

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 710 – COMPUTERISATION

Immigration Department

New Subhead “New Immigration Control System of the Immigration Department”

Members are invited to approve a new commitment of \$912,215,000 for the implementation of a new Immigration Control System for the Immigration Department.

PROBLEM

The Immigration Department (ImmD) needs to develop a new control point system, namely the Immigration Control System (ICONS), to enhance operational efficiency and effectiveness at immigration control points for meeting rising service demands.

PROPOSAL

2. The Director of Immigration, with the support of the Secretary for Security and the Government Chief Information Officer, proposes to create a new commitment of \$912,215,000 to implement ICONS.

JUSTIFICATION

Maintaining service quality with a mission-critical information systems strategy

3. Since the 1980s, ImmD has been adopting information technology to support its day-to-day operations. The existing set of control point systems, comprising the Entry/Exit Processing and Records System (EXPRESS), Automated Passenger and Vehicle Clearance Systems (APVCS/e-Channels),

Encl. 1

Face Recognition System (FACES) as well as Deployment Information and Command System (DICS), was implemented in phases from 2004 to 2006 under ImmD's second Information Systems Strategy (ISS-2)¹. This set of systems supports the highly demanding round-the-clock immigration control services for the heavy and fast growing passenger and vehicular traffic at ImmD's 13 control points. A brief account of the existing set of control point systems is at Enclosure 1.

4. To improve its service quality, ImmD commissioned consultants to conduct the third Information Systems Strategy (ISS-3) Review in March 2010 with a view to formulating a long-term information systems strategy. The Review recommended that ImmD should revamp its information technology infrastructure (ITI) to provide a platform for other new information technology initiatives under ISS-3. Riding on the new ITI, the Review also recommended that ImmD should consolidate and re-construct its existing set of control point systems into an integrated one, i.e. ICONS, to enhance its service quality and capacity to meet the challenging business requirements in the coming years.

Coping with increasing service demand

5. Hong Kong is one of the most popular international trade and tourism hubs with very heavy passenger traffic and visitor throughputs at control points. From 2007 to 2011, the number of visitors grew rapidly from 28.203 million to 41.931 million, with an average annual growth rate of 10.76%. Among these visitors, the number of Mainland visitors increased from 15.264 million to 27.882 million, with an average annual growth rate of 16.61%. In 2012, the number of visitors has further increased to 48.615 million (15.94% increase from 2011), of which 34.661 million were Mainland visitors (24.31% increase from 2011). ImmD foresees that the total number of visitors will continue to augment in the coming years, with increasing pressure on the handling capacity of its existing control point systems. With this anticipated growth, the handling capacity of existing systems would reach their limit by as early as 2016.

6. The heavy passenger traffic will be further amplified with the commissioning of new control points in the coming few years, including the Kai Tak Cruise Terminal, and the West Kowloon Terminus of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link, etc. An integrated system would be required to substantially improve the efficiency of ImmD in handling the massive passenger traffic.

/Adopting

¹ ISS-2 initiatives were introduced in 1999 and fully implemented in 2009 with a view to empowering the processing capacity of ImmD through the application of the latest information technology.

Adopting advance information and biometric technologies

7. The use of electronic travel documents (e-TD)² has become increasingly popular worldwide, given the rapid advancement in information and biometric technologies. ImmD estimates that over 60% of visitors will be holding e-TD by 2016, and over 90% by 2020. To capitalize on this trend, ICONS would strengthen immigration control with the latest technologies, such as authenticating travellers' identity through face recognition technology. Face recognition technology is a proven technology with a reliable degree of accuracy. It has been adopted in other advanced countries (e.g. Australia, Portugal, Germany and the United Kingdom) for automating immigration clearance purpose.

Need for timely replacement of the existing systems

8. Each ISS of ImmD is generally intended for meeting the service demand for a decade. While the existing set of control point systems has generally been capable of handling the current heavy passenger traffic, they were built on the hardware and technologies developed a decade ago. Its normal serviceable lifespan is expected to expire by the end of 2016. It is increasingly difficult for ImmD to effectively maintain the existing control point systems due to the ageing and obsolescence of both hardware and software. There is an imminent need for a timely replacement of the existing systems.

