

**For discussion
on 12 July 2021**

**Legislative Council
Panel on Information Technology and Broadcasting
Update on the Application of Information Technology
to Combat COVID-19**

Purpose

This paper aims to report to Members on the latest development of the application of information technology (IT) in combating the COVID-19 in Hong Kong.

Application of Technology

2. The COVID-19 has raged in the past year or so. Global economic and social operations have been severely challenged, from which Hong Kong could not be insulated. The Hong Kong Special Administrative Region (HKSAR) Government has been adopting a multi-pronged approach by implementing various measures with a view to curbing the spread of diseases, assisting the public in the face of the epidemic under the new normal at the same time, and preparing for economic recovery. Innovation and technology (in particular IT) has played an important part of it. The ensuing paragraphs will introduce the application of IT by the Government in combating the COVID-19.

Supporting Measures to Prevent the Importation of Cases

Compulsory Quarantine Arrangements

3. Compulsory quarantine is a key measure implemented 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 by inbound travellers from places 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 inbound travellers from places outside Hong Kong are subject to compulsory quarantine.

4. Since the implementation of the measures, the Office of the Government Chief Information Officer (OGCIO) has been actively assisting DH in its application of IT to prevent the importation of cases, so as to ensure that confinees comply with the requirements of staying at their designated dwelling places during quarantine period. Such technologies involve the use of the “StayHomeSafe” mobile app with geo-fencing capability, complementing a Bluetooth Low Energy (BLE) wristband worn by the confinee, with a view to achieving monitoring function. While keeping the confinee’s whereabouts under monitoring, their personal privacy are protected.

5. The “StayHomeSafe” mobile app adopts locally developed technologies. By analysing in real time the wireless signals at the confinee’s dwelling place, including WiFi, Bluetooth and telecom signals, etc., any changes in the signals would suggest possible breaches of the compulsory quarantine requirement by the confinee concerned. The monitoring system will instantly alert the Control Centre for their follow-up actions, so as to ensure that confinees are staying in their designated dwelling places. So far, electronic wristbands coupling with the “StayHomeSafe” mobile app have been used by over 540 000 confinees. While geo-fencing is not a new technology, it is the first time in the world that this technology is applied on such a large scale. As geo-fencing does not rely on technologies such as GPS, it thus helps protect personal privacy. Over 40 overseas economies have inquired about the technologies and experience in respect of the “StayHomeSafe” mobile app and the BLE wristband. Relevant equipment and technologies have been exhibited on invitation in the Museum für Kommunikation, a renowned communications museum in Germany.

6. OGCIO has also assisted in the arrangements of digitising quarantine orders that expedite the quarantine process at border control points as well as provided necessary support to relevant departments to facilitate their checking of confinees’s information.

Supporting Anti-epidemic Measures in the Community

Community Testing Centres

7. To enable members of the public to make an online booking for the testing services in a fast and secure manner, OGCIO has established an online booking system and registration system for the Community Testing Centres established by the Government in various districts in November 2020, simplifying the on-site registration procedures and reducing the chance of mass gathering. The registration system is designed to separate citizens’ personal

data and the sample testing process, so that laboratories responsible for testing samples will not gain access to any personal data, thereby protecting citizens' personal privacy.

COVID-19 Vaccination Programme

8. To facilitate the launch of the COVID-19 Vaccination Programme by the Government in February 2021, OGCIO has established an online booking system which enables members of the public to choose and make bookings in respect of the time and venue for receiving the first and second doses of vaccination. SMS reminders will also be sent to the concerned citizens. Following the expansion of eligible person to receive vaccinations and hence the addition of booking group every time, queuing system will be added to the booking system to ensure a smooth booking process of citizens. Real-time updates on the booking status are already made available on the thematic webpage of COVID-19 Vaccination Programme to keep the public informed of the booking places available in vaccination centres and the vaccination related statistical information. The system also supports the setting of vaccine quotas for each vaccination centre, and provides booking statistics to assist in the coordination of vaccine logistics arrangement under the programme. As at early July, the online booking system has processed more than 2.18 million booking registrations.

