Panel on Security of the Legislative Council

**Implementation of projects of
an updated Information Systems Strategy
in the Immigration Department**

         This paper informs Members of the updated Information Systems Strategy (ISS-2) of the Immigration Department (ImmD) and the implementation plan of the Information Technology (IT) Infrastructure Upgrade Programme and the Immigration Control Automation System (ICAS) Enhancement Programme under the first phase of ISS-2.

BACKGROUND

Updated Information Systems Strategy

2.   ImmD's first ISS was formulated in 1991 and implemented fully in 1995. It yielded significant productivity gains that enabled ImmD to delete as many as 613 posts (equivalent to some $240 million per annum at 1999-2000 price level). In order to address the changing business environment of ImmD and to meet its long-term business needs, ImmD commissioned a consultancy study in 1999 to review its Information Systems Strategy. On completion of the review, the consultant recommended an updated ISS (ISS-2) which will enable ImmD to adequately meet the growing demands for public services of higher quality to be delivered at a lower cost in a more responsive manner. A rough estimate is that the implementation of ISS-2 will bring about tangible savings of some $430 million per annum[1].

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[1] This comprises the savings of $167 million per annum at 1999-2000 price level arising from the deletion of 425 posts; savings of $23 million per annum in accommodation arising from the conversion of paper records to digital format and redesign of training courses by using computer-based training; and the sustaining of savings of some $240 million per annum achieved by the deletion of 613 posts under the first ISS.

3.   The ISS-2 embodies 30 separate but inter-related projects. A list of these projects and their implementation plan are set out at Annex A.   18 of the projects aim to upgrade the information technology infrastructure and to improve the business processes and management of staff.   They are a pre-requisite for the delivery of the rest of the 12 projects which aim to provide information systems solutions to meet ImmD's business needs such as the issue of electronic visa/permit and automated passenger clearance, as well as to support Government initiatives such as Electronic Service Delivery[2].

4.   The 30 projects under ISS-2 are to be implemented according to a structured programme in six years starting from 2001-02. Since all the projects are inter-dependant, it is important that they are to be implemented in full as planned so as to achieve the synergy effect. For instance, we need to have smart ID Cards in place before we can pursue implementation of the automated passenger clearance project. Similarly, we need to upgrade the IT infrastructure before we can enhance the ICAS which supports the operations of the immigration control points.

5.   Feasibility studies are needed for 23 projects under ISS-2 which are complex, investment-intensive, of a large scale, and will require deployment of new technologies and a high degree of system integration.   Such studies are required to identify the technical options, formulate the implementation plan and determine the costs and benefits. Feasibility studies will not be required for the remaining seven projects, which are relatively minor and straight-forward.

6.   To date, feasibility studies for eight projects, namely the HKSAR Identity Card project, the Electronic Visit Permit Application System (Pilot) project, the IT Infrastructure Upgrade Programme (comprising four separate projects i.e. Project No. 4 to 7 at Annex A), and

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[2]   The Electronic Service Delivery Scheme, which is a key initiative of the "Digital 21" IT Strategy of the Government, aims to deliver high quality public services to the community in an innovative manner, improve the efficiency and reduce the cost of delivery of public services, and foster the development of electronic commerce in Hong Kong.   Under the Scheme, the public can obtain on-line services from Government departments and public agencies through different delivery channels, at all times.

the ICAS Enhancement Programme (comprising two separate projects i.e. Project No. 8 and 9 at Annex A) have been completed. Funding approval for the implementation of the first phase of the HKSAR ID Card was obtained from the FC in March 2001. Funding approval for the Electronic Visit Permit Application System (Pilot) project is being sought under the block vote "Head 710 Computerisation". As regards the IT Infrastructure Upgrade Programme and the ICAS Enhancement Programme, both the ISS-2 consultancy study and their respective feasibility studies have recommended that ImmD should pursue these two programmes as a matter of urgency and priority. The former affects all application systems of ImmD and its ability to use information technology, and the latter is a mission-critical component of the day-to-day immigration clearance service at the control points.

7.   We will commence the feasibility studies in respect of 15 other projects in three phases spanning from 2001 to 2004. We will need to seek funding from the FC for the implementation of these projects by phases.

