

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 710 – COMPUTERISATION

Office of the Government Chief Information Officer

New Subhead “Centrally Managed Messaging Platform”

Members are invited to approve the creation of a new commitment of \$252,210,000 for developing and implementing a Centrally Managed Messaging Platform in the Government.

PROBLEM

We need to develop and implement a new platform to replace the Government’s current decentralised email system in order to enhance the ability in tackling the increasing cyber security risks, utilise computing resources optimally and increase operational efficiency of the Government.

PROPOSAL

2. The Government Chief Information Officer, with the support of the Secretary for Innovation and Technology, proposes to create a new commitment of \$252,210,000 for developing and implementing a Centrally Managed Messaging Platform (CMMP) to replace the decentralised email system currently in operation in bureaux/departments (B/Ds).

/JUSTIFICATION

JUSTIFICATION

Review on the Current Government Messaging System

3. The Government's current email system architecture was built on a decentralised model which is barely capable of leveraging on technology advancement (such as cloud computing) in a timely manner, and adopting the latest security protection functions (e.g. security patches and encryption standards) in a concurrent manner. This would limit B/D's ability to tackle the growing cyber security risks. In addition, computing resources may not be properly integrated and optimally utilised in maintaining and managing such decentralised system by individual B/Ds.

4. Furthermore, the existing email system of B/Ds is not able to provide enhanced functions, such as instant messaging (IM) services and efficient searching and retrieving of email documents.

5. The Office of the Government Chief Information Officer (OGCIO) commissioned a consultant in 2016 to study the development of a government messaging platform which could meet present-day and future needs. The study recommended building a new Government messaging system based on a centralised model which could further support integration of other collaboration tools, such as IM and file sharing. The messaging platform will enable B/Ds to make use of the latest technologies and tackle the increasing cyber security risks in a timely and effective manner.

6. We agree with the study's recommendation, and plan to develop and implement the CMMP initially for B/Ds located in the Central Government Offices (CGO) and their related sub-offices (as listed at Enclosure 1).

Encl. 1

The Proposed CMMP

7. The proposed CMMP will be developed on the basis of the latest industry standards with scalable cloud servers of the latest model and compatible with a series of collaboration tools. A comparison of the characteristics of the existing email system and the CMMP is as follows –

/Existing

	Existing Email System	CMMP
(a) Email Communication	Encryption for restricted classification of emails can meet the basic security requirements	Strong encryption for emails of restricted classification, compliant with the latest international standards
(b) Compatibility with other communication and collaboration tools	Incompatible with other communication and collaboration tools (e.g. unified communication and file sharing)	Compatible with other communication and collaboration tools (e.g. voice mailbox, unified communication and file sharing)
(c) Instant Messaging	Not support mobile instant messaging	Support mobile instant messaging up to confidential classification
(d) Reliability and Availability	Servers distributed in different office locations of B/Ds, more difficult to ensure availability and more vulnerable to security attacks	Cloud servers providing round the clock support with 99.95% availability, more robust against security attack, and full resilience with disaster recovery (DR) facility
(e) Environmental Friendly and Energy Saving	Distributed servers resulting in duplicate resources, without versatile system management	Centralised cloud servers scalable to meet user demand, more environmental friendly and energy saving, and with versatile system management
(f) Information Security	Managed by individual B/Ds, difficult to achieve a consistent level of security protection	Can achieve a consistent level of security protection among different B/Ds meeting or even exceeding industry standards
(g) Economies of Scale	Duplicated support resources, cannot achieve economies of scale	Economies of scale with central support; high availability, ease of use and secure

/Expected

Expected Benefits

8. The CMMP, which will be centrally managed, will replace the existing decentralised email systems and avoid the need for B/Ds to support and upgrade the individual email systems on their own. B/Ds can also achieve a consistent level of information security protection, which meets or even exceeds industry standards and will be more robust against cyber attacks. Moreover, the CMMP will provide support 24 hours a day, 7 days a week, with 99.95% availability, and possess DR capability.

9. The CMMP will adopt scalable cloud servers which can be dynamically expanded to meet user demands. The total number of servers will be reduced from about 320 to some 80, saving space and reducing electricity consumption by two-thirds or an estimated amount of \$880,000 annually. Also, we will use servers of the latest model with higher energy efficiency to reduce carbon footprint by two-thirds.

10. By adopting the latest industry standards, the CMMP will be compatible with a series of collaboration tools (e.g. unified communication with text, voice, image and video contents, and file sharing) and will fully support mobile IM to enhance work efficiency to meet business needs.

11. The CMMP will also open up the opportunity for B/Ds to establish a digital workplace, and through integrating with collaboration tools such as IM, video conferencing, document storage and file sharing, introduce a new work mode to streamline office workflow and strengthen information security. The above functions will enhance the operational efficiency and productivity of B/Ds, as well as achieving economies of scale for the Government.

12. Taking into consideration the scale of the project, the CMMP will initially be implemented in B/Ds located in the CGO and their related sub-offices. The CMMP will be gradually expanded to cover Government departments in other locations for better economies of scale.

