

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 710 – COMPUTERISATION

Social Welfare Department

New Subhead “Establishment of the Next Generation Information Technology Infrastructure”

Members are invited to approve a new commitment of \$175,767,000 for establishment of the next generation information technology infrastructure for the Social Welfare Department.

PROBLEM

The existing information technology infrastructure (ITI) of the Social Welfare Department (SWD) is approaching the end of its serviceable lifespan with some of its key components becoming obsolete. The system, which was designed years ago, is not flexible enough for SWD to cope with the up-to-date operational requirements for provision of social welfare services through various information technology (IT) systems and services.

PROPOSAL

2. The Director of Social Welfare, with the support of the Secretary for Labour and Welfare and the Government Chief Information Officer, proposes to create a new commitment of \$175,767,000 to establish a Next Generation ITI. It seeks to maintain a reliable and secure IT platform for SWD to meet its existing and future business and operational requirements effectively.

/JUSTIFICATION

JUSTIFICATION

Constraints of the Existing ITI

3. The existing ITI of SWD was set up in 2005. It includes data centres, network, file servers, personal computers, email system, security system and system management facilities, etc. to support the operation of about 5 600 staff members at 238 SWD offices over the territory. The ITI also enables the development and daily use of over 50 IT application systems to cater for the business needs of SWD for delivery of a wide range of quality welfare services.

Lack of technical support for obsolete components

4. Having been in place for nine years, the current ITI setup is becoming outdated and some product components will become obsolete soon. For example, the network equipment that connects SWD offices to data centres will go out of support by October 2016, and the support for document management software will end by October 2017. As a result, SWD will not be able to procure the necessary maintenance support for critical network equipment nor receive updated security patches for software after the de-support dates. Maintenance of the existing ITI with aged hardware and software will become increasingly costly and difficult. System reliability will be undermined without proper and professional support. It is therefore the right timing to start replacement of these aged components to ensure adequate technical support for the continual functioning of the ITI.

Deficiencies in system security and recovery functionalities

5. The current ITI setup lacks comprehensive system security features. It is not able to support speedy deployment of security patches to remove security loopholes. Delay in deploying security patches would increase the chances of computers being infected by new viruses. The setup also lacks the ability to perform full disk encryption which is a feature that can significantly increase system security against unauthorized access.

6. In case of a prolonged service interruption at the existing data centre, the current setup will require the data files to be restored at the backup data centre with equipment properly configured and tested before SWD users can access the computer systems again. The whole recovery process under the current setup can take up to 72 hours which is very lengthy and unsatisfactory. It is necessary to upgrade the existing infrastructure in order to improve the security and serviceability of the ITI.

/Unable

Unable to support operational requirements and new application systems

7. Given that IT resources in the existing ITI are not optimized and cannot be shared among application systems, the current application systems lack flexibility and scalability to support the changing operational requirements of SWD. The existing ITI is hence hindering SWD from leveraging the latest IT to develop new application systems. For example, the current ITI does not support the development of a secure e-communication platform to enhance SWD's interaction with external parties.

8. In 2012, SWD commissioned a consultant to conduct a review of the Departmental Information Technology Plan (DITP). Taking into account the consultant's recommendation, SWD sees a genuine need for replacing the aged ITI and considers the establishment of the Next Generation ITI Project (the Project) the highest priority item under the DITP.

Proposed Next Generation ITI

9. Apart from replacing the ageing hardware and software and leveraging new technology for improvement in system efficiency and effectiveness, the proposed Project also seeks to pave way for revamping the existing IT application systems and/or developing new IT application systems to meet the new and changing business needs of the Department.

10. Owing to the enormous scale and complexity of the proposed ITI, SWD commissioned a consultant to conduct a Technical Study from October 2012 to September 2013 to design the overall system architecture and define the detailed functional requirements of the Next Generation ITI. The Technical Study recommended 19 items to be implemented in the Project (Enclosure 1). Taking into account the consultant's recommendation, we propose to establish the Next Generation ITI. This will improve the infrastructure of SWD by using advanced data centre design and centralized storage and data repository, which will be complemented by the adoption of cloud computing and virtualization technology, the establishment of secure e-communication platform and enhancement of security management, etc.

Encl. 1

ANTICIPATED BENEFITS

11. The Next Generation ITI will have the following benefits –

/(a)

- (a) improving the resilience and stability of the ITI under a new system architecture. It will enable more efficient recovery in eight hours or less (as against the existing recovery time of 72 hours) in the event of system failure during disaster situation;
- (b) optimising the use of computer resources and providing room for service and capacity expansion through the enhanced scalability, efficiency and capacity of the new network;
- (c) enabling a more flexible and scalable open platform for the implementation of new IT projects through the construction of a solid and robust foundation with the adoption of relevant technology such as cloud infrastructure;
- (d) facilitating systematic and evidence-based data and impact analysis for better service planning and policy implementation through the establishment of the centralised data repository infrastructure;
- (e) facilitating the implementation of e-communication with a view to enhancing SWD's interaction with over 500 subvented and subsidised service providers in the welfare sector through a more secure electronic data exchange platform in addition to the email system; and
- (f) ensuring high-level protection to personal data by means of modern centralised data storage and backup technology coupled with high performance data encryption solution.

