

SMART VISION 智城

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六大範疇建議 邁向全新智慧城市

ADVICE IN SIX AREAS
TO MOVE TOWARDS A NEW SMART CITY



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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。

”

目 錄 CONTENTS

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02

Messages to Public
給公眾的話

04

Dashboard Specials
儀表板特輯

06

Feature Story
專題故事

Advice in Six Areas to Move Towards a
New Smart City
六大範疇建議 邁向全新智慧城市

12

Event Review
活動回顧

14

Response to The 2020-21 Budget
回應2020-21財政預算案

16

SCC Corner
智城觀點

In an epidemic, can we balance Personal Privacy and
Public Safety ? – Dr. Winnie Tang, JP
手機大數據的限制和潛力 – 鄧淑明博士 太平紳士

The Openness and Transparency of Interactive Map
Dashboard Alleviate Social Panic
Together, We Fight the Virus – Hon. Elizabeth Quat, BBS, JP
互動地圖儀表板資訊公開透明 減少恐慌同心抗疫 – 葛珮帆議員

Visualize the Novel Coronavirus Outbreak
with Interactive Map Dashboards – Esri China (Hong Kong)
互動地圖儀表板 新冠疫情圖像化 – Esri 中國 (香港)

Smart City Development in HK x EV & EV-charging
networks – Mr. Gary Ng
香港智慧城市發展x電動車及充電網絡 – 吳福強先生

Smart City : How Blockchain enables Hong Kong to
become cashless society – Mr. Harris Wong
智慧城市：區塊鏈如何使香港成為無現金社會 – 黃偉邦先生

How to make use of technology to enhance home work
experiment – Mr. Simon Loog
應用科技 體驗智慧工作模式 – 龍沛智先生

Applying the Smart City concept to personal needs
– Mr. Steven Leung
以智慧城市概念提升個人衛生 – 梁泰康先生

Indoor Navigation and Location-based Services for Smart
Cities – Signify Hong Kong
智慧城市的室內定位和導航服務 – Signify Hong Kong

Messages to Public

給公眾的話

政府在2019年10月公布的《施政報告》中，已預告將於2020年公布《香港智慧城市藍圖2.0》（《藍圖2.0》），匯報各項措施的最新進展，並就智慧城市發展提出新建議。智慧城市聯盟早在2017年12月第一份《香港智慧城市藍圖》尚未推出之前，已就智慧城市建設收集各界意見並呈交政府。結果政府採納多個範疇的建議，今天並已初見成果，包括推出數碼個人身份（eID）和空間數據共享平台等。

回顧首份《藍圖》，建立「智方便」平台（原名為eID）是當中最受關注的建議之一。香港作為一個開放城市，必須為市民提供真正便捷而全方位的市政服務。數碼個人身份乃智慧城市發展的重要基石，各界均期望平台能盡快推出，方便市民以網絡辦理各項民政事務。同時，金融基礎建設——流動支付系統也是近年的一大躍進。金管局推出的快速支付系統「轉數快」，是全球第一個提供跨銀行、跨電子錢包、全天候運作的即時現金轉付平台。隨着「轉數快」的推出，香港的零售支付生態出現前所未見的轉變，亦標誌着香港的支付系統已邁向新紀元。

The *Policy Address* issued in October 2019 announced the introduction of the *Smart City Blueprint for Hong Kong 2.0* ("Blueprint 2.0") in 2020. The latest progress of different measures and the new suggestions on smart city development would be outlined. In developing smart city, SCC has taken a proactive role in consolidating different communities' views to the government before December 2017 when the first *Smart City Blueprint for Hong Kong* was not yet launched. We are glad to see our suggestions were adopted by the government and the fruition in different areas such as launching electronic identity (eID) system and rolling out a common spatial data infrastructure (CSDI), etc.

On reviewing the first *Blueprint*, one of the most eye-catching suggestions was building up "iAm Smart" platform (previously named as eID). iAm Smart is the cornerstone to smart city development. As an open city, Hong Kong should provide an actual life-wide and convenient municipal services to the community. The community aspires the electronic identity system to be implemented as soon as possible so that the citizens can live in a smart life-style to deal with the everyday affairs with a few clicks. Moreover, mobile payment system has been a big step of financial infrastructures in recent years. Hong Kong Monetary Authority has launched the Faster Payment System (FPS) which is the world's first real-time payments platform enabling the public to make instant transfer of funds anytime, anywhere, across different banks or digital wallets. The launch of the FPS brings an unprecedented change to the retail payment environment and marks a key step forward in developing Hong Kong payment system into a new century.



Mr. Gary Yeung, MH
楊文銳先生，榮譽勳章

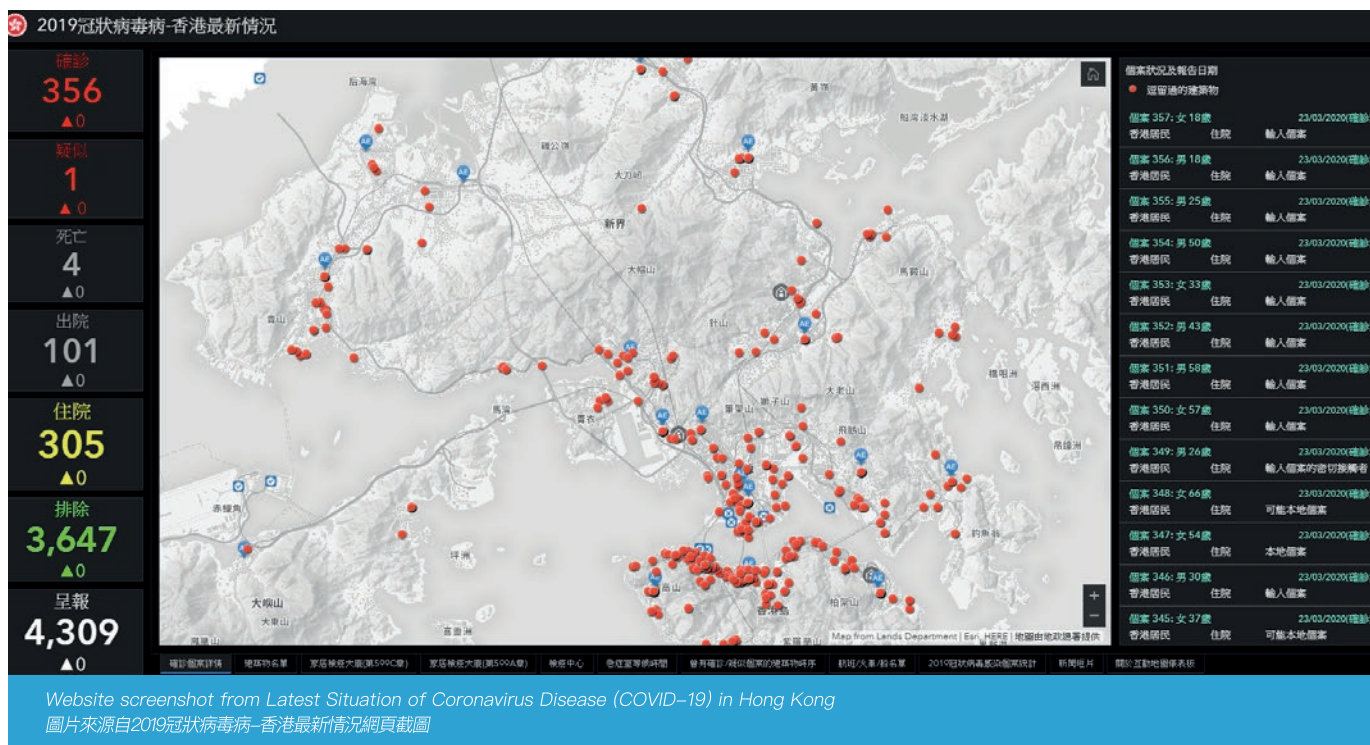
President
會長

我認為現在推出《藍圖2.0》正是時候，因為大眾已初嘗智慧城市發展的好處，真切感受並廣泛應用它的服務。政府亦是時候檢視過去的工作成效，尋求進步空間。聯盟作為主導單位，近日聯合香港總商會及香港理工大學賽馬會社會創新設計院，攜手為《藍圖2.0》準備建議書，再次匯集各界持份者對之前一份《藍圖》的意見，並提出下一步的建議，其中有不少貼近民生議題的實用方案，如智慧廁所、智慧泊車和樂齡科技等。此外，香港如要在智慧城市的發展進程上突破現時的樽頸，則需加快落實5G數碼基建。如果能多管齊下推動5G網絡發展和應用，使網絡數據傳輸量和速度也大幅增加，各項智慧城市所需的科技和產物便可加速發展。

培育人才亦是智慧城市得以持續發展的重要條件。有見及此，聯盟於2018年成立「智慧城市學院」（SCA），幫助有志投身智慧城市行業人士得以持續進修與學習。聯盟現正與香港科技大學和香港專業教育學院（IVE）舉辦「智慧城市專業文憑」課程和在職管理人員培訓。未來聯盟將繼續積極與各大專院校合作，推動智慧城市學科課程，務求為培育人才出一分力，促進香港智慧城市的健康發展。

People have initially felt the benefits brought by the smart projects of the first *Blueprint*, so it is the right time to introduce the *Blueprint 2.0* in which the government should reflect on their work in the past and find area for improvement. Assuming a leadership, SCC once again collaborates with The Hong Kong General Chamber of Commerce, and Jockey Club Design Institute for Social Innovation at The Hong Kong Polytechnic University to prepare an advisory paper for the coming *Blueprint 2.0*. Our advisory paper consolidates different shareholders' opinions on the last *Blueprint*. Not only does it provide the suggestions for further developing smart city in the future, but it also highlights many practical projects which are worth pursuing in regard to the livelihood, i.e. Smart Toilet, Smart Parking and Gerontology, etc. As soon as the 5G Network infrastructure is established in Hong Kong, we can break through the bottlenecks encountered nowadays by multi-pronged approach. With a boosted volume and speed of local mobile data available, different technologies and products which are vital to smart city can be applied and to be used more widely.

Nurturing talent is another essential condition to sustain smart city development. In view of this, SCC have formed the Smart City Academy (SCA) in collaboration with universities to help train more talent who are devoted to smart city industries through continuing education. We are partnering with The Hong Kong University of Science and Technology (HKUST) and Hong Kong Institute of Vocational Education (IVE) to conduct the course of "Professional Diploma in Smart City" and to provide training courses for the middle managers. In the coming year, we will continue to work proactively with different universities and colleges in Hong Kong in promoting smart city courses. We hope that through nurturing talent, a scene of prosperity for Hong Kong as a smart city can be expected.



公私營合作範例－ 智慧城市聯盟助開發疫情地圖

Public - Private Partnership - SCC helps to develop **Interactive Map Dashboard** for the epidemic

2019新型冠狀病毒疫情全球肆虐，政府透過官民合作形式，開發疫情互動地圖儀表板（Interactive Map Dashboard，下稱「疫情儀表板」），名為「2019冠狀病毒病-香港最新情況」，向公眾提供本港疫情的即時資訊。

智慧城市聯盟（聯盟）兩位創辦人兼榮譽會長葛珮帆議員與鄧淑明博士，聯合會長楊文銳先生推動政府建立這個疫情儀表板。在發展局和地政總署統籌，以及聯盟IT義工團隊的協助下，進行開發工作，協助政府向公眾提供疫情的最新資訊。同時，政府資訊科技總監辦公室、衛生防護中心、醫院管理局和相關政府部門則負責提供數據支援。各單位攜手合作，令儀表板可在短短數天內面世，實在令人鼓舞。至三月下旬，

The novel coronavirus disease epidemic is overwhelming the world. In order to provide the latest information on the outbreak to the public, the government developed an Interactive Map Dashboard ("the Dashboard") which is named as "Coronavirus Disease (COVID-19) in HK" via government and community collaboration.

