mr. Tony Wong, JP, Assistant Government Chief Information Officer (Industry Development) at the Fifth China Smart City International Expo 2019 in Beijing from 14th to 16th June. Numerous exhibitions displaying the advanced development of smart city and technological innovation were showcased at the Expo.

智慧城市聯盟創辦人及榮譽會長鄧淑明博士和聯盟會長楊文銳先生，聯同助理政府資訊科技總監（產業發展）黃志光先生，在6月14至16日出席於北京舉行的第五屆中國智慧城市國際博覽會。是次活動設多個成果展區，展示智慧城市建設和科技創新的先進經驗。

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Smart City Academy Inauguration Ceremony 智慧城市學院的開幕典禮

The Smart City Academy (SCA) and the Hong Kong Institute of Vocational Education (IVE), one of the VTC member institutions, signed a MoU during the Smart City Academy Inauguration Ceremony on 19th June to jointly launch a Professional Diploma in Smart City Programme. The collaboration highlighted SCA's and IVE's dedication and commitment to nurture talents for smart city and sustainable development of society.

智慧城市學院（SCA）與職業訓練局（VTC）機構成員香港專業教育學院（IVE）將合作開辦「智慧城市專業文憑」課程，並已於6月19日智慧城市學院的開幕典禮中簽署合作備忘錄，標誌兩個機構攜手合作，培訓更多智慧城市專才，為社會持續發展作出貢獻。



Smartizen Park @SummerFest 「智慧城市遊樂園@中環夏誌」

Co-organised by SCC and Central Venue Management (CVM), Smartizen Park@SummerFest was held from July 15 to September 1. As a focal event of SCC this year to celebrate its 3rd anniversary, the Smartizen Park consisted of three featured zones, namely the EXPERIENCE zone, LEARN zone, and PLAY zone. Through various programs and showcases, the public explored and appreciated the delight of living with innovative technologies.

適逢智慧城市聯盟成立三周年，由智慧城市聯盟及Central Venue Management合辦之「智慧城市遊樂園@中環夏誌」已於7月15日至9月1日在中環海濱活動空間圓滿舉行。

活動設有三大大區：「體驗區」、「學習區」、「玩樂區」，透過不同節目及展覽，讓公眾探索創新科技如何改善生活。

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Smart Mobility and Smart Living Conference cum Partnership MoU Signing Ceremony 「智慧出行、智慧生活」研討會暨簽署合作備忘錄儀式

One of the highlights in the Smart Mobility and Smart Living Conference held in the Cyberport on 17th July was a Partnership MoU Signing Ceremony.

Under the witness of Mr. Nicholas Yang, JP, Secretary for ITB; Mr. Alexandre Giorgini, Consul General of France; two Founders and Honorary Presidents of SCC Hon Elizabeth Quat, BBS, JP, and Dr. Winnie Tang, JP; and Mr. Peter Yan, CEO of Cyberport; the Partnership of MoU was jointly signed by Mr. Gary Yeung, MH, President of SCC; Mrs. Rebecca Silli, Chairman of French Chamber of Commerce and Industry in Hong Kong; and Mrs. Agnes Romatet Espagne, Vice President of Task force sustainable city of the Movement of the Enterprises of France.

This MoU ceremony marked the 35th MoU signing of SCC since its founding. SCC looks forward to having fruitful collaboration in the near future.

數碼港於7月17日舉辦「智慧出行、智慧生活」研討會，高潮之一是簽署合作備忘錄儀式。

在創新及科技局局長楊偉雄太平紳士、法國駐港總領事官明遠先生和智慧城市聯盟兩位創辦人及榮譽會長葛珮帆議員與鄧淑明博士，以及數碼港行政總裁任景信先生見證下，智慧城市聯盟會長楊文銳先生代表聯盟與法國工商總會，以及法國企業運動聯盟可持續發展專責小組的代表簽署合作備忘錄。

此為聯盟成立以來所簽署的第35份合作備忘錄。聯盟對於往後的各方合作，共同推動智慧城市充滿期待。

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AUGUST



The Views of IT Specialist On the Policy Address Symposium 2019

「IT人看施政報告」研討會

SCC was one of the organisers of "The Views of IT Specialist On the Policy Address Symposium 2019" held in Wan Chai on 14th August. Being one of the speakers, President of SCC, Mr. Gary Yeung, MH, expressed his view on the 2019 Policy Address from the perspective of developing Smart Cities. The Government Chief Information Officer, Mr. Victor Lam, JP, also attended the symposium to exchange views with IT specialists and discuss topics around technology development, including "Improving Business and Industrial Development", "Talent Training" and "Technology Development and Building International Innotech Center".

「IT人看施政報告」研討會在8月14日傍晚於灣仔舉行，智慧城市聯盟作為活動合辦機構之一，由聯盟會長楊文銳作代表，從發展智慧城市的角度講述對《施政報告》的期望。政府資訊科技總監林偉喬先生亦有出席，代表政府聆聽IT界專業人士的意見，並與一眾IT業界人士一同探討「改善營商環境與產業發展」、「科技人才培訓」以及「科技發展與打造國際創科中心」等議題。



"2019 DEMO CHINA Hong Kong Division" finals

「2019 創業邦DEMO CHINA 香港區選拔賽」總決賽

"2019 DEMO CHINA Hong Kong Division" finals was successfully held on 21st August. Mr. Gary Yeung, MH, President of the SCC, and Mr. Fang Pingchao, Managing Director of CYZONE, gave a speech for the competition, after the master of ceremony Dr. Li Chan Wing kicked off this event. The officiating guest, Dr. David Chung Wai-keung, JP, Under Secretary for Innovation and Technology, also shared his insights to encourage the finalists before their pitching.

All teams tried the whole bag of tricks in the competition with their wonderful presentations. After all, MICAS Limited from Shenzhen won the champion. Wish they could further develop their innovative technology in the Greater Bay Area.

於8月21日舉行的「2019 創業邦DEMO CHINA 香港區選拔賽」總決賽經已圓滿結束。活動由李燦榮博士擔任大會主持，智慧城市聯盟會長楊文銳先生及創業邦董事總經理兼創業邦天使基金合夥人方平潮先生分別為活動致歡迎詞，而主禮嘉賓創科局副局長鍾偉強博士亦為總決賽致詞。

當天入圍的隊伍施展渾身解數，最後由密卡思（深圳）電訊有限公司獲得大獎，恭喜恭喜！相信日後該公司將有更多機會在大灣區發展其創新技術。

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21

AUGUST



Smartizen Park@SummerFest: Various Events Demonstrate Smart Lifestyle

智慧城市遊樂園@中環夏誌 豐富節目展示智能生活模式

Smartizen Park@SummerFest ("the Smartizen Park"), organized by Smart City Consortium, was successfully held from July 15th to September 1st. About 40,000 visitors were attracted to visit and had interacted with smart products! As a focal event of SCC this year to celebrate its 3rd anniversary, the Smartizen Park was divided into three major zones, namely the EXPERIENCE zone, LEARN zone, and PLAY zone. A happier, healthier, and smarter lifestyle was demonstrated via various programs and showcases. Visitors could explore and appreciate the delight of living with innovative technologies.

The event was generously supported by a number of technology companies, such as Nexusguard and TOZ.

適逢智慧城市聯盟成立三週年，聯盟在中環海濱活動空間舉辦的「智慧城市遊樂園@中環夏誌」（「遊樂園」），已於7月15日至9月1日圓滿舉行，共吸引了近4萬人次入場參觀與互動！作為聯盟2019年的重點活動，遊樂園設有三大園區：「體驗區」、「學習區」、「玩樂區」，透過豐富多元的節目展示更愉快、更健康、更聰明的智能生活模式，讓公眾親身探索並領略創新科技為生活所帶來的趣味，體驗智慧生活方式。

活動更獲各科技企業積極支持，如贊助商Nexusguard 和TOZ等。

體驗區：實用科技體驗與精彩特備節目

「體驗區」展出了各贊助公司的智能產品，包括通天地智能產品孵化基地（TTD）的塗畫電子書法體驗系統、創奇思（Cherrypicks）AR水族館和再生資源科技有限公司的逆向自動售賣機等創新技術，讓參觀者感受智能生活的趣味！而西門子有限公司則於區內展示多個智慧城市發展技術，包括「多功能智慧燈柱模型」、「路旁智能監測盒子」和「樓宇科技互動屏幕」，讓公眾了解智慧城市如何利用智能技術應對城市挑戰。

同場亦邀請了 Hong Kong Livefeed（香港直播）為公眾展示嶄新網上娛樂及網購體驗，同時為園區多場不同類型活動提供直播服務。ER Esport則在場設置結合真實與虛擬體育的電子競技器材，讓兒童及青少年親身體驗虛擬體育，藉此推廣全民電競。

為了持續給公眾帶來新鮮感和多元化體驗，場內設有多個嶄新科技的短期展覽。參展陣容相當鼎盛，包括政府資訊科技總監辦公室、機電工程署、香港科技園、數碼港、香港應用科技研究院、有利集團、數碼通和iUni-Plus。

政府資訊科技總監辦公室在「體驗區」內主要展示三項資訊科技應用，包括「Wi-Fi.HK」、「長者數碼計劃」和「數碼個人身分」，鼓勵市民及長者了解並善用科技改變生活。機電工程署則展出多種有關機電設備及系統的創新科技，又向公眾介紹「創新科技協作平台」、「政府物聯

EXPERIENCE zone : Memorable Experience and Special Program of Technology Applications

The EXPERIENCE zone showcased the smart products of the sponsoring companies for visitors to explore the smart city solutions which addressed urban challenges. The products included Smart Calligraphy Table by TTD Smart Products Accelerator, the AR Aquarium by Cherrypicks and Reverse Vending Machine by RVM Technology Limited to give the public a taste of smart living. Siemens Limited also displayed a number of smart city development technologies, including the multi-functional smart lamppost model, embedded city boxes and Building Technology Interactive Table.