The IT Infrastructure Upgrade Programme

8.   The IT Infrastructure Upgrade Programme aims to put in place a capable, reliable and scalable network with the necessary hardware and software to enable ImmD to cope with the increasing workload and to lay the requisite fundamental foundation for implementing various application system projects under the ISS-2.

9.   The existing IT infrastructure of ImmD which provides the essential infrastructural communication network and system architecture underpinning all the application systems of the department was designed in 1991. Some of the key components were put into use as early as 1993. The existing infrastructure is aging and becoming obsolete. For these reasons, the vendors of some major components, such as personal computers and their operating systems, have indicated that they will not provide maintenance support by 2004. Therefore, the existing infrastructure is experiencing increasing difficulty to support the existing application systems and cope with the growing processing needs. More importantly, it will not be able to support the new or enhanced application

systems to be introduced under the ISS-2. The infrastructure upgrade will address the deficiencies of the existing infrastructure in areas of network, mainframe and mid-range computers, resilience, information security, and infrastructure management and support.

The ICAS Enhancement Programme

10.   The ICAS supports the provision of immigration clearance services to travellers at control points. Designed in 1992 and implemented in 1995, the ICAS mid-range and personal computer platforms are becoming obsolete and its capacity is being stretched to the limit. As some key components will approach the end of their life expectancy (e.g. the optical character recognition readers used for immigration clearance [3]) and some are going to be outdated (e.g. the mid-range computers [4]), the system is running into the danger of having no maintenance support when most of the existing maintenance contracts expire in 2005. It will be very difficult to acquire compatible equipment, which is being phased out, in the market to cater for the setting up of new immigration control points. Bearing in mind that the passenger throughput at all the control points has been increasing at a rate of 40% during the past five years, it is expected that the existing ICAS will be unable to cope with the growth in workload at control points by 2004.

11.   The ICAS Enhancement Programme aims to maintain the availability of ICAS functions at a quality performance level despite the increases in workload as well as to uplift the system to the latest technology platform so that it can support and interface with ImmD's new initiatives to enhance the delivery of service at control points. Specifically, it will -

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[3] The optical character recognition readers are connected to the personal computers at immigration clearance counters and facilitate immigration clearance. Without these readers, the processing time for all passengers will be significantly lengthened.

[4] The mid-range computers at control points serve as a bridge between the mainframe computer in the headquarters and the personal computers at immigration control points and support the personal computers at control points. Failure of the mid-range computers means the system cannot perform many essential functions at the control points.

(a) replace the aging and obsolescent hardware and software so that the system can continue to function and will be able to cope with the growing workload up to at least 2008-09;

(b) upgrade the system architecture to cater for the establishment of new control points;

(c) support and interface with the Automated Passenger Clearance and Automated Vehicle Clearance projects;

(d) support Advance Passenger Processing and provide electronic communication services to the private sector including group tour operators and shipping companies to facilitate pre-clearance process;

(e) improve information security of the ICAS; and

(f) enhance the existing application functions so that immigration officers will be able to perform their job more accurately, effectively and efficiently.

BENEFITS

12. The successful implementation of the IT Infrastructure Upgrade Programme and the ICAS Enhancement Programme will enable ImmD to cope with the increasing service demands, improve the service to the public, establish a platform to enable the delivery of other ISS-2 projects, strengthen information security, facilitate electronic communication, and enhance the effectiveness of immigration control.

13. The current estimate is that the implementation of the IT Infrastructure Upgrade Programme will bring about cost avoidance of $65.9 million, which would otherwise be incurred in replacing obsolete and outdated components of the existing IT infrastructure to overcome the aging problems and to cater for growth in workload.

14. Implementation of the ICAS Enhancement Programme will enable ImmD to continue to sustain perennially the staff savings arising from implementation of the existing ICAS. Of the 613 posts retrenched

as a result of the first ISS, 328 posts (equivalent to $122 million per annum at 2001-02 price level) were attributable to the implementation of ICAS in 1995. Since then, workload at immigration control points has grown by some 40% while productivity has been improved correspondingly over these years. Assuming the workload will continue to grow at 9% per annum, by the time when the enhanced ICAS is put into operation in 2004-05, ImmD will be able to avoid the creation of 642 posts (equivalent to $239 million per annum at 2001-02 price level) which would otherwise be necessitated if work at control points is not supported by any ICAS.