The two Founders and Honorary Presidents of Smart City Consortium (SCC), Hon Elizabeth Quat and Dr. Winnie Tang, and President Mr. Gary Yeung have advocated the government to launch the Dashboard for facilitating an effective dissemination and exchange of information related to the outbreak. The launch of the dashboard is led by the Development Bureau and Lands Department with support from SCC's volunteer IT team with the datasets provided by the Office of the Government Chief Information Officer, Centre for Health Protection (CHP), Hospital Authority, and relevant government bureaux and departments. Thanks to the collaboration of every unit, it is encouraging that it took only a few days to launch

桌面版和手機版已錄得超過1,600萬瀏覽次數，可見成效顯著。

疫情儀表板讓市民可在網上一覽本港疫情的最新情況，並設有地圖清晰顯示過去十四天內，確診患者曾經逗留過的建築物、曾經乘搭的公共交通工具，即航班/火車/船名單。儀表板更展示每日感染個案統計，包括確診個案、仍住院接受檢查個案、符合呈報準則個案等的數字；它還附有確診個案詳情，如年齡、性別等；以及各政府醫院急症室的輪候時間，並每十五分鐘更新一次。除此之外，在「資料一線通」（data.gov.hk）平台上有許多本港疫情相關數據，可供市民下載。

葛珮帆議員表示，疫情儀表板將最重要的資訊放在一個版面上呈現，好讓市民對最新形勢一目了然，此舉能防止假消息不斷散播，消除大眾疑慮，有穩定人心的作用。而最重要的是，地圖和背後的資訊扣連，數據更可供下載，有利各界對疫情作相關研究及創立便民應用程式。政府在其他項目上，亦應參考這個模式。

鄧淑明博士指出，疫情儀表板是公私營的成功例子。香港要成為真正的智慧城市，應好好累積這次疫情發展和演變的實戰分析經驗，這對未來醫療大數據的研究，肯定大有裨益。她又補充指香港推出互動地圖儀表板的二月三日，同日世界衛生組織亦推出全球新冠病毒的互動地圖儀表板，及後很多地區和城市都相繼跟隨，香港的儀表板可說領先很多其他地方。

聯盟義工團隊將繼續竭力更新並加強疫情儀表板的功能，期望藉提高資訊透明度，令大眾及早防範，也希望各方善用數據分析，協助研判疫情，部署好防控工作。



the Dashboard for fighting the epidemic. As of late March, the Dashboard's desktop and mobile versions have attracted more than 16 million views, which reflects the effectiveness.

Public can have an overview of the latest situation of the epidemic in Hong Kong from the online Dashboard with a map which displays buildings with confirmed cases, and the transports, ie. flights/trains/ships taken by confirmed patients 14 days before their symptoms could be noticed. The Dashboard also displays the statistics of daily confirmed cases, probable cases and fulfilled reporting criteria cases; the details of the confirmed cases with information such as age and gender as well as the waiting time of accident and emergency (A&E) service of public hospitals which is updated every 15 minutes are also available. Besides, lots of data are open to the public for download through data.gov.hk.

Hon Elizabeth Quat stated that the Dashboard gathers the most important information on the same page for the public to grasp the latest situation at a glance. This can stop the rumors and allay public concern so as to pacify the public's mood and provide assurance. Most importantly, it links up the map with the datasets which allow the public to download. This can facilitate epidemic related research and development of other applications for providing convenience to the public. The government can follow the practice and adopt it on other public services.

Dr. Winnie Tang pointed that the Dashboard is a successful example of public-private partnership (PPP). To transform Hong Kong into a truly smart city, the authority should apply the experience gained in the development and evolution of this epidemic which will assist the analysis of big data for medical care in the future. She highlighted that Hong Kong launched the Interactive Map Dashboard on February 3, the same day as WHO launched its global COVID-19 Interactive Map Dashboard. Many regions and cities followed suit afterwards. The Dashboard developed by Hong Kong has a leading position in the world.

SCC's volunteer IT team will continue to spare no effort in updating and strengthening the functions of the Dashboard. With the effective dissemination of information, it is hoped that all parties will make good use of data analysis to help assess the situation of the epidemic and make timely prevention and control measures.

Advice in **Six Areas** To Move Towards a **New Smart City**

六大範疇建議 邁向全新智慧城市

首份《香港智慧城市藍圖》在2017年12月推出，內含70項措施，例如數碼個人身份（eID）和轉數快等，清晰規劃出如何利用創科解決都市挑戰，並提升城市管理成效和改善市民生活質素等。而香港政府將在2020年公布《香港智慧城市藍圖2.0》（《藍圖2.0》），進一步推動香港智慧城市發展。

智慧城市聯盟（聯盟）自2016年成立以來，一直為連繫各界，推動香港作為領先的智慧城市而努力，當中包括積極向政府提交諮詢報告和舉辦以科技為題的研討會等。如今《藍圖2.0》發布在即，聯盟作為主導單位，近日聯合香港總商會及香港理工大學賽馬會社會創新設計院，攜手為《藍圖2.0》準備建議書，並已在2019年12月12日舉行了「智慧城市圓桌會議 - 藍圖2.0」，收集來自商界領袖、行業專家及學者的意見和反饋。以下整合6大智慧城市發展範疇的部分意見：

The first Hong Kong Smart City Blueprint was launched in December 2017. It comprises 70 measures such as adopting electronic identity (eID) and Fast Payment System (FPS), etc. The policy objectives to pursue smart city development are to make use of innovation and technology to address urban challenges, enhance the effectiveness of city management and improve people's quality of living, etc. Hong Kong government will announce the Smart City Blueprint for Hong Kong 2.0 ("Blueprint 2.0") in 2020 to further promote smart city development.

Smart City Consortium (SCC) has been collaborating with different stakeholders since establishing in 2016. In order to foster Hong Kong as a pioneer of smart city, we are striving to prepare consultation reports to the government and organize seminar with technology theme. The Blueprint 2.0 is going to be launched soon. As a leading unit, SCC held a brainstorming meeting, titled "Smart City Roundtable - Blueprint 2.0" on 12th December in 2019, with Jockey Club Design Institute for Social Innovation of The Hong Kong Polytechnic University and the Hong Kong General Chamber of Commerce as strategic partners. Industry experts, business leaders and academics were invited to share their opinions and advice on the six major areas in smart city development. Their opinions are summarized as follows:

智慧經濟：加強數碼基建 保金融競爭力

聯盟金融科技委員會主席陳家豪先生指出，一個城市的經濟若要健康地持續發展，其基礎建設必須相應配合，否則容易失衡。香港自開埠以來均以發展傳統基礎建設為主，數碼基建則較遲起步，很多需要配合互聯網發展的基礎建設未能完善支撐現今的金融科技發展，如乘搭的士普遍不能使用電子支付、處理稅務仍需依賴紙張等。香港若要提升經濟上的競爭力，需建立一套有系統的數碼基礎建設，與其他城市系統接軌，以保持其國際城市的優越地位。

正當英國及歐盟的「開放銀行計劃」在去年底成功實行之際，香港的「開放應用程式介面」（Open API）計劃今年也進入第三階段。香港可參考外地的成功策略，推出近似的開放銀行計劃，提供公平競爭環境，讓銀行一直對外封鎖的客戶數據可開放讓市場共享，並透過規管銀行的應用程式介面(API)，統一對外的數據交換接口；同時更需落實統一API標準，並將計劃覆蓋到其他監管機構如證監會、保險業監管局及積金局的系統中。

為配合數碼經濟發展，修改已過時的個人資料保護條例亦不可缺少。現時法例對互聯網數據收集、處理及發布並無明確規範，政府可參考歐盟的《一般資料保護規範》（GDPR），有效配合公開數據發展，讓香港擔當全球數據中心的角色，提高香港的競爭力。



Ms. Rene Chu, Convenor of Smart People
智慧市民意見召集人 朱可儀女士

智慧市民：推動教育科技 培育新一代人才

香港面臨人才增長追不上科創增長的現象，技術公司人才短缺，現時政府積極引進海外人才只能解燃眉之急，我們需長遠解決香港人才增長不足的策略。

哈佛大學教授愛德華·格拉瑟（Edward Glaeser）撰寫的《城市的勝利》（Triumph of the City）一書總結道：「創建智慧城市的最佳亦是唯一方法是建立有能力吸引和留住人才的學校。」與鄰國新加坡相比，香港在以科技支援教學方面，估計落後了大約10年。2018年以來，新加坡已自小學階段推廣人工智能（AI）教育，而香港的學校才剛剛開始重視STEM（科學、科技、工程、數學）教育。全球正興起在



Mr. Emil Chan, Convenor of Smart Economy
智慧經濟意見召集人 陳家豪先生

Smart Economy: Step Up Efforts in Digital Infrastructure to Enhance Financial Competitiveness

Mr. Emil Chan, Chairman of FinTech Committee of SCC, stated that digital infrastructure is essential for a sustainable and healthy development of a city. Otherwise the structure of city will become imbalanced. Hong Kong has been advancing mainly in traditional infrastructure since British settlement. Late development of digital infrastructure leads to a lack of adequate support for development of FinTech today. For example, electronic payment is usually not available for paying taxi fares, and paper is still used for processing tax report. To enhance Hong Kong's competitiveness, establishing a systematic digital infrastructure is needed for connecting with other cities' system and maintaining the status of Hong Kong as an international financial centre.

Before Hong Kong Open API stepping into stage three this year, the United Kingdom and the European Union already launched Open Banking successfully last year. The government can make reference to the practice of them to implement more efficient schemes for Open Banking to reach a level playing field. Besides, the customer data which is currently held by individual banks can be shared within the financial industry, and unifying the application programming interface (API) of data exchange according to world practice is recommended. Moreover, it is essential to establish a set of unified API standards which incorporate requirements of other financial regulators such as Securities and Futures Commission, Insurance Authority and Mandatory Provident Fund Schemes Authority.

With the objective to facilitate development of digital economy, amending the outdated personal data protection ordinance is also essential. The existing legislation does not provide a clear regulation on internet data collection, processing and release. Hong Kong government can make reference to the General Data Protection Regulation (GDPR) by EU to facilitate the development of open data so that Hong Kong can play a role in global data centre and enhance its competitiveness.

Smart People: Promoting Edtech and Nurturing Future Talent

Hong Kong is facing two critical issues in terms of people. The growth of the talent pool is not matching the requirement for technological innovations and thus, technical firms are short of talents. Although the government has encouraged overseas talents to come, it will only alleviate the situation in short-term. The best solution is to address the talent-shortage problem at source by making feasible strategies in the long run.

