Legislative Council Panel on Security

New Information Technology Infrastructure of the Immigration Department

PURPOSE

This paper seeks Members' support on the proposal to implement a new Information Technology Infrastructure (ITI) for the Immigration Department (ImmD).

BACKGROUND

2.   Since the 1980s, ImmD has introduced the use of information technology (IT) application systems to support its work in various areas, such as immigration control (e.g. e-Channels), personal documentation (e.g. e-Passport and Smart Identity Card System) as well as visa control and enforcement (e.g. Application and Investigation Easy System). The design of all ImmD's systems must ensure reliable and effective service to public, as well as a high degree of data security in view of the nature of their functions.

3.   ImmD's existing IT application systems are underpinned by an ITI which comprises an internal network connecting some 40 locations (including branch offices and boundary control points (BCPs)) to the data centre (DC) at ImmD's Headquarters, where the majority of data is stored and a large amount of daily processing is carried out at the mainframe system (introduced in the 1980s) and numerous midrange servers (introduced in the 1990s).

4.   There is also a backup system to maintain mission-critical services to public and to protect data in case the DC at the Headquarters goes down. This includes a Resilience Centre (RC) set up in the North District Government Offices in Fanling and the Disaster Recovery Centre service run by the Office of the Government Chief Information Officer (OGCIO) for the mainframe system.

JUSTIFICATIONS

5.   ImmD has been facing tremendous growth in service demand and new challenges in the last two decades, requiring additional processing and database capacity in both the servers at the DC at ImmD's Headquarters and the backup system. Based on the increasing trend in service demand and taking into account new projects under planning (e.g. opening of new BCPs) for the next few years, ImmD projects that the existing mainframe system will reach its processing capacity limit by 2015. The system will need to be enhanced before then.

6.   Meanwhile, other hardware and software in the existing ITI introduced a decade or more ago are becoming obsolete. Maintenance is becoming increasingly costly and difficult. Some hardware parts can no longer be procured at the market. Renewal of agreements with contractors for ongoing maintenance of the systems will become very costly, if not impossible. System reliability will be undermined without proper and professional support.

7.   At the same time, OGCIO will terminate its Disaster Recovery Centre service for mainframe systems by end 2014. Procuring an additional backup mainframe server will not be cost-effective since mainframe technology is also becoming obsolete.

8.   We hence propose to implement a new ITI to phase out the existing ITI in order to maintain reliable, convenient and secure IT support service to ImmD, as well as to meet the requirements for new service demand and provide better services through the application of up-to-date IT technologies.

9.   When implementing the new ITI, the existing system will run in parallel until the new system is thoroughly and robustly tested in order to maintain uninterrupted service to public and to achieve a smooth and secure transition. This renders the need of additional DC capacity. However, the existing DC at ImmD's Headquarters, which was designed and built in the 1980s, will reach its maximum operating capacity by around 2013 to 2014 and cannot be further expanded due to physical constraints.

10.   We therefore propose to acquire DC services available in the market for the phasing out of the mainframe. Apart from implementing the

new ITI, additional DC services will also be needed to support new business needs (e.g. opening of a few new BCPs starting from 2015) and the continuation of existing service (e.g. immigration clearance systems, e-Passport, Smart Identity Card System, etc.) and possible upgrading[1] for the IT application systems of ImmD implemented since the early 2000s, until the development of a new permanent DC for ImmD (tentatively being planned for commissioning by around 2018). We will separately consult the Legislative Council (LegCo) on these plans with further details in the near future.

11.   In addition to addressing the imminent need to replace the existing infrastructure, ImmD will also take this opportunity to leverage on the latest IT technologies (e.g. Service-Oriented Architecture Framework, advanced data encryption solution and Cloud computing technology, etc.) in order to achieve the following –

(a)   the migration from a mainframe system to a more scalable environment will allow much more efficient use of computer resources and provide room for expansion of service and capacities;

(b)   a new system architecture enabling more efficient recovery in the event of system failure to further improve resilience and stability of the mission-critical IT systems;

(c)   creation of a solid and robust foundation to enable more flexible upgrades of existing IT application systems in the next few years; and

(d)   up-to-date data encryption technology to ensure high-level protection to personal data.

