

For discussion
on 5 May 2015

Legislative Council Panel on Security

The Next Generation Electronic Passport System

PURPOSE

This paper seeks Members' support for the proposal to implement the Next Generation Electronic Passport System (e-Passport-2 system).

BACKGROUND

2. Article 154(1) of the Basic Law stipulates that the Central People's Government shall authorize the Hong Kong Special Administrative Region (HKSAR) Government to issue, in accordance with law¹, passports of the HKSAR of the People's Republic of China (HKSAR Passports) to all Chinese citizens who hold permanent identity cards of the Region, and travel documents² (T/Ds) of the HKSAR of the People's Republic of China to all other persons lawfully residing in the Region. As at end April 2015, around 9 million HKSAR Passports have been issued since 1 July 1997. The number of countries or territories which have granted visa-free access or visa-on-arrival to holders of the HKSAR Passport has reached 152.

3. Machine-readable passports issued by authorities of different countries or regions worldwide since the 1980s are standardised by the International Civil Aviation Organization (ICAO)³ under the United Nations. In May 2004, ICAO published a new standard for biometric passports (or

¹ The issue, amendment and cancellation of the HKSAR Passports and matters incidental thereto or connected therewith are provided for under the HKSAR Passports Ordinance (Cap. 539).

² Besides HKSAR Passport, travel documents include HKSAR Documents of Identity for Visa Purposes (Doc/I), HKSAR Re-entry Permits, and HKSAR Seaman's Identity Books.

³ ICAO is a specialised agency of the United Nations responsible for, among other things, devising travel document standards for compliance by contracting members with a view to enhancing the effectiveness of control on passport fraud and maintaining the integrity and security of passports and other travel documents.

e-passports). In the light of this new standard, the Immigration Department (ImmD) started to implement the current Electronic Passport System in 2005 and issue the electronic HKSAR Passport (e-Passport) since February 2007, with a view to enhancing its security standards. Fully complying with the ICAO standard, e-Passport contains a contactless chip that stores information including those printed in the machine readable zone (MRZ) of the bio-data page (a sample at Annex)⁴, as well as the holder's image, full name in English and Chinese, place of birth, issuing authority and date of issue.

4. The current e-Passport system would have been in use for ten years by 2017. In March 2010, ImmD engaged an external consultant to conduct its third Information Systems Strategy (ISS-3) Review, which recommended ImmD to revamp its information technology infrastructure (ITI) to upkeep service quality and enhance handling capacity to cope with the substantially growing service demands. The Panel endorsed the proposal of ImmD to develop a new ITI at the meeting on 7 November 2011 (LC Paper No. CB(2)164/11-12(05)). The ITI project received funding support from the Finance Committee on 9 December 2011.

5. Riding on the new ITI, the ISS-3 consultant recommended ImmD to gradually replace its various existing core computer systems, which had been developed and implemented between late 1990s and 2000s and would hence become obsolete approaching the late 2010s, in order to ensure quality and uninterrupted delivery of ImmD's critical services to the public. Amongst other things, the ISS-3 consultant recommended implementation of the e-Passport-2 system to address the obsolescence of hardware and software of the existing e-Passport system and to cater for potential new business needs. Following the recommendation, ImmD completed a feasibility study on the implementation of the e-Passport-2 system in October 2014.

JUSTIFICATIONS

Ageing and obsolescence of the existing system

6. The e-Passport system handles applications for and production of HKSAR Passports and T/Ds. It was developed in 2005 and commissioned in 2007. Similar to other major computer systems, the e-Passport system was designed for optimal use for about 10 years. As the system was built on technologies prevailing about a decade ago, ImmD is facing increasing

⁴ Information printed in the MRZ of the bio-data page includes the holder's name in English, date of birth, sex, nationality and Hong Kong Permanent Identity Card (HKPIC) number, and the number and date of expiry of the passport.

difficulties in securing critical maintenance of the major hardware and software of the system (such as mid-range servers, storage systems, etc.). The current system maintenance agreement will expire in June 2017. Whilst ImmD has explored with the contractor possible extension of the agreement until around 2020, further extension would risk system reliability. Implementation of the e-Passport-2 system will avoid the risk of a large-scale failure of the existing system leading to serious disruption of critical public service (e.g. suspension of application processing and production of HKSAR Passports) causing grave public inconvenience.