Benefits of ICONS

9. The implementation of ICONS aims to maintain uninterrupted, quality, and mission-critical clearance services to cope with the perennial growth of passenger traffic in the coming ten years and to support ImmD in introducing new immigration initiatives. It will enhance immigration clearance efficiency and effectiveness through further deployment of e-Channels and introduction of self-service departure for visitors holding e-TD; improve immigration control through face recognition technology; and strengthen the overall resilience of control point operations by flexible allocation and sharing of computer resources through adopting cloud computing and virtualisation technology, etc. It will also achieve synergy in the areas of IT resources utilisation, system monitoring,

/data

² e-TD refers to travel documents containing information in digital/electronic format in accordance with the standards set out by the International Civil Aviation Organisation. This information may be extracted to authenticate the identity of travellers by electronic means. The electronic Exit-Entry Permits for Travelling to and from Hong Kong and Macao targeted to be introduced by Mainland authorities by phase in 2013 and electronic passports are examples of e-TD.

data processing, and flexible deployment of manpower resources, etc. The above benefits will enable ImmD to continually maintain effective and efficient immigration control and service, which will be conducive to supporting Hong Kong's leading position as an international trade and tourism hub.

DETAILS OF THE PROPOSAL

10. The development of ICONS will –
- (a) upgrade and consolidate the hardware and software of the existing separate control point systems to sustain the smooth operation of immigration control points; upkeep service level against growing demand of service as well as meeting new business needs;
 - (b) upgrade over 430 existing e-Channels to multi-purpose e-Channels and introduce over 100 new multi-purpose e-Channels to enable flexible deployment of e-Channels services according to passenger traffic pattern. As multi-purpose e-Channels may also serve as Express e-Channels³ for Hong Kong residents, the overall handling capacity of control points will also be enhanced;
 - (c) improve immigration control for incoming visitors using e-Channels through face recognition technology in addition to the existing fingerprint authentication. In addition, by utilising face recognition technology, visitors holding e-TD will be able to perform self-service departure clearance through e-Channels. The number of departure counters may therefore be reduced, enabling re-deployment of manpower to perform other duties at control points;
 - (d) enhance resource management and operational efficiency of control points through internal information sharing and further automation of business processes (e.g. decision-support and case management); and
 - (e) upgrade system architecture to cater for future business needs and the commissioning of new control points.

/SAVINGS

³ ImmD introduced Express e-Channels in March 2009 to provide expedited e-Channel service to Hong Kong residents aged 18 or above upon voluntary enrollment. The clearance time for Express e-Channels is about eight seconds, which is four seconds faster than that of ordinary resident e-Channels. Currently, the service is only available at the Lo Wu Control Point.

SAVINGS AND COST AVOIDANCE

11. The implementation of ICONS will enhance productivity and reduce costs to the tune of \$955.748 million in 2016-17, totalling \$2,322.241 million by 2020-21. Details are as follows –

- (a) non-recurrent cost avoidance of \$765.854 million in 2016-17, being the cost otherwise required to revamp the existing control point systems reaching its normal serviceable lifespan;
- (b) recurrent cost avoidance of \$39.069 million in 2016-17 and \$52.092 million from 2017-18 onwards, being the additional recurrent cost otherwise required for the maintenance of the revamped systems mentioned in item (a) above;
- (c) recurrent staff cost avoidance of \$41.109 million in 2016-17 and increasing to \$189.734 million in 2020-21, being the staff cost that would otherwise be required if self-service departure clearance for visitors holding e-TD is not implemented;
- (d) realisable recurrent savings of \$80.684 million in 2016-17 and \$107.578 million from 2017-18 onwards, being the required maintenance cost of the existing control point systems; and
- (e) notional recurrent staff cost savings of \$29.032 million in 2016-17 and \$38.709 million from 2017-18 onwards arising from the reduction of existing traditional immigration counter services as some of the visitors holding e-TD will go for self-service departure clearance.

Encl. 2 12. A cost and benefit analysis for the implementation of ICONS is at Enclosure 2.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

13. We estimate that the implementation of ICONS will incur a total non-recurrent expenditure of \$912.215 million from 2013-14 to 2016-17. The breakdown is as follows –

/((\$'000)

		(\$'000)				
Items	2013-14	2014-15	2015-16	2016-17	Total	
(a) Hardware	-	8,228	103,005	419,620	530,853	
(b) Software	-	9,843	42,728	95,762	148,333	
(c) Implementation and Contract Staff Services	2,902	38,318	73,061	54,036	168,317	
(d) Site Preparation	-	-	8,864	8,864	17,728	
(e) Communication Network	-	1,271	2,172	-	3,443	
(f) Consumables and Other miscellaneous	-	-	-	102	102	
(g) Contingency	145	2,883	11,492	28,919	43,439	
Total	3,047	60,543	241,322	607,303	912,215	

14. On paragraph 13(a) above, the estimated expenditure of \$530.853 million is for the acquisition of computer hardware such as system servers, workstations, storage system, network equipment, e-Channel equipment, etc.

15. On paragraph 13(b) above, the estimated expenditure of \$148.333 million is for the procurement of new system and application software.

16. On paragraph 13(c) above, the estimated expenditure of \$168.317 million is for the acquisition of implementation services from external service providers and contract staff, including system analysis and design, development, testing and installation, etc.

