**For discussion
on 6 May 2008**

Legislative Council Panel on Security

**Development of the Third Generation of
Major Incident Investigation and Disaster Support System**

PURPOSE

      This paper seeks Members' support for the development of the Third Generation of Major Incident Investigation and Disaster Support System (MIIDSS3) for the Hong Kong Police Force (HKPF) to replace the existing Second Generation of Major Incident Investigation and Disaster Support System (MIIDSS2), which is becoming obsolescent and is unable to effectively cope with the increasingly complex demands arising from major incident investigations and disaster support operations.

BACKGROUND

2.   The MIIDSS, first acquired in 1990 at a capital cost of $5.403 million, was a system capable of analysing and processing a large volume of raw information data in major incident investigations and major disaster support operations. Typically, the system was deployed to assist in the investigation of serious and complex crimes and victim identification, as well as in handling casualty enquiries and victim identification following major disasters, such as the Garely Building fire in 1996 and the aircraft crash at the Hong Kong International Airport in 1999.

3.   Due to system limitation and technology obsolescence, HKPF replaced MIIDSS by MIIDSS2 in 2001 at a capital cost of $6.810 million. The new system has a larger processing capacity, supports more users and performs better in terms of efficiency and accuracy in data capture. A workstation has been installed in the Centre for Health Protection (CHP) since February 2007 to support the Department of Health during major epidemic outbreaks. For illustration, MIIDSS2 was deployed to support the relevant departments in handling the aftermath of the fatal bus crash on Tuen Mun Highway in 2003, in contact tracing analysis during the SARS outbreak in 2003 and in tracking Hong Kong residents suspected of missing in the South Asia Tsunami Disaster in 2004.

THE NEED TO REPLACE MIIDSS2 WITH MIIDSS3

4.   MIIDSS2 faces the following system problems and limitations –

(a)   The computer technologies and system design adopted by MIIDSS2 are outdated. Maintenance support services from some of the software suppliers are no longer available. In addition, the maintenance cost for MIIDSS2 is on a rising trend. For illustration, the annual maintenance cost for an outdated desktop workstation of MIIDSS2 in 2007 was $2,200; compared with $300 for a more advanced notebook computer available in the market in 2007. Following a 11% increase in the total maintenance cost in 2007-08 over 2006-07, we expect that maintenance expenses for MIIDSS2 will continue to increase by over 10% annually.

(b)   The operating environment for investigations of major crimes has become more sophisticated in recent years. Detection of serious and complex crimes nowadays involves the analysis of a massive volume of data in different formats and media (e.g. CCTV footage, DNA profiles, electronically stored transaction records, etc.). Some of them can only be retrieved with the latest technology which is beyond the capability of MIIDSS2.

(c)   MIIDSS2 is capable of automatic information indexing which is of immense assistance in investigations of major incidents or disasters. However, such functionality relies on manual inputting of data by specially trained staff according to a structured database design. This inputting process is very labour-intensive. Moreover, to maximise the effectiveness of the system for automatic indexing and subsequent analysis, the pre-designed data fields have to be modified should there be any mismatch with the data to be captured.

(d)   MIIDSS2 was designed primarily for crime investigation and major disaster support operations, but not communicable disease outbreaks. While it rendered indispensable service during the SARS outbreak, recent tests conducted on the system conclude that the existing system would not be able to cope with the demands arising from a possible large-scale epidemic (e.g. avian flu outbreak) involving more than 200 000 personal records.

5.   To maintain the capability of HKPF in investigating complex crimes and in handling major incidents and disasters, it is necessary to update the computer system design of MIIDSS2 so that it can continue to perform complicated data analysis in support of crime investigations and disaster relief operations.

THE PROPOSED SYSTEM

6.   We propose to replace the existing MIIDSS2 with a new MIIDSS3 with the following improved functions –

    (a) **Enhanced efficiency in data collection**

        User-friendly e-forms will be used to avoid duplicate effort in filling manual forms and corresponding re-input of data into the computer system. Data exchange between cooperating parties such as CHP will be conducted electronically, thus enhancing the speed and accuracy of data transfer. To further streamline data inputting, automatic devices for capturing data will be introduced. For example, Radio Frequency Identification and biometric identification technology will be adopted for tracking of specified persons and properties seized during major incidents.