"The single best way to create a smart city is to create schools that attract and retain able people," as stated by Harvard University

教育中使用人工智能，香港要急起直追，政府應擔當主導角色，鼓勵及引導教育界善用人工智能，培訓新一代人才。

個人化學習是教育發展之路，而教育科技（Edtech）是這條道路的基石。由於現時香港大部分學校仍然依賴面對面上課方式傳授知識，所以在當前的新型冠狀病毒疫情中，學校和課堂均暫停的情況下，學生的學習也被迫停止。若能在教育政策上善用教育科技，運用人工智能學習系統讓學生隨時隨地學習，可令學習不再受不能上學等突發情況所限制。

智慧政府：加快推行CSDI 提升公營服務

開放數據對發展智慧政府是重中之重。與此同時，加快推動空間數據共享平台（CSDI）同樣重要，好讓地理空間資訊得以整合、互通和共享，協助政府各部門規劃和制訂政策，同時促進民間創新。創奇思總經理錢國強先生指出，運用平台上的數據，包括房屋、交通、經濟到治安等，以資訊促進城市管理，甚至建立聯合運作平台（Common Operational Picture），把各項零碎數據整合，在地圖上標示並作全面分析，當出現如2018年強颱風山竹和2019新型冠狀病毒等突發大型事件時，便可調撥並統籌資源應對。政府各部門的資訊可互通協調，並一站式把最新情況發布給市民，增加消息透明度，緩減恐慌情緒。此外，亦建議貿易單一窗口（Trading Single Window）做好融合CSDI的準備，並以公私型合作模式支持數據在兩者之間互聯互通。

同時，為了加快試行及採納科技項目，政府可考慮引入快速通行證計劃，放寬對智慧城市項目試驗的監管，令科技產業有更大的發揮空間，研發出更多有利城市發展的新產品。而隨著政府推出數碼個人身份和各種智能城市基礎設施，可考慮整合更全面和更方便的單一平台，為市民提供更快捷便利的公營服務體驗。



Mr. Andy Chung, Convenor of Smart Environment
智慧環境意見召集人 鍾偉傑先生

智慧環境：減少污染 發展可持續環境

根據環境局發表的《香港氣候行動藍圖2030+》報告，香港將於2030年實現把碳強度由2005年水平降低65%至70%。而透過創新科技有助可持續環境發展，達到以上目標。

在電力供應方面，香港現時正逐步減少使用煤炭，實現低碳

Professor Edward Glaeser in his book *Triumph of the City*. Comparing our education system with our neighbouring country Singapore, we might have been lagging behind for a decade. Singapore has been promoting artificial intelligence (AI) education starting from the age of 10 since 2018. However, our schools are just starting to value STEM (science, technology, engineering & mathematics) education. While AI education is on a rise world wide, Hong Kong should catch up with full speed. The government needs to take the leading role in encouraging and leading the education sector to utilize AI technology to bring benefits to students and nurture the future talent.

Due to the current epidemic of COVID-19, not only are schools closed, but classes are also suspended. Nowadays in Hong Kong, most of the school education systems still rely on face-to-face teaching. Therefore, learning activities are much affected. To address the difficulty, the learning act Personalised Learning is the road to sustain education while Edtech is the paving block. If Edtech could be implemented in education for Hong Kong, students could gain knowledge without going to school and learn in any time and any places with AI learning system so that their learning activities would not be disrupted under emergency situations.



Mr. Kenny Chien, Convenor of Smart Government
智慧政府意見召集人 錢國強先生

Smart Government: Enhancing Public Services by Expediting the Implementation of CSDI

Open Data is the key to smart government. The government should accelerate the implementation of common spatial data infrastructure (CSDI) to provide a platform to consolidate, exchange and share geographic spatial data. This can support different departments of government for making plan and policy, as well as foster innovation by the community. General manager of Cherrypicks Limited Mr. Kenny Chien pointed out that utilizing the data on the platform can facilitate city management in different aspects such as housing, transportation, economy and security, etc. He continued that developing Common Operational Picture can consolidate and manage fragmented data so as to display on map for analysis. If there is large-scale events or emergency such as Super Typhoon Mangkhut in 2018 or coronavirus outbreak in 2019, it is easier for the government to react and allocate the resources. An interconnection mechanism will then be in place among the various policy bureaux, government departments and public organizations to release information on the latest situation to public on a one-stop information portal. More people will benefit by clearer information. Moreover, he also suggested that Trading Single Window should be well-prepared for connecting with CSDI. The mutual connections will be carried out by Public-Private Partnership for supporting the data exchange.

To expedite the conduction of tests and adoption of technology, government should consider introducing fast pass and relaxing regulations on smart city projects so as to create opportunity for technology industry to demonstrate

目標，同時增加使用替代和再生能源供應如天然氣、太陽能以及轉廢為能的堆填沼氣，一系列減碳措施值得讚揚。除此之外，政府亦可在城市海陸空交通上善用替代能源，如即將試行的電動渡輪和電動單層巴士。聯盟綠色委員會主席鍾偉樑先生表示，為確保這類電動交通工具可持續發展，前期試點測試和選擇合適的電動技術具有舉足輕重的影響力，政府可參考歐洲carbon-robust ship的概念，權衡新船設計時所需的靈活性、安全性和如何保持長期競爭力。

為減少空氣污染，加強監測是另一可行方案。政府可考慮使用低成本傳感器建立微電網，以了解和分析空氣污染和噪音污染的來源和流量，從中找到減少污染的節能解決方案。參考北歐國家的做法，以物聯網和雲端技術研發的創新解決方案，透過精確分析，測量社區中的空氣和噪音水平，是低成本、低維護費的替代方案。



Ms. Rosana Wong, Convenor of Smart Mobility
智慧出行意見召集人 黃慧敏女士

智慧出行：開放數據 改善城市流動性

聯盟副會長黃慧敏女士指出，解決交通擠塞問題在許多城市已是刻不容緩，而智慧出行解決方案，既能舒緩交通問題，亦能改善行車速度等道路情況。她強調每個城市都應該因應自己的潛在挑戰及問題，以獨特的策略來制定智慧出行方案。

在香港，除了善用世界一流的基建樞紐，進一步加快大灣區一小時生活圈的建設外，開發可改善路況和安全性的自動駕駛車輛及嶄新的出行服務，如「汽車即服務」（Cars-as-a-service）、共享單車、私人電召汽車服務等，均能減少交通擠塞，並提供更環保及更便宜的出行模式，同時亦有助減少交通事故、改善空氣質素及減少泊車用地，是推動智慧出行的政策目標。

此外，開放數據對於促進智慧出行也有很大的貢獻。通過安裝物聯網嵌入式傳感器，制定公共數據共享方案及成立跨部門綜合指揮中心，可鼓勵政府與市民之間的雙向溝通。開放數據平台不僅可提供如泊車及道路情況、公共交通候車時間和空氣質素等實時資訊，還能作為一個政府收集民意的渠道，以改善整個城市的交通規劃，實現建設智慧城市的全民參與。

智慧生活：「智能安老」方案助健康老齡化

全港三分之一人口快將達到退休年齡，老齡化社會加上建築物日漸陳舊，香港正面對人口及城市「雙老化」局面。

their full strength, undertake research and develop more new products to promote city development. After rolling out eID and different smart city infrastructures, the government should consider consolidating them on a single platform which is more comprehensive and convenient to provide user-friendly public services to the people.

Smart Environment: Reduce Pollution and Achieve Sustainable Development

According to Hong Kong's Climate Action Plan 2030+, we need to reduce our carbon intensity by about 65-70% by 2030 compared with 2005 level. We trust that we could achieve all the relevant sustainable development goals via technology innovation, interaction and collaboration.

In regard to electricity supply, Hong Kong will continue to phase out coal for electricity generation and use more renewable energy such as natural gas, solar energy and waste-to-energy as well as increase non-fossil fuel sources. These will enable Hong Kong to reduce carbon emissions significantly. We are impressed by the series of carbon reduction measures. Also, the government can increase the use of the non-fossil fuel in land based vehicles, marine and aerial vessels, such as the trial electric ferry and electric single-decker bus. Mr. Andy Chung, Chairman of the Green Committee of SCC, expressed that the pilot trials are essential for us to choose the right technology which should be future-proof. Reference can be made to the concept of carbon-robust ship in Europe, which highlights the necessity of flexibility, safety, and long-term competitiveness when designing new ships.

Strengthening pollution monitoring is another way to reduce air pollution. To identify energy efficient solutions, the government can enhance pollution monitoring by establishing micro grid which uses low cost sensors to measure the air+noise levels by detecting the source and discharge. Northern Europe has set a good example for our reference. Making use of innovative IoT+Cloud solutions which offer low-cost, low-maintenance alternative for having a dense grid of enough accuracy measuring the air+noise levels in many neighborhoods with advanced analytics support is recommended.

Smart Mobility: Open Data to Facilitate Urban Mobility

Ms. Rosana Wong, Vice President of SCC, opined that smart cities must deliver smart mobility solutions to improve urban mobility in particular to cut congestion within their cities which has become the most pressing issue to be tackled by policymakers around the world. Undoubtedly, strategies for formulate smart mobility solutions and meeting urban mobility challenges are unique to each city.

Apart from taking the unique geographical advantage to solidify transportation system and world class infrastructure hub which can accelerate the construction of one hour living circle in the Greater Bay Area, Hong Kong should develop autonomous vehicles which can improve traffic flows and safety as well as introduce new mobility services like Cars-as-a-service, shared bicycle, private ride-hailing. These services are also important to drive Hong Kong to achieve smart mobility goals such as encouraging higher productivity, reducing congestion, fostering greener and cheaper transportation options, minimizing traffic accidents, improving air quality and reducing the need of urban footprint for parking.

In addition, open data is also important to facilitate smart mobility. By installing IoT-embedded sensors, public data sharing scheme and the set-up of cross-departmental integrated command theatre can be the new approaches to encourage two-way communication

「雙老化」所帶來的雙重影響將構成嚴重社會問題，若不妥善處理，將危害香港的持續發展。

聯盟研究及藍圖委員會主席秦仲宇先生表示，香港必須採取「智能安老」方案應對「雙老化」問題，為照顧未來的長者作好準備，使他們可安樂養老。如發展室內外智能健康監控系統，透過物聯網感應器，實時感知個人健康狀況和測量生物特徵，偵測生活習慣和社交行為的變化。這些數據更可傳輸到任何智能家居設備中作個人化的設定，並連接醫院數據庫，全面管理個人健康狀況。建立智能健康大數據分析平台也是另一良方，集合市民的健康記錄和數據，並授權醫療界專業人士進行分析，可從中了解環境變化與健康風險之間的關係，預測急性疾病和傳染病的發病及傳播風險。

為實現以民為本的智慧城市，公共政策需鼓勵和促進科技惠及各個社群，故此應支持本地樂齡科技發展，包括資助科技公司發展樂齡技術及儀器，並推行補貼計劃，資助有需要的家庭購買這些器材，以建立智能健康社區網絡。

聯盟期望《藍圖2.0》有所突破，加速智慧城市的發展步伐。聯盟亦將繼續竭盡所能支援香港的科技發展，積極支持政府發展更以人為本的世界級一流智慧城市。



between the government and citizens. Open data platform can provide real-time data such as parking space availability, traffic congestions, public transportation arrival time and suspended particulate levels in air, etc. Besides, it can also offer a channel for the government to improve urban mobility planning by collecting input from citizens to achieve the citizen empowerment in smart city development.



Smart Living: Smart Ageing Project Enables The Elderly To Stay Healthy

As one-third of Hong Kong's population has reached their retirement age and many of the city's buildings are getting old, Hong Kong is facing "double-ageing" situation. The combined impact of "double ageing" will trigger serious social problems, which if not tackled properly will endanger Hong Kong's sustainability.

Mr. Daniel Chun, Chairman of SCC Research and Blueprint Committee, said that by adopting smart ageing project which prepares Hong Kong to serve the elderly of tomorrow, it helps tackle the "double-ageing" problem as well as promote an age-friendly city. Through installing IoT-embedded sensors of the indoor and outdoor smart health monitoring system, the personal health condition, biometric measures, living habits and the changes in social behavior can be followed instantly. These data can be transferred to any smart home equipment for checking against personalized criteria and can also be sent to the hospital database for monitoring personal health condition comprehensively. Setting up a big data of health analytics platform is effective in gathering citizen's health record and data, and thus facilitates analysis by authorized healthcare professional. This increases the understanding of the relationship between the climatic changes and health risks as well as predicting the incidence and the risk of transmission of both acute and infectious diseases.

To build a people-centric smart city, public policy should promote inclusive technology by encouraging the development of gerontechnology and also subsidizing the technology company in developing related products. Besides, the policy can provide subsidy to families in need of these products, and thus builds a smart health social network.

SCC is looking forward to the achievement of *Blueprint 2.0* to accelerate the smart city development. We will continue putting all our efforts in supporting technology development in Hong Kong and offering proactive support to the government to develop Hong Kong as a world-class smart city with people-oriented services.