Hong Kong Livefeed was invited to showcase the new online entertainment and shopping experience, while it also provided live broadcast services for different events in the Park. Meanwhile, ER Esports showcased eSports facilities which combined real and virtual sports for children and youngsters to try out and feel the excitement of virtual sports, so as to promote the concept of e-sports for all.

In order to keep the Park fresh and exciting, several short-term exhibitions were held to allow the public to experience diversified innovative technologies. Participated parties included Office of the Government Chief Information Officer (OGCIO), Electrical and Mechanical Services Department (EMSD), Hong Kong Science and Technology Park Corporation (HKSTP), Cyberport, Hong Kong Applied Science and Technology Research Institute, Yau Lee Group, SmarTone and iUni-Plus.



通」、「多用途機械人服務員」等配合香港創新科技發展的研發及應用。香港科技園及數碼港向公眾介紹創科生態圈及重點科技群組等資訊，並展示園區公司的智能產品及科技如智能健身鏡、「aspara室內智能種植機」和「無人派送機械人」等。另外，展覽亦設置5G基站，並讓公眾體驗智能建築科技結合VR技術，現場亦有「同步簽名機械臂」、「實時包剪揼」等機械裝置與參觀者互動，展示5G的高速及低時延特點。

除此之外，聯盟也舉行了多項活動、研討會與工作坊等特備節目，包括由Hong Kong Livefeed主辦的溝通技巧訓練工作坊，邀請了溝通專家李燦榮博士，教授如何透過聽與講，提升表達能力；聯盟同時舉行了簡介科技應用如物聯網和金融科技的研討會，深入淺出地為公眾介紹最新科技；大會亦舉辦了「2019年創業邦DEMO CHINA香港區選拔賽」決賽及兩個講座，講述路演技巧及大灣區投資商機及其注意事項。

學習區：智醒學習STEM

與香港設計師協會合辦的「學習區」以「智醒探索天地」為主題，讓大眾「親手做、親學」。區內設有「親子學習工作坊」及「大型STEM裝置體驗區」，更有多達15個「多元化科學原理工作坊」，讓小朋友動手製作道具及組裝零件，了解多種科學原理。當中也



OGCIO showcased three major ICT applications including Wi-Fi.HK, ICT Programmes for the Elderly, and Electronic Identity (eID) to encourage the public and the elderly to learn how innotech changes our lives. On the other hand, EMSD demonstrated the latest innovative technologies related to electro-mechanical equipment and initiatives such as E&M InnoPortal, Government -Wide IoT Network, Service Robot to show cooperation in the development and application of Hong Kong's innotech development. HKSTP and Cyberport showcased their digital tech start-up ecosystem and deep-dive clusters development. The public could try innotech products such as Smart Fitness Mirror, aspara™ and Unmanned Distribution-HOLACOW.

Moreover, the exhibition also demonstrated the characteristics of low latency and high data speed in 5G network technology. Visitors could experience smart construction technology combined with VR tech, and also Signing Robot Arm and Paper-Scissors-Stone Game.

At the same time, Hong Kong Livefeed's training invited communication expert Dr. Li Chan Wing to share how to improve communication skills through listening and speaking.



讓小朋友發揮想像力、啟發創意潛能及培養設計興趣，更提升兒童IQ及對STEM（科學、科技、工程及數學）的認知。

活動及展覽內容結合科技與玩樂，以具趣味和互動方式，帶領香港走向創新，並寓教育於娛樂，有助培養新世代人才，實現智能、成功和可持續的未來。

玩樂區：啟發無限創意

與創意運動協會、Tublock HK及香港設計師協會合辦的「玩樂區」，設計了多項創意運動和玩具小遊戲，包括桌上沙壺、四人乒乓球及管狀積木玩具等等。小朋友更可在「水管拼接積木區」和「飛機訓練場」砌出賽車和研發不同的紙飛機；透過參與四人乒乓球、桌上足球及桌上沙壺等創新體育項目，將創意延伸至運動、設計與工程等領域。

是次活動得以順利舉行，讓數以萬計市民能透過互動展示，了解創新及科技如何改善市民生活質素，實有賴各合作夥伴的支持與配合。聯盟未來將繼續全力推廣智慧城市及創新科技發展，讓更多市民能體驗智慧生活！

In addition, SCC also held a series of events, seminars and workshops on technology applications, such as the internet of things (IoT) and financial technology (Fintech), etc. as special programs. They served as an introduction of the latest technologies to the public. “2019 DEMO CHINA Hong Kong Division” finals and two seminars about roadshow skills and investment opportunities in the Greater Bay Area and their precautions, were one of the favourite activities among startups.

LEARN zone : Family activities & STEM workshop

Co-organized with Hong Kong Designers Association (HKDA), the LEARN zone allowed parents to participate with kids. The Paired Studying Workshops, STEM (science, technology, engineering and mathematics) Experience Area and 15 STEM workshops that integrated studies and amusement, enabled children to use their imagination to explore their creativity potential and cultivate interest in innotech. It would eventually translate into IQ growth and improve their understanding of STEM.

Featuring the latest technologies in an interesting and interactive manner designed for our next generations, the activities showcased how new technologies were integrated into our daily lives and leisure time, as well as leading Hong Kong toward an intelligent cosmopolitan. It also helped nurture talents and broaden young people’s horizons.

PLAY zone : Inspire new generation’s creativity

PLAY zone which co-organized with the Creative Sports Association, Tublock and HKDA brought us a variety of creative sports experiences and different mini-games and toys, including shuffleboard, table tennis X and tubular block toy. Through gaming, children were encouraged to apply their creativity to sports, design and engineering.

With the support and collaboration of all partners, the event has been held successfully. It demonstrated how technology could enhance our quality of living. In the future, SCC will continue to promote smart cities and innotech development, so that more citizens can experience smart life!





Lik On Technology Attained Smart Transformation Strive to Build a Safe and Smart Community

力安科技實現智能化轉型 致力打造智慧社區

近年政府在發展智慧城市方面擔當主導角色，《香港智慧城市藍圖》的發展計畫也相當全面，涵蓋政府、經濟、教育、醫療、環境及出行等六大範疇。同時，政府亦大力推動如數碼港、科技園等本地創新科技基地的建設，令業界更投入發展本地創科。

另一方面，業界期望政府能更積極引導行業發展，以多項實際措施配合智慧城市發展，其中包括：培育科技人才，支持業內持續進修，為年青人提供職業發展階梯；協助企業進行業務轉型，例如將傳統人力主導的行業轉型為以智能化科技主導，以提升服務質素及工作效能；為智慧城市六個範疇發展科技及開拓機遇。

《智城》今期邀請到力安科技有限公司接受訪問，分享其對智慧城市、智能保安管理以及城市數據運用的看法，並發表對香港發展智慧城市的期望。

In recent years, the Government has assumed a leading role in developing Smart City. For example, *Hong Kong Smart City Blueprint* is a comprehensive plan which covers six major areas, namely economic, educational, medical, environmental, government and transportation area. The Government has also supported the development of local innovation base facilities such as Cyberport and HKSTP to facilitate the industry.

At the same time, the industry expects the Government to take more practical measures proactively in strengthening the development of Smart City, including nurturing more talents in technology, supporting continuing education and establishing comprehensive career pathways for young people; encouraging corporate business transformation, such as facilitating traditional business model to convert from relying heavily on manpower to a technology-led business model to enhance the service quality and efficiency; fostering the development of technology and exploring business opportunities, etc.

In this issue, *Smart Vision* invited Lik On Technology Limited to share their views on smart cities, smart security management and urban data application, as well as their expectations of the Government's Smart City promotion and assistance to the industry.



Mr. John Wong, Director of Lik On Technology Ltd.
力安科技有限公司董事黃天厚先生

關於力安科技有限公司

力安科技有限公司於1983年創辦，是新鴻基地產集團旗下康業服務有限公司的子公司。康業現時在香港管理近1,600棟樓宇，涉及130,000多個單位，力安科技致力為康業打造安全和智慧社區。近十年來，公司將創新科技融入物業管理及保安行業，積極從傳統物業管理業務轉型，以創新科技將物業管理智能化。公司曾開發多項便利屋苑住戶及管理部門的手機應用程式。例如：配合智能手機NFC功能的「NITROL智能巡邏系統」，改善傳統巡邏模式。

智能化物業管理 成就智慧生活體驗

「力安科技主要業務是利用創新科技，將物業管理智能化，為屋苑、工商廈及商場提供優質客戶服務及生活體驗，打造安全而智慧的社區。」力安科技有限公司董事黃天厚先生（John）說。

John留意到以往保安行業十分倚賴人手，且效率不理想：過往保安員會以簽簿或以「巡更棒」配合巡邏點按鈕進行工作，中途若遇到如漏水、雜物阻塞通道等問題，通報其

About Lik On Technology

Lik On Technology was established in 1983. It is a subsidiary company of Hong Yip Service Co. Ltd., a company under Sun Hung Kai Properties. Hong Yip Service is now managing around 1,600 buildings with over 130,000 flats in Hong Kong. Lik On Technology facilitates Hong Yip to build “safe and smart communities”. In the past decade, the company had been proactively integrating innovative technology into property management and security services. The company has developed several user-friendly mobile applications for residents and management departments, such as the patented technology NITROL Smart Patrol System, which enhances patrol mode with the embedded NFC function of smartphones.

Smart Estate Management - Smart Living Experience

“The major business of Lik On Technology is to utilize innovative technology in the scope of estate management, thereby providing excellent customer services and smart living experiences to the residents and users in estates, industrial and commercial buildings, as well as shopping malls. We aim to create ‘safe and smart communities’ in Hong Kong.” said Mr. John Wong, director of Lik On Technology.