    (b) **Enhanced operational and investigative capabilities for crime detection**

        MIIDSS3 will have an updated design with advanced technologies to support the investigation of complex crime cases. Provision of free text search and data mining capability (including Chinese text) will enhance the effectiveness in identifying leads in crime investigation. The system will also be equipped with powerful analysis tools to assist users in identifying useful information and data correlation from the vast amount of raw data collected. With the enhanced capability of MIIDSS3, the processing time will be shortened, thus improving the availability and performance of the new system.

(c) **Expandability of system capacity**

In case there is a sudden upsurge of workload (e.g. unplanned but time-critical deployment of MIIDSS3 to assist CHP in contact tracing) that exceeds the regular capacity of the system, the proposed system will be able to interoperate with other available computing resources of HKPF (such as disaster recovery servers) so as to increase the overall capacity of the system. Such design is considered the most cost-effective solution to cater for major unforeseen operations that involve unpredictable workload.

(d) **Improved flexibility in overseas deployment**

MIIDSS3 will be equipped with commonly adopted and widely compatible communication equipment that would facilitate its connectivity with overseas telecommunication systems. As a result, the system can be utilised to assist disaster support operations overseas.

(e) **Conformity to Interpol standard**

The data structure of MIIDSS3 will conform to the Interpol standard on disaster victim identification, thus facilitating the electronic exchange of victim data in major disaster overseas involving Hong Kong residents.

(f) **Better system utilisation**

The enhanced system design of MIIDSS3 will support a larger user population of frontline investigation officers, from 70 workstations covering 14 police formations in the existing system to 108 workstations covering 28 police formations in the proposed system. The wider availability of the new system will enhance the overall quality of policing work.

7.   Equipped with more sophisticated technologies, MIIDSS3 will improve the overall effectiveness and efficiency in the investigation of complex crime cases and disaster management. In addition, MIIDSS3 will continue to serve as an important tool to assist DH in performing contact tracing analyses during major epidemic outbreaks.

8.　　　The proposal to redevelop the existing MIIDSS2 has the support of the Office of the Government Chief Information Officer.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

9.　　　Based on market surveys, we estimate that the implementation of MIIDSS3 will require a non-recurrent cost of $44.090 million over a four-year period from 2008-09 to 2011-12, of which $41.950 million will be capital expenditure and $2.140 million for project management and staff training.　A breakdown is at **Annex A**.　In addition, the implementation of the project will entail a non-recurrent staff cost of $5.935 million, involving a total of 109 man-months of police officers and information technology staff, for managing the project.　HKPF will absorb the non-recurrent staff cost through internal redeployment.

Recurrent Expenditure

10.　　　We estimate that the annual recurrent expenditure for the proposed system is $5.710 million in a full year from 2012-13 onwards.　A breakdown is at **Annex B**.　This recurrent cost will be partly offset by the savings mentioned in paragraph 11(a) below and the net additional recurrent expenditure of $5.309 million in a full year will be absorbed from within the existing resources of HKPF.

Cost Savings / Avoidance

11.　　　We estimate that the implementation of the proposed MIIDSS3 will bring about annual savings of $ 1.383 million in a full year from 2011-12 onwards, comprising –

      (a)   realisable savings of $401,000 a year, being the maintenance cost of the existing MIIDSS2.　The savings will be used to cover part of the recurrent cost of the proposed MIIDDS3;

      (b)   notional savings of $525,000 a year, mainly due to savings in staffing costs arising from more efficient data inputting for MIIDSS3 with the use of e-forms; and

(c)   cost avoidance of $457,000 a year, arising mainly from the adoption of advanced technology (e.g. data warehouse, data mining and text mining tools) to cope with the increase in complexity in major incident analysis. The actual deployment of manpower resources in each major incident analysis operation will be reduced as a result of the enhanced technological capability of MIIDSS3.