/Cost

Cost Savings/Avoidance

13. We estimate that the implementation of the proposed CMMP will bring about \$27,950,000 cost savings/avoidance per annum from 2021-22 onwards, comprising the following –

- (a) Realisable savings of \$21,950,000 per annum

The realisable savings comprise savings of \$18,130,000 by B/Ds on staff cost for supporting the current email systems, \$2,940,000 on maintenance costs of hardware and software, and \$880,000 on energy saving; and

- (b) Cost avoidance of \$6,000,000 per annum

The cost avoidance (i.e. amount which would otherwise be incurred if the existing system continued to be used) comprises the recurrent expenses of \$1,330,000 on maintenance cost of hardware and software for confidential IM service, \$2,800,000 on maintenance cost of hardware and software for provision of DR services outside the CGO for existing email systems, and \$1,870,000 on staff cost for providing such DR service.

14. In addition, we anticipate that there will be a one-off cost avoidance of \$230,220,000 for B/Ds to upgrade the current email systems (including hardware, software and implementation service cost for performing upgrade exercise) for enhancing security and provision of confidential IM services.

Encl. 2 15. A cost and benefit analysis for the proposed CMMP is at Enclosure 2.

FINANCIAL IMPLICATIONS**Non-recurrent Expenditure**

16. The proposal will incur a one-off cost of an estimated total of \$252,210,000 over a period of around four years from 2017-18 to 2020-21. The indicative cost breakdown and estimated cash flow requirements by financial years are as follows –

/2017-18

	2017-18 \$'000	2018-19 \$'000	2019-20 \$'000	2020-21 \$'000	Total \$'000
(a) Hardware	7,190	-	19,780	8,990	35,960
(b) Software	8,290	-	22,790	10,350	41,430
(c) Implementation Services	18,910	-	52,900	24,380	96,190
(d) Contract Staff	7,640	15,270	15,270	7,630	45,810
(e) Communication Network	-	570	1,130	560	2,260
(f) Training	900	-	2,490	1,130	4,520
(g) Others	620	30	1,700	770	3,120
Sub-total	43,550	15,870	116,060	53,810	229,290
(h) Contingency	-	-	-	22,920	22,920
Total	43,550	15,870	116,060	76,730	252,210

17. On paragraph 16(a) above, the estimate of \$35,960,000 is for the acquisition of computer hardware, including servers, network facilities, security modules and backup equipment.

18. On paragraph 16(b) above, the estimate of \$41,430,000 is for the acquisition of computer software, including operating system, email system, migration software and information security software.

19. On paragraph 16(c) above, the estimate of \$96,190,000 is for the acquisition of implementation services, including system analysis and design, development, testing, installation, system migration and making training plans. The cost item also includes the services for security risk assessment and audit in various implementation stages.

20. On paragraph 16(d) above, the estimate of \$45,810,000 is for the engagement of contract staff to supplement the in-house project management team during system design, installation, testing and implementation.

21. On paragraph 16(e) above, the estimate of \$2,260,000 is for the setup of communication network.

22. On paragraph 16(f) above, the estimate of \$4,520,000 is for the training of trainers, end-users and system administrators on new system functions and system administration.

23. On paragraph 16(g) above, the estimate of \$3,120,000 is for other expenditure, including site preparation for accommodating the servers and equipment, acquisition of start-up consumables (e.g. backup tapes), and data centre expenses.

24. On paragraph 16(h) above, the estimate of \$22,920,000 represents a 10% contingency on items set out in paragraphs 16(a) to (g) above.

Other Non-recurrent Expenditure

25. The implementation of the proposed CMMP will entail an additional non-recurrent staff cost of \$19,630,000 for OGCI0 during the four-year period from 2017-18 to 2020-21. The cost represents a total of 158 man-months of IT staff efforts for performing tendering, service engagement, and contract management works. OGCI0 will absorb the requirements within existing resources.

Recurrent Expenditure

26. We estimate that the recurrent expenditure arising from the project will be \$13,190,000 per annum from 2024-25 onwards for OGCI0 to manage, operate, maintain and support the CMMP. Breakdown of the requirement is as follows –

	2020-21	2021-22	2022-23	2023-24	2024-25 Onwards
	\$'000	\$'000	\$'000	\$'000	\$'000
(a) Hardware & Software Maintenance	-	6,600	7,190	7,190	7,190
(b) System Maintenance	-	1,020	1,110	4,910	5,250

/(c)

	2020-21	2021-22	2022-23	2023-24	2024-25 Onwards
	\$'000	\$'000	\$'000	\$'000	\$'000
(c) Communication Network	550	590	590	590	590
(d) Others	150	160	160	160	160
Total	700	8,370	9,050	12,850	13,190

27. On paragraph 26(a) above, the estimated annual expenditure of \$7,190,000 is for the hardware and software maintenance costs.

28. On paragraph 26(b) above, the estimated annual expenditure of \$5,250,000 is for the maintenance cost of custom programme items.

29. On paragraph 26(c) above, the estimated annual expenditure of \$590,000 is for the subscription of communication lines.