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12
DECEMBERSmart City Roundtable – Blueprint 2.0
智慧城市圓桌會議 - 藍圖2.0

Smart City Roundtable – Blueprint 2.0, organized by the Smart City Consortium in conjunction with The Hong Kong General Chamber of Commerce and Jockey Club Design Institute for Social Innovation of The Hong Kong Polytechnic University, was held on 12th December, 2019. Participants of the brainstorming events included business leaders, industry experts, and academics. Various experts shared their thoughts and made recommendations on the six major smart city components, namely, Smart Mobility, Smart Living, Smart Environment, Smart People, Smart Government and Smart Economy during the meeting.

The policy recommendations, ideas and solutions raised in the course of these discussions will be elaborated in an advisory paper for submission to the HKSAR Government in early 2020.

由智慧城市聯盟主辦、香港總商會及香港理工大學賽馬會社會創新設計院協辦的「智慧城市圓桌會議 - 藍圖2.0」於去年十二月十二日中午舉行。各界專才包括商界領袖、行業專家及學者一同參與集思討論活動，分享他們對智慧城市六大主要範疇的想法和建議，包括智慧出行、智慧生活、智慧環境、智慧市民、智慧政府及智慧經濟。

是次討論所提出的政策建議、想法和解決方案，聯盟將會收錄於建議書並於2020年初遞交予香港特區政府。

Briefing Session: Professional Diploma in Smart City
「智慧城市專業文憑」課程介紹會

A Professional Diploma in Smart City Programme, developed under the collaboration between IVE Engineering and Smart City Academy (SCA), will kick off in March 2020. The programme aims to nurture smart city talents for supporting the development of Hong Kong. A briefing session was held on 15th January to let interested parties understand the content of the course.

「智慧城市學院」與職業訓練局（VTC）機構成員香港專業教育學院（IVE）工程部去年簽署合作備忘錄，合作開辦「智慧城市專業文憑」課程，旨在培育香港智慧城市發展人才，並於今年三月開課。在1月15日舉行了介紹會，讓有興趣人士了解課程內容。

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15
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16

JANUARY



Building tomorrow's Smart City: What to learn from innovative collaboration

Following up the MoU signing with SCC last year, the French Chamber of Commerce and Industry in Hong Kong launched a "Building tomorrow's Smart City: What to learn from innovative collaboration" forum on smart city development on 16th January. Mr. Tony CK Wong, JP, Deputy Government Chief Information Officer of OGCIO, presented the smart city development in Hong Kong. Ir. Dr. KF Tsang, Vice President of SCC and Chairman of IoT Committee, also shared his insights at the forum.

繼去年與聯盟簽署諒解備忘錄後，法國工商總會於1月16日舉行了關於建設未來智慧城市的研討會。政府資訊科技總監辦公室副政府資訊科技總監黃志光先生在研討會上談論香港在智慧城市的發展狀況；而聯盟副會長兼物聯網委員會主席曾劍鋒博士工程師也分享了他的見解。



Presentation Ceremony of FinTech Awards 2019

「2019金融科技大獎」頒獎典禮

The presentation ceremony of the FinTech Awards 2019 was organized by ETNet with SCC as a strategic partner. The event was held on 17th January with resounding success.

Dr. Winnie Tang, Founder and Honorary President of SCC, was invited to be the Head of Judge. At her speech in the ceremony, Dr. Tang pointed out that HK was aspired and well-positioned to be the FinTech hub. She also envisioned that the winners would strive to be exemplary in the FinTech industry.

Mr. Leo Chiu, Chairman of SCC Investment Committee, joined the discussion panel with senior representatives from Cyberport and Science Park, and shared his insights at the panel of Sustainable Finance for the Digital Economy. Mr. Sam Fan, Honorary Treasurer of SCC, also presented awards to the winners of the AI group.

由經濟通主辦的「2019金融科技大獎」頒獎典禮於1月17日完滿舉行。聯盟為是次活動策略夥伴。

聯盟創辦人及榮譽會長鄧淑明博士獲邀擔任首席評判並在頒獎典禮上致辭。她指出香港完全具備成為金融科技中心的資格，並寄望得獎者能成為本地創新金融楷模。聯盟投資委員會主席趙敬賢先生與數碼港和科學園的資深代表在「數字經濟的可持續金融」討論環節中分享了他的見解，而聯盟名譽司庫范家珩先生則負責向人工智能組別的得獎者頒發獎項。

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17

JANUARY

智慧城市聯盟就2020-21年度財政預算案的回應 Comments from Smart City Consortium on The 2020-21 Budget

歡迎政府**逐步落實智慧城市發展措施**

SCC Welcomes The Government's **Implementing Smart City Measures Progressively**



智慧城市聯盟歡迎政府今年內公布《香港智慧城市藍圖 2.0》（《藍圖2.0》），樂見政府逐步落實智慧城市發展方案，及在《2020-21年度財政預算案》提出有關智慧城市進一步發展的措施。

聯盟會長楊文銳表示，讓市民大眾感受到智慧項目的好處，有助推動智慧城市的發展。《預算案》提到政府將多管齊下推動 5G 網絡發展和應用的措施；推出「智方便」一站式個人化數碼服務平台；資助企業或機構進行與車輛有關的創新科技研究和應用；探討進

Smart City Consortium (SCC) welcomes the government's plan to launch the *Smart City Blueprint for Hong Kong 2.0* ("Blueprint 2.0"). We are pleased that the plan for progressively implementing smart city development plan was mentioned in *The 2020-21 Budget*.

Mr. Gary Yeung, MH, President of SCC said that the smart city development can be further promoted if the public can feel the benefits brought by the smart projects. The recent Budget announced a number of smart initiatives, including a multi-pronged approach in facilitating the development and application of 5G network; the launch of the "iAM Smart", a one-stop personalised digital service platform; a funding support for enterprises or organisations to conduct research and application on vehicle-related I&T; the policy of further promoting the use of electric vehicles (EVs); formulation of Hong Kong's first roadmap on the popularization of EVs, and so on. These measures benefit the lives of community at large. At SCC, we would like to see more details on how the *Blueprint 2.0* will be rolled out this year. At the same time, we are actively utilizing the connections in field to consolidate the opinions from the shareholders, and will put forward an advisory paper to the government accordingly.

Yeung added that the pressing need nowadays is to help the small and medium I&T enterprises to overcome the

一步推廣電動車的政策，制定本港首份電動車普及化路線圖等等，都能惠及市民。聯盟期待政府今年內公布的《藍圖 2.0》有更多具體落地措施。同時，聯盟正積極發揮其在業界的脈絡，協助收集持份者的意見，將就智慧城市的未來發展向政府提交建議報告。

楊文銳表示，現今最直接最逼切的是協助中小型科創企業度過難關、製造就業機會；今年的《預算案》提及促進多個行業發展，重建國際社會對香港作為亞洲商業樞紐的信心，聯盟認為政府應更積極向東盟地區推廣本地研發的智慧城市服務及方案（Smart-City-as-a-Service），為創科企業開拓商機。

培育人才方面，預算案相當重視創科人才，包括研發人員的培訓及吸納、青年創業及STEM教育和實習，這都有利創科發展，不過，聯盟關注到去年有關STEM的撥款尚未到位，希望財委會盡快通過。此外，在當今的困難時期，政府應為本地畢業生創造更多就業機會，或透過更多孵化計劃扶助初創企業。目前香港初創生態系統發展日益成熟，受僱人員過萬，希望政府能多管齊下，以免裁員及倒閉潮出現。

difficulties and create job opportunities. The latest Budget proposed different measures to promote the development of different industries and revamp the confidence of Hong Kong as a business hub in Asia. One of the services the government should promote is the locally-developed Smart-City-as-a-Service (SCaaS) to the ASEAN countries to create business opportunities for the I&T companies in Hong Kong. Regarding the use of technological means for improving livelihood, we recommend to highlight the contribution of smart-technological advancement to everyday living.

In nurturing talent, SCC noticed the focus on I&T talents in the Budget which includes the training and recruitment of research and development staff, youth entrepreneurship, and STEM education and internship. However, we have learnt that the STEM funding proposed last year has not yet been approved. We urge the Finance Committee to expedite deliberations on outstanding funding proposals. At the same time, the government should create more job opportunities to local graduates via these aforementioned measures and to support start-ups via Incubation Programmes. Our maturing start-up ecosystem is currently employing more than ten thousand employees. We expect multiple measures to be implemented as soon as possible to avoid cutbacks and shakeouts.



手機大數據的限制和潛力

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In an epidemic, can we balance Personal Privacy and Public Safety ?

Originally posted on South China Morning Post on 26th February, 2020



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全球流動通訊系統協會（GSMA）估計，今天全世界手機用戶已逾50億，因此近年不少研究探討如何以手機數據來偵察傳染病，或是在地震、山泥傾瀉時搜索傷者。

例如今次為應對新型冠狀病毒疫情，中國城市和小城鎮改革發展中心首席經濟學家李鐵在一篇文章中指出，如能善用手机數據，可大減中國控制疫情的經濟代價和社會成本。

大減抗疫成本

有內地分析員估算，在新春假期的短短七天，單就電影票房、餐飲零售、旅遊市場，直接經濟損失估計超過一萬億元人民幣。而內地手機用戶已達14億，和總人口相若，因此李鐵提出通過「手機信令」（signalling），針對性地追蹤和控制疫情，可以大為降低抗疫成本。

「手機信令」是指手機與電訊網絡發射基站之間的通訊，只要啟動手機，它便會自動和附近的基站通訊，以備隨時要發出或接收電話及訊息。換言之，電訊網絡必須識別該手機的定位才可提供服務。在非常時期，這有助迅速找到用戶的位置。

內地掌握手機數據的是三大網絡營運商，集合它們的資訊，全國人口在內地的流向和分布就瞭如指掌。如此一來，監測與疫情有接觸的人或家居隔離者是否私自出走，可做到滴水不漏。這樣，毋須整個社會停工停課，也可收控制疫情之效。

救急扶危與疫情預警

手機數據在協助地震等天災人禍的救援工作上，亦大派用場。

In times of epidemics, how are we to strike a balance between protecting personal privacy and maintaining public safety?

Today, more than five billion people in the world have mobile devices, and many of them can't live without their phones. They represent a huge data pool that many researchers could tap to help manage an infectious disease outbreak, or locate trapped and injured individuals after an earthquake.

Mobile big data for social good

In 2017, GSMA, the association representing mobile operators worldwide, launched a "Big Data for Social Good" initiative that encourages telecoms groups to support responses to epidemics and natural disasters by sharing anonymised metadata.

More recently, media outlets looking to track the spread of the new coronavirus in and outside China used location data from tech giant Baidu's map app to analyse the travel patterns of the five million people who left Wuhan, the city at the centre of the outbreak, before it was closed off in January.

Now, experts such as Li Tie, chairman and chief economist of the China Centre for Urban Development, have advocated the use of big data to manage a crisis and reduce the risk of a future crisis.

Cost effective way to contain epidemic

As the COVID-19 outbreak intensified before the Lunar New Year holiday, China placed cities on lockdown and brought the economy to a virtual standstill. The epidemic is affecting sectors including catering, retail and tourism, and also hit Lunar New Year box office revenue. One analyst estimated economic losses reached 1 trillion yuan just in the first seven days of the holiday.

At the grass-roots level, some local authorities allowed only one person per family to leave the house for two hours a day. As Li pointed out in an article in January, all these drastic measures were "very effective in preventing the further spread of the epidemic, but at huge social and economic costs".

Instead, given that there are now 1.4 billion mobile devices in use in China, Li proposed using mobile phone signalling data to manage an epidemic.

These signals are regularly sent and received by a mobile phone each time it passes a base station in a telecoms network, but only if the phone is switched on.

There are three major mobile operators in China. If the authorities gather mobile phone signalling data from these operators, it is possible to monitor the whereabouts of the national population, or target particular regions or individuals round the clock within the country.