他同事跟進需要耗費大量時間，造成工作效率偏低。有見及此，力安科技於2014年研發專利技術「NITROL智能巡邏系統」，以手機應用程式讓保安員以錄音、照片、影片等形式紀錄巡邏狀況，即時將消息通報相關部門，提升各部門的協調效率。

除了保安人員，屋苑住戶亦能利用科技帶來的便利，享受智能化的生活。SoProp屋苑手機應用程式能夠提供即時屋苑通告、緊急通告、會所活動等資訊，讓住戶可一站式查閱所有關於屋苑的資訊。住戶又可以透過手機程式繳交管理費，或預約屋苑及會所設施並付款。

住戶也可以使用手機確認住客身份、開啟大門及信箱等，毋需隨身攜帶各類住戶證件或鑰匙卡，方便之餘，亦避免了丟失匙卡的風險。程式亦提供訪客登記服務，住戶可透過手機以QR Code授權訪客確認身份，快捷便利。

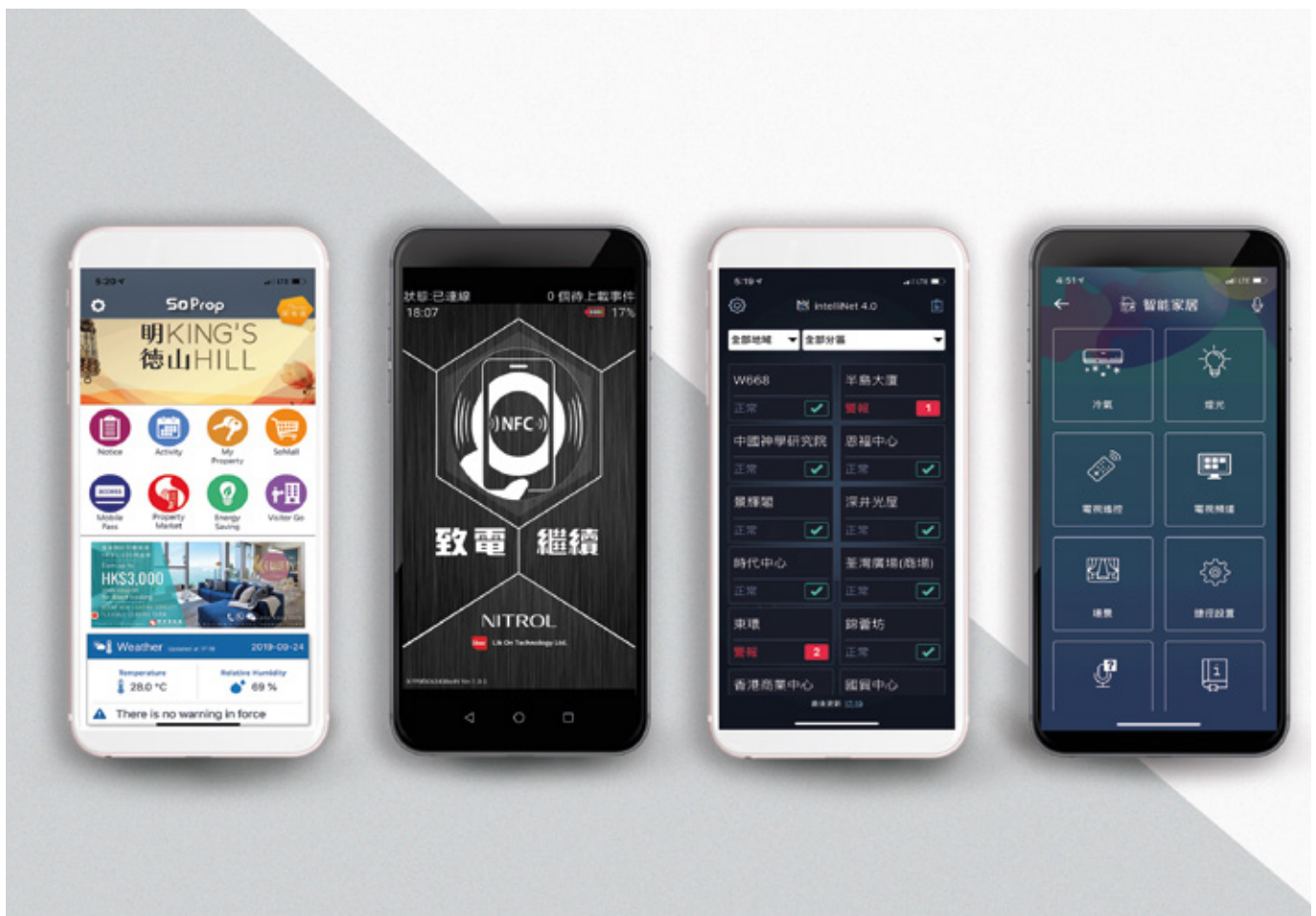
物聯網締造智能化管理

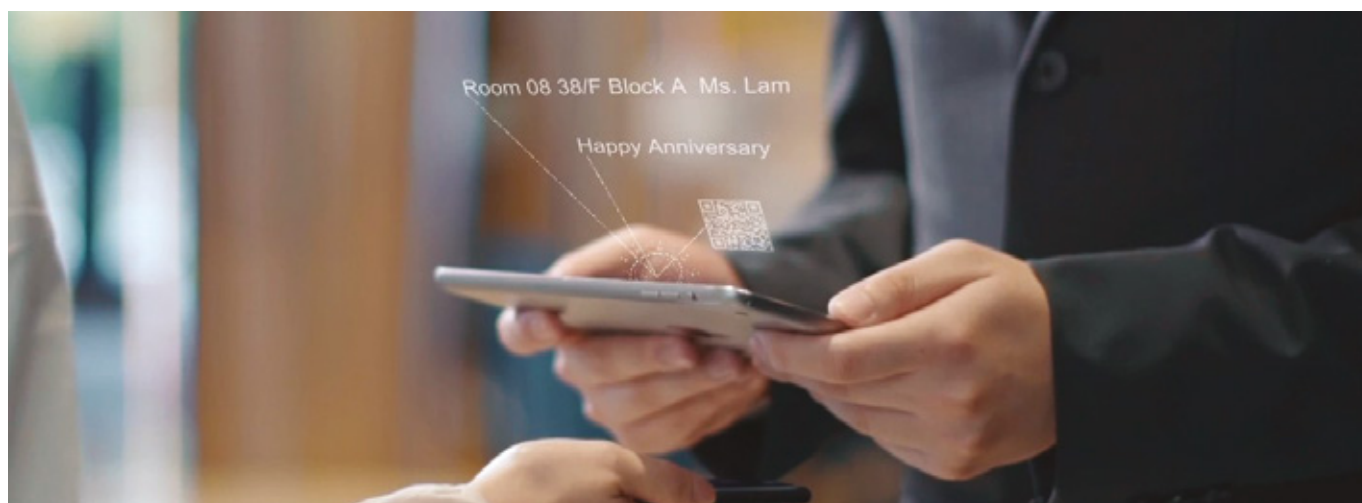
力安科技把物聯網（IoT）技術應用在屋苑、工商廈及商場數據收集、監察及分析上，如大門保安感應器及中央空調系統溫度調節感應器，實現智能化物業管理。公司的IoT物業管理系統「IntelliNet 4.0」可做到實時環境觀察、遙距操

John noticed that providing security services requires much manpower, yet its use was not efficient. Security guards commonly use paper records or patrol sticks while working. If there is any unexpected issues noticed in the patrol, such as leakage and blocked aisles, the security guards take much time to notify related departments to follow up. This mode of operation is labour-intensive, time-consuming and less effective. In view of this, Lik On Technology has launched its patented technology NITROL Smart Patrol System in 2014, which enables security guards to record the situations via sound, photo and video recordings with smartphones. Real-time information can be sent to related departments for handling. Efficiency and coordination between departments are improved.

Apart from security service, technology also benefits the estate residents with smart living experience. SoProp mobile application provides real-time notifications including general notices, urgent notices and regular club activities. Residents can also pay management fee and book club facilities with online payment through the app.

The app can replace cards and keys for the residents to confirm identity, open doors and mailbox. It is more convenient and safer as it reduces the risk of losing keycards. The app also provides visitor registration service. Visitors with the authorized QR code can simply enter the buildings without complicated procedures.





作設施及儀器、設置溫濕度監測點，24小時監察室內環境及設施狀況，節能之餘亦能提供舒適環境。

不過，物業管理行業現時請人不易，因此John希望透過融入創新科技，提升工作環境。例如為了讓康業母公司內部管理層與前線員工之間的溝通更有效率，力安科技開發了「WeCom內部通訊平台」，將內部培訓課程、員工活動以及管理層公佈等資訊即時傳達至各部門員工，加強部門之間的溝通。

打造智慧社區 共建智慧城市

打造安全、智慧社區是力安科技的願景，智能化建設應該從家居生活開始，例如理想的「智能家居系統」要讓住戶無論是否身處家中，也可使用手機遙距控制單位內燈光、冷氣及電視等設施。住戶更可以語音輸入功能（包括廣東話）調控設備，盡享智能家居生活的便利。

對於香港未來發展智慧城市，John認為一些科技產品如5G技術、IoT以及人工智能均會是主要的推動力，而安全及智慧社區則可謂智慧城市的核心元素。力安科技期望未來能深入參與香港智慧城市的建設，與政府、業界攜手共建智能化生活空間。



Nitrol - Smart Patrol System

Internet of Things - Smart Management

Lik On Technology has applied internet of things (IoT) to the data collection, surveillance and analysis in estates, industrial and commercial buildings, and shopping malls. These range from the security sensors on the doors to temperature on the central air-conditioning system. The company's IoT estate management system intelliNet 4.0 can assist oversight on environment, remote operation of facilities and equipment, and temperature and humidity monitoring points. The indoor environment and conditions of facilities can be monitored and adjusted 24 hours a day, which helps to save energy and to provide a comfortable environment.

