For discussion
on 4 December 2012

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Legislative Council Panel on Security

**New Immigration Control System (ICONS)
to Support Control Point Operation
of the Immigration Department**

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PURPOSE

      This paper seeks Members' support on the proposal to implement a new control point system, namely Immigration Control System (ICONS) to enhance operational efficiency at immigration control points.

BACKGROUND

2.   Since the 1980s, the Immigration Department (ImmD) has been strategically adopting information technology to support its day-to-day operations. The existing control point systems of the ImmD, comprising the Entry/Exit Processing and Records System (EXPRESS), Automated Passenger and Vehicle Clearance Systems (APVCS), Face Recognition System (FACES) as well as Deployment Information and Command System (DICS), were implemented by phases from 2004 to 2006 under ImmD's second Information Systems Strategy (ISS-2) Review. They enable the ImmD to provide mission-critical, efficient and round-the-clock immigration control services for the heavy and fast growing passenger and vehicular traffic via the 13 existing control points. A brief description of the existing control point systems is given at **Annex A** for reference.

3.   In March 2010, the ImmD commissioned consultants to conduct its third Information Systems Strategy (ISS-3) Review in order to formulate the long-term information systems strategy for the Department. The ISS-3 review recommended the ImmD to revamp its information technology infrastructure (ITI) to upkeep the ImmD's service quality and enhance its handling capacity to cope with the substantially growing service demands. Members of this Panel endorsed the proposal of the ImmD to develop a new

ITI and expand the capacity of its data centres 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.

4.   Riding on the new ITI, the ISS-3 Review also recommended, inter alia, to consolidate the existing EXPRESS, APVCS, FACES and DICS of the ImmD into one integrated control point system, i.e. ICONS, to tackle the obsolescence of software and hardware and handling capacity limitation of the existing control point systems, to sustain support to business operation at immigration control points and to address new business needs arising from the commissioning of new control points.   In accordance with the strategic direction set forth in the ISS-3 Review, the Administration has completed a feasibility study (FS) on ICONS in July 2012.   The conclusions of the FS have been duly reflected in the proposal of the ImmD below.

JUSTIFICATIONS

5.   The ImmD is facing rapid growth in visitor workload in the past five years with an average annual growth rate of 10.76%.   The growth is mainly attributable to increase in Mainland visitors, representing a five-year average annual growth rate of 16.61%.   While the existing control point systems have been providing effective support to handle such heavy passenger workload, they were built on technologies from about a decade ago and their major hardware and software are facing increasing difficulties in system maintenance and expansion due to ageing and obsolescence.   It is necessary for the ImmD to upgrade its major hardware and software under ICONS so that they will be compatible with the new ITI to be implemented in 2014 in order to meet future expansion need and technological advancement to cater for increasing workload in the years to come.

6.   In addition, with the introduction of new control points in the coming few years to tie in with the development of major infrastructure projects, including Kai Tak Cruise Terminal and West Kowloon Terminus of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link, the existing control point systems will reach their capacity limit and face limitation for further expansion.   The introduction of ICONS, riding on the new ITI, is therefore required to support the commissioning of future new control points.

7.   At the same time, the rapid advancement in information and biometric technologies, as well as the growing popularity of electronic travel documents (e-TD)[1] worldwide, have provided an opportune time for the ImmD to consolidate and improve its business operation at control points. The ImmD has looked into the feasibility of deploying latest technology, such as face recognition technology, for identification of passengers using the Automated Passenger Clearance System (e-Channels) in the FS of ICONS.   According to the FS, face recognition technology has reached high maturity and accuracy and is widely adopted in other advanced countries for automated border clearance purpose (e.g. Australia, Portugal, Germany, United Kingdom, etc.).   According to available information on the development of passport technology internationally, the ImmD estimates that over 60% of visitors will be holding e-TD by 2016 and would gradually increase to over 90% in 2020.   This underlines the possibility of further automation in the immigration clearance procedure through face recognition technology, including the introduction of Self-Service Departure (SSD) e-Channels to all departing visitors holding e-TD without prior enrolment, which will enhance immigration clearance efficiency and effectiveness.

8.   The implementation of ICONS aims to maintain uninterrupted, quality mission-critical clearance services, cope with the perennial growth of passenger traffic in the coming years and support the ImmD in introducing other new initiatives.   Specifically, it will –

(a)   upgrade and consolidate the hardware and software of the four existing control point systems to sustain the smooth operation of immigration control, to upkeep the service level against growing demand of service as well as to meet 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 cater for more flexible deployment of e-channels among visitors and residents according to passenger traffic pattern.   As multi-purpose e-channels may also serve as Express e-channels[2]

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[1] Electronic travel documents, which include electronic passports and electronic Exit-Entry Permits for Travelling to and from Hong Kong and Macao (targeted to be introduced by Mainland authorities by phases from 2013), refers to travel documents that contain biometric information (including machine-readable face images) which are compliant with the standards set out by the International Civil Aviation Organisation.   These machine-readable face images may be extracted to authenticate the identity of travellers by electronic means.

