

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 710 – COMPUTERISATION

Hong Kong Police Force

New Subhead “Development of the Third Generation of Major Incident Investigation and Disaster Support System”

Members are invited to approve a new commitment of \$43,980,000 for developing the Third Generation of Major Incident Investigation and Disaster Support System of the Hong Kong Police Force.

PROBLEM

The existing Second Generation of Major Incident Investigation and Disaster Support System (MIIDSS2) of the Hong Kong Police Force (HKPF) is becoming obsolescent and is unable to effectively cope with the increasingly complex demands arising from major incident investigations and disaster support operations. Without a replacement system for MIIDSS2, the efficiency and effectiveness of HKPF in investigating complex crimes and in handling major incident and disaster relief operations will be seriously affected, and the capability of the Department of Health (DH) in contact tracing during epidemic outbreaks compromised.

PROPOSAL

2. The Commissioner of Police (CP), with the support of the Secretary for Security and the Government Chief Information Officer, proposes to create a new commitment of \$43,980,000 to replace MIIDSS2 by the Third Generation of Major Incident Investigation and Disaster Support System (MIIDSS3).

/JUSTIFICATION

JUSTIFICATION

The Existing MIIDSS2

3. MIIDSS, first acquired in 1990, 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, 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.

4. Due to system limitation and technology obsolescence, HKPF replaced MIIDSS by MIIDSS2 in 2001. MIIDSS2 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 DH 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 Severe Acute Respiratory Syndrome (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

5. 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 an 11% increase in the total maintenance cost in 2007-08 over 2006-07, we expect that the maintenance expenses for MIIDSS2 will continue to increase by over 10% annually.
 - (b) The operating environment for investigation of major crimes has become more sophisticated in recent years. Detection of serious and complex crimes nowadays involves analysis of a massive volume of data captured in different formats (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)

- (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 contact tracing during 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 possible large-scale epidemic outbreaks where, as a planning parameter, analysis of more than 900 000 relationship records is required.

6. 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 by developing MIIDSS3 so that the system can continue to perform complicated data analysis in support of crime investigations and disaster relief operations, hence better meet the latest business and operational requirements of HKPF.

The Proposed System and its Benefits

7. We propose to replace 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 (RFID) and biometric identification technology will be adopted for tracking of specified persons and properties seized during major incidents.

/(b)

- (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. In terms of staff time, 2 588 police man-hours a year will be saved and as a result of the introduction of new functions, an additional 2 250 police man-hours a year will be avoided.

- (c) Expandability of system capacity

In case there is a sudden upsurge of workload (e.g. non-scheduled but time-critical deployment of MIIDSS3 to assist CHP in contact tracing during epidemic outbreaks) 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 standard on disaster victim identification introduced by Interpol in 2005, thus facilitating the electronic exchange of victim data in major disaster overseas involving Hong Kong residents.

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(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. At the same time, the design of the system in terms of access and use control will be further enhanced so that the security of the data stored in the system would not be affected by the expanded coverage of the system.

8. 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.

Cost Savings/Avoidance

9. We estimate that the implementation of the proposed MIIDSS3 will bring about annual savings of \$1,383,000 in a full year from 2011-12 onwards, comprising –

(a) Realisable savings of \$401,000 per annum

The realisable savings will come from the maintenance cost of MIIDSS2. The savings will be used to cover part of the recurrent expenditure of the proposed MIIDSS3 detailed in paragraph 22 below.

(b) Notional savings of \$525,000 per annum

With the enhanced functions mentioned in paragraph 7 above, notional savings in staff cost will be achieved through more efficient data inputting with the use of e-forms and more powerful data analysis of MIIDSS3. The notional savings will be scattered among different formations of HKPF and will be redeployed to speed up the process of case investigation and to enhance the quality of case investigations. A detailed breakdown of the estimated notional savings is at Enclosure 1.

(c) Cost avoidance of \$457,000 per annum

The cost avoidance will arise 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. A detailed breakdown of the estimated cost avoidance is at Enclosure 2.