15. Over and above the avoidance of costs mentioned above, there will be realizable savings upon the implementation of these two programmes of about $22.1 million per annum, which would otherwise be required for payment of maintenance costs for the existing hardware and software components which are fast becoming obsolete.

FINANCIAL IMPLICATIONS

16. The total cost for development and implementation of the two programmes is estimated to be $547.2 million over four years from 2001-02. We expect to be able to achieve break-even two years after the implementation of the programmes. The total cost may be broken down into the following components -

(a) <u>non-recurrent project expenditure</u> for the acquisition of computer hardware and software, implementation and contract staff services, site preparation, training, consumables and miscellaneous items and contingency (at 5%) 361.6

(b) <u>non-recurrent costs</u> for additional in-house staff and accommodation for system development 73.3

(c) <u>recurrent expenditure</u> up to 2005-06 112.3

Total 547.2

(The above does not include non-recurrent costs of $38.5 million for additional in-house staff and accommodation for conducting feasibility studies on the rest of ISS-2 projects.)

IMPLEMENTATION OF IT INFRASTRUCTURE UPGRADE AND ENHANCEMENT OF ICAS

17.   We aim to seek funding approval from the FC in respect of the IT Infrastructure Upgrade and ICAS Enhancement programmes after the summer recess. With funding approval, ImmD will start the development of projects under these two programmes in December 2001 with a view to rolling out an upgrade IT infrastructure in 2003-04 and an enhanced ICAS in 2004-05. Detailed implementation plans are set out at Annexes B and C respectively.

Security Bureau
22 June 2001

List of projects and macro implementation plan of the updated ISS

Phase	Project No.	Name of Project & Description	Implementation	Status
Phase 0 (1999-2000)	1	**HKSAR ID Card^D** To develop and implement the necessary infrastructure and application system for issuing new ID cards to the public.	May 2003	FS was completed in June 2000. With the funding approval obtained from the Finance Committee in March 2001, implementation of the first phase of the project has started.
Phase I (2000-01)	2	**Business Processing Re-engineering^E** To streamline and centralise work processes with the aim of significantly improving productivity, and bringing the greatest benefit from new and improved information systems.	Throughout the implementation of the updated ISS	Business process re-engineering studies have been conducted on application for extension of stay and visas; validation of right of abode claim; management of birth, death and marriage records. Studies on other areas will be mounted prior to implementation of the related information systems.
	3 (Part I)	**Electronic Visit Permit Application System (Pilot)^D** To introduce a new computer system for handling applications and issue visit permits to Taiwan visitors through electronic means. (The experience gleaned from this pilot scheme will be useful for subsequent implementation of Part II of the scheme to cover other categories of visitors.)	March 2002	FS was completed in November 2000. Implementation of the project is subject to funding approval from the Administrative Computer Projects Committee.

Note :

E denotes that the project is one of the 18 enabling projects.

D denotes that the project is one of the 12 delivery projects.

Phase I (2000-01)	4	**IT Infrastructure Upgrade Programme** **Mainframe Investment**[E] To upgrade the processing and storage capacity of the mainframe to meet the needs of the updated ISS applications.		
	5	**Midrange Investment**[E] To upgrade the server computers (which link the mainframe computer in the headquarters and the personal computers in outstations) to the current technology platform and to enhance processing power and storage capacity.		
	6	**Desktop Investment**[E] To provide suitable modern personal computers on the desktop for immigration officers handling various applications in the headquarters and to the officers manning the clearance counters and kiosks at immigration control points to facilitate their daily work.	August 2003	FS was completed in March 2001. Implementation of these projects is subject to funding approval from the Finance Committee.
	7	**Communications Network Investment**[E] To upgrade the communication network (a core IT infrastructure component shared by all ImmD applications now serving the immigration headquarters, 30 branch offices and 10 control points) to support the updated ISS applications and new offices and control points.		