7. Separately, the new ITI, based on which ImmD re-engineers and re-organises its existing computer application systems to meet anticipated increase in business needs and requirements, is being implemented by phase starting from April 2015. Systems running on the existing and the new ITIs cannot communicate directly. Implementation of the e-Passport-2 system compatible with the new ITI will ensure smooth and efficient communication between ImmD's electronic passport system with its other mission-critical computer systems also running on the new ITI (e.g. the new immigration control system to be commissioned by phase starting from early 2016), avoiding unnecessary delays in its daily operation.

Coping with increasing demand

8. The number of HKSAR Passport applications substantially increased from around 539 000 in 2007 to 774 000 in 2014⁵. To cope with such increase, ImmD has been stretching the operation of the e-Passport system to beyond its designed capacity under normal usage. For example, the personalisation machines at the Travel Document Personalisation Centre, which is a key component of the current e-Passport system, have been consistently deployed for operation substantially beyond their designed operating hours, sometimes eating into the capacity originally spared for system maintenance and backup in emergencies. Even so, in the past three years, the daily demand for personalisation of HKSAR Passports and Doc/Is exceeded the maximum designed capacity of the machines by 5% to 20% around 10% of the time⁶. Such prolonged overuse has seriously aggravated the ageing and wear and tear of the machines, adding to the imminent need for their replacement.

⁵ The number of applications for Doc/Is remained at around 50 000 per year in the past five years.

⁶ From 2012 to 2014, there were respectively 11, 41 and 27 days on which the daily throughput of personalization machines had to be stretched to personalising 3 700 to 4 200 booklets a day, comparing to the designed maximum capacity limit of 3 500 booklets per day.

9. It is expected that the number of HKSAR Passport applications would remain high in the longer run, reaching over 936 000 in 2023⁷. If the proposed e-Passport-2 system is not implemented as planned, ImmD will not be able to cope with such increase in HKSAR Passport applications in the next decade⁸.

Enhancing the application and issuance process

10. Implementing the e-Passport-2 system brings opportunity to enhance public service during the HKSAR Passport application process. For example, electronic submission of applications, which is available to use by only selected types of e-Passport applicants now⁹, may be extended to all eligible applicants regardless of their age. Electronic submission of e-Passport applications may also be extended from the web-based platform to the mobile platform, making it more accessible to applicants in completing and submitting e-Passport applications at their convenience. Self-service kiosks will be introduced to provide flexibility of extending service hours and allow eligible applicants to collect their passports at their convenience. Furthermore, the wider adoption of Automatic Case Assessment will shorten the time needed to assess those straightforward applications of e-Passport and Doc/I, making possible room to shorten the overall processing time required for such applications in future. All these expansions on the use of electronic application will increase the efficiency in the overall processing and issuance of e-Passports and Doc/Is and provide greater convenience to the public.

Updating e-passports according to ICAO recommendations

11. ICAO recommends that passport issuing authorities should introduce changes to passport designs and security features every ten years. Implementing the e-Passport-2 system will create room for ImmD to enhance the security features of current e-Passports (such as see-through window,

⁷ Forecast based on the number of eligible e-Passport applicants and the number of passports to be expired.

⁸ Subject to the outcome of the upcoming tendering exercise and actual system design, it is expected that the next generation personalisation machines for the production of HKSAR Passports and Doc/Is will be able to sustain a much higher throughput, at least doubling the existing capacity.

⁹ At present, online application is only applicable to those applicants who are holders of valid HKPIC, aged 11 or above and are able to collect the passports in person. With the implementation of the e-Passport-2 system, the online application will be extended to HKPIC holders aged below 11 for replacement of HKSAR passport application.

multi-colour UV print, etc.) with up-to-date technologies in the market to keep the forgery rate low, which is crucial to our ongoing efforts in maintaining confidence of overseas authorities to allow HKSAR Passport holders visa-free access to their country or region. ImmD will keep in view the latest ICAO recommendations and standards, including those on security features and chip technology, and update the e-Passport accordingly¹⁰.

Personal Data Privacy Protection

12. There has been no known case of leakage of personal data stored in e-Passports since its introduction in 2007. That said, to ensure the data protection principles as promulgated in the Personal Data (Privacy) Ordinance (Cap.486) are observed and complied with, ImmD will conduct Privacy Impact Assessments at critical stages of implementation of the e-Passport-2 system, including system analysis & design and before system rollout. In addition, a Privacy Compliance Audit will be conducted after system rollout. Relevant reports will be passed to the Office of the Privacy Commissioner for Personal Data, whose comments will be duly taken into account in the implementation of the e-Passport-2 system.