Encl. 2

10. In addition to the annual savings set out in paragraph 9 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.

Cost and Benefit Analysis

11. A cost and benefit analysis on the development of MIIDSS3 is at Enclosure 3.

Encl. 3

FINANCIAL IMPLICATIONS**Non-recurrent Expenditure**

12. We estimate that the proposed development of MIIDSS3 will require a total non-recurrent expenditure of \$43,980,000 over a period of four years from 2008-09 to 2011-12, broken down as follows –

	2008-09	2009-10	2010-11	2011-12	Total
	\$'000	\$'000	\$'000	\$'000	\$'000
(a) Hardware	-	2,324	4,648	4,648	11,620
(b) Software	-	4,710	9,420	9,420	23,550
(c) Communication network	-	62	124	124	310

/(d)

	2008-09 \$'000	2009-10 \$'000	2010-11 \$'000	2011-12 \$'000	Total \$'000
(d) Implementation services	-	1,068	2,136	2,136	5,340
(e) Contract staff	420	370	370	370	1,530
(f) Site preparation	160	720	160	-	1,040
(g) Training	-	100	200	200	500
(h) Consumables	-	18	36	36	90
Total	580	9,372	17,094	16,934	43,980

13. On paragraph 12(a) above, the estimate of \$11,620,000 is for the acquisition of computer hardware, including servers, workstations and printers.

14. On paragraph 12(b) above, the estimate of \$23,550,000 is for the acquisition of computer software, including operating system software, database management software, data warehouse and mining software, and personal computer software.

15. On paragraph 12(c) above, the estimate of \$310,000 is for the acquisition of network equipment to upgrade the existing network of HKPF to cater for the increased workload of the new system.

16. On paragraph 12(d) above, the estimate of \$5,340,000 is for system implementation services, including system installation, customisation and development of new system, and project management.

17. On paragraph 12(e) above, the estimate of \$1,530,000 is for engaging two contract staffs to supplement the in-house project management team, for a duration of 24 months and 32 months respectively, to provide support in project planning, procurement, system acceptance and contract management.

18. On paragraph 12(f) above, the estimate of \$1,040,000 is for preparing the site for accommodating the servers and equipment, including provision of electricity supply facilities, trunking and cabling.

19. On paragraph 12(g) above, the estimate of \$500,000 is for training of trainers, end-users and system administrators on new system functions and system administration.

20. On paragraph 12(h) above, the estimate of \$90,000 is for the acquisition of start-up consumables such as backup tapes, toner cartridges, printer toners, batteries and RFID tags.

Other Non-recurrent Expenditure

21. The development of the proposed MIIDSS3 will also entail an additional non-recurrent staff cost of \$5,935,000. The cost represents a total of 109 man-months of police officers and information technology staff^{Note} for collecting user requirements, planning and monitoring the project, quality assurance, user acceptance and change management. HKPF will absorb the requirement through internal redeployment.

Recurrent Expenditure

22. We estimate that the recurrent expenditure arising from the project will be \$5,710,000 per annum from 2012-13 onwards, broken down as follows –

	2010-11 \$'000	2011-12 \$'000	2012-13 and onwards \$'000
(a) Hardware maintenance	-	1,130	1,200
(b) Software licence and maintenance	-	3,290	3,370
(c) Communication network	780	780	780
(d) Consumables	-	360	360
Total	780	5,560	5,710

/23.

^{Note} Including 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.

23. On paragraph 22(a) above, the estimated annual expenditure of \$1,200,000 is for the provision of hardware maintenance for servers and workstations.

24. On paragraph 22(b) above, the estimated annual expenditure of \$3,370,000 is for the licence fees and maintenance expenses for the system software.

25. On paragraph 22(c) above, the estimated annual expenditure of \$780,000 is for the rental of communication data lines and maintenance of additional network equipment.

26. On paragraph 22(d) above, the estimated annual expenditure of \$360,000 is for the acquisition of consumables such as toners for printer and tapes for data backup.