The shortage of manpower is deeply felt in property management. Thereby, John wants to improve the working environment through integrating innovative technology into the business. For example, in order to enhance the efficiency of communication between the management and the front-line staff, Lik On Technology has developed Wecom Internal Communication Platform. The Platform enables circulation of information related to internal training courses, employee's activities and management's announcements to various departments.

Smart Community - Smart City

Lik On Technology aims to create 'safe and smart communities' in Hong Kong. Smart facilities in daily lives is a good starting point: Smart Living System allow users to use their smartphone in remote control of the lights, air-conditioners and televisions, etc. Users can also remotely control equipment via voice commands.

Regarding the development of Smart City in Hong Kong, John pointed out that some technology products such as 5G network, IoT and artificial intelligence, will form the major support, while safe and smart community is the core component of a smart city. Lik On Technology looks forward to participating in the construction of Smart City in Hong Kong, as well as to create smart living environment with the Government and the industry.



Innovation of Projection Mapping facilitates STEM Education

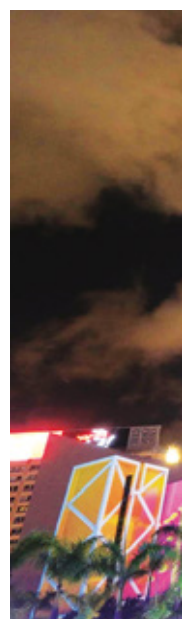
創新光影投射技術 促進STEM教育

全球經濟、科學及科技急速發展，帶來了轉變和挑戰。為了裝備學生應對新形勢，並為未來培育更多科研人才，STEM（科學、科技、工程及數學）教育成為全球教育的一項重大發展趨勢。自2016年至今，STEM已是香港教育界的熱門話題。STEM是跨學科課程，著重發明、探索、體驗及解難能力，其教學模式富趣味性及互動性，能訓練學生的獨立思考及創意思維。

在不同類型的STEM課程中，3D光雕投影及擴增/虛擬實境等課程最受學生歡迎。光雕投影（projection mapping）注重立體物件跟投影間的配合，透過特定軟件及程式，令投射影像配合物體的形狀，再與聲音結合，突出主題。通過3D光雕的學習過程，一方面可增長孩子的創科知識，另一方面亦能提升創意。同時，由於只要在投影器材額外加上感應器，就能通過肢體動作或聲音與投影內容互動，因此在過去3年，學界已舉行不少3D光雕展覽，亦將光雕投影技術用於不同科目如地理、歷史、科學等的教學上，讓學生參與及體驗，令學習過程更有趣，因此深受師生歡迎。

Promoting STEM (science, technology, engineering and mathematics) education is a global trend of basic education. It equips students with knowledge and skills to meet challenges from rapid global economic, scientific and technological development, thereby nurturing more talents for scientific research. Since 2016, STEM education has become a hot topic in Hong Kong. It is a cross-disciplinary course, focusing on invention, investigation, experience and the ability of problem-solving. STEM's interesting and interactive mode of teaching can encourage students' independent and creative thinking.

Among the different types of STEM courses, 3D projection mapping and augmented / virtual reality (AR/VR) courses are the most popular subjects. Projection mapping focuses on the integration with 3D objects and projection. Through the combination of sounds and images matching the shapes of objects with the efforts of specific software and programs, the theme of the presentation can become more outstanding. Children can gain knowledge of innovative technology and enhance their creative capacity via the learning process and the experience of 3D projection. In addition, with added extra sensors in the projector, our body gestures or sounds can interact with the projected images, thereby making the content more attractive. In the past three years, academia has held several 3D projection exhibitions. Projection mapping technology has also been used in the teachings of various subjects, such as geography, history, science, etc. Through the participation of students, the lessons are more interesting, therefore it becomes popular among students and teachers.



創新光影藝術科技 帶領浸沉式教育潮流

經過學界的推動，並與外國的科技及經驗融合，投影技術逐漸廣泛應用於香港各大展館、商場、餐廳、企業活動以及各類型的娛樂表演，甚至成為一種嶄新的數碼媒體藝術（digital art）。近年在維港兩岸的「幻彩詠香江」及「閃耀維港」光影匯演，就是香港旅遊發展局主辦的夜間光影投映的大型項目。而坊間亦陸續出現不少收費的光影投映展館，如今年4月於九龍灣舉辦的「香港站—梵高在世：多感官體驗展」、7月於馬灣挪亞方舟建立的光影互動展「e-Planet夢想星球」，都是利用光、影、音技術與公眾互動，不但吸引世界各地大量的遊客，亦增加學生接觸科技及文化藝術融合的玩樂式教育體驗。

由於光影投射所需的硬件不多，卻能帶來無窮變化，因此在室內設計及空間設計行業中，光影投射已成為另類「環保牆紙」，亦是「環保裝修」的新寵。因只需改變投影內容及動

Innovative Technology & Art - Leading Trends of Immersion Education

Projection technology has been widely applied in various major pavilions, malls, commercial activities and different types of entertainments and performances under the motivation by academia and the combination of foreign technology and experience. It has even become a kind of new digital art. In recent years, the light shows on both sides of the harbour, such as A Symphony of Lights and Hong Kong Pulse Light Festival, are the large-scale night show projects held by Hong Kong Tourism Board. There are also some exhibitions of light projection in the public with tickets on sale, such as Van Gogh Alive-Hong Kong in Kowloon Bay in April this year, e-Planet showcased in the Noah's Ark in Ma Wan in July, etc. These shows utilized the technologies of light, shadow and sound to interact with the public, attracting many local and foreign visitors. Students can also learn from the experience of technology and cultural arts.



Mr. Kason Yu, Touch Moment's Brand Founder
Touch Moment 品牌創辦人余嘉舜先生

畫，就能改變整個裝潢的氣氛及情調，故此不少餐廳及商場或發展商在裝修時都加入了投影元素，如商標投影、櫥窗投影、霧幕投影及3D全息投影等，以增加場地的現代格調及新鮮感。

香港光影投射技術 需急起直追

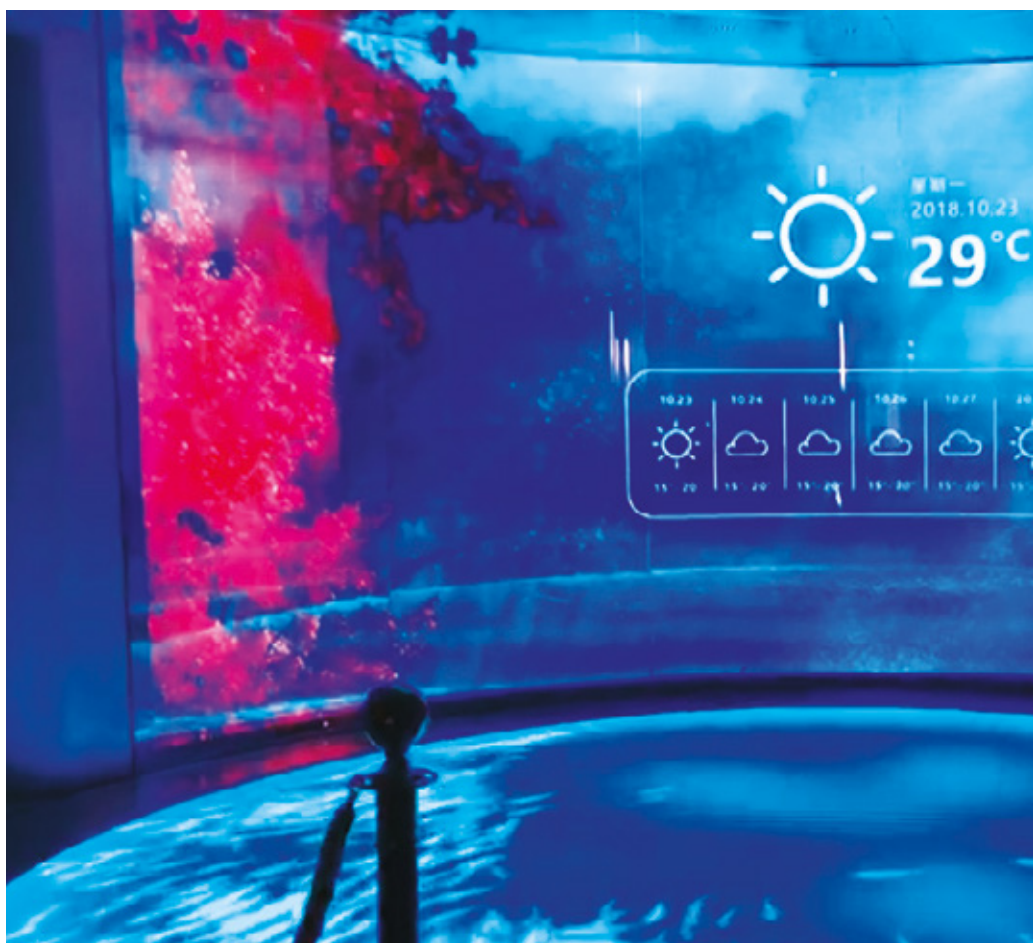
光影投射技術大致分為5類，包括全息投影（holography）、3D投影（3D projection mapping）、擴增實境（augmented reality, AR）、虛擬實境（virtual reality, VR）、大型光影互動感應裝置如屏幕觸感等。這些技術相信將是未來多媒體藝術的大趨勢，但由於香港空間有限，軟硬件的發展起步也較遲，比起日本teamLab、韓國、法國及內地的多媒體創作團隊，香港在這方面較為落後，但行業的進步與發展亦因此存在很大空間。

本地科技公司看準時機 專注研發最新投影技術

本地已有不少科技及公關公司提供相關服務，為教育展覽及商場活動增加科技互動元素，協通科技有限公司（Letlink）是本地其中一間引入光影投射技術的科技公司。Letlink業務總監Kason對於本地的光影藝術科技市場非常有信心，他相信這類技術將日益普及，甚至會由商用市場轉向學界、家居，改善大家的學習及生活體驗，於是成立品牌「觸·動」（Touch Moment），希望為香港學校、中小企以及工商機構提供一站式及低成本的光影投射技術及內容設計方案。

Touch Moment是一個嶄新的多感官互動概念品牌，專為學界及企業策劃、設計及實施各類型智能展示空間，結合高科技光影技術及文化內容，希望為大眾締造出難忘的「觸動時刻」。Touch Moment業務主要是透過展示交互技術（human-computer interaction techniques）呈現沉浸式數碼藝術，用戶通過各類感應器與光影投射內容進行互動，共同參與展示內容，從而深入體會展項想表達的主題。

Touch Moment品牌創辦人Kason及技術團隊皆畢業於香港科技大學，團隊當中更有2人擁有科大計算機科學與工程學博士學位，團隊亦有知名的空間設計師、軟件工程師、人工智能交互技術專家等。Touch Moment的項目管理團隊會首先根據客戶的活動主題及場地特徵，提供度身訂做的設計方



As projection mapping requires small amount of hardware to make great variations, it has become an alternative eco-friendly wallpaper for renovation. By changing the projection contents and animations, the ambience and style of the interior decoration of a venue can change accordingly. Lots of restaurants and malls, or even property developers utilize this technology in the interior decorations, such as trademark projections, window display projection, fogscreen projection and 3D holography, etc. which makes the venue design more contemporary and refreshing.

