For discussion
on 11 May 2020

Legislative Council
Panel on Information Technology and Broadcasting

Smart Government Innovation Lab

Purpose

This paper updates Members on the work progress of the Smart Government Innovation Lab (Smart Lab).

Background

2. Government procurement is one of the eight major areas for innovation and technology (I&T) development as announced in the 2017 Policy Address. In April 2019, the Government formally implemented a new procurement policy, aiming to encourage departments to adopt marking schemes, raise the technical weighting in assessment and make innovative suggestions submitted by bidders as an assessment criterion. In general, departments should not include bidders' experience as a mandatory requirement for participating in procurement. Such arrangements can help create more opportunities for local small and medium enterprises (SMEs), including start-ups, to participate in the bidding of government contracts.

3. To promote the development of "Smart Government" and facilitate development of I&T in Hong Kong, the Office of the Government Chief Information Officer (OGCIO) established the Smart Lab in April 2019 to encourage and facilitate wider adoption of I&T in government departments, and promote active participation of industry players to assist departments in adopting various information technology (IT) solutions to improve public services. Coupling with the new pro-innovation government procurement policy mentioned above, the initiative creates more business opportunities for the local industry and thereby nurturing more local I&T talents.

4. Furthermore, the Electrical and Mechanical Services Department set up the E&M InnoPortal in 2018 to compile demands for new electrical and mechanical (E&M) technologies of various government departments, public

bodies and the E&M trade so that the I&T sector, including start-ups and universities, can propose corresponding E&M solutions. Through matching on the Portal and on-site trials, the set-up has been facilitating and promoting technology research and development as well as application. Over 60 solutions and services proposed by the local industry and universities have been successfully matched so far.

Work Progress of the Smart Lab

5. In terms of facilitating industry involvement and liaison work, the Smart Lab organises regular technology fora which invite industry players to introduce their technical solutions to government departments. Local start-ups and SMEs joining the fora can better understand the needs of government departments, and submit proposals on suitable areas to the Smart Lab or relevant government bureaux and departments (B/Ds). In 2019, the Smart Lab organised three technology fora in collaboration with Cyberport and Hong Kong Science Park, where relevant departments and industry players were invited to join. The themes of these fora were "Smart City Infrastructure", "Intelligent Transport System and Traffic Management", and "Blockchain Technology for Public Services" respectively. The fora had attracted over 740 participants from more than 60 different B/Ds and 170 public or private organisations / enterprises.

6. The Smart Lab has also set up an industry liaison office at Cyberport 1 to showcase and display some technologies that have been successfully or are being tested by B/Ds, such as city dashboard, chatbot, virtual reality (VR), geospatial information system and smart sensing technology, etc., with a view to inspiring application by more B/Ds.

7. Besides, the Smart Lab has set up a thematic website (www.smartlab.gov.hk) setting out the challenges faced by different public services and inviting industry players to submit technology solutions and product suggestions. Over the past year, through proactive promotion and liaison with B/Ds and the industry, the Smart Lab has published over 50 business needs of B/Ds on the website and received over 200 IT solutions submitted by the industry, covering areas such as artificial intelligence (AI), data analytics, cloud computing and Internet of Things, etc.

8. In response to the business needs of various departments, the Smart Lab, through exchanges with the I&T industry, sources suitable technology solutions from the industry (especially local start-ups and SMEs). It also arranges thematic workshops on related business needs and testing and proof-of-concept for suitable solutions to let relevant departments better understand solutions and products which address their needs, so as to draw up procurement requirements more effectively. Since its establishment, the Smart Lab has matched a total of 31 business needs with solutions, and in the process, 27 thematic workshops have been arranged for relevant departments.

9. The Smart Lab will arrange proof-of-concept in collaboration with relevant departments having regard to the maturity of technologies and the operational needs of departments. Presently, the Smart Lab has arranged proof-of-concept for 15 solutions with potential (the solutions concerned are listed in **Annex 1**) to test if they can meet the business needs of departments and if they are technically feasible.

10. The Smart Lab also encourages relevant B/Ds to pilot the use of technologies that have undergone proof-of-concept or are mature in the market, in order to verify their performance and reliability under real-life situation. Currently, a total of eight projects are being planned for or in the progress of pilot

implementation. Details are set out in **Annex 2**.