Provision of the Remote Monitoring System for the Fridge System and Related Equipment for the Community Vaccination Centres (CVC)

9. Since the COVID-19 vaccine has stringent requirement to be properly stored in the fridge at the temperature specified by the pharmaceutical factory, the Electrical and Mechanical Services Department (EMSD) designed and manufactured an Integrated Fridge Monitoring System and installed sensors for vaccine fridges in the CVCs in 18 districts across the territory to remotely monitor the temperatures of the fridges and their fault signals. Furthermore, with the use of Internet-of-Things (IoT) technology, the real-time data of room temperature, power supply system and some lifts and escalators installed in the CVCs are also transmitted to the COVID-19 Vaccination Programme Central Command Centre and the Regional Digital Control Centre of the EMSD, for round-the-clock monitoring of the electrical and mechanical equipment and the fault system alarm. At the same time, the Integrated Fridge Monitoring System also provides information on emergency response, including early warning messages, contact persons, etc., for providing solid technical support to ensure the safety and quality of vaccine storage and the operation of the CVCs.

Interactive Map Dashboard on the Latest Situation of COVID-19 in Hong Kong

10. Through application of open data and geographical IT, the Government launched the Interactive Map Dashboard on the Latest Situation of COVID-19 in Hong Kong (Interactive Map) in February 2020 to enable the public to keep abreast of the latest situation of the epidemic and other related information effectively. The Interactive Map has been continuously updated since its launch to provide more information, including details of probable/confirmed cases, buildings in which such cases have resided/visited, flights/trains/ships/vehicles taken by confirmed cases, specimen collection points and designated quarantine hotels, etc. The Interactive Map has so far recorded over 54.4 million views. In addition, datasets under the Interactive Map are also opened up in machine-readable format via Public Sector Information Portal for free public use. The IT industry and other organisations can make use of such open data to conduct further analyses and develop other related websites and applications.

Support Measures for the Gradual Resumption of Economic Activities on the Basis of Vaccine Bubble

COVID-19 Electronic Vaccination and Testing Record System

11. The Government launched the COVID-19 Electronic Vaccination and Testing Record System in December 2020 for citizens to download their electronic testing records. In February 2021, the system was further enhanced to include electronic vaccination records so that citizens could download the electronic vaccination record through “iAM Smart” mobile app upon verification of their identity. Both electronic vaccination and testing records bear a QR code embedded with digital signature technology to ensure that the information in the code is tamper-proof, facilitating effective verification of the authenticity of these electronic records. OGCIO is also assisting the Food and Health Bureau in the exploration of capturing the vaccination records of those persons who have received vaccination outside Hong Kong into the vaccination database of the Government, and providing them with a QR code for vaccination records that facilitates their entry into certain designated local premises for display under the vaccine bubble initiative.

“LeaveHomeSafe” Exposure Notification Mobile App

12. OGCIO launched the “LeaveHomeSafe” mobile app in November 2020 to provide members of the public with a convenient digital tool for recording

their whereabouts. In an unfortunate event of infection, users are required to submit their visit records as prescribed by law to assist the Centre for Health Protection in epidemiological investigations. Regardless of whether those confirmed patients are “LeaveHomeSafe” users or not, their visit records will be broadcast through “LeaveHomeSafe” to other users who have visited the same venues. Health advice will be issued to them to increase their vigilance so as to minimise the risk of further transmission of the virus. Besides, the “LeaveHomeSafe” is enhanced for issuing compulsory testing notices to relevant users to facilitate the work of compulsory testing. If a user has visited the venues specified in the notices on the specified dates, the app will issue compulsory testing notice message and remind concerned citizens to undergo testing in accordance with the requirements and procedures stipulated in the notice.