[2] 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.

for Hong Kong residents, the enhancement would also enable more efficient clearance and enhance the overall handling capacity of control points;

(c)   enhance immigration control for incoming visitors using e-channels through enabling face recognition technology in addition to fingerprint authentication. In addition, by utilising face recognition technology, visitors holding e-TD will be able to perform SSD clearance through e-Channels. The projected number of additional departure counters would be reduced proportionally, hence enabling re-deployment of manpower to perform other clearance-related duties;

(d)   enhance resource management and operational efficiency of control points through internal information sharing and further automation on business processes (e.g. decision-support and case management); and

(e)   upgrade the system architecture to cater for future business needs and the commissioning of new control points.

SAVINGS AND COST AVOIDANCE

9.   The successful implementation of ICONS will enable the ImmD to cope with 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 $765.854 million in 2016-17, being the cost required to revamp the existing control point systems, which will become obsolete soon, and to sustain its operations;

(b)   recurrent cost avoidance of $39.069 million in 2016-17 and $52.092 million from 2017-18 onwards, being the additional recurrent cost 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 required to cope with the growth of departing visitors if SSD 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 implementation of SSD clearance for visitors holding e-TD.   This notional staff savings will mainly be used to offset the staff requirements on additional gatekeepers and related supervisors for the SSD e-Channels.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

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

						($'000)
	Items	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**Total**
(a)	Hardware[3]	-	8,228	103,005	419,620	530,853
(b)	Software[4]	-	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	-	-	-	102	102
(g)	Contingency	145	2,883	11,492	28,919	43,439
	Total	**3,047**	**60,543**	**241,322**	**607,303**	**912,215**

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[3] Including the replacement of servers and workstations; enhancement of existing e-Channels; as well as procurement of new e-Channels.

[4] Including new application and database software.

Other Non-recurrent Cost

11.   A total non-recurrent staff expenditure of $86.244 million will also be incurred for the planning, co-ordination and implementation of the project.

Recurrent Cost

12.   The proposal will entail an annual recurrent expenditure of $1.584 million in 2015-16 and increasing to $193.335 million in 2020-21.   This covers hardware and software maintenance, daily support service, communication network costs and other system consumables.   In addition, it will incur an annual recurrent staff cost of $30.845 million in 2016-17 and increasing to $83.111 million in 2020-21 for gate-keeping of the new e-channels and related supervisory duties.   Such requirements will be reflected in the Estimates of the relevant years, with the breakdown as follows –

				($'000)			
Items		**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
Recurrent Expenditure							
(a)	Hardware	-	82,488	109,984	109,984	109,984	109,984
(b)	Software	-	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**

13.   The project is expected to deliver a total financial benefit of $2,322.241 million by 2020-21 mainly arising from cost avoidance to recruit additional staff and to sustain operation of existing control point systems.

14.   A cost and benefit analysis for the implementation of ICONS is provided at **Annex B** for reference.

IMPLEMENTATION PLAN

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

Task	Target Schedule
Seeking funding approval from the Finance Committee	Early 2013
Tendering	April 2013 to February 2014
System Development and Implementation	
System Analysis & Design	March to August 2014
System Development and Testing	September 2014 to May 2015
User Acceptance Testing	June to November 2015
Site Preparation	September to November 2015
Training	October to December 2015
Production Rollout (by phase)	December 2015 to June 2016

ADVICE SOUGHT

16.　　Members' views are invited on our proposal to implement ICONS for the ImmD and our plan to seek funding approval from the Finance Committee in early 2013.

Security Bureau
November 2012

ImmD's Existing Control Point Systems

This annex describes the existing control point systems of the ImmD, namely EXPRESS, APVCS, FACES and DICS.

Entry/Exit Processing and Records System (EXPRESS)

2.   EXPRESS was implemented in June 2004 for the ImmD to automate control clearance operations with round-the-clock availability at the immigration control points of HKSAR, including –

(a)   background checking, record management and examination processing;

(b)   capture, maintain and enquire passenger movement records; and

(c)   automate 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	

Automated Passenger and Vehicle Clearance Systems (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 are as follows –

(a)   automate the passenger clearance process using biometric technologies; and

(b)   capture movement records of passengers.

Face Recognition System (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.

Deployment and Information Command System (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									
Non-recurrent									
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
Recurrent									
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									
Non-recurrent									
Cost avoidance	-	-	-	765,854	-	-	-	-	765,854
Sub-total	-	-	-	765,854	-	-	-	-	765,854
Recurrent									
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**	