17. On paragraph 13(d) above, the estimated expenditure of \$17.728 million is for site preparation, including computer room facilities, data ports and power points as well as trunking and cabling works.

18. On paragraph 13(e) above, the estimated expenditure of \$3.443 million is for the setup cost and rental charges of communication network.

19. On paragraph 13(f) above, the estimated expenditure of \$0.102 million is for the acquisition of start-up consumables, including backup media.

20. On paragraph 13(g) above, the estimated expenditure of \$43.439 million represents a 5% contingency on the cost items set out in paragraphs 13(a) to 13(f).

Other Non-recurrent Expenditure

21. The proposed implementation of ICONS will require a project team for project management, procurement of hardware, software and services, site preparation, installation support, security risk assessment and audit, system/user acceptance tests and implementation support. This will entail a non-recurrent staff cost of \$86.244 million from 2013-14 to 2016-17 as follows –

	2013-14	2014-15	2015-16	2016-17	Total
	\$'000	\$'000	\$'000	\$'000	\$'000
Staff cost	15,789	29,519	32,604	8,332	86,244

22. The staff cost represents a total of 840 man-months of immigration service grade staff, 229 man-months of IT professional grade staff and 78 man-months of clerical staff.

Recurrent Expenditure

23. We estimate that the annual recurrent expenditure arising from the project will be \$1.584 million in 2015-16, increasing to \$193.335 million from 2020-21 and onwards. This expenditure covers hardware and software maintenance, on-going support service, communication network and other system consumables. Such requirements will be reflected in the Estimates of relevant years, with the breakdown as follows –

/((\$'000)

Items	(\$'000)					
	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21 and onwards
Recurrent Expenditure						
(a) Hardware Maintenance	-	82,488	109,984	109,984	109,984	109,984
(b) Software Maintenance and Licences	-	23,116	30,822	30,822	30,822	30,822
(c) On-going Support Service	-	25,952	36,402	38,202	39,642	41,802
(d) Communication Network	1,584	10,722	10,722	10,722	10,722	10,722
(e) Consumables	-	5	5	49	5	5
Total	1,584	142,283	187,935	189,779	191,175	193,335
Recurrent Staff Cost	-	30,845	48,857	59,457	69,736	83,111

24. On paragraph 23(a) above, the estimated annual expenditure of \$109.984 million is for hardware maintenance to sustain the system.

25. On paragraph 23(b) above, the estimated annual expenditure of \$30.822 million is for software maintenance and licence fees to sustain the system.

26. On paragraph 23(c) above, the estimated annual expenditure of \$41.802 million is for on-going support service of the system.

27. On paragraph 23(d) above, the estimated annual expenditure of \$10.722 million is for communication network rental charges.

28. On paragraph 23(e) above, the estimated annual expenditure of \$0.005 million is for acquisition of consumables such as backup media.

29. In addition, it will incur an annual recurrent staff cost of \$30.845 million in 2016-17, increasing to \$83.111 million in 2020-21 for gate-keeping of the new e-Channels and related supervisory duties. This cost will be partly offset by the notional staff savings arising from the reduction of existing traditional immigration counter services as mentioned in paragraph 11(e) above.

IMPLEMENTATION PLAN

30. The proposed ICONS will be implemented according to the following schedule –

Activity	Target completion date
Procurement of Hardware, Software and Services	February 2014
System Development and Implementation	
System Analysis & Design	August 2014
System Development and Testing	May 2015
User Acceptance Testing	November 2015
Site Preparation	November 2015
Training	December 2015
Production Rollout (by phase)	June 2016

PUBLIC CONSULTATION

31. We consulted the Legislative Council (LegCo) Panel on Security on 4 December 2012. Members supported the proposal and its submission to the Finance Committee (FC) for the funding approval.

BACKGROUND

32. The ISS-3 Review recommended in March 2010 that ImmD should revamp its ITI to upkeep ImmD's service quality and enhance its handling capacity to cope with the substantially growing service demands. FC approved a new commitment of \$862.202 million for the project of "New Information Technology Infrastructure of the Immigration Department" on 9 December 2011. The system is planned to roll-out in June 2014.

33. Riding on the ITI, the ISS-3 Review also recommended, inter alia, the development of ICONS, to cope with future service demand and technological requirements in the area of immigration control, and to address the obsolescence and limited capacity of the existing set of control point systems. ImmD has completed the feasibility study (FS) on ICONS in July 2012, the conclusions of which have been duly reflected in the above proposal.

34. The ITI and ICONS are part of the eight strategic information technology projects formulated under the ISS-3 review to be implemented in a structured programme from 2012-13 to 2018-19. The eight ISS-3 projects are:

- (i) Next Generation ITI;
- (ii) ICONS;
- (iii) Visa Automation System;
- (iv) Assistance to Hong Kong Unit, Births, Deaths & Marriage, Right of Abode Decision Support System;
- (v) Next Generation Electronic Passport System;
- (vi) Next Generation Smart Identity Card System;
- (vii) Enforcement Case Processing System; and
- (viii) Human Resources Management System.

