For discussion
on 29 April 2016

FCR(2016-17)9

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND
HEAD 710 – COMPUTERISATION
Government Logistics Department
New Subhead "Replacement of the Procurement and Contract Management System and the Unallocated-Store Program"

Members are invited to approve a new commitment of $72,659,000 for replacing the Procurement and Contract Management System and the Unallocated-Store Program of the Government Logistics Department.

PROBLEM

The existing Procurement and Contract Management System (PCMS) and the Unallocated-Store (U-Store) Program of the Government Logistics Department (GLD) are approaching the end of their serviceable lives.

PROPOSAL

2. The Director of Government Logistics, in consultation with the Government Chief Information Officer and with the support of the Secretary for Financial Services and the Treasury, proposes to create a new commitment of $72,659,000 for replacing the existing PCMS and U-Store Program.

/**JUSTIFICATION** …..

JUSTIFICATION

Need for Replacement of the PCMS and U-Store Program

3. The PCMS and U-Store Program have been in operation in GLD since 2009 and 2004 respectively. The PCMS is used mainly for procurement administration and contract management, while the U-Store Program is used to support operations related to the supply of U-Store items, including the receipt of U-Store items, replenishment of stock, processing of orders raised by bureaux/departments (B/Ds) and issuing of U-Store items.

4. Similar to many computer systems, the expected life span of the PCMS is about ten years. It will reach the end of its serviceable life in 2019. Although the U-Store Program was enhanced in 2013 by upgrading its operating system to extend its life span, it is expected to become obsolete by January 2020.

5. In 2014-15, GLD conducted a review on the replacement of the U-Store Program and also engaged a contractor to conduct a feasibility study on the replacement of the PCMS. According to these two studies, the existing system components of the PCMS and U-Store Program will be phased out quickly and their spare components will soon become unavailable in the market due to technology advancement. Maintenance of the systems beyond their expected life span will be difficult, if not impossible, thereby affecting system reliability and performance. It is therefore necessary to replace these mission-critical systems in time to avoid any disruption of services.

6. The PCMS now adopts Internet Protocol version 4 (IPv4) for suppliers to access the system. As the number of Internet Protocol addresses supported by IPv4, which has already been in use as an international standard for some 32 years, will soon reach its ceiling, we need to replace the PCMS by a system based on Internet Protocol version 6 (IPv6) which can support more Internet Protocol addresses. Otherwise, parties using addresses under IPv6 would not be able to gain access to our website when IPv6 becomes more widely used in future.

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7. To cater for new business needs, structural changes were applied in the past few years to the application software in the existing system through hard-code programs. These programs built in fixed values or parameters in the application software to introduce new business rules that the existing software was not originally designed to handle. However, they have also made it increasingly difficult to maintain the application software in the existing system and provide further improvement to cater for new business requirements. Further increasing the number of structural changes will also increase the risk of system failure.

8. We have considered the option of maintaining the PCMS beyond its expected life span. Although we may be able to continue to support the system by continuous replacement of ageing hardware and ad hoc system enhancement to meet new technology standards, the cost incurred would be very high. Besides, such system would hardly be able to effectively cope with business changes. We therefore consider replacement of the system to be a more cost-effective option. Apart from meeting the new technology standards, a proper replacement system can include new functions under an integrated design to cope with new business needs more effectively, thereby enhancing the operational efficiency of GLD. As regards the U-Store Program, although its server and operating system have been upgraded as a stop-gap measure to meet the latest security requirements, the application software is inadequate to support the operation of the U-Store effectively.

Functions and Benefits of Replacement Systems

9. The feasibility study completed in 2015 found that it was practicable and more cost-effective to incorporate the replacement of the U-Store Program into the PCMS replacement project as one integrated project through shared use of hardware and data centre services.

10. In addition to performing the full range of functions of the existing PCMS and U-Store Program, the proposed replacement systems will be equipped with the following new/enhanced functions to enable GLD to meet its operational needs and provide better and more reliable services to B/Ds –

(a) a new workflow engine to ensure greater flexibility and shorter lead time for configuring business rules and adapting to future business changes (e.g. introducing any new type of purchases for use by B/Ds, if required, or revising the schedule of authorities);

/(b) …..