30. On paragraph 26(d) above, the estimated annual expenditure of \$160,000 is for other expenditure, including acquisition of consumables (e.g. backup tapes) and subscription of data centre services.

31. In addition, OGCIO will redeploy a total of 120 man-months of IT staff internally to provide system support and administration, entailing a recurrent staff cost of \$7,100,000 per annum.

32. The above recurrent requirements (amounting to around \$20,290,000 per annum) will be included and reflected in the annual estimates of OGCIO in relevant financial years. After implementing the CMMP, B/Ds will no longer need to maintain the existing individual email systems on their own. The savings (around \$21,950,000 per annum as mentioned in paragraph 13(a) above) by B/Ds from the hardware, software and system maintenance, as well as technical support resources, are estimated to be on par with the recurrent cost for managing, operating, maintaining and supporting the CMMP by OGCIO. Therefore, there will be no additional recurrent cost for the Government as a whole.

/IMPLEMENTATION

IMPLEMENTATION PLAN

33. The estimated schedule for the implementation of the CMMP is as follows –

Activity	Target Completion
(a) Seeking funding approval from the Finance Committee (FC) of the Legislative Council (LegCo)	2nd Quarter 2017
(b) Completion of Tendering	September 2017
(c) System Development	December 2017 to December 2018
(d) Production Rollout (by phase for B/Ds listed at Enclosure 1)	December 2018 to June 2020

PUBLIC CONSULTATION

34. We briefed the LegCo Panel on Information Technology and Broadcasting on 13 March 2017. Members supported the submission of the proposal to FC for funding approval.

BACKGROUND

35. It is the Government's established policy to take full advantage of information technology to improve its efficiency, quality of service and cost-effectiveness. The Government's current email system architecture was built about 20 years ago based on a decentralised model, under which each B/D sets up and manages its own email system. The 22 B/Ds listed at Enclosure 1 are using the system currently in operation, with a total of 320 email servers scattered across more than 10 different locations.

Innovation and Technology Bureau
Office of the Government Chief Information Officer
May 2017

Enclosure 1 to FCR(2017-18)9

B/Ds which are to implement CMMP^{Note}

1.	Central Policy Unit
2.	Civil Service Bureau
3.	Home Affairs Bureau
4.	Chief Executive's Office
5.	Security Bureau
6.	Department of Justice
7.	Constitutional and Mainland Affairs Bureau
8.	Chief Secretary for Administration's Office
9.	Food and Health Bureau
10.	Financial Secretary's Office
11.	Financial Services and the Treasury Bureau – Financial Services Branch
12.	Financial Services and the Treasury Bureau – Treasury Branch
13.	Commerce and Economic Development Bureau – Communications and Creative Industries Branch
14.	Commerce and Economic Development Bureau – Commerce, Industry and Tourism Branch
15.	Education Bureau
16.	Innovation and Technology Bureau
17.	Innovation and Technology Bureau – Innovation and Technology Commission
18.	Innovation and Technology Bureau – Office of the Government Chief Information Officer
19.	Labour and Welfare Bureau
20.	Development Bureau
21.	Transport and Housing Bureau
22.	Environment Bureau

^{Note} Listed according to the number of strokes of the first Chinese character of the B/D.

Cost and Benefit Analysis for the Implementation of the CMMP

	Cash flow (\$ '000)										
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Cost											
Non-recurrent											
- Expenditure	43,550	15,870	116,060	76,730	-	-	-	-	-	-	252,210
- Staff Cost	6,200	6,200	6,200	1,030	-	-	-	-	-	-	19,630
Sub-total	49,750	22,070	122,260	77,760	-	-	-	-	-	-	271,840
Recurrent											
- Expenditure	-	-	-	700	8,370	9,050	12,850	13,190	13,190	13,190	70,540
- Staff Cost	-	-	-	6,510	7,100	7,100	7,100	7,100	7,100	7,100	49,110
Sub-total	-	-	-	7,210	15,470	16,150	19,950	20,290	20,290	20,290	119,650
Total cost	49,750	22,070	122,260	84,970	15,470	16,150	19,950	20,290	20,290	20,290	391,490
Savings											
Non-recurrent											
- Cost avoidance	76,180	50,790	-	-	-	-	-	61,950	41,300	-	230,220
Sub-total	76,180	50,790	-	-	-	-	-	61,950	41,300	-	230,220
Recurrent											
- Realisable savings	-	-	-	-	21,950	21,950	21,950	21,950	21,950	21,950	131,700
- Cost avoidance	-	550	4,910	6,000	6,000	6,000	6,000	6,000	6,000	6,000	47,460
Sub-total	-	550	4,910	6,000	27,950	27,950	27,950	27,950	27,950	27,950	179,160
Total savings	76,180	51,340	4,910	6,000	27,950	27,950	27,950	89,900	69,250	27,950	409,380
Net savings	26,430	29,270	(117,350)	(78,970)	12,480	11,800	8,000	69,610	48,960	7,660	17,890
Net Cumulative savings	26,430	55,700	(61,650)	(140,620)	(128,140)	(116,340)	(108,340)	(38,730)	10,230	17,890	