Hong Kong's Projection Mapping Revolution

Projection mapping technology can be divided into five categories, including holography, 3D projection mapping, AR, VR, and large-scale light interactive sensors such as touch screens, etc. It is believed that these technologies will be the major trends of multimedia arts in the future. However, compared to Japan's teamLab and multimedia creative teams in Korea, France and Mainland, Hong Kong is relatively lagging behind in the development of software and hardware because of limited spaces. But it also means much room for development and improvement for the industry in Hong Kong.



案，技術團隊則負責研發獨家的軟件裝置技術，為用戶提供集科技、創意、項目管理及現場技術支援於一身的空間設計及展示服務。Touch Moment的技術團隊已於交互技術領域上擁有國內10多項軟件著作權及專利，自2015至今，已成功完成逾150個項目，遍及全國30幾個城市。過去兩年，Touch Moment的團隊也參與多個香港教育界及工商界的活動及室內戶外投影裝置項目，服務包括電子投影簽名版、牆身及餐桌投影互動感應裝置以及空間展示設計等。

由於內地的AR/VR及投影技術比香港成熟，經驗亦較豐富，Touch Moment 團隊更派員專程到廣州科學城的科技公司受訓，與內地的程式師、設計師、創作團隊等交流學習，為求令香港的光影投射技術應用更多元化、大眾化。除提供創意技術服務，Touch Moment也代理了不少適用於學校及工商界的智能投影產品，包括全息投影風扇、特製LED顯示屏、紅外線玻璃屏展櫃及各類高科技投影機等，務求為香港不同學校及工商機構提供智能而高科技的空間展示方案，令學生的學習體驗更具樂趣，使STEM教育更相得益彰。

Local Technology Company - Opportunity to Develop Projection Technology

There has been lots of local technology and PR companies providing projection technology related services in Hong Kong, which integrates technological interaction into educational exhibitions and mall events. Letlink is one of the local technology companies which introduced projection mapping technology. Kason, Business Director of Letlink, has great confidence in the local light art technology market. He believes that with this kind of technology becoming more and more popular in the future, it will change everyone's learning and living experience in not only the commercial markets, but also academic area, and even households. Therefore, he has built a brand called Touch Moment with the vision of providing one-stop and low-cost projection mapping technology and content design solutions for SMEs and business establishments.

Touch Moment is a new multi-sensory interactive conceptual brand which specifically provides services for academia and enterprises, such as planning, designing, and creating various types of smart display spaces. With the integration of high-tech projection technology and cultural contents, the brand wants to create numerous unforgettable touchy moments with the public. Touch Moment's business mainly focuses on presenting digital art immersion with human-computer interaction techniques. Through interaction with the projected contents via various types of sensors, the theme of the exhibition can become more impressive.

The founder of Touch Moment, Kason, and his technical team are all graduated from HKUST. Two of them has also been awarded the Master Degree of Science Program in Computer Science and Engineering. The team also includes well-known spatial designers, software engineers, AI interaction technologists, etc.

Touch Moment's project management team will provide tailor-made conceptual design solutions to clients based on the theme of events and characteristics of sites. Its technical team will then developed exclusive software technologies, in order to provide spatial design and display services with the integration of technology, creativity, project management and on-site technical support to clients. Touch Moment's technical team owns a dozen software copyrights and patents in the interaction techniques area in Mainland. Since 2015, the team has successfully accomplished more than 150 projects in more than 30 cities in the country. In the past two years, Touch Moment's team has participated in several events and indoor/outdoor projection equipment projects undertaken by Hong Kong academia and companies. The services provided including digital projected signature boards, wallpapers, dining table interactive sensors and spatial display designs, etc.

As the development of AR/VR and projection technologies in Mainland is more advanced than Hong Kong, Touch Moment team has sent several employees to the technology companies in Guangzhou Science City for training. The team also interacted with and learnt from programmers, designers and the creative

關於觸•動（Touch Moment）

觸•動（Touch Moment）是協通科技（Letlink）旗下專門提供各類VR/AR/3D互動光影投射技術及服務的品牌，融合科技與文化，開啟數碼藝術新時代，為香港人締造不同的觸動時刻。由2015年起服務中港各地逾百間工商機構，完成超過150個投影及互動感應裝置項目。



team in Mainland, hopefully, to make Hong Kong's projection mapping technology more popular and widely adopted. Apart from providing creative technical services, Touch Moment is also an agent of various types of smart projection products applicable in schools and companies, including holography fans, tailor-made LED display screens, infrared glass display cases and all kinds of high-tech projectors, etc. The company has sought to provide smart and high-tech spatial display solutions to various educational and commercial institutions in Hong Kong, so as to support the implementation of STEM education.

About Touch Moment

Touch Moment is a brand under Letlink Technology limited which specifically provides all kinds of VR/AR/3D interactive projection technology to integrate technology and culture, to open a new era of digital arts so as to create different touchy moments for Hong Kong people. It has accomplished more than 150 projection and interactive sensor projects for more than a hundred commercial institutions in Hong Kong and Mainland since 2015.





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Founder & Honorary President,
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齊來為未來打拚

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Let us work hard for the future

The Chinese version was posted on Hong Kong Economic Journal on 16th July, 2019

母校香港大學理學院今年成立80周年，作為畢業生，除了略盡綿力，為新開辦的應用人工智能跨學院學位課程成立一個微小的獎學金「鄧淑明應用人工智能獎學金」，給予表現出眾的同學；也打算把今年出版、以迎接未來為主題的拙著，送給學院誌慶。

《你未來就緒嗎？》是我五年前開始構思撰寫「創科三部曲」系列的壓軸。它探討資訊科技和地理資訊系統（GIS），如何在過去和未來改變我們的生活，藉此鼓勵香港人擁抱科技，合力建造一個先進的宜居城市。

出版過程中，最令我感到榮幸的是得到港大三位現任院長和一位榮休教授，即理學院的艾宏思院長、工程學院的趙汝恒院長、建築學院的偉仕達院長、政治與公共行政學系名譽教授卜約翰榮休教授為本書撰寫序言，加上Esri創辦人兼總裁Jack Dangermond，這五位備受尊崇的人物在書中表述如何做到「未來就緒」，已經精采萬分。在此容許我簡單概括如下：

一）科學素養

不少工程專家已經逐步為全球挑戰提供解決方案，並游說各國領導善用科技造福人類。不過，一般市民是否意識到科技如何改變日常生活？是否已經為日新月異的就業市場裝備好自己？要迎接未來，每個人都應該擁有最基本的科學知識，否則易被淘汰。

This year marks the 80th anniversary of the Faculty of Science of The University of Hong Kong (HKU). As a graduate, apart from setting up a small "Winnie S M Tang Scholarship in Applied Artificial Intelligence" for outstanding students of the new interdisciplinary degree program in Applied Artificial Intelligence, I also want to dedicate my new book to the Faculty in celebration of the anniversary.

Themed embracing the future, the new book *Are You Future Ready?* is the finale of the innotech trilogy that I composed in the last few years.

The first one of my trilogy *Surfing the IT World* published in 2016 is about my startup story. The book won the Publishing Award (Commerce and Management Category) in the first Hong Kong Publishing Biennial Award 2017 hosted by the Hong Kong Publishing Association.

The second one *Smart City 3.0* provides a comprehensive review of the concept of smart city with lots of vivid examples and stories. It is a reference book for young people planning to study a master course of the subject, and for the general public to grasp the new ideas.

This one, the third in the series, explores how information technology and geographic information system (GIS) change our living in the past, the present and the future, thereby encouraging Hong Kong people to embrace technology and work together to build an advanced and liveable city.

In the course of publishing, I am most honoured to have prefaces written by three current deans and an emeritus professor of HKU. They are Professor Matthew Evans, Dean of the Faculty of Science;

因此，我們需要啟發孩子學習科學，探索周圍的世界；在大學，除了基礎語言，基礎數學技能、編寫電腦程式亦應該列為必修科目。在研發方面，也應投入GDP相當的百分比（例如像眾多外地城市撥出2-3%），才可發揮智慧城市的潛力。

二）避免黑箱思維

物聯網結合先進的傳感技術、城市大數據、人工智能（AI）和超高速數據處理，意味着不久的將來，科技會帶來完全嶄新的時代。處理龐大而複雜的數據需要AI和先進的科學模型，好處是預測精準，卻往往是黑箱思維，難以向人解釋結果是源於哪些數據，因此令人疑惑。

故此，一方面我們需提升普羅大眾的科學素養，另一方面AI也要改善黑箱思維。

三）多方協作

為什麼要有科學素養？為什麼要避免黑箱思維？因今天的互聯網時代，專制威權再不合時宜，需要市民、學界、公私營機構、政府等多方同心協作，解決如房屋、交通等都市難題，共同塑造未來。

岔開一筆，書名翻譯自「Are you future ready?」，編輯說拗口不通順，建議改為「你準備好了嗎？」之類，但我卻對「未來就緒」這個譯名情有獨鍾，因為「就緒」比「準備」較似電器那個ready mode，即按即啟動的模式，表示早已蓄勢待發，比「準備」更領先一步。我期望讀者看過本書後，從心態到行動也就緒，積極為未來的挑戰打拚！



有關《你未來就緒嗎？》的詳情，請以手機掃描二維碼了解。

To know more about the book, please scan the QR code.