Key Tasks in the Coming Year

11. Other than continuing to promote the application of the above mentioned IT technologies, one of the key tasks of the Smart Lab in the coming year is to explore the application of robotics technologies, including machine learning, cognitive systems, intelligent agent, robotic process automation, etc. to further enhance public services. The Smart Lab will arrange a series of seminars, thematic workshops and technology fora in the latter half of this year to raise the awareness of B/Ds about robotics technologies, and invite industry participation through online briefings and virtual fora, etc. The Smart Lab also plans to develop robotic process automation modules, such as putting in place an automated workflow for form processing, streamlining the processing of general public enquiries, etc., in order to expedite the adoption of related technologies and enhance the operational efficiency of government departments.

12. OGCIO is carrying out a pilot project of applying robotics technologies in smart office and is developing a smart robot, which would receive, introduce and guide visitors to a tour of exhibits in the Smart Lab. Subject to the effectiveness of the pilot project, the Smart Lab will promote the application of robotics technologies to other suitable departments. Aside from that, the Smart Lab will actively promote the potential of the application of robotics technologies in B/Ds and public services and strengthen the coordination of different parties in applied technologies.

13. To further promote robotics technologies, OGCIO will invite

government staff of various departments to participate in an open competition in the middle of this year to submit conceptual proposals which can effectively apply robotics technologies to enhance public services. After selection, the Smart Lab will provide assistance to short-listed proposals to complete proof-of-concept within a six-month period, and finally select the winning teams. These winning proposals can encourage relevant departments to arrange further pilot implementation.

14. Apart from Cyberport and Hong Kong Science Park, the Smart Lab also engages the Hong Kong Productivity Council as the co-organiser of technology fora starting from 2020-21. Online briefings and virtual fora are also arranged to further enhance communication with the industry. The Smart Lab will also step up efforts to facilitate more government departments to proactively explore the adoption of technologies in enhancing existing public services, or even to introduce new services by adopting an innovative approach. The Smart Lab will strengthen collaboration with the E&M InnoPortal in areas such as testing and proof-of-concept of adoption of different technologies so as to expedite and enhance the effectiveness of the relevant work, and provide more convenient and people-oriented public services.

Advice Sought

15. Members are invited to note the content of this paper and offer comments.

Innovation and Technology Bureau
Office of the Government Chief Information Officer
May 2020

Annex 1

Smart Government Innovation Lab

Solutions with Proof-of-Concept Arranged

(up to April 2020)

	Proof-of-Concept Projects	**Bureau/ Department**
1	Use radio frequency identification (RFID) technology to manage valuable audio-visual equipment and keep track of all equipment movement	Information Services Department
2	Use smart sensing and in-door positioning technologies to keep track of visitors' movement in order to enhance the security at the data centre	Office of the Government Chief Information Officer
3	Use a guiding robot to serve as a receptionist to receive visitors and guide visitors to tour around different showcases	Office of the Government Chief Information Officer
4	Use light detection and ranging (LiDAR) to estimate the average journey time and speed of vehicles on specific road sections	Office of the Government Chief Information Officer
5	Use LiDAR to conduct proof-of-concept and provide a prototype for detecting different types of vehicles	Office of the Government Chief Information Officer
6	Use smart film to display real-time data, such as date, time and weather information, on the glass enclosure of a room or meeting room. Changing of transparency level is also allowed to adjust and provide privacy and better user experience	Office of the Government Chief Information Officer
7	Use mesh wireless network technology for provision of public Wi-Fi services to enhance wireless network connectivity and efficiency	Office of the Government Chief Information Officer

	Proof-of-Concept Projects	Bureau/ Department
8	Integrate VR and BIM technologies with 3D maps and 4D immersive display system to simulate and display various trial technologies of smart city, and to visualise BIM models and 3D maps to facilitate city management	Office of the Government Chief Information Officer
9	Use anti-bot technology which integrates AI and machine learning to distinguish human inputs from robot-generated inputs in real time so as to prevent people from using computer programmes to automatically book public facilities	Leisure and Cultural Services Department
10	Use data analytics to optimise the design of route for delivery works to improve delivery efficiency	Hongkong Post
11	Use video analytics to conduct automatic traffic surveys for pedestrian and vehicular traffic	Transport Department
12	Use video and data analytics to conduct traffic surveys for vehicles at road junctions and automatically monitor abnormal traffic conditions to support traffic management	Transport Department
13	Use data analytics and machine learning to speed up case searching and provide reference materials to assist in drafting replies to public enquiries with reference to complaint and enquiry cases previously received	Transport Department
14	With the application of smart film technology, enhance the opacity control of meeting areas and reduce the need for manual adjustment	Correctional Services Department
15	Use thermal sensors and data analytics to perform people counting and behaviour monitoring with privacy preserved. It includes counting the number and duration of people staying in a designated location and detect any abnormalities therein such as overcrowding or prolonged stay	Correctional Services Department