13. To facilitate the citizens to present their vaccination records when entering certain designated premises under the vaccine bubble initiative, OGCI launched the “LeaveHomeSafe 2.0” in June 2021. By scanning the QR codes on paper or electronic vaccination records using the newly added “Electronic Vaccination and Testing Record” function, the public can store their COVID-19 vaccination records and QR codes in the “LeaveHomeSafe” mobile app to facilitate easy retrieval if needed. The “LeaveHomeSafe” mobile app does not require registration of any personal information and does not have a tracking function. Like visit records, the electronic vaccination records stored in the app will only be saved in users’ mobile phones and will not be uploaded to the Government or any other systems, thus protecting the user’s personal privacy. Since its launch, the number of downloads of the app exceeds 4.6 million. About 90 000 public and private venues across the territory have participated in the scheme to display the “LeaveHomeSafe” venue QR codes.

14. Taking into account the views of the public and the industry, and under the premise of protecting the public’s privacy, we would continue to explore different technology solutions to enhance the app and expand its functionality to assist in the gradual resumption of economic and social activities on the basis of vaccine bubble.

“QR Code Verification Scanner” Mobile App

15. To tie in with the implementation of vaccine bubble, OGCI assisted the Food and Environmental Hygiene Department to swiftly develop the “QR Code Verification Scanner” mobile app for the operators of relevant catering business premises and scheduled premises to scan QR codes on paper copies and electronic copies of the COVID-19 vaccination records issued by the

Government for confirming their authenticity. The mobile app is easy to use and has so far recorded over 50 000 downloads.

Resumption of Cross-boundary Travel

Return2HK Scheme

16. The “Return2HK” Scheme has been operating smoothly since its implementation in November 2020. OGCI has set up an online booking system for the Hong Kong residents who meet the specified conditions under the scheme to apply for quarantine exemption quotas for returning to Hong Kong from the Mainland or Macau via different control points to ensure a smooth and orderly quarantine process at these control points. So far, over 240 000 people have successfully made bookings through the system.

Health Code System

17. To prepare for the gradual resumption of people flow between Hong Kong and Guangdong/Macao, OGCI and DH have jointly developed the “Hong Kong Health Code System” with the use of blockchain technology to confidentially exchange the valid nucleic acid testing result in the format of a “Health Code” with the applicant’s consent for health declaration purpose on entry. Under the “Return2HK” Scheme, the conversion function for converting the “Yue Kang Code” of Guangdong Province and the “Macao Health Code” of Macao to the electronic Health Declaration Form platform of Hong Kong has already been adopted. At present, the number of successful applications for code conversion has exceeded 140 000. We will continue to proactively discuss with Guangdong Province and Macao on measures to facilitate the health declaration for cross-boundary people flow among three places, including exploration of technical arrangement to include vaccination record in the existing data conversion function for the “Health Code”.

18. Meanwhile, with the successive launch of large scale COVID-19 vaccination programmes in various places around the world, governments, associations and organisations across the globe have started their study on establishing the mutual recognition mechanism and technical solutions that can prove the health status of travellers through mutual recognition of the up-to-standard testing results and vaccination records, with a view to facilitating gradual resumption of cross border people flows. The HKSAR Government has, in collaboration with the Airport Authority, engaged in technology exchange on the digital health pass with the International Civil Aviation Organisation and other associations and organisations. We will closely

observe the development of relevant international standards, and explore the feasibility of mutual access of our virus test results and vaccination records with other digital health records and technology platforms, so as to facilitate the citizens' travelling abroad in the future.

Other Application of Information Technology under the New Normal

Distance Business (D-Biz) Programme

19. While many metropolises over the world are placed under lockdown, making use of e-commerce has become more important. This has also expedited digitalisation of the city. The Innovation and Technology Bureau launched the D-Biz Programme under the Anti-epidemic Fund to support enterprises to adopt IT solutions to continue their business and services during the epidemic. A total of 25 640 applications were approved for funding, of which about 95% were small to medium enterprises. The total funding involved was around \$1.7 billion. The programme does not only enable many enterprises to seize the opportunity to expedite their digital transformation to face the challenges posed by the epidemic, but also, in the long run, enhance their competitiveness and explore new business opportunities.

Advice Sought

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

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July 2021**