Estimated expenditure to be re-deployed from existing ITI and Cost Savings/Avoidance

12. The annual recurrent expenditure for the existing system is \$26,789,000, covering –

- (a) \$23,786,000 per annum as the annual recurrent cost of hardware and software maintenance, communication line, system support services, facility management and consumables for the existing ITI; and
- (b) \$3,003,000 as staff cost.

/These

These resources will be released and redeployed to partly support the recurrent cost of the new Next Generation ITI.

13. The proposed Project is expected to generate the following recurrent cost saving and avoidance –

- (a) \$10,247,000 from 2017-18 onwards upon the implementation of a department-wide management information system on the new centralised data repository which can be set up subsequently on the Next Generation ITI. The use of the centralised data repository for data and impact analysis will achieve the notional savings of manpower required for searching information from individual application systems, office statistics and case files. Although the manpower saving is fragmented and cannot be realised by deletion of posts or deployment of the staff concerned to other services, there is overall improvement in work efficiency; and
- (b) cost avoidance of \$931,000 from 2017-18 onwards as there is no need for some server-related costs and maintenance costs resulted from the adoption of cloud computing technology.

14. The implementation of the Project will also achieve a non-recurrent cost avoidance of \$13,212,000, arising from a reduction in the number of servers to be purchased from 137 to 70 through the adoption of cloud computing technology in the Next Generation ITI.

Encl. 2 15. A cost and benefit analysis of the implementation of the proposal is at Enclosure 2.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

16. The implementation of the Project is estimated to incur a non-recurrent cost of \$175,767,000 spanning across four financial years from 2014-15 to 2017-18, with breakdown as follows –

/(a)

	2014-15 \$'000	2015-16 \$'000	2016-17 \$'000	2017-18 \$'000	Total \$'000
(a) Hardware	5,908	31,847	16,491	500	54,746
(b) Software	647	5,510	26,155	2,131	34,443
(c) Communication Network	-	16,134	8,311	-	24,445
(d) Implementation services	1,189	10,434	19,420	2,021	33,064
(e) Contract staff	2,802	4,333	4,769	1,186	13,090
(f) Contingency	1,055	6,826	7,514	584	15,979
Total	11,601	75,084	82,660	6,422	175,767

17. At paragraph 16(a) above, the estimate of \$54,746,000 is for the acquisition of computer hardware, including computers and servers, storage system, security devices, and backup and recovery equipment.

18. At paragraph 16(b) above, the estimate of \$34,443,000 is for the acquisition of system software, including operating systems, virtualisation software, mobile device management system software, centralised data repository, enterprise system management software, back-up and recovery software.

19. At paragraph 16(c) above, the estimate of \$24,445,000 is for the acquisition of network equipment and related services for the installation of communication lines connecting the two data centres and various offices of SWD.

20. At paragraph 16(d) above, the estimate of \$33,064,000 is for the acquisition of implementation services from external service providers including system analysis and design, development and installation of the Next Generation ITI.

21. At paragraph 16(e) above, the estimate of \$13,090,000 is for the hiring of contract technical staff to provide project management services for system development and implementation.

22. At paragraph 16(f) above, the estimate of \$15,979,000 represents a 10% contingency on the items set out in paragraphs 16(a) to (e) above.

Other Non-recurrent Expenditure

23. The implementation of the Project will entail an additional non-recurrent staff cost of \$15,037,000, with breakdown as follows –

	2014-15	2015-16	2016-17	2017-18	Total
	\$'000	\$'000	\$'000	\$'000	\$'000
Staff cost	2,870	4,820	4,820	2,527	15,037

24. The cost represents a total of 140 man-months of social work and IT grade staff for planning, co-ordination and implementation of the Project. SWD will absorb the requirement through internal redeployment of existing resources.

Recurrent Expenditure

25. The on-going maintenance and support of the Next Generation ITI will require an estimated recurrent cost of \$53,697,000 in a full year, which is \$29,911,000 higher than that for the existing system at \$23,786,000 per annum. The Next Generation ITI will involve a higher annual recurrent expenditure mainly due to its growing complexity, which includes cloud service, mobile application system and advanced security system etc., resulting in higher system management and support contract service charges and higher hardware and software maintenance expenses. Higher rental charges of new data centres and communication lines with greater bandwidth will also be incurred. SWD will make use of the existing manpower (equivalent to \$3,003,000 per annum) to support the Next Generation ITI and absorb the remaining additional funding from within its existing resources.

