

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 710 – COMPUTERISATION

Office of the Government Chief Information Officer

New Subhead “Implementation of a Government Cloud Platform”

Members are invited to approve a new commitment of \$242,000,000 for the implementation of a Government Cloud Platform.

PROBLEM

In order to meet the rising expectations and demand from the public for quality government services, the Government needs to continuously enhance the cost-effectiveness and responsiveness in e-government service delivery.

PROPOSAL

2. The Government Chief Information Officer, with the support of the Secretary for Commerce and Economic Development, proposes to create a new commitment of \$242,000,000 to implement a Government Cloud Platform (GovCloud).

JUSTIFICATION

Support the development of common e-government services

3. Under a cloud computing environment, computing resources such as computer servers and data storage can be pooled together for shared use by users. Users can flexibly utilise the computing resources as a service on demand basis. Through a “metering” function, service providers can measure the resource usage and charge the users for it.

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4. The proposed GovCloud serves to support the hosting of some common e-government services for shared use by bureaux and departments (B/Ds). We have identified electronic information management (EIM) and electronic procurement as the anchoring e-government services on GovCloud, having regard to the importance and latest development of these two e-government initiatives as follows -

EIM

EIM, which covers content management, records management and knowledge management, helps B/Ds address effectively and efficiently the ever-increasing amount of paper and electronic records created and received through different sources and in different formats. In pursuance of this initiative, the Office of the Government Chief Information Officer (OGCIO) promulgated in 2011 to B/Ds a government-wide EIM strategy and framework to facilitate EIM implementation in B/Ds.

Electronic Procurement

Through automating and streamlining the procurement processes in the Government, electronic procurement aims to enhance transparency, efficiency and cost-effectiveness, and to achieve more competitive pricing for Government procurement. We completed a pilot electronic procurement programme for three departments last year. The post-pilot review concluded that the anticipated benefits of electronic procurement were achieved and a business case for wider roll out in Government was established. We consulted the Legislative Council Panel on Information Technology and Broadcasting on 12 April 2012 on the proposed wider roll out of electronic procurement in Government. Members were supportive of the proposal.

5. GovCloud will support about 30 B/Ds, which have expressed interest in using these shared services, to roll out their EIM and electronic procurement services for five years from 2013-14 to 2017-18.

6. GovCloud will comprise a core infrastructure and a shared pool of computing resources. The core infrastructure will cover services of data centre, network, security, resilience, backup and load balancing, as well as components of resource virtualisation, provision and metering. The shared pool of computing resources will consist of server, storage and network resources which will be

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dynamically provided to e-government services based on individual workload demand. The core infrastructure will facilitate secure, robust and effective hosting and access of the shared pool of computing resources. We believe that GovCloud could enhance the development and delivery of common e-government service in a cost-effective manner.

Potential benefits

7. We expect that the implementation of GovCloud can bring about the following benefits –

- (a) *Cost saving* - As a shared hosting platform, GovCloud will bring about economy of scale. It will help avoid the need of building duplicated infrastructures for implementing EIM and electronic procurement separately. We can avoid an additional investment of about \$67 million over a five-year period if we adopt a centralised approach of building GovCloud. A cost and benefit analysis for the proposed project is at the Enclosure.
- (b) *Time saving* - Through the adoption of cloud computing technology, GovCloud will enable rapid provision of computing resources, with lead time of procurement and installation substantially reduced from a few months to a few days. This can help expedite delivery of e-government services and enable earlier delivery of the associated benefits to Government and the general public. For example, a B/D would only require two to three months to roll out a typical EIM service under a cloud computing environment in contrast to at least nine to twelve months under a traditional approach to procure and install the service.
- (c) *Enhanced agility in meeting dynamic demand* - GovCloud will facilitate on-demand and flexible provisioning of computing resources. This would greatly enhance agility and responsiveness of B/Ds in meeting dynamic public demands for e-government services.
- (d) *Fostering development of IT industry* - The implementation of GovCloud will generate demands for various types of IT professional positions and services in data centre hosting (e.g. data centre facilities management and security management), operations management, project management, as well as IT system integration. It will foster the development of the local IT industry in strengthening relevant skills on implementation and management of cloud services and business models in cloud computing.

Encl.

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To leverage on the flexibility of cloud service provision in the market, we will adopt an outsourcing approach for implementing and operating GovCloud as a total solution. This will help create synergy and partnership across different levels and among different sectors in the local IT industry. GovCloud will be a hosting platform to facilitate the development of more e-government services. It will help generate demands on e-government application development, and related maintenance and support services, which will bring about more business opportunities to local IT industry. We have conducted market research to assess the local market capability of providing the required services of GovCloud, and confirmed that the industry is ready to provide such services.

FINANCIAL IMPLICATIONS

Non-recurrent expenditure

8. We estimate that the implementation of GovCloud will require a total non-recurrent expenditure of \$242,000,000 from 2012-13 to 2017-18. The indicative cost breakdown and cashflow requirements by financial years are as follows:

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
(a) Provision of the core infrastructure	-	56,000	14,500	14,700	15,000	15,300	115,500
(b) Provision of the shared pool of computing resources	-	10,900	4,800	12,300	22,800	44,700	95,500
(c) Programme coordination, management and support	600	1,700	1,700	1,700	1,700	1,700	9,100
Sub-total	600	68,600	21,000	28,700	39,500	61,700	220,100
(d) Contingency	50	6,870	1,970	2,870	3,970	6,170	21,900
Total	650	75,470	22,970	31,570	43,470	67,870	242,000

9. On paragraph 8(a) above, the estimate of \$115,500,000 is for the provision of the core infrastructure and related services for GovCloud, including hardware (such as core network equipment, remote data backup solution, system resilience and disaster recovery facilities), software (such as resource provisioning tools, metering tools, central management and monitoring tools), operation support, management and helpdesk services, data centre facilities for hosting the core infrastructure, as well as annual assessment and audit on information security and privacy by independent third party.