SAVINGS AND COST AVOIDANCE

13. Implementation of the e-Passport-2 system will enable ImmD to cope with the growing service demands in the coming ten years and improve the quality of service to the public. It will also bring about the following savings and cost avoidance –

- (a) **Non-recurrent cost avoidance** of \$332.76 million in 2018-19, being the cost required to revamp the existing e-Passport system and related service components, that would soon become obsolete, for sustaining the current business operations;
- (b) **Recurrent cost avoidance** of \$3.85 million in 2019-20 and

¹⁰ To protect the information stored in the chip from unauthorized access, the existing e-Passport adopts a Basic Access Control mechanism in accordance with the specifications set by ICAO. When the bio-data page of an e-Passport is directly placed onto an optical and electronic passport reader, selected information in the MRZ will be optically captured to form a “key text string”, which will be used by the reader to generate, through a specific access control algorithm, a real time and one-off key for establishing a one-to-one and exclusive encrypted communication channel between the chip of the e-Passport and the reader. The wireless data transmission function of the chip will be turned on only after such encrypted communication channel is successfully established.

increasing to \$29.27 million in 2021-22 and onwards, being the annual staff cost avoidance and additional cost required as set out in item (a) above;

- (c) **Recurrent realisable savings** of \$12.38 million in 2019-20 and increasing to \$24.77 million from 2020-21 onwards, being the annual realisable staff savings and annual maintenance cost of the existing systems; and
- (d) **Recurrent notional savings** of \$153.60 million in 2019-20 and \$123.05 million from 2020-21 onwards, being an annual notional staff savings and annual cost required for the procurement of T/D booklets under the existing system.

FINANCIAL IMPLICATIONS

Capital Expenditure

14. It is estimated that implementation of the e-Passport-2 system will incur a total capital expenditure of \$357.83 million over five financial years from 2016-17 to 2020-21. The breakdown is as follows –

		(\$'000)					
	Items	2016-17	2017-18	2018-19	2019-20	2020-21	Total
(a)	Hardware	-	-	10,027	75,416	20,054	105,497
(b)	Software	-	-	8,025	56,451	16,051	80,527
(c)	Implementation, contract staff and consultancy services	1,545	4,352	10,704	57,476	14,466	88,543
(d)	Site Preparation	-	-	1,846	4,308	-	6,154
(e)	Consumables	-	-	-	44,451	-	44,451
(f)	Communication Network	-	-	-	131	-	131
(g)	Contingency	155	435	3,060	23,823	5,057	32,530
	Total	1,700	4,787	33,662	262,056	55,628	357,833

Other Non-Recurrent Cost

15. A total non-recurrent staff cost of \$49.95 million will be incurred for the planning, co-ordination and implementation of the project.

Recurrent Costs

16. The proposal will entail an annual recurrent expenditure of \$145.59 million in 2019-20, increasing to \$203.24 million from 2021-22 onwards. This covers the costs for hardware and software maintenance, on-going support and contract staff services, communications network, other consumables and T/D booklets. In addition, it will incur an annual recurrent staff cost of \$0.15 million in 2019-20 and \$0.29 million from 2020-21 onwards. Such requirement will be reflected in the estimates of the relevant years, with the breakdown as follows –

Items	(\$'000)		
	2019-20	2020-21	2021-22 and onwards
Recurrent Expenditure			
(a) Hardware Maintenance	-	9,320	18,640
(b) Software Maintenance	-	8,526	17,052
(c) Ongoing Support and Contract Staff Services	325	7,973	15,297
(d) Consumables	712	1,423	1,423
(e) Communication Network	3,064	4,085	4,085
(f) T/D Booklets	141,493	146,747	146,747
Total	145,594	178,074	203,244
Recurrent Staff Cost	146	291	291

ESTIMATED IMPLEMENTATION PLAN

17. The estimated schedule for implementing the proposed e-Passport-2 system is as follows –

<u>Activity</u>	<u>Estimated Schedule</u>
Seeking funding approval from the LegCo Finance Committee	Q4/ 2015
Tendering	Q1/2016 to Q3/2017
System Development and implementation	
System Analysis and Design	Q3/2017 to Q1/2018
System Development	Q2/2018 to Q1/2019
Site Preparation	Q3/2018 to Q3/2019
User Acceptance Test	Q2/2019 to Q4/2019
Training	Q3/2019 to Q4/2019
Production Rollout (by phase)	Q3/2019 to Q1/2020

ADVICE SOUGHT

18. Members' views are invited on our proposal to implement the e-Passport-2 system and on our plan to seek funding approval from the Finance Committee.

Security Bureau

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