26. The cost breakdown of the recurrent expenditure is set out as follows –

/(a)

	2015-16 \$'000	2016-17 \$'000	2017-18 \$'000	2018-19 onward \$'000
(a) Hardware and Software Maintenance	960	6,268	11,082	11,379
(b) Communication Line	1,660	4,980	4,980	4,980
(c) System Support Services	11,006	27,178	27,178	27,178
(d) Facility Management	10,080	10,080	10,080	10,080
(e) Consumables	80	80	80	80
Sub-total	23,786	48,586	53,400	53,697
(f) SWD Staff	3,003	3,003	3,003	3,003
Total	26,789	51,589	56,403	56,700

27. On paragraph 26(a) above, the estimated annual expenditure of \$11,379,000 is for hardware and software maintenance as well as software license fees.

28. On paragraph 26(b) above, the estimated annual expenditure of \$4,980,000 is for the rental of communication lines.

29. On paragraph 26(c) above, the estimated annual expenditure of \$27,178,000 is for contract service for ongoing system maintenance, technical support, help-desk support as well as system administration.

30. On paragraph 26(d) above, the estimated annual expenditure of \$10,080,000 is for data centre rental charges.

31. On paragraph 26(e) above, the estimated annual expenditure of \$80,000 is for the acquisition of consumables such as backup tapes for ongoing system operation.

32. On paragraph 26(f) above, the estimated annual expenditure of \$3,003,000 represents the staff cost for provision of on-going support for the Next Generation ITI. This comprises 29 man-months of social work and technical grades staff.

IMPLEMENTATION PLAN

33. Subject to Members' approval, the Project will commence in July 2014 at the earliest and the tentative completion dates of the major activities are as follows –

	Activity	Target Completion Date
(a)	Tendering for the implementation of the Next Generation ITI	July 2015
(b)	Development and deployment of Next Generation ITI	March 2017
(c)	User acceptance test for the Next Generation ITI	May 2017
(d)	System live run of the Next Generation ITI	July 2017

PUBLIC CONSULTATION

34. The Legislative Council Panel on Welfare Services was consulted on 14 April 2014. Members in general supported the funding proposal. In response to Members' request, supplementary information on the payback period of the Project has been provided to the Panel and the relevant information has been incorporated into this paper as appropriate.

BACKGROUND

35. The existing ITI of SWD, including data centres, network, file servers, personal computers, email system, security system, system management facilities and helpdesk, was set up in 2005 and is currently supporting the operation of about 5 600 staff members at 238 SWD offices. The ITI is essential in enabling the development and daily use of IT application systems to cater for the business needs of SWD in the delivery of a wide range of quality welfare services.

**Recommended Items
under the Establishment of the Next Generation ITI**

1. New Data Centres Setup
2. Network Infrastructure Establishment
3. Enterprise ITI and Centralised System Infrastructure Implementation
4. File Server and Backup Implementation
5. Email Upgrade
6. E-Communication Implementation
7. Centralised Data Repository Infrastructure Establishment
8. Identity Management System Upgrade
9. Desktop Operating System Upgrade
10. Virtualised Desktop Infrastructure Implementation
11. Desktop Security Solution Implementation
12. Mobile Computing Implementation
13. Enterprise System Management Implementation
14. Helpdesk Implementation
15. Security Information and Event Management Implementation
16. Data Loss Protection Implementation
17. Web Application Firewall and Database Activity Monitoring Implementation
18. Network Access Control Implementation
19. ITI Governance Establishment

Cost and Benefit Analysis of the Establishment of the Next Generation ITI

Cash Flow (\$'000)

	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Total
Cost								
<u>Non-recurrent</u>								
- Expenditure	11,601	75,084	82,660	6,422	-	-	-	175,767
- Staff cost	2,870	4,820	4,820	2,527	-	-	-	15,037
Sub-total	14,471	79,904	87,480	8,949	-	-	-	190,804
<u>Recurrent</u>								
- Expenditure	-	23,786	48,586	53,400	53,697	53,697	53,697	286,863
- Staff cost	-	3,003	3,003	3,003	3,003	3,003	3,003	18,018
Sub-total	-	26,789	51,589	56,403	56,700	56,700	56,700	304,881
Total Cost	14,471	106,693	139,069	65,352	56,700	56,700	56,700	495,685
Savings								
<u>Non-recurrent</u>								
- Cost avoidance	-	-	-	13,212	-	-	-	13,212
Sub-total	-	-	-	13,212	-	-	-	13,212
<u>Recurrent</u>								
- Expenditure of existing ITI to be redeployed to support the new ITI								
- Maintenance costs	-	23,786	23,786	23,786	23,786	23,786	23,786	142,716
- Staff costs		3,003	3,003	3,003	3,003	3,003	3,003	18,018
- Notional savings	-	-	-	10,247	10,247	10,247	10,247	40,988
- Cost avoidance	-	-	-	931	931	931	931	3,724
Sub-total	-	26,789	26,789	37,967	37,967	37,967	37,967	205,446
Total Savings		26,789	26,789	51,179	37,967	37,967	37,967	218,658
Net Shortfall	14,471	79,904	112,280	14,173	18,733	18,733	18,733	277,027
Net Cumulative Shortfall	14,471	94,375	206,655	220,828	239,561	258,294	277,027	