例如，2010年令10多萬人喪生的海地大地震，一個瑞典卡羅琳醫學院學生便說服當地最大的電訊公司，免費分享190萬名用戶的匿名通話紀錄，藉此尋找生還者和救助災民——首都太子港差不多四分一的居民被迫流離失所，這個分析令當局更清楚災民的流向，從而規劃救援措施。

另一例子是登革熱預警。這疾病以蚊子傳播，估計在2013和2014年間全球有5,000萬人受感染，導致每年50萬人住院和2.5萬人死亡。美國麻省理工學院以新加坡230萬人的匿名手機通話紀錄建立預警模型，能持續地把登革熱個案的地理位置預報出來，準確性達八成。

保護私隱 vs. 維持公共安全

被喻為最嚴的私隱條例、歐盟的《一般資料保護法》（GDPR）指出，在人道救援上，如需監察傳染病和天災人禍，運用數據毋須徵得數據主人的同意。

可是，由於今次新型冠狀病毒在武漢首次發現，當地市民成為眾矢之的。網上有一篇文章，題為《武漢人是否還應該有隱私》，訴說不少武漢回鄉民眾的家庭地址、身份證號碼以至手機號碼在社交媒體上廣傳，成為了「公開被線上追殺的通緝令」。

即使把手機數據匿名化和整合才用來分析，國際科學期刊《自然》卻指出，只要有四個以上的數據點，便有機會辨識到個人出來。假如手機數據落入販運人口集團手中，更變相幫助不法分子識別亟待救援的災民。因此，美國耶魯大學研發員Nathaniel Raymond提倡要制定一套完善的手機數據使用指引。加拿大西門菲沙大學的學者Susan Erikson也指出，手機數據不是萬能，例如它未能預測到2014年西非爆發伊波拉疫症。

把握機會 推動智慧醫療

原因之一是大數據分析本身的問題：分析和預測模型是基於許多設定，有偏差的設定只會產生有偏差的結果；其次，在某些國家行之有效的方法未必可套用到其他地方。好像我們習慣手機是隨身的個人物品，不會隨便和人交換，但在西非國家塞拉利昂，當地卻流行租用手機，換句話說，手機在當地並不等於某一個人，所以相關理論可能隨時碰壁。

今次的疫情令人思考手機數據在防控傳染病的價值，香港要成為真正的智慧城市，必須提升疫症的預警能力，故此政府應該把握是次機會，徵求電訊商將匿名並整合了的手機位置數據予研究人員分享，讓他們累積分析的實戰經驗；同時也要集思廣益，制定運用手機數據指引，為推動智慧醫療發展打好基礎。



Assist in disaster relief

This means that people who have been exposed to a virus and placed on home quarantine should not be able to escape detection. In theory, it is possible to contain an epidemic without shutting down factories or an entire society.

And, in fact, the use of mobile phone data in crisis relief is becoming common. For example, after an earthquake killed more than 100,000 people in Haiti in 2010, researchers from Karolinska Institutet of Sweden persuaded the largest mobile operator in Haiti to share the anonymised data of about 1.9 million users. Their data analysis allowed organisations to track the movement of earthquake survivors and plan relief operations accordingly.

In another case, researchers from the Massachusetts Institute of Technology of the U.S. created several models to trace the spread of dengue, a mosquito-borne virus, in Singapore. The model that used the anonymised call records of 2.3 million people from 2011 was found to be more effective.

Privacy vs. public security

Still, the use of such data, anonymised or not, raises questions about privacy. In China, people from Wuhan are already being doxxed, and having their home addresses, ID numbers and mobile phone numbers published on social media. An internet article puts it rhetorically: "Should the people of Wuhan still be allowed privacy?"

Moreover, studies have shown that even when data is anonymised and aggregated, it is possible to re-identify an individual using just four data points.

This is why Nathaniel Raymond, from the Yale Jackson Institute for Global Affairs, has warned that mobile phone data might be improperly used by public and private organisations. If the data falls into the wrong hands, people in need of asylum, for example, might be victimised by human-trafficking groups. Therefore, comprehensive guidelines must be developed on the use of mobile data in crisis relief.

Biased assumptions generate biased results

Susan Erikson, at Simon Fraser University, has also found limitations to the big data strategy. For example, mobile phone data did not prove useful in Ebola containment efforts in Sierra Leone, where the virus caused 4,000 deaths from 2014 to 2015.

One reason for the failure is the problem with big data analysis itself: analysis models are based on assumptions, and biased assumptions will generate biased results.

Most of us are accustomed to treating mobile phones like extensions of our individual selves. However, in Sierra Leone, mobile phones are "loaned, traded, and passed around among family and friends, like clothes, books, and bicycles," according to Erikson. "A single phone can be shared by an extended family or, in rural areas, a neighbourhood or a village." Therefore, an analysis model based on the assumption that a mobile phone is an extension of an individual was never going to work.

Prepare for the next outbreak

But what lessons can we learn from all this in Hong Kong? If Hong Kong is to become a truly smart city, the government should seize the opportunity thrown up by the outbreak and persuade telecoms operators to share big data with researchers so that we can better prepare for the next outbreak and promote smart healthcare.

At the same, the authorities must develop comprehensive guidelines on the use of such data, to lay a solid foundation for smart health care in Hong Kong.

互動地圖儀表板資訊公開透明 減少恐慌同心抗疫

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The Openness and Transparency of Interactive Map Dashboard Alleviate Social Panic Together, We Fight the Virus

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政府於2月3日在衛生防護中心的網頁新增「新型冠狀病毒感染本地情況互動地圖儀表板」(Interactive Map Dashboard)，市民可從儀表板一覽有關新型冠狀病毒的即時官方資訊，例如確診個案數目、確診者曾乘搭的交通工具、逗留過的建築物等資料，稍後將加入更多功能。只有當資訊進一步公開、政府防疫工作更加透明時，社會才能減少過度恐慌，同心防疫。

筆者於農曆新年前向政府提出建立互動地圖儀表板，在與政府召開跨部門會議後，獲政制及內地事務局協調、衛生防護中心提供主要資料、政府資訊科技總監辦公室協助整理由不同政府部門提供的數據，聯同發展局、地政總署以及智慧城市聯盟的專家義工團隊共同努力下，以短短兩三天的時間將整個互動地圖儀表板迅速完成，當中使用了地政總署的香港地圖公開數據，過程中毋須花費任何公帑，盡顯「官民合作」的高效分工方案。

早前中國疾病預防控制中心已推出「疫情分布系統」網上平台，有助公眾理性、客觀地了解認識疫情形勢。其後更成立疾控保障服務小組，於官網推出「新型冠狀病毒感染的肺炎疫情分布系統」，動態更新和展示疫情在全國以及環球的疫情變化。



The HKSAR Government launched an Interactive Map Dashboard on the website of the Centre for Health Protection (CHP) on 3rd February to update the public on the COVID-19 epidemic. The content herein included the number of confirmed cases, status on public transport such as flight and train, and the list of buildings where the confirmed patients have travelled or stayed. To prepare our community to fight the virus and avoid public panicking, the information needs to be more open and the work of the government more transparent.

I proposed the introduction of an Interactive Map Dashboard to the government before the Lunar New Year. After convening an inter-departmental meeting, and with the co-ordination of the Constitutional and Mainland Affairs Bureau, the comprehensive Interactive Map Dashboard was effectively online within only a few days. The dashboard was jointly developed and managed by the Development Bureau, Lands Department and a group of expert volunteers from the Smart City Consortium, with datasets contributed by CHP and the relevant government bureaus and departments, all consolidated by the Office of the Government Chief Information Officer. Thanks to the public datasets of Hong Kong map from the Lands Department, the dashboard was developed efficiently without using any government fund. It was the coming to fruition from joining the hands of the government and of the public.

Earlier the Chinese Centre for Disease Control and Prevention (CCDC) launched an online platform Epidemic Distribution System which helped the public better understand and deal with the situation more rationally and objectively. Thereafter, CCDC organized a disease control and security service unit which launched the COVID-19 Epidemic Distribution System for updating the news and showing the changing conditions in China and the rest of world.

Meanwhile, Centre for Systems Science and Engineering (CSSE) of Johns Hopkins University of the United States developed the world's first internet COVID-19 Interactive



美國約翰霍普金斯大學的系統科學和工程中心也匯集了來自世界衛生組織、美國疾病預防控制中心、中國疾控中心等資訊，建立了全球首個網上新型肺炎的互動地圖儀表板，將地圖和背後的資訊扣連，數據同時可供下載，方便各界對疫情作相關研究及創立便民應用程式。

筆者認為特區政府應參考中國疾控中心及約翰霍普金斯大學，設立一個疫情通報系統，讓官方發放即時準確的信息，避免有人藉疫情散播失實的消息，製造誤導信息，達到別有用心企圖。

互動地圖儀表板的資訊應當進一步豐富完善，為政府設立一個疫情通報系統奠定基礎。例如，可以添加政府、銀行、航空公司、巴士公司等公共服務調動內容；對保留下來的深圳灣、機場、港珠澳大橋三個關口，應當提供本地、內地及其他居民每日進出數字。另外，現時表列患者資料只是獨立個案，儀表板還可以加入關係鏈，展示患者感染途徑和尋找致病源頭，揭示在香港出現人傳人途徑的軌跡。

政府亦應增加市民最迫切想知道的資訊，如口罩、酒精、消毒藥水等防病必備物資的供應。現時藥房和進口商售貨，主要通過社交網站專頁發布內容，市民一不留神就錯過，而且網絡亦有不少虛假資訊，令市民無辜受騙。政府應主動與藥房商會、物資供應商和銷售商聯絡，集中商戶通報銷售日期、地點和銷售量等數據，再由儀表板統一整合發放。同時，政府必須穩定這類防疫物資的銷售和供應，制止市場囤積居奇，保障市民以合理價格取得基本數量。

完善互動地圖儀表板資訊，能令資訊進一步公開透明，提升公眾的監察疫情能力及政府施政透明度，減少社會恐慌，讓市民同舟共濟攜手抗疫。

Map Dashboard by consolidating the information from the World Health Organization, Centers for Disease Control and Prevention (CDC) of the U.S. and CCDC. In order to make it more convenient for different parties to undertake research on the epidemic and for others to develop handy applications, the dashboard includes a linkage between information shown on the map and the data behind which can be downloaded at the same time.

To counter the spreading of malicious rumours which generate misleading messages to the public, I suggested that the HKSAR Government should set up an epidemic notification system with reference to CCDC and Johns Hopkins University so that the latest and accurate information can be made available to the public.

The information on the Interactive Map Dashboard should be further improved and enriched for the government to provide a basis for setting up an epidemic notification system. For example, the content of public services in operation such as government, bank, airline, bus company should be included. While the ports at Shenzhen Bay, airport and Hong Kong-Zhuhai-Macao Bridge are still opened, the numbers of local, Mainland and the other countries' personnel entering Hong Kong should also be reported. Moreover, the information of the confirmed COVID-19 patients are shown only as individual cases in isolation, the chain of infection tracing the paths and sources of infection can be added to the dashboard to reveal the contagious track from person to person in Hong Kong.

Furthermore, the government should add the information on medical supplies for the public to fight the virus. For example, the availability of surgical masks, alcohol and antiseptic solution are the information that the public are craving for. Nowadays, the pharmacies and importers release messages of available supplies through social media. However, not only can these messages be missed out easily, the internet also contains a large amount of the false information. Hence, people can easily fall into traps. The government should take the initiative to contact the pharmacy chambers, suppliers and dealers for centralizing the data reported by the shop keepers. Data on the dates, location, and the quantities of supplies available can be gathered and released by the dashboard. Meanwhile, to stop stockpiling, government should stabilize the price and supply of this type of goods so that the people can obtain the basic medical supply at a reasonable price.

Perfecting the messages on the Interactive Map Dashboard can make the information more open and transparent so that the public can scrutinize the government effort on epidemic control, the panic of the society can then be reduced so that everyone can work together hand in hand in fighting the virus.

