

**For discussion  
on 9 November 2020**

**Legislative Council Panel on  
Information Technology and Broadcasting**

**Application of Information Technology  
to Combat COVID-19**

**PURPOSE**

This paper briefs Members on the application of information technology (IT) in combating the 2019 coronavirus disease (“COVID-19”) in Hong Kong.

**USE OF TECHNOLOGY**

2. COVID-19 has since early 2020 developed into a global epidemic. The Government has taken a series of measures to contain the spread of the disease. Innovation and technology, particularly IT applications, has played an important part in some of these measures. Some examples are set out in the ensuing paragraphs.

**FACILITATING QUARANTINE**

**Home Quarantine Arrangements**

3. Compulsory quarantine is a key measure adopted by Department of Health (“DH”) since 8 February 2020 to reduce cross-boundary passenger flow so as to minimise the risk of imported cases brought about by people arriving from outside Hong Kong. Under the Compulsory Quarantine of Certain Persons Arriving at Hong Kong Regulation (Cap. 599C) and Compulsory Quarantine of Persons Arriving at Hong Kong from Foreign Places Regulation (Cap. 599E), save for exempted persons, all persons arriving from outside Hong Kong are required to be subject to a 14-day compulsory quarantine.

4. To support the home quarantine arrangements, the Office of the Government Chief Information Officer (“OGCIO”) has deployed communication technologies to ensure that confinees comply with the requirement to stay at their dwelling places for 14 days, including:

- (a) the “StayHomeSafe” app with geofencing capability to be paired with a Bluetooth Low Energy (“BLE”) wristband worn by the confinee; and
- (b) the location sharing function of WhatsApp and WeChat, supplemented by surprise video calls as an interim additional measure deployed between 8 February and 26 April 2020, when the supply of wristbands were not sufficient to meet the large influx of people returning to Hong Kong.

5. The “StayHomeSafe” app was jointly developed by OGCIO, the Logistics and Supply Chain MultiTech R&D Centre (“LSCM”), the Hong Kong University of Science and Technology and a technology start-ups<sup>1</sup> at the Hong Kong Science Park, making use of geo-fencing technology. It detects the wireless signals (WiFi, Bluetooth, GPS, telecom signals, etc.) at the confinee’s dwelling place, thereby creating an invisible fence to keep the confinee within that location. Any changes in the signals would mean possible breaches of the home quarantine requirement and would trigger an alert at the Control Centre.

6. So far, these two measures have facilitated the monitoring of some 470 000 people under home quarantine, with some 80 000 using location sharing and over 390 000 using wristbands paired with the “StayHomeSafe” mobile app. While geofencing is not a new technology, its use on such a scale is first in the world. More importantly, it does not rely on technologies such as GPS and thus has helped protect personal privacy. Over twenty overseas economies have approached OGCIO and LSCM, seeking advice on the “StayHomeSafe” app and the BLE wristband.

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<sup>1</sup> Compathnion Technology Limited

## **FACILITATING PUBLIC ACCESS TO COVID-19 UPDATES AND COMMUNITY-WIDE ANTI-EPIDEMIC MEASURES**

### **COVID-19 Dashboard**

7. With the collaborative effort of Development Bureau, Lands Department, DH, OGCI, and volunteers from the information technology industry, the “Interactive Map Dashboard on the Latest Situation of Coronavirus Disease in Hong Kong” (“the Dashboard”) was launched on 3 February 2020. It facilitates members of the public to know more about the latest situation of the epidemic and other relevant information. Since its launch, the Dashboard has been continuously enhanced to include more information, including details of probable / confirmed cases, buildings in which such cases have resided / visited, flights / trains taken by confirmed cases, collection points for submission of specimen, statistics on testing etc. As at end-October 2020, the Dashboard has recorded over 39 million views.

8. In addition, the datasets under the Dashboard are made available via OGCI’s Public Service Information Portal in machine-readable formats for free use by the public. With the Application Programming Interfaces provided by OGCI, the industry and other interested parties can make use of such data conveniently to conduct further analysis and develop other websites and programmes / mobile apps.

### **CuMask+™ Registration and Distribution**

9. To facilitate convenient registration and distribution of CuMask+™, the OGCI developed an online CuMask+™ registration system to handle large number of online registrations made by the public within a short period of time, using a real-time queuing technology solution to regulate the inflow traffic to ensure that the public can smoothly submit registrations in an orderly manner. This has enabled a good user experience in the registration process. On the first day of registration, over 720 000 registrations involving over 2 million registrants were smoothly processed. During the 1-month registration period, there were some 1.4 million registration covering 4 million registrants. In addition, online registration is not required for the second round of mask distribution from 14 September to 31 October 2020, as consent has already been given by citizens to re-use their personal information for the same purpose.

10. In addition, OGCIO developed a simple IT application for residents to collect masks from over 300 post offices, and estate management offices of the Housing Authority and Housing Society without the need for prior registration. By the end of October 2020, we have distributed around 10 million masks.