(b) a new Collaborative Workspace to centralise the repository of tender documents (i.e. to store tender documents centrally in the replacement system for the PCMS instead of individual personal computers) and enable collaborative use of the tender documents by various users in GLD and B/Ds;

(c) improved functions relating to screen flow, user interface, error messages, bring-up and alert, response time, report generation, as well as enhancement features such as interaction with users, automatic copying, and provision of pre-defined list with options to replace manual data input. They will enhance efficiency, achieve better monitoring and control on business, and enable prompt decision-making;

(d) enhanced scope of interface to enable more effective exchange of data with other systems by –

(i) developing a new interface with the Printing Services Management System (PSMS)[1] in GLD for sharing of updated supplier information; and

(ii) expanding the data coverage of established interface with other B/Ds, i.e. collect from the Government Financial Management Information System (GFMIS)[2] of the Treasury additional data on the orders issued under GLD bulk contracts, and change the interface with the e-Procurement System of the Office of the Government Chief Information Officer from one-way to two-way to facilitate the exchange of updates on suppliers' particulars;

(e) automatic delivery of soft copies of reports to users instead of printing out hard copies for distribution, which will reduce the use of paper; and

/(f) …..

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[1] PSMS supports the operations of the Printing Division of GLD. It provides functions to enable preparation of printing job estimates and specifications, order processing and enquiries, scheduling, production control, job tracking and reporting, outsourcing and contract management, inventory control, costing analysis, and invoicing, etc.

[2] GFMIS supports the operations of B/Ds in respect of financial management. It provides functions to enable recording and reporting of approved funds, commitments, cash receipts, and payments, etc.

(f) new/enhanced functions relating to U-Store operations for updating and approving orders, grouping orders and bulk picking items, and consolidating orders to facilitate the distribution of U-Store items by transportation teams. They will help speed up processing time, improve tracking of delivery status, improve efficiency of retrieving management information, enable better sharing of information on U-Store items and enhance customer satisfaction.

FINANCIAL IMPLICATIONS

Capital Expenditure

11. It is estimated that the implementation of the proposed project will require a total capital expenditure of $72,659,000 over a period of five years from 2016-17 to 2020-21. The cost breakdown is as follows –

	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000	2020-21 $'000	Total $'000
(a) Hardware			615	6,734		7,349
(b) Software			253	12,046		12,299
(c) Communication network		3	36	21		60
(d) Implementation services		7,080	2,135	20,108	1,406	30,729
(e) Contract staff	553	2,663	3,977	2,991		10,184
(f) Site preparation			70			70
(g) Consumables		20	211			231
(h) External testing team			254	3,157		3,411
(i) Data centre services		240	1,143	338		1,721
(j) Contingency	55	1,001	869	4,539	141	6,605
Total:	**608**	**11,007**	**9,563**	**49,934**	**1,547**	**72,659**

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12. On paragraph 11(a) above, the estimate of $7,349,000 is for the acquisition of computer hardware and network equipment including servers, development workstations, switches, firewalls and security devices, and other computer peripherals.

13. On paragraph 11(b), the estimate of $12,299,000 is for the acquisition of computer software including system software to drive and support hardware, database software, application software, intrusion detection software, end-user computing tools and development tools.

14. On paragraph 11(c), the estimate of $60,000 is for the acquisition of communication network bandwidth services for GLD to connect with the Government Backbone Network and Central Internet Gateway, and fax line services during system testing.

15. On paragraph 11(d), the estimate of $30,729,000 is the service charge for the contractors to develop and implement the replacement systems as well as to carry out Security Risk Assessment and Audit and Privacy Impact Assessment. The major activities will include system analysis and design, application development and deployment, system integration and testing, as well as database conversion and migration.

16. On paragraph 11(e), the estimate of $10,184,000 is for the engagement of contract staff to assist GLD in project management activities such as providing technical advice, and monitoring the system implementation and rollout.

17. On paragraph 11(f), the estimate of $70,000 is for the acquisition of cabling services, network nodes and power ports to facilitate site preparation work for the replacement of the U-Store Program.

18. On paragraph 11(g), the estimate of $231,000 is for the acquisition of consumables such as storage media to be used for testing and data conversion during implementation.

19. On paragraph 11(h), the estimate of $3,411,000 is for the engagement of an external testing team to assist in conducting testing and offering advice to enhance the effectiveness of detecting defects and problems during implementation.

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20. On paragraph 11(i), the estimate of $1,721,000 is for the acquisition of data centre services for hosting the proposed systems.

21. On paragraph 11(j), the estimate of $6,605,000 is a contingency provision of around 10% of the cost items set out in paragraphs 11(a) to (i).

Other Non-recurrent Expenditure

22. The project also entails non-recurrent staff costs of $23,844,000 from 2016-17 to 2019-20 for managing the project. The costs will be absorbed by GLD through internal redeployment.

