[LCQ22: Hong Kong International Airport](#)

Following is a question by the Hon Yiu Si-wing and a written reply by the Secretary for Transport and Housing, Mr Frank Chan Fan, in the Legislative Council today (October 23):

Question:

In recent years, the Hong Kong International Airport (HKIA) has been facing keen competition from the other four airports in the Pearl River Delta Region. Regarding the application of new technologies by the Airport Authority Hong Kong (AAHK) for enhancing the competitiveness of HKIA, will the Government inform this Council if it knows:

(1) the strategy formulated for the coming five years by the AAHK on the application of new technologies in HKIA, as well as the relevant implementation timetable and estimated expenditure;

(2) the new technologies and smart systems currently used by the AAHK and those to be used in the coming five years, as well as their benefits/anticipated benefits; and

(3) whether the AAHK has, by drawing reference from the practices of advanced airports in foreign countries, procured facilities applying new smart technologies which are compatible with the HKIA three-runway system which will be completed in 2024?

Reply:

President,

The Government has all along been working closely with Airport Authority Hong Kong (AAHK) in exploring and taking forward various measures to enhance the services and competitiveness of the Hong Kong International Airport (HKIA). In recent years, the AAHK has proactively exploring technological applications in developing HKIA as a smart airport for delivering a unique passenger experience on one hand and further enhancing operational efficiency on the other. The AAHK has already formulated a series of development strategies to vigorously promote and implement its smart initiatives through the application of intelligent data, operation and automated passenger processing technology and data analytics, so as to optimise airport operation and enhance passenger experience. My reply to various parts of the question raised by the Hon Yiu Si-wing is as follows :

(1) and (2) HKIA's smart airport development strategy covers five key aspects, including (i) building and enabling a smart infrastructure; (ii) enhancing efficiency with robotics and automation; (iii) self-services and smoother passenger journey enabled by technology; (iv) connecting passengers with personalised and intelligent touch; and (v) gaining insight for optimising airport operations via data analytics. In relation to these five key aspects, the AAHK has implemented or planned for various smart

initiatives at HKIA.

In respect of building a smart infrastructure, the AAHK has established a set of core platforms for creating fast, agile and reliable connectivity among people, devices and facilities at HKIA. These platforms include increasing the high speed Wi-Fi zones with a speed of up to 400 megabits per second or more to 30 in the passenger terminals, applying 5G technologies, providing an independent, reliable and dedicated wireless network for use by airport operators, building an Internet-of-Things (IoT) Network to allow massive amount of devices and facilities at HKIA be interconnected for collection of data for analysis. With the above platforms, AAHK is able to apply big data analytics and Virtual Reality (VR) applications; in particular the "digital twin" provides an airport model for scenic VR simulation which can be used for operational drills or training, so as to allow AAHK to manage the airport operations more effectively and be able to respond to the needs of passengers.

Increasing automation and use of robotics not only enhance efficiency but also improve occupational safety and health. More new applications on robotics and automation have been adopted or in the process of being tried out at HKIA. For example, a high-speed baggage transport system is under construction to automate the delivery of arrival baggage from the Midfield Concourse, robotics technology is being used for some cleaning work and ambience monitoring in the passenger terminals. In collaboration with a local research institution, an automatic system has been developed for the detection of foreign objects on runways in real-time to enhance runway safety and operational efficiency. In addition, the AAHK is conducting a feasibility study to adapt autonomous driving technology onto electric tractors on the apron for enhancing the efficiency in cargo and baggage delivery.

Since 2016, the AAHK has started to introduce various automated and self-serviced processes, from check-in to departure security, in phases. Self-service is introduced at HKIA not only as a means to suit the new generation of passengers, but also to enhance efficiency. To allow more flexible use of counter space and improve efficiency, self-bag drop facilities have been installed at 120 check-in counters, reducing bag drop time to 60 seconds as compared to two to three minutes at manual counters. A new generation of smart mobile check-in kiosks invented by the AAHK has also been launched. A total of 120 kiosks are in service at various locations in the passenger terminals as well as off-airport locations. For example, the kiosks are deployed at the Guangzhou-Shenzhen-Hong Kong Express Rail Link West Kowloon Station and the Hong Kong Boundary Crossing Facilities of the Hong Kong-Zhuhai-Macao Bridge to provide check-in service. To provide passenger a seamless experience, the application of facial recognition technology allow passengers to use their face as a single token in handling different processes at the airport, including check-in, security check and boarding, without repeatedly showing the passport or boarding pass. A total of 48 self-service e-security gates equipped with facial recognition technology have been launched at Terminal 1 by June 2019. Other e-facilities including self-boarding gates and e-transfer gates are being planned for installation in phases.

The AAHK will continue to connect passengers with personalised and intelligent touch. HKIA's mobile app "HKG My Flight" provides a wide range of functions and information to passengers. When it is paired with HKIA's smart baggage tag, MyTAG, arrival passengers will receive notifications when their bags are ready for pick-up. HKIA is the first airport in the world introducing such service. Over 10 000 pieces of MyTAG have been sold so far.

Data analytics is a key element in the airport's digital transformation. With plenty of data available from various aspects of airport operations, big data analysis will enable predictive decisions and timely enhancements in, for example, queue management and deployment of manpower or other resources for serving flights and passengers. For instance, AAHK's "IoT-Augmented Airfield Service System" utilises and integrates a multitude of disparate data sources to provide real-time and predictive AI-enabled analytics for HKIA community to better manage aircraft arrival and departure, baggage handling and catering service. The "baggage trolley tracking system" launched in 2017 uses video analytics to enhance the efficiency of manpower and equipment deployment for retrieving and providing trolleys for passengers, which helps improve service in the passenger terminals.

The AAHK is responsible for the budget and expenditure for the above smart airport initiatives, which are funded by its operation and maintenance budget. Therefore we do not have the detailed breakdown.

(3) The AAHK will continue to follow closely the trend of technology applications in airports of different places and examine as to whether they are suitable for application at HKIA. The AAHK established the Airport Technology Advisory Council in 2015 to engage experts from various research and development institutions and universities in providing guidance on introducing advanced technologies at HKIA; and at the same time facilitate universities and technology industry around the world (including local startups) to conduct various trials of technological solutions at HKIA. In the course of developing HKIA into a smart airport, HKIA itself will continue to serve as an incubating platform, facilitating Hong Kong's technology industry in exploring new ideas and innovative solutions in aviation.

To further strengthen HKIA's leadership in the development of smart airport and applied technology, the AAHK will continue to work closely with international aviation organisations including the International Air Transport Association and the Airport Council International in pioneering the technology development and drive new standards for the industry.