互動地圖儀表板 新冠疫情圖像化

Visualize the Novel Coronavirus Outbreak with Interactive Map Dashboards

中國湖北省武漢市在2019年年尾，發現了一種不知名的病毒性肺炎在迅速傳播，後來証實是由新型冠狀病毒（現稱COVID-19）引起。這種病毒不僅在中國大陸廣泛傳播，截至今年3月尾，世界各地已累計超過700,000宗確診病例。

實時數據融匯「動態地圖篩選」

為了進行防疫工作，許多政府機構和非政府組織的地理資訊系統（GIS）專家正使用ArcGIS Online、ArcGIS Dashboards和ArcGIS API for Python開發互動地圖儀表板（Interactive Map Dashboards），從而把國際健康組織獲得的衛生資訊以圖像呈現。儀表板配備了「動態地圖篩選」功能，用戶在調整地圖覆蓋範圍時，會自動顯示相應地域範圍的個案病歷及關鍵績效指標（KPIs）數據。利用ArcGIS Online中的聚類（Clustering）分析功能，用戶更可以從地圖上見到暗藏的病毒散播趨勢。

例如，約翰·霍普金斯大學（Johns Hopkins University）在具備「動態地圖篩選」功能的地圖上（<https://bit.ly/2Sawx8O>），近乎實時地追蹤COVID-19的傳播情況。此外，Esri中國（香港）很榮幸與智慧城市聯盟的資訊科技義工團隊，共同開發由香港政府發布的疫情最新情況的互動地圖儀表板（<https://chp-dashboard.geodata.gov.hk/covid-19/zh.html>），在地圖上顯示了確診個案、仍需住院進行調查的個案及過去14天內確診個案的住所清單。更新版更增加功能包括確診時序動態地圖顯示功能，讓市民了解個案發生的日期及地點，以對數據有更深入的了解。

By the end of 2019, an unknown type of pneumonia was diagnosed locally in Wuhan, Hubei of China. It spread quickly and was caused by a novel coronavirus (now namely COVID-19). There coronavirus is highly contagious. Up to end of March this year, a total of more than 700,000 confirmed cases were found not only in China but also around the world.

Pulling Real-time Data to Map-sensitive Dashboards

Interactive map dashboards are developed by experts of geographic information systems (GIS) in many government bodies and non-profit organizations using ArcGIS Online, ArcGIS Dashboards, and ArcGIS API for Python to visualize the data sourced from a number of international health organizations. With the “map-sensitive” function, users can zoom in or zoom out of the map so that it will automatically display the related cases of infection and key performance indicators (KPIs) in a particular region at a glance. Users can easily identify underlying patterns of the virus distribution on the dashboards with the clustering capabilities in ArcGIS Online.

For example, John Hopkins University (JHU) is tracking the spread of COVID-19 on a map-sensitive dashboard (<https://bit.ly/2Sawx8O>) in near real time. In addition, Esri China (Hong Kong) is honored to join a group of IT volunteers of Smart City Consortium (SCC) in the development of an interactive map dashboard (<https://chp-dashboard.geodata.gov.hk/covid-19/en.html>) on the latest status of epidemic released by the government of Hong Kong. It shows the number of confirmed cases, cases still hospitalized for investigation and list of buildings where confirmed patients have stayed in the past 14 days on a single map. Enhanced features include a time sequence showing the probable infection time so that the public will get a better understanding the risk they are exposed to.

重點

- 具「動態地圖篩選」功能的儀表板能將所有實時數據融匯，並有助將數據轉化為智慧，揭示病毒散播的奧秘；
- 全球各地政府透過儀表板和地圖，把關鍵的資訊和關鍵績效指標（KPIs）化成圖像，令人一目了然；
- 應該向公眾開放更多空間數據，既有助提高數據透明度，也加強對緊急事故的應變準備。

Essential Points

- Map-sensitive dashboards put all real-time data visually together and help transforming data into insights on the virus spread;
- Authorities around the globe use dashboards and maps to visualize key information and Key Performance Indicators (KPIs) at a glance;
- More spatial data should be open to the public as enhanced data transparency will help emergency preparedness.



如想查看更多不同城市製作的儀表板，可到此StoryMap (<https://bit.ly/39To4wV>) 瀏覽。

數據開放有助防疫

只有在開放衛生數據的情況下，我們才能成功建構互動地圖儀表板，這與「空間數據共享平台」(CSDI)的核心概念和框架相呼應。香港人在疫情爆發初期搶購日用品，正是由於當時資訊不足，難以平息有關資源短缺的謠言，可見提高資訊透明度是增加防疫信心的最佳方法。

做好準備應對疫情

流行病是一場自然災害，已經影響了人們的生活方式。具備「動態地圖篩選」功能的互動地圖儀表板能提供即時資訊，讓大眾能基於事實作決定，知道如何應變，例如調整出行計劃和社交活動；同時也幫助政府傳播最新疫情資訊，提高大眾的防疫認識。顯然，互動地圖儀表板在智慧生活中已起著巨大的作用，也成為了智慧城市的核心建設。

To see more different dashboards made by experts in various cities, you may visit this StoryMap at <https://bit.ly/39To4wV>.

Data Transparency Helps Fight Epidemic

The creation of interactive map dashboards has only been possible given that the relevant health data are made open to the public, which echo the core concept and framework of common spatial data infrastructure (CSDI). Some of the people in Hong Kong became panic and rush to hunt for daily essentials because information was not readily available to stop the rumors. Information transparency is undoubtedly the most effective way to afford people confidence amid the epidemic.

Better Prepare for the Outbreak

The epidemic of COVID-19 is a natural disaster which has adversely affected our living. The offering of real-time and map-sensitive dashboards not only informs the public how to tackle the situations and makes evidence-based decisions such as adjusting their travel plans and social gathering events, but also helps governments in information dissemination and raises awareness of virus spread prevention through enhanced information transparency. Obviously, the map-sensitive dashboard has played a crucial role in smart living, which is a core concept in smart cities.



The display function showing the infection according to time sequence has been added.

互動地圖儀表板增加確診時序動態地圖顯示功能，讓市民了解個案發病的日期。

香港智慧城市發展x 電動車及充電網絡



吳福強先生
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Managing Director of Shun Hing
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Smart City Development in HK x EV & EV-charging networks

由嶄新科技結集而成的純電動車，結合了智能科技、零排放、安全及超卓性能於一身，以智慧出行的方式，完美地配合香港智慧城市的發展。

政府早年已提出智慧城市項目，「智慧出行」更是當中重要的一環，體現科技發展對交通運輸帶來的改變。近年，電動車的發展趨勢更牽動了一場全球性的汽車革命，透過汽車與電腦智能系統的結合，發展至科技的另一個里程碑。

最新的電動車科技 - 汽車 x 電腦智能系統的結合

以全球電動車領航者特斯拉為例，如今電動車科技不單能提供「GPS 汽車定位」、「實時交通」，更可透過手機程式「無匙駕駛」、「智能遙控啟動及解鎖車輛」，以及「遙控啟動溫度系統」。

電動車獨特的「自動輔助駕駛系統」亦被視為未來汽車的主要功能，個別電動車品牌早已配置了此功能，車主可透過智能系統指令車輛在特定情況下自動輔助加速、煞車、轉向或換綫，並能通過無線軟件不時遙距更新車上各項功能。透過創新的智能系統能有效地彌補傳統人手駕駛的不足，提供安全舒適的駕駛體驗，也讓道路使用變得更有效率。

善用科技 — 智能充電系統

對於電動車車主，最好的充電方式莫過於聘用合資格工程公司在家安裝交流充電器，晚間在家泊好車，接上充電器後，第二天一早汽車即充滿電能，簡單方便之餘亦符合經濟效益。

目前，在全港18區不同類型樓宇的588個快速充電器分布廣泛，平均約10公里有一個。這些快速充電器以高達120kWh的直流充電模式，可於30分鐘補充車輛一半的電量，足夠再行駛超過270公里。

Combining intelligent technology, zero emissions, safety and superior performance, electric vehicle (EV) perfectly shapes Smart Mobility and the development of smart city in Hong Kong.

Hong Kong government has proposed a smart city program in the early years. Smart mobility is an important part of it, which reflects the change to transportation brought by technological development. Recently, the development of EV has further revolutionized the global automotive industry which on combining with computer intelligent systems emerges in another era of technology.

Latest EV Technology - Combination of Automotive x IT

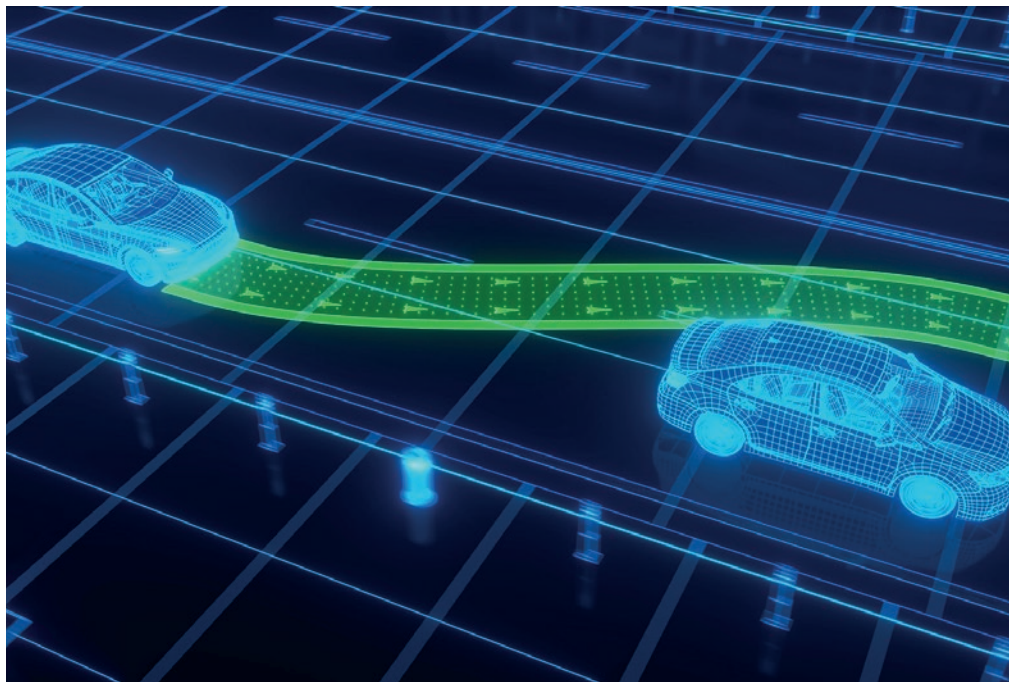
Take a well-known EV brand Tesla as an example. Right now, EV technology provides not only GPS Positioning, Real-time Traffic Conditions, but also jam-packed with technology providing Keyless Driving, Remote Starts & Unlock the Vehicle and Remotely Climate Control through the mobile apps.

Autopilot system of EV is an advanced suite of active driver assistance, which is regarded as the major function of future vehicles. Some EV brands incorporated this function years ago, which is capable of controlling the throttle, brakes, steering and lane changes in certain situations. Furthermore, through its wireless software update, bugs are continuously ironed out and new capabilities introduced.

The innovative intelligent system can effectively back up the human error in traditional manual driving, to deliver safe and comfortable driving operation, and enhance the efficiency on use of road.

Make Good use of Technology - Intelligent Charging

For most EV owners, the best way to charge EV is to install an AC EV-Charger by a qualified electrician at home parking space for a convenient, easy and cost-effective charging access, plug in overnight when you get home, and wake up to a full charge every morning.