27. As compared with MIIDSS2, MIIDSS3 will incur an additional recurrent expenditure of \$5,309,000 per annum from 2012-13 onwards. The increase is mainly due to the high expenses for annual licence fees for the sophisticated software such as analytical tools and data and text mining software, as well as their annual maintenance charges, plus the maintenance cost for expanded system hardware. HKPF will absorb the additional recurrent expenditure from within its existing resources.

28. The proposed project will also entail a recurrent staff cost of \$334,000 per annum, representing a total of 7.2 man-months of information technology staff for providing contract administration and performance monitoring of vendor, which is the same amount as that for MIIDSS2. HKPF will redeploy the existing staff effort to provide daily support to the proposed system. No additional recurrent staffing will be required.

IMPLEMENTATION PLAN

29. We plan to implement the development of MIIDSS3 according to the following schedule –

/Activity

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 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

30. Upon completion of the MIIDSS3 project, the hardware of MIIDSS2 will be traded-in. Before the contractor removes the hardware from HKPF's premises, the hard disk will be degaussed to ensure that data stored therein are destroyed permanently. The contractor will also be required to dispose of the parts in an environmentally friendly manner.

PUBLIC CONSULTATION

31. We consulted the Legislative Council Panel on Security on the proposal on 6 May 2008. Members generally supported the proposal and raised no objection to submitting it to the Finance Committee for funding approval.

OTHER PROPOSALS CONSIDERED

32. Apart from replacing MIIDSS2 with a new system, CP has also considered the option of enhancing the existing system to accommodate the new operational requirements and continuous growth of data. However, the sole supplier for the MIIDSS2 application advised that since the technology adopted by MIIDSS2 is obsolete, it is unable to support the enhanced functions required, and partial replacement or upgrading of MIIDSS2 to meet the new requirements is not feasible. Therefore, CP considers that developing MIIDSS3 is the only feasible option.

/BACKGROUND

BACKGROUND

33. HKPF acquired MIIDSS in 1990 at a capital cost of \$5,403,000 to assist in major incident investigations and major disaster support operations. Due to system limitation and technology obsolescence, HKPF replaced MIIDSS by MIIDSS2 in 2001 at a capital cost of \$6,810,000.

Security Bureau
May 2008

Notional savings arising from the proposed system

Work process which brings about the savings	No. of Police Constable post involved	Savings \$'000
(a) Inputting raw data from pre-designed form	0.489	183
(b) Handling data import and export	0.459	171
(c) Processing data analysis and query	0.459	171
Total	1.407	525

Cost avoidance arising from the proposed system

	Work process which brings about cost avoidance	No. of Police Constable post involved	Cost avoidance \$'000
(a)	Detecting interested subjects (e.g. person, car etc.) automatically from video (e.g. CCTV footage)	0.306	115
(b)	Capturing raw data from hardcopy of document	0.459	171
(c)	In-depth analysis of raw data by sophisticated tools	0.459	171
	Total	1.224	457

Cost and Benefit Analysis for the Proposed System

	Cash flow (\$'000)								
	2008-09	2009-2010	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Total
Cost									
Non-recurrent									
- Expenditure	580	9,372	17,094	16,934	-	-	-	-	43,980
- Staff Cost	1,370	1,826	1,826	913	-	-	-	-	5,935
Sub-total	1,950	11,198	18,920	17,847	-	-	-	-	49,915
Recurrent									
- Expenditure	-	-	780	5,560	5,710	5,710	5,710	5,710	29,180
Sub-total	-	-	780	5,560	5,710	5,710	5,710	5,710	29,180
Total Cost	1,950	11,198	19,700	23,407	5,710	5,710	5,710	5,710	79,095
Savings									
Realisable Savings	-	-	100	401	401	401	401	401	2,105
Notional Savings	-	-	131	525	525	525	525	525	2,756
Cost Avoidance	-	-	114	457	457	457	457	457	2,399
Total Savings	-	-	345	1,383	1,383	1,383	1,383	1,383	7,260
Net Savings	-1,950	-11,198	-19,355	-22,024	-4,327	-4,327	-4,327	-4,327	-71,835
Net Cumulative Savings	-1,950	-13,148	-32,503	-54,527	-58,854	-63,181	-67,508	-71,835	