Professor Christopher Chao, Dean of the Faculty of Engineering; Professor Christopher Webster, Dean of the Faculty of Architecture; Professor John P. Burns, Emeritus Professor of the Department of Politics and Public Administration; as well as Jack Dangermond, Founder and President of Esri. They wrote on how to be future ready, may I briefly summarize their views as follows:

1) Scientific literacy

Many engineering experts have gradually provided solutions to global challenges and lobbied national leaders to utilise technology for the benefit of mankind. However, does the general public realize how technology change their everyday life? Are they ready for the ever-changing job market? To meet the future challenges, everyone should be equipped with the most basic scientific knowledge, otherwise they will be left behind.

Therefore, we need to inspire our children to learn science and explore the world. In universities, in addition to basic languages, basic numerical skills and computer programming should also be compulsory subjects. In terms of research and development (R&D), it is also necessary to invest a considerable percentage of GDP (for example, 2-3% as in many cities around the world) in order to reap the benefits of smart technologies.

2) Avoid black-box thinking

The emergence of internet of things, combined with advanced sensing technology, urban big data, artificial intelligence (AI) and ultra-high speed data processing implies that technology will bring a completely new era in the near future. However, processing large amount of complex data requires AI and advanced mathematical models. The advantage is that the prediction is accurate. But it is difficult to trace which data generated the result as the analysis was done in a black box, so it is not assuring.

Therefore, on one hand, we need to improve people's scientific literacy and on the other hand, we should improve the confidence of using black-box thinking of AI.

3) Multi-party collaboration

Why do we need to be scientifically literate? Why do we have to avoid black-box thinking? In the internet era today, authoritarianism is no longer appropriate. We need people, academia, public and private organisations, as well as the government to work together to solve urban problems, such as housing and transportation issues, and jointly shape the future.

By the way, the Chinese name of my book is translated from "are you future ready?", the editor was not happy with the Chinese name for being not clear and coherent, and suggested "are you well prepared?". However, the word "ready" has double meaning behind. "Ready" is not only get prepared but also can figuratively describe the status of "standby mode" of an electronic appliance, that means, once the start mode is activated, the appliance is ready to go, one step ahead of "well prepared". I expect readers to be ready both in mindset and action after reading the book, and all of us will work hard to meet the challenges of the future!



葛珮帆議員
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「聯合平台」 完善救援活動

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Common Operational Picture Refines the Rescue Operations

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豪雨、風暴潮、雷暴和熱帶氣旋等惡劣天氣是香港的主要天災，惡劣天氣會嚴重影響交通和其他基本服務，並會引起水災、山泥傾瀉及其他事故，造成傷亡。因此政府制定《天災應變計劃》，列明政府的警報系統和應付天災的組織架構，及一旦發生天災時政府部門及其他機構的職能和責任。惟單靠《天災應變計劃》並不能完善應對災害，去年超強颱風「山竹」令香港各區受嚴重破壞，幸得公務員繼續留守崗位，及紀律部隊人員在前線冒着惡劣環境救災搶險。但風災過後交通未能完全恢復，市面出現大混亂，一眾打工仔、學生哥狼狽不堪。

筆者一直提倡智慧政府，港府更應運用科技應對全球暖化下與日俱增的惡劣天氣，設立資訊科技平台協調各政府部門，讓災情資訊及行動情報流通。由發展局牽頭，土木工程拓展署現正研發「聯合運作平台」(Common Operational Picture, COP)，作為一個共用地理資訊系統(GIS)平台，供各部門實時互通與天災有關的事故資訊(例如山泥傾瀉、由暴雨造成的水浸、風暴潮引發的海水淹浸和重大道路事故)和輔助資訊(例如天氣和交通資訊、地圖數據等)。

COP在外國已投入運作，如美國加州約有8,000名消防員使用，以地圖實時顯示各項資訊如火場圖片、地理位置、水源及附近受山火威脅的設施等，大減蒐集火場資料的

Rainstorms, storm surges, thunderstorms and tropical cyclones are the major natural disasters affecting Hong Kong. Adverse weather may seriously affect traffic and other essential services, and causes incidents with casualties such as flooding and landslides. In view of this, the Government formulated the *Contingency Plan For Natural Disasters* which specifies the official alarm systems, the organizational structure in coping with natural disasters, and the functions and responsibilities of different government departments and other organizations. However, relying solely on the *Contingency Plan For Natural Disasters* may not be a comprehensive way to cope with the disasters. Last year, the super typhoon Mangkhut had caused destruction to various districts. Fortunately, the civil servants and disciplined services staff were performing as required by their positions and providing disaster relief. Yet, the public were still being caught in dire straits and chaos caused by the typhoon.

I have been advocating Smart Government in recent years. The HKSAR Government should utilize technology to cope with the deteriorating inclement weather under the effect of global warming, and set up an IT platform to coordinate various government departments and circulate the information and operation intelligence for disaster relief. Led by the Development Bureau, the Civil Engineering and Development Department is developing a Common Operational Picture (COP) which is a new electronic platform with geographic information system (GIS) functions for sharing real-time emergency information on incidents (such as landslides, flooding caused by heavy rainfall, inundation of sea water caused by the storm surges and major traffic accidents) and supplementary information (such as weather and traffic information, map data etc.).



時間，更可將資訊即時分享給其他救援隊伍。除在救災時使用，COP在防災方面亦能派上用場。舉例在豪雨來臨前，可預先將危險斜坡位置和修葺狀況等資料輸入系統，有關部門可未雨綢繆；就算不幸發生山泥傾瀉，亦能據資料立即跨部門應對。

COP不但讓政府應對天災更有效率，更可用於活動保安、反恐及人潮控制等。雖香港治安良好，曾位列全球最安全城市第9名，而過去從未發生過恐襲，但政府不應鬆懈，除投放資源加強反恐工作及成立新跨部門反恐專責組外，亦可用COP協助整合大量反恐涉及的地理資訊相關資料，方便部門協調。例如在大型活動中，COP可確保各部門有實時而一致的資訊，便利紀律部隊部署行動及計劃緊急疏散區。

COP不止有利政府運作，亦可令市民得到更多資訊。新加坡在2016年推出一站式用戶平台，用家只要在手機程式輸入個別地點的郵區編號，就會即時接收到該地點發生的緊急事故警報，程式也讓市民可向負責應變的部門通報信息及尋求協助。香港可借鏡新加坡做法，以加強社區安全。

香港「聯合運作平台」試行版本已推出，以進行為期逾一年的測試，共8個政府部門如土木工程拓展署、渠務署和路政署等參與。「平台」會分階段推出，首階段已於今年初推出，並會於約一年後全面運作，而各紀律部門亦會提供互通資訊。但COP涉及大量地圖、建築物等資料，單單各部門輸入各自的資訊，不能成為真正有用的COP，必須整合這些空間數據才可加以分析、使用。颱風季節仍未過去，政府必須加快各部門的資料開放及整合。另外，政府亦需指派一個中央部門負責統籌COP，以確保COP能發揮作用。

COP is now in operation in a number of foreign countries. For example, there are approximately 8,000 firefighters using COP in California, USA. They use maps which display various relevant information in real-time, such as pictures of the fire scene, geographical location, water resources available and the nearby facilities threatened by hill fires, etc. It can greatly reduce the time spent on searching fire scene. Moreover, data can be shared with other rescuing teams instantly. Besides disaster relief, COP can also be genuinely helpful in disaster preparedness. To illustrate, relevant departments can get prepared for incidents by inputting data, such as locations of dangerous hillsides and respective states of repair, into the system before the rainstorm. If landslide unfortunately occurred, inter-departmental cooperation can be enabled immediately.

Apart from enabling the government to work more efficiently, it can also be used in situations of security for mega events, anti-terrorism attacks and crowd control, etc. The government should not be complacent, although according to *The Economist*, Hong Kong is a safe city which ranked 9th in the list of safe cities worldwide in 2018, and have never experienced any terrorist attack. Apart from investing in enhancing anti-terrorism measures and setting up a new dedicated unit for inter-departmental anti-terrorism, the government can also utilize COP in assisting the data consolidation of massive geographical information involved, so as to facilitate inter-departmental coordination. For example, in some mega events, COP can ensure that real-time and consistent information is delivered to various departments, which facilitates the disciplined services to formulate action plans and evacuation plans in advance.

COP not only benefits the operation of the government, but also provides more information to the public. Singapore has launched a one-stop Government service centre in 2016. Users can receive emergency alerts in particular area after inputting the postcode in the mobile app. The app also allows citizens to approach the relevant departments for assistance. Hence, its experience will be useful to Hong Kong to enhance community safety.

The trial version of Hong Kong's COP has been launched. The test involving 8 departments, such as the Civil Engineering and Development Department, the Drainage Services Department and the Highways Department, will last for more than a year. The COP will be launched in stages, the first stage has been launched at the beginning of this year. It will be fully operational by next year, the disciplined services will provide shared information. However, as COP involves massive data such as maps and buildings, it relies on the consolidation of the spatial data provided by various departments for analysis and use. As the typhoon season is still on, the government has to accelerate the process of opening and consolidating the data from various department before the next typhoon. In addition, the government should also assign a central department to be responsible for the coordination of COP, so as to ensure its effectiveness.