Shun Hing electrician is installing EV-charger.
信興工程人員正進行電動車充電器安裝。

電動車科技的延伸 — 潔淨能源儲存系統

電池的生命週期有限，有營運商為善用電動車的退役電池，推出智能能源儲存產品 — Power Pack，協助人類邁向智慧城市的可持續發展和未來的零碳生活模式。

信興科技之發展

信興集團成立於1953年，至今已發展為信譽昭著、實力雄厚的企業。其屬下之信興科技有限公司於1985年成立，為港、澳的商業機構及家庭提供一系列先進產品及方案，包括文儀及通訊產品、專業視聽及監控系統、辦公室家具，亦為超級市場、各式食肆及連鎖店提供商用冷凍設備的全方位解決方案，也為院舍引進各類型樂齡科技產品及提供合適設備/方案，同時為教育界提供優質的一站式專業校園工程服務以及清潔電器產品及廚房家電產品。此外，亦為商業機構、商場、酒店、私人住宅、獨立屋等提供專業優質的電動車充電解決方案。

推行全面優質管理

信興科技榮獲香港品質保證局頒發ISO9001品質管理證書、ISO14001環境管理證書，以標誌其優良服務質素及不斷改進以配合智慧城市的發展。



詳情請參閱
For More Details

Currently, in order to support EV on the road, a total of 588 Quick Chargers have been widely distributed in different types of buildings throughout 18 districts of Hong Kong, at an average distance of 10 km apart. They can charge at a high-speed of 120kWh and take about 30 minutes to charge half of the battery's capacity, sufficient for a journey of 270 km.

Extension of EV – Green Energy Storage System

With the limited life cycle of existing EV batteries, some operators have made better use of retired EV batteries and launched Power Pack – a scalable energy storage product for smart energy consumption in moving towards zero-carbon emissions and optimize people's lifestyle in future.

Development of Shun Hing Technology Co., Ltd.

Founded in 1953, Shun Hing Group has advanced to a well-established and recognized enterprise. Shun Hing Technology Co., Ltd., (SHTEC), a strong member of Shun Hing Group, was incorporated in 1985. SHTEC supplies quality products and solutions to the people of Hong Kong and Macau including office automation and telecommunication equipment, professional audio-video, security and surveillance systems, office furniture as well as a comprehensive solution of Cold Chain products for supermarkets, various restaurants and convenience stores. At the same time, SHTEC introduces the latest and innovative Gerontech products and solutions to elderly homes, provides one-stop professional campus services to academic sector as well as cleaning electrical equipment and kitchen appliances. The company also offers professional and high quality EV charging solutions for business corporations, shopping malls, hotels, apartments, houses, etc.

Implementation of Total Quality Management

Currently, SHTEC has achieved certification of ISO9001 Quality Management Systems and ISO14001 Environmental Management Systems. It offers reliable high level of service and continuous improvement for the smart city development.

智慧城市：區塊鏈如何使香港成為無現金社會

Smart City :

How **Blockchain** enables Hong Kong to become **Cashless Society**



梁永熹先生
Mr. Jase Leung

區塊鏈科研有限公司行政總裁及創始人
CEO & Founder, Blockchain Solutions Limited

無現金支付是智慧城市的基本組成部分之一。作為國際金融中心和領先的金融科技樞紐，香港需要強大的金融基礎設施來維持日常運作。而電子支付既要令人信賴又需方便使用，區塊鏈技術可平衡這兩個要求，因此是推動電子支付實際有效的解決方案。

西歐是最早推行無現金社會的先行者。瑞典是第一個將現金使用量降低到15%的國家，大多數公民通過信用卡、扣賬卡和手機銀行，大大減少現金支付。中國主要城市在數字支付的使用率也名列前茅，從購買餐點、高速公路繳費，到醫生診金，中國人隨時可以使用移動支付來代替現金。在不久的將來，尤其是中國中央銀行已宣布會推行數字貨幣/電子支付（DCEP）後，我們將看到支付領域廣泛採用區塊鏈技術。

香港是世界上最早使用無現金支付系統的地區之一。1997年，八達通卡正式推出，至今已發行超過3,500萬張，在香港採用率為99%，是無現金支付的經典範例。但是，隨著八達通成為香港的主要支付方式，我們在推動無現金社會的步伐卻停滯不前。不同的調查和研究顯示，在實施電子支付系統方面，香港均落後於新加坡、倫敦和紐約等競爭對手。



Cashless payment is one of the fundamental components of a smart city. As an international financial centre and a leading FinTech hub, Hong Kong needs a robust financial infrastructure to support it. To balance trustworthiness and convenience of e-payment, blockchain technology is a promising solution.

Western Europe is the forerunner in turning itself towards a cashless society. Sweden is the first country to reduce cash usage down to 15% with most of the citizens paying via credit, debit, and mobile banking solutions. China's major cities also rank high in digital payment adoption, from buying meals, to paying highway toll-booths and doctor's consultant fee, mainland Chinese readily use mobile payment services in lieu of cash. After China's Central Bank announced its digital currencies / electronic payment (DCEP), we shall see a wide-spread adoption of blockchain technology in payment transactions in the near future.

Hong Kong was one of the first places in the world with a cashless payment system. In 1997, the Octopus stored value smart card was officially launched. With over 35 million cards issued and an adoption rate of 99% among the entire city's populace, Octopus made an impressive record as one of the premier cashless payment examples. However, as Octopus becomes the city's dominant payment method, we have stagnated as a "cashless society" at that level. Different surveys and researches show that Hong Kong is now falling behind other competitors such as Singapore, London and New York in the implementation of e-payment systems.

To achieve cashless in Hong Kong, Blockchain Solutions Limited, together with Hitachi, a Japanese multinational conglomerate, has developed a e-payment system Veinbo, which promises to be the "Payment 3.0". Utilizing biometric authentication with blockchain technology, mobile payment users no longer have to panic when phone batteries run low.



為了在香港推廣電子支付，區塊鏈科研有限公司（Blockchain Solutions Limited）與日本跨國集團日立公司共同開發了電子支付系統Veinbo，推動「支付3.0」。這系統利用生物識別和區塊鏈技術，用戶毋需擔心手機電池電量不足時無法完成交易。

Veinbo通過生物特徵傳感器檢測手指靜脈形態識別用戶身份後，系統會自動連結到他/她的支付網路、網上銀行帳戶或電子錢包進行支付，所有交易同時記錄在區塊鏈上。因為每個人的血管形態都獨一無二而且不受外在情況影響，故此與指紋認證等生物識別方法相比，手指靜脈的安全性和準確性更高。Veinbo有助香港成為真正的無現金支付，屆時我們不再需要使用八達通卡、支付寶和微信支付等外在支付工具，只需運用我們的手指靜脈進行認證，即可完成付款程序。區塊鏈科研有限公司目前正在與香港科學園（HKSTP）合作，Veinbo會作為試點計劃，在未來成為香港科學園的支付系統。

數據安全向來是電子支付的一大關注點。而區塊鏈正是理想的方案。這個去中心化的系統會把客戶和交易數據都加密和存儲；同時，它的交易記錄可追溯和不可更改；對於需要查看的人而言，它的透明度甚高。區塊鏈的應用能減少支付過程中的失誤、網上罪案，又因為不涉現金，所以人工成本也可大大降低。

無現金交易和可持續的數字貨幣框架是智慧城市的重要組成部分，作為國際金融中心和金融科技樞紐，香港需要世界一流的金融基礎設施，尤其是安全可靠的無現金支付系統以支撐未來的經濟發展，而區塊鏈正是這個系統得以全面發揮的關鍵要素。

Through detecting the finger vein pattern by biometric sensor, the user identity could be checked and then directed to his / her payment gateway, online bank account or digital wallet to settle the payment instantly, with all the transactions recorded under the blockchain. The finger vein, when compared with fingerprint as a biometric authenticator, is highly secured and accurate to verify one's identification as blood vessel patterns are unique to each individual.

Veinbo allows Hong Kong to advance further in real e-payment as we do not need to use our Octopus card or mobile apps such as Alipay and WeChat Pay, but just our fingers. Blockchain Solutions Limited is now collaborating with Hong Kong Science Park (HKSTP) to introduce Veinbo as the future payment system in HKSTP as a pilot program.

Data security is always the main concern in e-payment. In this aspect, blockchain is an ideal solution as client and transactional data will be encrypted and stored by its decentralized system. At the same time, it enables the transactions to become traceable, immutable, and transparent for those who needs to see it. Adopting blockchain in cashless payment will also bring benefits with reducing errors, online crimes and the cost of labour involved in processing cash.

Cashless transactions and a sustainable digital framework for money transfer are vital to a smart city. As an international financial center and a FinTech hub, Hong Kong also needs a world-class financial infrastructure, especially a secured and cashless payment system to support it. In our view, blockchain is a key element for that system to achieve its full potential.

應用科技 體驗智慧工作模式



龍沛智先生
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Founder and Group CEO at WeLab

How to make use of technology to enhance Home Work Experiment



香港致力成為世界級的智慧城市，其中一個目標是利用科技提高城市的可持續性和效率。近期新型冠狀病毒疫情爆發，世界各地相繼實行在家工作（Work From Home）的模式，我們可從中體驗科技如何確保高效的工作效率，以及如何重塑在家工作這個未來職場的新趨勢。靈活的工作安排在智慧城市的發展中日趨重要，因此我們應探索如何在遠程工作下，既能提高生產力，亦可維持工作與生活的平衡。以下為一些在智慧城市在家工作的實用心得。

1. 建立「在家辦公的環境和心態」。

在家騰出一角，打造你的小型「家居辦公室」—專屬的工作間，並埋首在那處工作。為甚麼呢？因為這有助在心理上過渡到「工作模式」，令你有日常辦公的感覺，減少分心的機會，從而大大提高生產力。

另一個令你從心理上過渡到工作模式的秘訣是，在早上開始工作前，先換去在家的便服及喝杯咖啡，就如你平日出門上班一樣。這種「早晨的慣例」可助你在心理上自然進入辦公狀態。

Hong Kong strives to become a world class smart city. One of the objectives is to make use of technology to enhance the city's sustainability and efficiency. Due to the recent coronavirus epidemic, we were faced with the world's most extensive experiment of working from home. Under such unusual circumstances, it became clearer than ever as to how technology helps us work smartly and efficiently and how it is reshaping the future work environment. As flexible working arrangements may play an increasingly important role in smart city development, it is crucial to explore how we can enhance our productivity while maintaining a work-life balance when working away from home. Here are some practical tips to effectively work from home in a smart city.

1. Create a "home office environment and mindset" where you have a dedicated work space exclusively for work.

Set up a place at home where you can exclusively work there and commit to consistently working there - your mini "home office". This creates a mental shift into "work mode" where you have a sense of routine and reduce potential distractions around you. This can significantly increase your productivity.

Another tip which can help you is getting dressed up in the morning as if you were going to the office, e.g. have a coffee and get changed before you start working. By having such morning ritual, you can make that mental transition more natural.

2. Over-communicate with your team.

When we work from home, we change the mode we typically use to communicate with our colleagues - having face-to-face conversations. Without daily interaction in person, there can be breakdowns in communication, leading to inefficiencies, or worse - feeling loneliness, isolation and disengagement. Therefore, the key to staying in the loop and feeling connected with your team is constantly initiating communication (practise your ABCs — Always Be Communicating).