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[1]   On the assumption that up-to-date technology (e.g. private Cloud computing technology) will be applied, the possible upgrading of the application systems in the future will not result in additional data centre requirements.

COST SAVINGS AND AVOIDANCE

12.　　Following the implementation of the project, the replacement and upgrading cost of the existing ITI of about $648.0 million on non-recurrent expenditure and $15.34 million on additional recurrent expenditure can be avoided, the details of which are as follows –

(a) the operation sustaining cost of the existing ITI of $580.2 million for upgrading the to-be obsolete infrastructure, service cost for external DC service and relocation cost;

(b) the procurement cost of $67.76 million for two new sets of mainframe systems for daily production and disaster recovery service; and

(c) the additional recurrent maintenance cost of $15.34 million for the replaced mainframe systems.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

13.　　We estimate that the implementation of the proposed new ITI will incur a total non-recurrent expenditure of $862.2 million, including $410.5 million for the new infrastructure and $451.7 million for the DC service, over eight years from 2012-13 to 2019-20. The breakdown is as follows –

<div align="center">($'000)</div>

Items	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	Total
(a) Hardware	-	116,516	10,498	30,016	4,192	4,192	18,862	1,048	185,324
(b) Software	-	46,806	1,366	2,458	190	190	1,600	48	52,658
(c) Communication Network	-	2,147	2,292	2,174	2,138	2,138	2,138	535	13,562
(d) Implementation Services	-	35,361	63,483	2,631	-	-	-	-	101,475
(e) Contract Staff	-	9,236	4,300	-	-	-	-	-	13,536
(f) Site Preparation	-	2,000	2,343	1,000	-	-	-	-	5,343
(g) Consumables	-	1,249	-	-	-	-	-	-	1,249

($'000)									
Items	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	Total
(h) Data Centre Service	6,586	39,252	56,264	63,663	68,695	72,464	76,087	7,719	390,730
(i) Data Centre Relocation	-	-	-	-	-	-	6,770	13,173	19,943
(j) Contingency	659	25,257	14,055	10,194	7,522	7,898	10,546	2,252	78,382
Total	**7,245**	**277,824**	**154,601**	**112,136**	**82,737**	**86,882**	**116,003**	**24,775**	**862,202**

Other Non-recurrent Cost

14.   In addition, a total non-recurrent staff expenditure of $65.70 million will also be incurred for the planning, co-ordination and implementation of the project. Such requirements will be reflected in the Estimates in the relevant years.

Recurrent Expenditure

15.   The proposal will entail an annual recurrent expenditure of $45.90 million.   This covers hardware and software maintenance, communications network cost and other system consumables arising from the new ITI. In addition, an annual recurrent staff cost of $5.818 million is also required to provide on-going support for those new components and features of the new ITI. Such requirements will be reflected in the Estimates of the relevant years, with the breakdown as follows –

($'000)								
Items	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Recurrent expenditure								
(a) Hardware	-	-	16,593	21,365	22,881	27,429	27,429	27,429
(b) Software	-	-	8,967	10,757	10,846	11,113	11,113	11,113
(c) Communication Network	-	2,046	5,293	5,498	6,112	6,112	6,112	6,112
(d) Consumables	-	-	1,249	1,249	1,249	1,249	1,249	1,249
Total	**-**	**2,046**	**32,102**	**38,869**	**41,088**	**45,903**	**45,903**	**45,903**
Recurrent staff cost	**-**	**-**	**4,364**	**5,818**	**5,818**	**5,818**	**5,818**	**5,818**

IMPLEMENTATION PLAN

16.   The implementation plan for the new ITI is summarized below –

Activity	Target Schedule
Seeking funding approval from the LegCo Finance Committee	December 2011
Procurement of hardware, software and services	April to December 2012
System analysis, design, implementation and mainframe migration	January 2013 to March 2014
User acceptance test and rollout	April to June 2014
Operation of additional DC service to sustain new ITI, and operation and upgrading of other IT application systems	January 2013 to June 2019
Migration of ImmD's IT application systems to permanent DC (being planned)	July 2018 to June 2019

ADVICE SOUGHT

17.   Members' views are invited on our proposal to implement the new ITI of ImmD and our plan to seek funding approval from the Finance Committee in December 2011.

Security Bureau
October 2011