35. Given that the eight ISS-3 projects are inter-related and essential to ImmD's mission-critical operations, it is of paramount importance that they are implemented in full so as to achieve synergy and ensure the sustainability of ImmD's services. FS will be conducted, as appropriate, for all the ISS-3 projects which are complex and of a large scale as well as require deployment of new technologies and high degree of system integration. These FS, planned to be conducted in 2013-14, will identify the business needs and technical options, formulate the implementation plan and provide a cost-and-benefit analysis.

36. Implementation of ISS-3 would generate department-wide service improvement opportunities including further extension of self-service immigration clearance at control points. ImmD will separately consult LegCo on these plans with further details in due course.

ImmD's Existing Control Point Systems

This annex describes the existing set of control point systems of ImmD, namely Entry/Exit Processing and Records System (EXPRESS), Automated Passenger and Vehicle Clearance Systems (APVCS/e-Channels), Face Recognition System (FACES) and Deployment and Information Command System (DICS), now supporting 13 immigration control points.

EXPRESS

2. EXPRESS was implemented in June 2004 for ImmD to automate control clearance operations with round-the-clock availability at the immigration control points of HKSAR, including conducting background checking, record management and examination processing; maintaining passenger movement records; and automating further examination processing on passengers.

3. EXPRESS is now supporting 13 control points, namely:

Hong Kong International Airport	China Ferry Terminal
Harbour Control	Hung Hom
Lo Wu	Lok Ma Chau
Lok Ma Chau Spur Line	Macau Ferry Terminal
Man Kam To	Sha Tau Kok
Shenzhen Bay	Tuen Mun Ferry Terminal
Tuen Mun River Trade Terminal	

APVCS

4. APVCS was introduced by phase in 2004 (passenger clearance) and 2005 (vehicle clearance) providing self-service immigration clearance services to passengers and vehicle drivers with the use of advanced biometric and smart identity card technologies. The major functions of APVCS include automating the passenger clearance process using biometric technologies; and capturing movement records of passengers.

/FACES

FACES

5. FACES was implemented in 2006 to assist immigration officers in verifying the true identity of persons by employing face recognition technology. It provides functions for immigration officers to conduct checking on suspected passengers during the immigration clearance process. The system helps immigration officers to identify persons who attempt to circumvent immigration control by using multiple identities.

DICS

6. DICS was implemented in 2006 comprising closed circuit television function for the purposes of providing live view of passenger and vehicle flow at control points, as well as maintaining immigration clearance statistics and counter assignment information. It aims at enhancing frontline workforce and operations management at control points and facilitating management's monitoring of immigration clearance.

Cost and Benefit Analysis for the Implementation of the New Immigration Control System (ICONS)

	Cashflow (\$'000)								
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Total
Cost									
<u>Non-recurrent</u>									
Expenditure	3,047	60,543	241,322	607,303	-	-	-	-	912,215
Staff cost	15,789	29,519	32,604	8,332	-	-	-	-	86,244
Sub-total	18,836	90,062	273,926	615,635	-	-	-	-	998,459
<u>Recurrent</u>									
Expenditure	-	-	1,584	142,283	187,935	189,779	191,175	193,335	906,091
Staff cost	-	-	-	30,845	48,857	59,457	69,736	83,111	292,006
Sub-total	-	-	1,584	173,128	236,792	249,236	260,911	276,446	1,198,097
Total Cost	18,836	90,062	275,510	788,763	236,792	249,236	260,911	276,446	2,196,556
Savings									
<u>Non-recurrent</u>									
Cost avoidance	-	-	-	765,854	-	-	-	-	765,854
Sub-total	-	-	-	765,854	-	-	-	-	765,854
<u>Recurrent</u>									
Cost avoidance	-	-	-	-	-	-	-	-	-
Expenditure	-	-	-	39,069	52,092	52,092	52,092	52,092	247,437
Staff cost	-	-	-	41,109	95,117	130,598	157,528	189,734	614,086
Realisable savings	-	-	-	80,684	107,578	107,578	107,578	107,578	510,996
Notional savings	-	-	-	29,032	38,709	38,709	38,709	38,709	183,868
Sub-total	-	-	-	189,894	293,496	328,977	355,907	388,113	1,556,387
Total savings	-	-	-	955,748	293,496	328,977	355,907	388,113	2,322,241
Net savings	-18,836	-90,062	-275,510	166,985	56,704	79,741	94,996	111,667	125,685
Net cumulative savings		-108,898	-384,408	-217,423	-160,719	-80,978	14,018	125,685	