### **Universal Community Testing Programme**

11. OGCIO had put in place a number of IT systems to facilitate efficient execution of the Universal Community Testing Programme launched on 1 September 2020. They included an online appointment booking system and a registration system to enable speedy registration at the Community Testing Centres (“CTCs”) to reduce bunching of people at registration counters. Through integration with the Laboratory Test System which recorded the testing results uploaded by laboratories, the testing results were made available to participants, mostly within 72 hours. All personal information in the booking and registration systems were not passed onto the laboratories, thereby fully protecting the personal privacy of programme participants. As regards the logistics and security in the supply and collection of specimen tubes, LSCM had developed a stringent system, where QR code/barcode identifiers, electronic seal, bluetooth and global positioning system were integrated into a control network for real-time tracking of all the boxes and delivery vehicles.

12. During the 14-day Programme, some 150 delivery vehicles were deployed - involving 7 800 round trips between 148 CTCs, four designated testing laboratories and the warehouse - to ensure a good supply of empty specimen tubes and specimen collection boxes for the CTCs and more importantly, timely and safe delivery of specimen tubes from CTCs to the laboratories two times per day. The logistics operation and control system developed by LSCM also ensured that the delivery of specimen tubes were done within 1.5 hours from the closure of CTCs, less than one minute of unloading time at the laboratories, no loss of collection boxes, and continuous supply of empty tubes and collection boxes at all CTCs until the last day.

### **Cash Payout Scheme**

13. Banks and the Hongkong Post are the registration agents for the Cash Payout Scheme. In addition to the traditional paper-form submission and e-banking services, OGCIO has assisted registration by providing new

online channels for application of cash payout via their websites. OGCIO also developed a centralised registration platform for data validation and eligibility checking for the Scheme. With these convenient e-channels, over one-third of the eligible persons (i.e. 2.6 out of 7.1 million) submitted their applications on the first registration day on 21 June 2020. Over 80% of the applications were received via the new online channels or e-banking services.

### **Employment Support Scheme**

14. OGCIO has been providing technical support to the Employment Support Scheme. Specifically, OGCIO assisted in preparing the specifications of the IT system as well as ensuring system performance, security and web accessibility. Public response was encouraging and the IT system had been running smoothly throughout the two phases of application, involving over 600 000 applications. This is another example of how IT could help facilitate multi-stakeholder collaboration and shorten the system delivery time substantially. It also improves our capacity and scalability to handle the large user population and influx of workload under a very tight schedule without compromising security and data privacy.

## **FACILITATING THE NEW NORMAL UNDER COVID-19**

### **“LeaveHomeSafe” Exposure Notification Mobile App**

15. OGCIO will launch the mobile app “LeaveHomeSafe” in mid-November 2020 to provide members of the public with a digital tool to record their visits to different venues through scanning venue-specific QR codes posted at the venue entrances. If a venue has been visited by a confirmed COVID-19 patient, the app will notify those users who have visited the same venue around the same time as the patient. This increases vigilance and self-protection of users as well as their confidence in visiting different venues. In the unfortunate event of infection, the users’ visit records can assist DH in epidemiological investigations and contact tracing.

16. Participation by venue operators and individuals will be entirely voluntary. The app users will participate in complete anonymity. Information of the venues that he/she visited will only be stored in his/her phone, and the visit records will be removed automatically after 31 days.

## **Health Code System**

17. For gradual resumption of travel between Hong Kong and Guangdong/Macao, a Health Code initiative will be launched after the epidemic situation has stabilized. It aims to facilitate exemption of cross-border travellers from compulsory quarantine in an orderly manner via mutual recognition of COVID-19 virus test results.

18. OGCIO has worked together with DH to develop the Hong Kong Health Code system. The system leverages blockchain technology for the secured exchange of health codes upon the consent of applicants. It will enable recognised testing institutions in Hong Kong to upload valid nucleic acid testing results of persons eligible for exemption from compulsory quarantine. Eligible persons who need to travel to Guangdong or Macao can download their nucleic testing results through the Hong Kong Health Code system for conversion to the health code systems of Guangdong or Macao (i.e. the “Yue Kang Code” or “Macao Health Code”) for health declaration purpose when entering Guangdong or Macao. Eligible persons arriving at Hong Kong from Guangdong or Macao can also choose to use the code conversion function on the “Yue Kang Code” and “Macao Health Code” systems to directly convert their valid nucleic acid testing results for use on the electronic Health Declaration Form platform of Hong Kong for their entry. In addition, a travel booking system with daily/ weekly quota will be implemented to ensure that cross-boundary travels will be smooth and orderly.

## **ADVICE SOUGHT**

19. Members are invited to note the content of this paper.

**Innovation and Technology Bureau  
Office of the Government Chief Information Officer  
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