10. On paragraph 8(b) above, the estimate of \$95,500,000 is for the provision of computing resources, including hardware (such as servers, disk storage and tape storage), software (such as server, disk and backup software) and network bandwidth, for the common EIM and electronic procurement services and data centre facilities for hosting the shared pool of computing resources. The computing resources and the related expenditure will be consumed on demand in accordance with the uptake of e-government services by B/Ds.

11. On paragraph 8(c) above, the estimate of \$9,100,000 is for the acquisition of contract IT professional staff for programme coordination, management and support in managing the contractor's work for the implementation and operation of GovCloud.

12. On paragraph 8(d) above, the estimate of \$21,900,000 represents about 10% contingency on the cost items set out in paragraphs 8(a) to (c) above.

13. The non-recurrent staff cost^{Note} for the implementation of GovCloud will be absorbed within the existing resources of OGCIO.

Recurrent expenditure

14. Under a cloud computing model, services are bundled in a way that infrastructure capacity will increase gradually and technology will enhance progressively in light of demand. Such bundled services normally require payment by instalments without a breakdown of charging components. All expenditures are

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^{Note} The non-recurrent staff cost of \$18,000,000 represents a total of 204 man-months of in-house IT professional staff effort required for planning and managing the implementation of GovCloud, conducting procurement exercise, performing the subsequent contract management and overseeing the service operation.

covered by the estimates stated in paragraphs 8 - 13, and no additional recurrent maintenance cost of GovCloud will be required in the five-year period from 2013-14 to 2017-18. With a sufficient large service demand generated by B/Ds in using the GovCloud services in the coming five years, we expect that B/Ds will be able to sustain the operation of GovCloud using their own resources beyond 2017-18.

IMPLEMENTATION PLAN

Governance of the outsourcing arrangement

15. We will adopt an outsourcing approach for implementing and operating GovCloud and will take the following measures to ensure that the outsourcing arrangement will meet the requirements on information security, service quality and service portability –

- (a) to ensure information security, the selected contractor will be required to provide the cloud services under an environment dedicated to the use by Government. The contractor has to comply with prevailing government policies, guidelines and requirements on information security. Thorough assessments and audits on security and privacy will be conducted by independent third party both before and annually after launching the service;
- (b) to ensure service quality, the contractor should possess relevant professional competence, meet specific technical requirements, fulfill stringent service level agreements and adopt industry best practices on IT service management. The OGCIO will deploy dedicated IT professional staff to oversee the performance of the contractor; and
- (c) to ensure service and data portability, the contractor has to adopt open standards on portability in its solution. Periodic data backup will be arranged from contractor's data centres to Government's data centre. Contract provisions will also be in place to facilitate smooth service transition and exit arrangement if there is a need to do so. This will enable the Government to have a wider choice of service providers if we are to extend GovCloud to cover more e-government services in future.

/Implementation

Implementation schedule

16. The proposed implementation plan is as follows –

	Activity	Timing
(a)	Tendering for services to construct and operate GovCloud	July 2012 to December 2012
(b)	Construction of GovCloud	January 2013 to November 2013
(c)	Rollout of GovCloud services	December 2013

PUBLIC CONSULTATION

17. We consulted the Task Force on Industry Facilitation and the Task Force on E-government Service Delivery of the Digital 21 Strategy Advisory Committee, which comprise members from the IT industry, academia and relevant B/Ds, in April 2012. Members of the Task Forces supported the proposal.

18. We also consulted the Legislative Council Panel on Information Technology and Broadcasting on the proposal on 14 May 2012. Members were supportive of the proposal. On Members' advice, more elaboration on the governance of the outsourcing arrangement of GovCloud is provided in paragraph 15 above.

BACKGROUND

19. GovCloud is an initiative announced in the 2011-12 Policy Address, with the aim to reap the benefits of advanced cloud computing technologies for more cost-effective delivery of e-government services and improved responsiveness to meet rising public demand.

Cost and Benefit Analysis for the Proposed Implementation of a Government Cloud Platform

	Cash flow (\$'000)						
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total
Cost							
Non-recurrent							
- Expenditure	650	75,470	22,970	31,570	43,470	67,870	242,000
- Staff Cost	4,360	5,350	5,350	980	980	980	18,000
Sub-total	5,010	80,820	28,320	32,550	44,450	68,850	260,000
Recurrent*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total cost	5,010	80,820	28,320	32,550	44,450	68,850	260,000
Savings							
Non-recurrent							
- Cost avoidance	650	93,970	31,970	36,870	54,970	90,570	309,000
- Avoidance of staff cost	4,360	5,350	5,350	980	980	980	18,000
Sub-total	5,010	99,320	37,320	37,850	55,950	91,550	327,000
Total savings	5,010	99,320	37,320	37,850	55,950	91,550	327,000
Net savings	-	18,500	9,000	5,300	11,500	22,700	67,000
Net cumulative savings	-	18,500	27,500	32,800	44,300	67,000	

* Under a cloud computing model, services are bundled in a way normally requiring payment by instalments without a breakdown of charging components, and hence all recurrent maintenance cost of GovCloud will be covered by the non-recurrent commitment in the five-year period from 2013-14 to 2017-18.