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Mr. Wingo Wong

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虛擬銀行助香港向智慧城市邁出重要一步

Virtual Banking Marks an Important Step in Hong Kong Delivering Smart City Initiative



2019年是香港金融科技發展重要的一年。香港金融管理局（金管局）發出八個虛擬銀行牌照，這是金管局實現智慧銀行新紀元的重要策略。

對於不少港人來說，智慧城市的概念還是比較陌生。雖然在制定發展策略和搭建基礎設施方面已經獲得較大進步，但許多計劃還未完全落實，因此我們在日常生活中尚未感受到智慧城市所帶來的好處。即將推出的虛擬銀行，將改變銀行業的生態，為銀行業務運作模式帶來變革，有助香港向智慧城市發展邁出重要的一步。

2019 has already been a remarkable year for Hong Kong's FinTech development. The Hong Kong Monetary Authority (HKMA) has granted eight virtual banking licenses, a strategic move to realize its goal of building "a new era of smart banking" in the city.

To many people in Hong Kong, the idea of Smart City may feel quite far away. While there has already been a huge amount of progress made in developing strategies and infrastructure to support the Smart City vision, many of these plans are yet to be fully executed, or their impacts are yet to be felt in our daily lives. However, the soon-to-be-in-operation virtual banks will change the way banking operates and provide tangible evidence of Hong Kong's transformation into a Smart City.

We know that many tech-savvy millennial consumers prefer a virtual experience and want to interact with their bank solely through non-branch channels. With no physical branches, virtual banks will deliver just that. Their business models are built around fully utilizing digital channels and resources, which bring advantages of cost efficiency and greater technical agility. They focus on enhancing customer experiences and driving the development of innovative financial solutions.

In reality, the benefits of virtual banking are attractive to all generations, not just the millennials. As new entrants into a highly competitive banking market in Hong Kong, these virtual banks will need to compete with the rapidly developing online platforms of the incumbent banks. Virtual banks argue that they will provide tailored services to individual consumers and businesses who have

一般人認為千禧世代的消費者較易接受新的事物，即使銀行服務也不例外。虛擬銀行沒有實體分行，透過電子平台提供服務，切合這一代消費者的需求。虛擬銀行的商業模式圍繞數碼渠道和線上資源構建，擁有成本優勢和更高的技術靈活度，並致力於提升用戶體驗，推動開發創新金融解決方案。

事實上，除了千禧世代，虛擬銀行業務將會吸引社會各個階層的關注。因為作為香港銀行業的後來者，虛擬銀行要在激烈的市場競爭中生存，需要與現有銀行競爭開發電子平台。虛擬銀行認為，他們將為那些被傳統銀行忽略的消費者和企業提供個人化的服務方案。故此許多分析師都認為，虛擬銀行的發展能夠為不同社群提供金融服務，推動普惠金融。可以肯定，香港的銀行業將會面臨翻天覆地的變化，並且更重視以客為尊的策略，這也符合金管局的发展方向。

新興虛擬銀行的發展基石

為了如期推出高效的數碼化服務，虛擬銀行需在短期內建立可靠的作業系統，處理身份鑑證、遠程開戶、信貸評分、貸款組合管理，以及提供風險管理、保安和防詐騙措施。在業務層面上，業界需要具備豐富的虛擬銀行運作經驗和了解香港數碼經濟市場的挑戰，他們也需要掌握大數據技術，並能獲取、詮釋和分析各類數據資訊，以監察異常情況和潛在風險。最終，那些能夠快速並有效評估和管理組合風險的銀行，將能克服轉型過程中所遇到的阻力，脫穎而出。

環聯副總裁兼首席業務官黃凱榮解釋：「我們深明資訊的價值，致力發掘創新的方法使用資訊，協助企業作出更佳、更明智的決定，這一直是我們的核心理念。我們相信善用資訊可以帶來無限好處（Information for Good）。發揮資訊的影響力，致力在全球各地建設更強健的經濟體系、更穩固的家庭財政，以及更安全的社區。」

「隨著虛擬銀行的出現和傳統銀行的數碼化轉型，為香港的消費者和中小型企業提供更貼身的服務、全新的客戶體驗，以及更具價格競爭力的創新產品。我們相信金融創新和資訊科技，將會鞏固香港作為亞洲金融中心的地位，實現智慧城市建設的願景，令智慧城市帶來的好處更顯而易見。」

been under-served by conventional banks. That's why many experts believe it will promote greater financial inclusion. Regardless, one thing is for sure, there is a huge amount of change across the entire banking sector and this will lead to a renewed focus on customer-centric strategies, all of which are in line with the HKMA's long-term goal.

Fundamental building blocks for the new virtual banks

To launch their services on time, virtual banks need to tackle a basket of issues, including risk management, security and anti-fraud by building a reliable system for identity verification, remote onboarding, credit decisioning, and portfolio management. They will need to form partnerships with organizations that already have virtual banking experience and have helped new market entrants navigate the digital economy around the globe, and know the challenges Hong Kong's new virtual banks will need to overcome. They are also required to understand new datasets and technology and ensure that it links, interprets, and analyzes information to detect anomalies and patterns of risk. Ultimately, those banks that can best assess and manage portfolio risk, whilst still ensuring a great customer experience, will be the ones that overcome resistance to digital transformation and be ultimately successful.

Mr. Wingo Wong, Vice President and Chief Business Officer for TransUnion Hong Kong, explains: "Finding new ways for using technology and data to help businesses make better and smarter decisions is part of our core philosophy. Through the power of information it is possible to build stronger economies and families and safer communities. We call this *Information for Good*."

"With the emergence of virtual banks and the digital transformation of conventional banks, consumers and SMEs in Hong Kong customers will benefit from improved banking services, better customer experiences, more competitive pricing, and product innovation. We strongly believe that, through financial innovation and the power of information, Hong Kong will strengthen its position as Asia's financial hub and realize its Smart City vision. As such, people will be convinced the benefits the Smart City initiative will bring."





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智慧城市： 區塊鏈如何塑造香港的未來

Smart City: How Blockchain Shapes Hong Kong Future

區塊鏈是構成智慧城市和創新科技重要的一環，更與市民生活息息相關。區塊鏈技術將會應用到社會中各個領域，無論教育、交通、行政、醫療、藝術、金融、物流、食品等範疇，也可找到區塊鏈的實際例子。位於香港科學園的區塊鏈科研（Blockchain Solutions Limited）亦因應各行各業對區塊鏈不同的需求，為各界提供一站式的區塊鏈解決方案。

以下是我們正在進行的項目，讓讀者對區塊鏈的運用更多了解：

教育界 / 人力資源

為應對偽造證書和假學歷問題，區塊鏈科研團隊研發了一個學歷及證書跨認證平台CertAuth，令外界可以快速有效地核實證書及學歷的真偽。第三方（如人力資源公司）可向學術機構查詢某學生的學歷，學術機構收到有關查詢後便會詢問該學生意願，學生可視乎需要將證書和學歷送出，最後經由學術機構將學生資訊發送到第三方。平台上的證書和學歷都經過加密處理，加上經由具權威性的機構發出，有效杜絕偽造證書的出現，亦減少了認證的人力成本和時間。

Blockchain, an essential part of Smart City, is gradually integrated into our daily lives. This technology has brought various benefits to different sectors of our society, including education, transportation, medical, art, finance, logistics, food and beverage, etc. In response to different needs of various industries, Blockchain Solutions Limited, a technology company located in the Hong Kong Science Park, provides turnkey solutions to enable the implementation of blockchain in Hong Kong.

Below highlights some of our on-going projects:

Education / Human Resources

Forgery of educational or professional certification has been on the rise as the job market becomes more competitive and more demanding. To combat fake certificates and qualifications, Blockchain Solutions has developed CertAuth, a cross-certification platform that verifies the authenticity of certificates and academic qualifications. Human Resource can send a request to participating institutions for verification of qualification. The student will also be notified that his academic qualifications will be sent once the student gives consent. All the student information is stored in blockchain, which is immutable & encrypted. CertAuth improves security, while also reducing manual work and shorten the recruitment process.



Transportation / Insurance

We have formed a partnership with a local taxi leasing company for the project CARMOB. The driving behavior of the taxi driver and car data is recorded and uploaded to the blockchain through a tailored made on-board diagnostics device. The data can be used to analyze his/her driving attitudes and patterns. The

taxi owner can then make a better judgment on whether to lease the taxi to a certain driver based on data insights driven by such data. Furthermore, the insurance industry can offer a relatively favourable premium to the taxi drivers with good rating, which are again based on driving behavioral data.

交通業 / 保險業

區塊鏈科研與本地的士租賃公司宣布了一項合作計畫，透過汽車記錄儀，記錄的士租客的行車情況及汽車狀態，並透過度身訂造的行車記錄儀上傳到區塊鏈，以分析的士司機的駕駛態度及駕駛習慣，車主可以根據結果定出相應的租車價格。此計劃亦與保險業合作，保險公司可以相對優惠的價格向駕駛態度良好的司機提供保險。

建造業

大眾對工程施工的安全日益關注，為確保地盤工人的安全，區塊鏈科研為建造業承辦商研發了一套結合了區塊鏈和物聯網（IoT）等技術的智能系統。主要功能包括：1）透過生物和人面識別進出工地；2）同時可作為工人及外判商的出勤紀錄及薪酬紀錄；3）使用智能標籤和電腦視覺技術的工地安全偵測系統，管理工地；4）重要的表格及文件會上傳至區塊鏈。系統的透明度高且安全可靠，有助雙方解決因上述情況引發的法律爭議。

物流業

區塊鏈科研一直與各界專才合作，構建具備物聯網以及區塊鏈功能的物流追蹤系統。與現時物流業常用的被動追蹤不同，系統通過提供動態定時感應器驅動的「主動追蹤」功能，將地理位置，溫度，濕度等相關數據實時傳輸至雲端平台。度身訂造的物聯網技術負責收集數據，區塊鏈則可確保了數據的完整性。主動追蹤功能可以減低在貨品運送途中的不確定性，特別適用於如葡萄酒、醫療設備、古董等的貴重商品。

區塊鏈技術日益成熟，在促成智慧城市中扮演重要的角色。區塊鏈科研亦致力將區塊鏈技術推廣並普及，讓更多市民可以享受到安全可靠、高效的智能生活。

Construction

There is a growing concern about the construction site safety and inspection procedures in Hong Kong. Blockchain Solutions has developed a modular system for a local construction contractor, integrating blockchain and internet of things (IoT). The major features of the solution include: (a) biometric & facial recognition for site check-in and sign-out; (b) worker and subcontractor payroll system; (c) site safety detection system, utilizing smart-tags and computer vision for work area control; (d) uploading key inspection forms onto the blockchain. The transparency and security of the records help resolve any legal disputes that may arise.