以智慧城市概念 提升個人衛生

Applying the Smart City concept to Personal Needs



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提到智慧城市，大家即時聯想到的，大多是引用智能科技優化出行、生活體驗、智慧人群管理、政府運作或提升經濟等宏觀範疇，一般市民又可如何切身體驗智慧城市發展為個人帶來的好處呢？如果智慧城市工具可讓大眾隨時隨地享用潔淨、舒適、供應齊全的公共洗手間，未嘗不是一種非常個人化的智慧城市體驗。

香港公共洗手間衛生情況一直為人詬病，近期新型冠狀病毒疫情爆發，全民齊心抗疫，大眾越來越關注公共衛生，保持公廁潔淨更是刻不容緩。大家都期望在使用醫院、公園、車站設施及商場等公眾地方的洗手間時，不需閉氣避免吸入臭氣，並有充足衛生紙及洗手液，保持個人衛生。若要維持這種水平的用家體驗，必須有專人定期清潔廁所，可是香港工資高企，人手短缺，縱使管理設施者樂意提供高端服務，亦要面對缺乏人力資源等種種制肘。

智慧城市科技在這問題上可以幫上一大忙，讓設施管理機構為大眾提供高度個人衛生體驗。



By using clean-on-demand concept, manpower can be deployed systematically and efficiently
採用按需清潔理念，能有效及有系統地善用人力。

The smart city concept is often associated with macro applications in smart mobility, smart living, smart environment, smart people, smart government and smart economy. So, how can average folks benefit from smart city development on a personal level? How about giving them a convenient access to clean, pleasant and well-equipped public toilets?

The recent outbreak of the novel coronavirus (COVID-19) underscores the importance of toilet hygiene, which has been underrated for maintaining a healthy environment in Hong Kong.

Indeed, wouldn't we all want to step into a public toilet at hospitals, parks, stations and malls that doesn't reek of foul odors with toilet paper and hand soap always available? However, this requires regular upkeep. The high labour costs and manpower shortage often deter the good intentions of operating public toilets to the highest standards.

This is where smart city technology comes in handy to benefit everyone on a most personal level.

Sensors and IoT help optimize toilet hygiene

Sensors are indispensable components for building a smart city. Different forms of sensors can be used to detect objects, heat, motion, pressure, sound and gas. Therefore, it is sensible to apply them in public toilets.

Gas sensors can be used to effectively measure whether the urea level has gone up, indicating that a toilet requires instant service. Pressure sensors can indicate if toilet rolls and hand soaps need to be replenished. This is particularly important for countering the coronavirus outbreak as hand soap should be readily available for toilet users to wash hands as required.

Sensors can enhance convenience and safety for users too. Object sensors can detect if a cubicle is vacant and

傳感器和物聯網 助提升公共衛生

傳感器是構建智慧城市的重要元素。傳感器功能多元化，有感應物體的，也有感應溫度、動作、壓力、聲音及氣體等多種功能，全部有助改善洗手間衛生。

例如，氣體傳感器可用於量度室內阿摩尼亞水平，若臭味超出正常幅度，顯示設施需要即時清潔；壓力傳感器可用於監察衛生紙及洗手液供應，適時發出補充指示，在目前抗疫期間，尤其需要確保洗手液供應不斷，方便使用者有需要時清潔雙手。

傳感器亦可用於打造更方便、更安全的用家體驗，物體感應器可顯示廁格是否空置，有助設計有效率的排隊系統；動作感應器可探測是否有使用者在廁所內跌倒，在殘障人士洗手間尤其有用，遇事故時，設施管理員可即時施救，避免當事人因失救釀成更嚴重傷害。

將所有的傳感器透過物聯網組合為一個整體方案，採用收發器或手機/WiFi網絡聯繫至中央控制台，有助設施管理人集中監控每個洗手間的情況，一經發現某洗手間需要即時服務，可按機制更有系統、更有效率地調配人手。

這種智能潔淨方案對物業管理機構的幫助很大，他們可以借助系統編配人手，不必浪費資源定期清潔較少人用的設施。系統所收集的數據更方便點算人流，預測使用量高峰或人流較少的時段，有利於編排服務以及補充必需品供應。

同時，洗手間是一個私密空間，裝置傳感器時必須絕對保障使用者的私隱。紅外線、鐳射及雷達的傳感器等非視覺傳感器在這種環境大派用場，既可達到預期功能，亦不會侵犯任何個人私隱。

智能潔淨方案 有利智慧城市發展

香港正在全速發展為智慧城市，希望鞏固長遠發展優勢的設施管理機構，均紛紛採納保安專家衛安有限公司旗下的智能清潔科技方案等科技工具，而衛安一直致力設計創新科技方案，不單鞏固保安功能，更利用科技優化生活質素，衛生管理就是其中一環。設施管理機構採納智能清潔科技方案後，不單可促進營運效率，亦可為客戶打造個人化體驗，並保障使用者安全。這等方案既有利於提升設施管理水平，更可彰顯機構對客戶的關懷和社會責任。

help to provide a user-friendly queuing system for toilet users. Motion sensors can be used to detect if a toilet user has taken a fall in the toilet, especially toilets for the handicapped, so that timely assistance can be rendered to avert aggravated injuries.

The beauty of a complete smart hygiene solution lies in linking all these sensors through the internet of things (IoT). Sensor information can be transmitted, via transceivers and mobile/WiFi Ethernet connectivity, to a central dashboard. At a glance, property managers can easily track which washroom requires immediate service and deploy manpower systematically and efficiently.

Such a smart hygiene system is no doubt a welcome tool for property managers to prioritize tasks, enabling more efficient deployment of manpower. For example, managers can assign cleaning staff to service less frequently used toilets on an as required basis instead of regularly. Data from the system can also be used for user counting, which helps facility managers to predict high and low usage periods to better plan service and consumable replenishment.

The toilet is a private place, so user privacy is an important consideration when applying sensors. The range of non-visual infrared, laser and radar sensors applied in lavatory settings can serve all necessary functions without infringing users' privacy in any way.

Smart hygiene in tune with Hong Kong's smart city vision

As Hong Kong is speeding towards the vision of becoming a smart city, forward-looking managers of public facilities are embracing smart hygiene solutions, such as those pioneered by Hong Kong's security expert Guardforce Limited, which has been developing innovative IoT solutions for not only augmenting security but also improving lifestyle through such applications as hygiene management. The enterprises that have adopted the smart hygiene solution can attest to the advantages of the solution in facilitating operational efficiency, engendering a much more wholesome and pleasant customer experience and ensuring users' safety. More than just an effective smart tool, smart hygiene is also a clear sign of caring and social responsibility.



Smart hygiene solution can enhance operational efficiency, provide pleasant customer experience and ensuring users' safety

智能衛生方案能提升營運效率，優化顧客體驗及加強用家安全。

智慧城市的 室內定位和導航服務

Indoor Navigation and Location-based Services for Smart Cities

室內定位和導航服務 創造現代商場體驗

傳統商場正面臨許多挑戰。今天的消費者期望商場能滿足不同的需求，時尚服飾之外，更要集合購物、餐飲和娛樂於一身。互聯網的出現帶來了零售業模式的轉變，零售商需要適應新的購物模式以免被淘汰，因此要在購物過程中為消費者提供一站式和個性化的體驗，以滿足需求。

事實證明，數碼互動可成功結合線上世界與實際購物體驗，為商場吸引更多顧客。而開發室內定位和導航服務的手機應用程式（app）便是實現這目標的有效方法。

研究：室內定位服務提高客戶滿意度

為幫助商場營運商明白室內定位和導航服務的價值所在，Signify（前稱飛利浦照明），於2016-2018年間針對全球1,000名消費者進行了研究調查。

研究結果顯示，顧客對室內定位和導航服務很有興趣，他們對尋路、定位促銷和故障問題報告等三類服務尤其反應熱烈。

尋路服務有助客戶找到目標商店和餐廳，或在停車場的座駕。事實上，85%的受訪者曾經在尋找商店、餐廳時遇到困難，而近半數受訪者表示若無法輕易找到指定地點，他們會選擇放棄。超過75%受訪者反映如果有尋路服務，會吸引他們繼續購物；而超過72%的受訪者想使用app來識別位置，或接收附近商店的促銷情報。在這些情況下，app既可以幫助識別消費者的位置，提醒他們前面的商店或餐廳有什麼優惠或促銷活動；同時，遇上公用設施如廁所、自動提款機或自動扶手梯等的故障事件，客戶亦能透過app即時報告。

如何部署室內定位及導航服務？

為確保消費者有優良的購物體驗，可靠、精準和即時的導航不可缺少。無線網絡（WiFi）和藍牙等是

Creating the modern mall experience with indoor navigation and location-based services

Traditional malls face increasing challenges. Modern consumers want a place that can satisfy many different needs. They're looking for a shopping, dining, and entertainment destination, not just a place where they can pick up the latest fashions. In order to survive, malls must move on from conventional formats and evolve to meet the demands of their increasingly choosy clientele.

Offering expanded digital engagement has proved to be an effective way of meeting the needs of the modern mall-goer. One way to do this is to enrich mall mobile apps with location-based services such as wayfinding and the inclusion of location relevant content.

Research: Location-based services make shoppers happy

To help mall operators determine what value indoor navigation can offer, Signify, formerly known as Philips Lighting, commissioned a research in 2016-2018 involving 1,000 shoppers worldwide.

The research shows that shoppers have a genuine interest in location-based services. Three categories of use cases resonated particularly well with shoppers: wayfinding, location-based promotions and problem reporting.

Wayfinding can be used to orient shoppers in the mall, for fast and convenient navigation to stores and restaurants, or to help shoppers find their way back to their cars. 85% of mall shoppers have had trouble finding a particular store, restaurant, or point of interest, and nearly half of them give up when they can't readily find what they're looking for. More than 75% of shoppers who have trouble finding stores would shop more if they had access to



主流的定位技術，不過在應用時可能受到場地信號干擾或安裝障礙而無法達到服務要求，部署和維護成本亦較高。為此，Signify開發了室內導航系統 Interact Indoor Navigation 方案，為商場營運商提供即時且精確至30厘米（即1英尺）的導航技術，更毋需添加或維護額外硬件。

Interact Indoor Navigation 方案利用專利的可見光通信（VLC）技術，發送獨有且可被智能手機攝影鏡頭探測到的VLC代碼，以提供即時和精確的定位服務。商場內的LED燈具中還可以裝配低功耗藍牙信標（BLE beacon）。BLE信標填補商場內沒有VLC的範圍，令室內定位和導航服務可以無縫地覆蓋整個商場範圍。該系統亦具有軟件和雲端解決方案，可通過識別代碼即時確定智能手機所在位置和座標。此外，使用高能效、低維護的LED照明，可提高照明品質同時顯著節省能源。

Interact Indoor Navigation 可以支援一系列室內定位及導航服務，包括尋路和發送個人優惠券，使購物體驗更具互動性、個人化和娛樂性，最終推動銷售並提高客戶對品牌的忠誠度。



wayfinding services. More than 72% of shoppers indicated they'd like to use a mobile app to find locations of sale promotions. In these situations, the mobile app locates a shopper's position and suggests easy routes to the store or restaurant of her choice. The third category of use cases turns mobile apps into practical tools that allow shoppers to report damaged or malfunctioning utilities such as toilets, ATMs, or escalators.

How to best deploy location-based services?

Successful deployment requires reliable, accurate, and real-time navigation aids to ensure users experience. Popular technologies such as standalone WiFi and Bluetooth beacons may not deliver the level of performance required, and they involve significant deployment and maintenance effort. Interact Indoor Navigation, an indoor navigation system offered by Signify, gives mall operators instant and hyper-accurate navigation of down to 30 cm or one foot, without the need to add or maintain additional hardware.

Interact Indoor Navigation use patented Visible Light Communications (VLC) technology to send out a unique code that can be detected with any smartphone camera, so as to provide instant and accurate location services. LED lighting can also incorporate in-luminaire Bluetooth Low Energy (BLE) beacons. BLE beacons support indoor navigation in areas of the mall that do not have enough light coverage and enable in-pocket performance without the additional installation and navigation hassles that these beacons usually require. The system also features a software and cloud solution that identifies the code and locates the exact position of the smartphone on the mall floor. In addition, energy-efficient and low-maintenance LED lighting offers improved light quality and ambiance, as well as significant energy savings.

Interact Indoor Navigation can support a range of location-based services—including wayfinding and personal couponing—that make shopping in a mall a more interactive, personalized, and enjoyable experience, ultimately driving sales and encouraging brand loyalty.

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12

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