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Phase I (2000-01)	8	**Immigration Control Automation System (ICAS) Enhancement Programme [D]** To enhance the existing system to address the aging and obsolescence problems and system limitation; and to raise the technology platform to support and interface with other initiatives of the updated ISS to improve the efficiency and effectiveness of operation of the immigration control points.	April 2004	FS was completed in April 2001. Implementation of the project is subject to funding approval from the Finance Committee.
	9	**with improvement on information security[D]** The opportunity will also be taken to improve data security of ICAS.		
	10	**IS Branch Organization Restructuring[E]** To restructure IS Branch (comprising 342 staff as at 1 April 2001) and strengthen it with IT staff professionals to make it ready to undertake the implementation of the updated ISS.	April 2001	With effect from 1 April 2001, the IS Branch of ImmD has been reorganised to integrate 48 IT professional grade staff (from ITSD) for even better coordination and effective implementation of the updated ISS. The second step of the restructuring will be to set up a dedicated division to drive the records management programme as recommended by the ISS Review.
Phase II (2001-02)	11	**Automated Passenger Clearance[D]** To enable the clearance of passengers securely using smart card and biometrics technologies without the aid of an Immigration Officer with a view to speeding up passenger flow and optimising staff usage.	2004-05	FS will be conducted in December 2001. Implementation of the project is subject to funding approval.
	12	**Data Warehousing (Management Information System)[D]** To provide user-friendly access to information held in ImmD databases and to make it readily available to ImmD management to aid their decision making, and to assist in the acquisition and deployment of resources more intelligently.	2004-05	FS will be conducted in December 2001. Implementation of the project is subject to funding approval.

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Phase II (2001-02)	13	**Capability Improvement Programme** **IS Process Improvement**[E] A comprehensive project to define the new processes for the restructured organisation to employ, and to train and support staff in their use. To equip the IS Branch with new and improved processes based on good IT industry practices, so that it can extend its management capability.		
	14	**IS Performance & Quality Measuring**[E] To establish a culture of regular measurement and target setting, and to use this as the means of driving quality improvement with a view to improving the effectiveness of the IS Branch. Specifically, the IS Branch will conduct monthly performance review of how well information systems are doing in relation to agreed performance measurements and to publish regular performance reports. This Branch will also establish a system defect reduction plan for its units.	2001-02	These initiatives will be pursued throughout the implementation of the updated ISS.
	15	**IS Strategy Project Office**[E] To set up a Project Office to conduct periodic reviews of the overall strategy, to adjust the implementation plan, and to obtain funding for successive Phases.		
	16	**Change Management**[E] To define the formal ImmD approach to pro-actively managing change throughout the organisation and to underpin the process re-engineering activity required to deliver the benefits of technology to the business.	2001-02	ImmD is focusing attention on all the implications of changes to be brought about by the updated ISS and will ensure that they will be adequately assessed and addressed throughout the implementation the updated ISS.

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Phase II (2001-02)	17	**Communication**[E] To communicate to the staff within ImmD to keep them informed of the progress of the implementation of the updated ISS and of the potential effects on business and people. The aim of this programme is to educate and inform all interested parties on a 'no surprises' basis to facilitate smooth implementation of the updated ISS.	2001-02	The communication has started and the effort will be sustained throughout the implementation of the updated ISS.
Phase III (2002-03)	18	**Enhancement of Processing Automation System (PAS)**[D] To enhance the system to meet the current business requirements and address current deficiencies of the PAS and to raise its technology platform to support the introduction of imaging for more efficient handling of applications for visas, entry permits and extension of stay. 19 **Integration of Supplementary Labour Scheme Information Management System (SIMS) into PAS**[D] The SIMS will be integrated with PAS to enable more effective maintenance of information on quotas of the importation of labour schemes.	2005-06	FS will be conducted in August 2002. Implementation of the project is subject to funding approval.
	20	**Electronic Records Programme** **File Conversion**[E] A programme of work to progressively convert a colossal volume of essential non-electronic records into electronic machine-readable format to support and enable business process re-engineering activity and new systems implementations. The records include visa, travel document and civil registration applications.	2005-06	FS will be conducted in April 2003. Implementation of the project is subject to funding approval.