The notional savings are scattered among different formations of HKPF. The savings (in staff time of police officers spent in data inputting and case analysis) will be redeployed to speed up the process of case investigation and to enhance the quality of case investigations

12.   In addition to the annual savings set out in paragraph 11 above, we anticipate that there will be notional savings and cost avoidance for each major disaster support operation arising from the enhanced functions and operational efficiency of the new system. The actual savings and cost avoidance would depend on the scale of the disaster and the scope of the support operation. At present, the staff resources involved in such ad hoc disaster support operations are redeployed temporarily from other police formations. With the commissioning of MIIDSS3, such temporary redeployment and disruption to the operation of other police formations can be minimised.

IMPLEMENTATION PLAN

13.   Subject to Members' view, we plan to seek funding approval from the Finance Committee in June 2008 with a view to implementing the proposed MIIDSS3 by September 2011. The detailed implementation plan is at **Annex C**.

Security Bureau
Hong Kong Police Force
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Non-recurrent Expenditure for the Proposed System

Cost Item		2008-09 $'000	2009-10 $'000	2010-11 $'000	2011-12 $'000	Total $'000
(a)	Hardware including acquisition of workservers, workstations and printers	-	2,324	4,648	4,648	11,620
(b)	Software including operating system, database management software, data warehouse, data mining software, etc.	-	4,710	9,420	9,420	23,550
(c)	Communication network equipment	-	62	124	124	310
(d)	System development including system installation, customisation and development of new system and project implementation	-	1,068	2,136	2,136	5,340

(e)	Contract staff services for necessary support for management and overall project implementation Note 1	440	400	400	400	1,640
(f)	Site preparation including electricity supply facilities, trunking and cabling	160	720	160	-	1,040
(g)	Training of trainers, end-users and system administrators	-	100	200	200	500
(h)	Consumables for start-up	-	18	36	36	90
	Total	**600**	**9,402**	**17,124**	**16,964**	**44,090**

Note 1   The proposal also entails non-recurrent staff cost of $5,935,000. It represents the internal staff efforts of one Chief Superintendent for two man-months, one Superintendent for two man-months, two Chief Inspectors for six man-months, one Sergeant and three Police Constables for 18 man-months, one Chief System Manager for two man-months, one Senior System Manager for six man-months and one Analyst Programmer I for 13 man-months for collecting user requirements, planning and monitoring the project, quality assurance, user acceptance and change management. These additional internal staff efforts will be absorbed by HKPF through internal redeployment.

Recurrent Expenditure for the Proposed System [Note 1]

Cost item	2010-11 $'000	2011-12 $'000	2012-13 and onwards $'000
(a) Hardware maintenance for servers, workstations, printers, etc.	-	1,130	1,200
(b) Software license subscription and maintenance of operating system, database management software, data warehouse software, data mining software, text mining software etc.	-	3,290	3,370
(c) Rental of communication data lines	780	780	780
(d) Consumables	-	360	360
Total	**780**	**5,560**	**5,710** [Note 2]

[Note 1] The project also entails recurrent staff cost of $334,000 a year, representing 1.2 man-months of Analyst Programmer I and 6 man-months of Analyst Programmer II for providing contract administration for the proposed system and performance monitoring of vendor, which is the same amount as that for the existing MIIDSS2. This will be met by redeploying existing staff efforts in supporting MIIDSS2.

[Note 2] As the realisable savings of $401,000 mentioned in para.11(a) above will be used to cover part of the recurrent expenses of MIIDSS3, the estimated additional recurrent expenditure of the proposal in a full year will be $5,309,000 a year.

**Tentative Implementation Schedule of
the Development of MIIDSS3**

	Activity	**Target Completion Date**
(a)	Tendering for the supply of hardware, software and implementation services	March 2009
(b)	System analysis and design of MIIDSS3	September 2009
(c)	System development and roll-out of MIIDSS3 Phase 1 (i.e. migration of existing MIIDSS2 to MIIDSS3)	December 2010
(d)	System implementation and roll-out of MIIDSS3 Phase 2 (i.e. provision of enhanced new functions such as data warehouse, data mining, text mining, etc.)	September 2011