Recurrent Expenditure

23. It is estimated that the proposal will entail an indicative annual recurrent expenditure of $2,473,000 in 2019-20, increasing to $11,987,000 from 2020-21 onwards, which will be absorbed by GLD from within its existing resources. The cost breakdown is as follows –

		2019-20	**2020-21 and onwards**
		$'000	**$'000**
(a)	Hardware maintenance	23	892
(b)	Software licence/subscription	8	1,236
(c)	Communication network	62	83
(d)	System maintenance	1,322	4,446
(e)	Consumables	45	45
(f)	Data centre services	1,013	1,351
(g)	Staff cost		3,934
	Total:	**2,473**	**11,987**

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Cost Avoidance

24. If the proposed project were **not** approved and GLD had to maintain the existing systems to cope with its business operation, the following costs would be involved –

(a) a non-recurrent provision of $303,000 for upgrading the soon-to-be outdated server software installed in the existing PCMS; and

(b) a recurrent annual provision of $11,108,000 in total for regular maintenance and staff costs, comprising $7,174,000 for system maintenance, communication network rental fees and hosting in data centre, and $3,934,000 for staff cost.

Furthermore, an efficiency gain at an estimated notional staff cost of $552,000 per annum that could be made through the new systems would not be achieved.

Cost and Benefit Analysis

Encl 25. A cost and benefit analysis of the project is set out at the Enclosure.

IMPLEMENTATION PLAN

26. Subject to funding approval in the current legislative session, we plan to implement the proposed project according to the following timetable –

Activity	**Target completion date**
Tendering and award of contract	June 2017
System analysis and design	May 2018
System development	
- all system functions except Collaborative Workspace	January 2019
- Collaborative Workspace	October 2019
System acceptance test, training and system roll-out	
- all system functions except Collaborative Workspace	June 2019
- Collaborative Workspace	December 2019

PUBLIC CONSULTATION

27. We consulted the Legislative Council Panel on Financial Affairs on 4 January 2016. Members raised no objection to seeking the Finance Committee's funding approval for the proposal.

BACKGROUND

28. One of GLD's main duties is to act as a procurement agent for major purchases of goods on behalf of B/Ds. The PCMS allows users in GLD and other B/Ds to handle procurement activities such as processing and monitoring of tender requests, tender invitations, tender offers, contracts/orders, suppliers enlistment and contractors' performance, and procurement information analysis. It also provides an electronic tender box for suppliers to submit tender offers and applications for inclusion in GLD's supplier lists. At present, the PCMS serves 9 462 users, including 144 users in GLD, 2 935 users in other B/Ds and 6 383 suppliers. In 2014, 222 purchase requests, 1 128 tender offers and 286 contracts were handled through the PCMS. The total value of purchases processed through the PCMS was $5 billion.

29. GLD is also responsible for maintaining, storing and distributing to B/Ds U-Store items which are held in the unallocated stock of GLD. These items include essential and emergency items (such as facial masks and personal protective equipment). The U-Store Program supports the related operations. In 2014, there were 129 items and 411 B/D users with 5 763 delivery locations maintained by the U-Store Program. The total number of orders raised by B/Ds and processed through the U-Store Program was 6 580.

Financial Services and the Treasury Bureau
April 2016

Enclosure to FCR(2016-17)9

Cost and Benefit Analysis
Replacement of the PCMS and U-Store Program

	Cash flow ($'000)								
	2016-17	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**Total**
(A) Cost									
Capital expenditure	608	11,007	9,563	49,934	1,547	-	-	-	72,659
Non-recurrent staff cost[Note 1]	2,522	5,538	8,940	6,844	-	-	-	-	23,844
Sub-total	*3,130*	*16,545*	*18,503*	*56,778*	*1,547*	-	-	-	*96,503*
Recurrent expenditure	-	-	-	2,473	8,053	8,053	8,053	8,053	34,685
Recurrent staff cost[Note 2]	-	-	-	-	3,934	3,934	3,934	3,934	15,736
Sub-total	-	-	-	*2,473*	*11,987*	*11,987*	*11,987*	*11,987*	*50,421*
Total Cost	**3,130**	**16,545**	**18,503**	**59,251**	**13,534**	**11,987**	**11,987**	**11,987**	**146,924**
(B) Cost Avoidance									
Recurrent expenditure of existing systems recurrent cost	-	-	-	-	7,174	7,174	7,174	7,174	28,696
Recurrent staff cost[Note 2]	-	-	-	-	3,934	3,934	3,934	3,934	15,736
Non-recurrent cost of upgrading software	-	-	-	303	-	-	-	-	303
Notional staff cost	-	-	-	-	552	552	552	552	2,208
Total Cost Avoidance	**-**	**-**	**-**	**303**	**11,660**	**11,660**	**11,660**	**11,660**	**46,943**
(C) Net cost [(A) – (B)]	**3,130**	**16,545**	**18,503**	**58,948**	**1,874**	**327**	**327**	**327**	**99,981**

Note 1 The staff efforts required for managing the project will be absorbed by GLD through internal redeployment.

Note 2 As staff who are currently deployed to support the existing PCMS will be re-deployed to provide support of the proposed replacement systems, there will be no additional recurrent staff cost incurred for the proposed systems.