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Phase III (2002-03)	21	**Imaging[E]** To exploit imaging technology and to implement imaging solutions in line with business requirements, namely, to make more information available to greater number of staff at faster speed and to achieve savings in staff and accommodation.		
	22	**Workflow[E]** To employ workflow tools and techniques to automate some business processes, in particular, those repetitive administrative procedures, with a view to improving the office efficiency	2005-06	FS will be conducted in April 2003. Implementation of the project is subject to funding approval.
	23	**Document Management[E]** To define and implement documentation management standards and practices in ImmD and to centralise document management under a single management responsibility with a view to improving information management and to enhance productivity.		
Phase IV (2003-04)	24	**Intranet Implementation[D]** To install an Intranet with increasing range of facilities and information for more speedy and effective communication among some 3000 ImmD staff. The project will improve staff productivity and morale.	2006-07	FS will be conducted in December 2003. Implementation of the project is subject to funding approval.
	25	**Electronic Service Delivery Support[D]** An ongoing programme to offer a wider range of information and services to the public via the Government ESD infrastructure.	2006-07	FS will be conducted in December 2003. Implementation of the project is subject to funding approval.
	26	**Automated Vehicle Clearance[D]** To automate vehicle clearance at land crossing points through the establishment of self-service kiosks using vehicle identification and biometrics technologies with a view to raising the overall vehicle throughput and reducing traffic congestion.	2006-07	FS will be conducted in February 2004. Implementation of the project is subject to funding approval.

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Phase IV (2003-04)	3 (Part II)	**Electronic Visa/Permit & Advance Passenger Processing [Full Version]**[D] To provide alternative means for travellers to Hong Kong to apply for and be issued with permits or visas which may be electronic or in hard copy to be delivered by new and more efficient methods. To utilise data captured at airline check-in to allow pre-checking of passengers and to facilitate passenger processing.	2006-07	FS will be conducted in February 2004. Implementation of the project is subject to funding approval.
	27	**Business Information**[E] To provide secure electronic access to essential documents required by ImmD officers in their day-to-day duties, and to the public via Electronic Services Delivery.	2006-07	FS will be conducted in April 2004. Implementation of the project is subject to funding approval.
	28	**Chinese Language Support**[D] To introduce Chinese language facilities into ImmD information systems wherever feasible and affordable.	2006-07	FS will be conducted in April 2004. Implementation of the project is subject to funding approval.
	29	**Personnel Support**[E] To provide systems, tools and facilities to support the ongoing training of ImmD personnel in both IT and business matters through the personnel training system and to provide a personnel information system in order to manage career progression and handle duty rostering for about 4,000 service staff.	2006-07	FS will be conducted in April 2004. Implementation of the project is subject to funding approval.
	30	**Additional Long Range Strategic Studies**[E] To explore in detail other possible strategic opportunities identified in the ISS Review with a view to bringing about cost saving and cost avoidance.	2006-07	ImmD will conduct these long range studies after implementing the time- and mission-critical initiatives under the updated ISS.

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IT Infrastructure Upgrade Programme

	Activity	*Expected Completion Date*
Stage 1	Upgrade of networks, provision of connectivity to the resilience centre and external networks, and commissioning of the infrastructure management and support facilities	
	Tendering	July 2002
	Analysis and design	November 2002
	Site preparation	April 2003
	Integration test	July 2003
	Implementation	August 2003
Stage 2	Extension of the upgraded infrastructure to support the control points	
	Analysis and design	April 2003
	Site preparation	August 2003
	Integration test	January 2004
	Implementation	February 2004
Stage 3	Extension of the upgraded infrastructure to support other sites	
	Analysis and design	January 2004
	Site preparation	February 2004
	Development	April 2004
	User acceptance test	September 2004
	Implementation	October 2004

ICAS Enhancement Programme

	Activity	*Expected Completion Date*
(a)	Tendering	August 2002
(b)	System design and development	October 2003
(c)	System testing	November 2003
(d)	User acceptance testing	February 2004
(e)	Site preparation	March 2004
(f)	Training	May 2004
(g)	Roll-out to control points (by phases)	June 2004 (starting from April 2004)