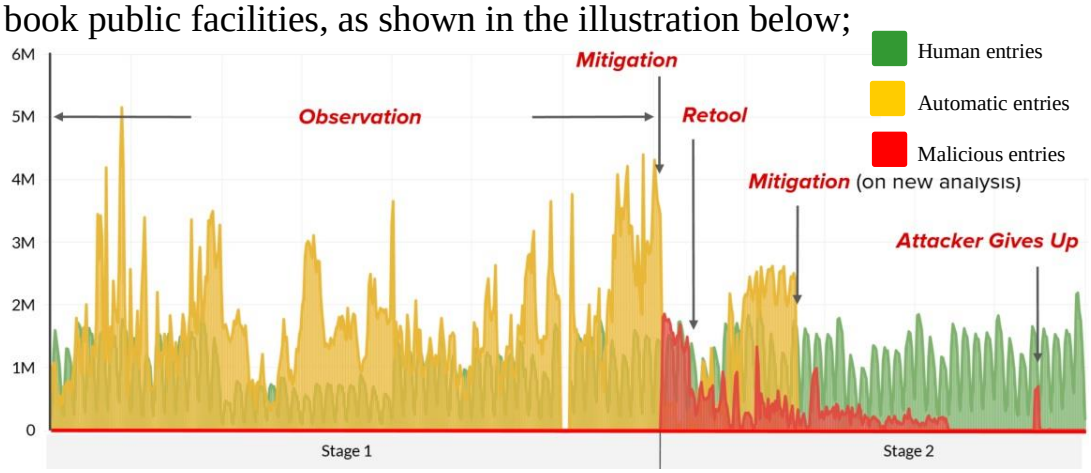
Annex 2

Smart Government Innovation Lab

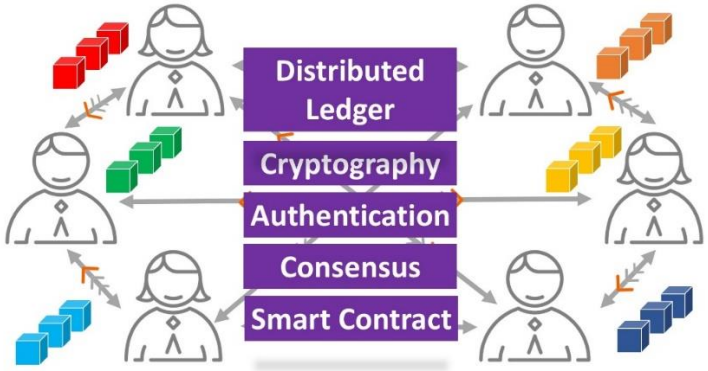
Projects Planned for or In the Progress of Pilot Implementation

(up to April 2020)

1. Use anti-bot technology which integrates AI and machine learning to distinguish human inputs from robot-generated inputs in real time so as to prevent people from using computer programmes to automatically book public facilities, as shown in the illustration below;



2. Adopt blockchain technology in the business areas of the following four government departments to take advantage of its features of decentralisation, immutability, high transparency and traceability in order to learn more about the benefits offered by blockchain technology, and explore the applicability and benefits of adopting blockchain technology in government services:



(i) <u>Intellectual Property Department</u> - Leverage the immutability feature of blockchain to maintain records of transfer of trademark ownership and relevant information in blockchain, so as to facilitate the receipt

of and access to such information by relevant stakeholders;

(ii) Department of Health - Record the information of pharmaceutical products and enhance the traceability and transparency of the supply chain through the information stored in blockchain to make pharmaceutical product management more effective;

(iii) Environmental Protection Department - Optimise the compilation of the draft environmental impact assessment reports involving works projects through the distributed ledger as well as the immutability and traceability features of blockchain to facilitate the traceability of document changes; and

(iv) Companies Registry - Monitor the filing status of company documents to enhance the "e-Monitor" service and provide more effective and automated services for company users;

3. Integrate VR and Building Information Modelling (BIM) technologies with 3D maps and 4D immersive display system to simulate and display various trial technologies of smart city with a view to promoting B/Ds to adopt related technologies to facilitate city management;

4. Use AI and big data analytics to transform information into reference assessments so as to boost the information sharing efficiency of the Cyber Security Information Sharing and Collaborative Platform; and

5. Use smart film to display real-time data, such as date, time and weather information, on the glass enclosure of a room or meeting room. Changing of transparency level is also allowed to adjust and provide better privacy and user experience.