Logistics

We have partnered with various industry specialists to create a proprietary logistic tracking IoT device + blockchain platform. The device differentiates itself with existing options by offering an active-tracking solution, powered by dynamically timed sensors. Pertinent data such as geographical location, temperature, humidity, etc. are transferred real-time to the cloud platform. Custom-built IoT device enables data collection while blockchain ensures data integrity. Tracking information remove uncertainties when shipping high-value goods such as wine-collections, medical supplies and devices, antiques, etc.

As demonstrated above, blockchain technology is becoming more mature and plays an important role in promoting Smart City. We are committed to develop and popularize blockchain technology so that people can enjoy a safe, reliable and efficient smart living.



羅國基先生
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Internet of Green Things (IoGT)

無線技術創建 可持續建築環境

Internet of Green Things (IoGT)

A Wireless Technology to Shape a Sustainable Built Environment

隨著5G時代的來臨，無線通訊技術將取代有線通訊技術，並朝向5G/窄頻物聯網（NB-IoT）方向發展。許多國家已開始進行實地測試，未來會加速發展人工智能與大數據，物聯網（Internet of Things或IoT）更是生活上不可或缺的一部分。

物聯網是通過「互聯網」把各種感應器與設備或環境連接起來，讓設備或環境之間可以互聯互通與互相交換資料並作出所需的指令。在物聯網的世界裡，每個感應器把其收集的數據傳送至雲端平台，進行實時分析並作出實時監控及應對，對於未來生活的便利將有極大的影響。

隨著5G時代的發展，物聯網技術正逐漸融合到環境管理中，利用感應器隨時隨地獲取附近環境的訊息並實時作出相應行動，其中人們的環保方式也因物聯網技術而帶來前所未有的方式。



Different parameters can be real-time monitored through the cloud-based platform using electronic devices.
透過電子設備登入雲端平台，實時監測各項參數。

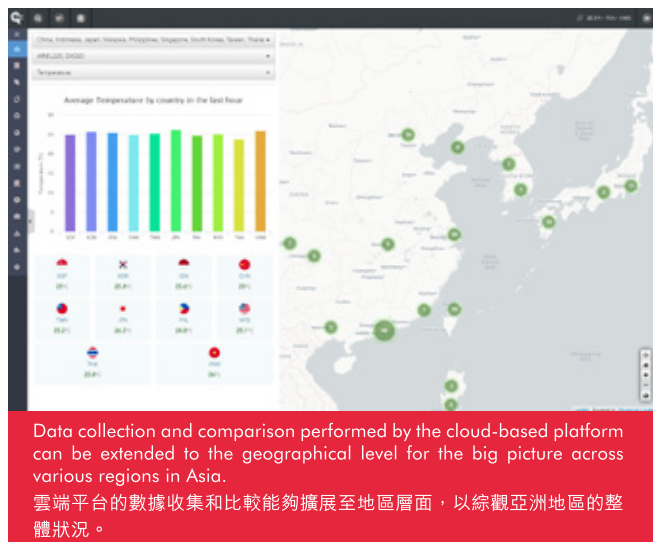
With the advent of the 5G era, wireless communication technology will replace wired communication technology and will develop towards 5G/Narrowband Internet of Things (NB-IoT). Many countries have begun field testing on these technologies. With the rapid development of artificial intelligence and big data in the future, the Internet of Things (or IoT) is undoubtedly indispensable.

The IoT connects sensors with various equipment or the environment through the internet, allowing devices or the environment to interconnect and exchange information and make the required instructions. In the world of the IoT, each sensor transmits its collected data to the cloud platform for real-time analysis, monitoring, and response, which will contribute significantly to the convenience of future life.

With the oncoming of the 5G era, the IoT technology is gradually used for ecological governance, using sensors to obtain information on nearby environments and take corresponding real-time actions from time to time. In short, IoT technology is changing the way people protect the environment in an unprecedented way.

Facilitate Environmental Management through IoT

Internet of Green Things (IoGT) is a new generation of IoT's design concept that utilizes the IoT technology to achieve energy savings and emissions reduction, mitigate pollution, minimize wastage of resources, so as to reduce harmful effects to human body and the environment. With the transformed and optimized network equipment and new technologies introduced, IoGT can achieve a reduction in energy consumption.



透過物聯網進行環境管理

Internet of Green Things (IoGT) 是新一代物聯網設計理念，藉著利用物聯網達致節能減排，減少環境污染和資源浪費，從而將人體和環境危害減至最低。IoGT通過對網絡設備進行改造、優化並引入新技術，以達致降低能源消耗量的目的。

一個成功的IoGT項目有助：

- 改善室內環境質素，令用家身心更健康，工作效率提升；
- 減少對周遭環境的污染；
- 向市場推廣具能源效益的樓宇、系統和設備，包括可再生能源的使用；以及
- 減少浪費食水、能源等日趨緊張的資源。

引入綠色物業管理概念

「綠色物業管理概念」就是引入一系列IoGT設備及作業系統，有效改善環境及管理質素。此類IoGT產品應用於能源管理、用水管理、室內環境質素管理、創新管理等，務求將大廈管理整合到同一個平台，提升環保及管理指數，最終增加樓宇使用者的滿意度。

在新建建築推行智能技術及建築信息管理

此外，IoGT亦可應用於新建建築。本地綠色建築評估工具綠建環評已於今年九月推出新建建築2.0版評估工具。這套工具採用最新標準以更客觀、更可量度的方式評估新建建築的整體質素，並迎合社會不斷轉變的需求及期望，以建設更健康、可持續及宜居的建築環境。綠建環評新建建築2.0版其中一個主要修訂包含智能技術和建築信息管理的信息，當中有幾個評分項目均與物聯網有密切關係，包括EU 4計量和監測，以及IDCM 13數碼設施管理介面。

EU 4計量和監測要求物業管理團隊量度及監測各項參數，並制定措施以提升建築物的表現；IDCM 13數碼設施管理介面則可協助設施管理團隊審核透過安裝於建築物內的電錶系統或物聯網設備所收集的數據。我們深信這些嶄新技術有助連接綠色建築和物聯網，亦是發展IoGT的起步點。

IoGT將會在綠色建築及物業管理的發展上有著重大改變，實現物與物的相聯。隨著樓宇興建旺盛，加上人手嚴重不足，我們更要日新月異的科技發展提高環境質素；而IoGT是解決困難的主要元素及配套。

A successful IoGT project helps:

- improve the indoor environment to enhance the health and wellbeing of occupants and improve work efficiency;
- reduce environmental pollution;
- promote energy-efficient buildings, systems, and equipment, including renewable energy; and
- reduce wastage of resources, such as water and electricity.

The Rise of the Green Property Management Concept

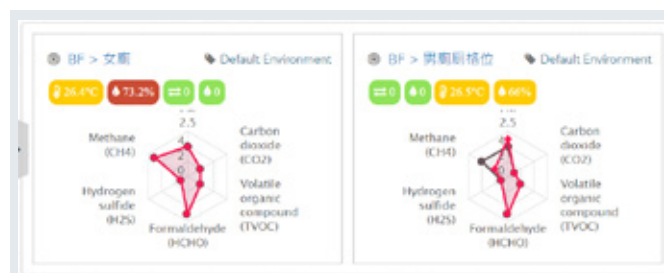
The Green Property Management Concept introduces a series of IoGT equipment and operating systems. It can improve the quality of environmental management effectively. These IoGT products are broadly applied to energy management, water management, indoor environmental quality management, innovation management, and so forth. By using the same control and monitoring platform for building management, it can enhance the efficiency of the environmental protection and the management performance, and ultimately improve tenant satisfaction.

Implement Smart Technology and Building Information Management in New Buildings

IoGT can be applied to new buildings as well. BEAM Plus, the local green building assessment tool, has launched the BEAM Plus New Buildings v2.0 ("BEAM Plus NB v2.0") in September this year. This new version applies the latest standards in evaluating the overall quality of new buildings in a more objective and measurable way, and caters for the fast-changing needs and aspirations of the community towards a healthier, sustainable and livable built environment. One of the major revisions of BEAM Plus NB v2.0 is to incorporate the concept of smart technologies and Building Information Management. There are a couple of credits relevant to IoT, such as EU 4 Metering and Monitoring as well as IDCM 13 Digital Facility Management Interface.

EU 4 Metering and Monitoring requires the property management team to measure and monitor different parameters and develop measures to improve the performance of the building, while IDCM 13 Digital Facility Management Interface can assist the facility management team to review data collected by the electricity metering system or IoT devices installed in the building. We believe the brand-new technology will help connect Green Building with IoT, and it is also the starting point of the IoGT development.

IoGT will have a noticeable impact on the development of green building and property management. With the advanced technology, the number of buildings served is booming dramatically which also addresses the severe shortage of building management workforce. To improve the quality of the environment, the IoGT will be a must factor and a strong support for solving the problem.



The cloud-based platform can display statistical analysis for the default environment.

雲端平台可以顯示預設環境的數據分析。

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ELECTRONIC HEALTHCARE

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