

**For discussion  
on 20 November 2012**

**Legislative Council Panel on Commerce and Industry**

**Relocation and Re-provisioning of Information Technology Systems and Facilities to  
the Trade and Industry Tower  
for the Trade and Industry Department**

**PURPOSE**

This paper seeks Members' support for the proposed relocation and re-provisioning of information technology (IT) systems and facilities of the Trade and Industry Department (TID) to tie in with its relocation to the Trade and Industry Tower (TI Tower), a new joint-user government office building at the Kai Tak Development Area.

**BACKGROUND**

2. The TID (the then Trade Department) has been operating in the Trade and Industry Department Tower (TIDT) in Mongkok since 1990. For the economic and cost-effective use of government properties as advocated by the Government Property Agency, the Finance Committee (FC) approved on 6 January 2012 vide FCR(2011-12)63 the construction of the new TI Tower<sup>1</sup> and the relocation of various government departments into the new premises. Accordingly, the TID will be relocated to the new TI Tower in 2015.

3. To support the business activities of the TID, a total of 32 IT application systems have been developed over the years to provide on-line licence application and enquiry services to the public as well as office automation services for some 600 TID staff. Among these, 17 IT application systems provide round-the-clock (24 hours a day for seven days a week) services to support the business activities of the trading community.

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<sup>1</sup> The construction works commenced in January 2012 and are expected to complete in December 2014.

4. To ensure continued and smooth delivery of IT services during and after the office relocation exercise, and to meet the operational needs of the department in the longer term, the TID commissioned a two-stage Feasibility Study/Technical Study (FS/TS) in 2009. Apart from identifying a secure and efficient IT solution for the relocation, the study also concludes that there is a business case for enhancing and upgrading the IT infrastructure. Key recommendations are set out at **Annex A**.

## **THE PROPOSED PROJECT**

5. In the light of the outcome of the FS/TS, we propose to enhance and upgrade the TID's IT infrastructure at the same time when the IT systems and facilities are relocated to the new TI Tower. Details of the proposed project are as below –

- (a) to replace the 15 application systems approaching end of serviceable life by 2015-16 to ensure continued delivery of service, and to enhance functions with the latest technology;
- (b) to enhance the infrastructure supporting 11 existing systems, including the additional Storage Area Network<sup>2</sup> (SAN) for testing and securing the timely resumption of service at the TI Tower in case the production SAN cannot resume service within the planned schedule; the better encryption functions of the SAN solution for critical applications; and the adoption of green IT operations to demonstrate Government's staunch support of green management<sup>3</sup>;
- (c) to upgrade the network capacity/throughput whereby enabling the wider use of multi-media information during daily operation; and
- (d) to consolidate the five scattered server rooms in the TIDT into two in the new office, to improve the operational efficiency.

6. Server room facilities standard will also be updated to meet the latest industry standards including gaseous type fire suppression system, hot/cold aisle cooling design and centralised monitoring.

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<sup>2</sup> A storage area network is a dedicated network that provides access to consolidated storage.

<sup>3</sup> The objective of green IT operation is to ensure the achievement of better energy-efficiency and environment impacts in government IT operation.

7. The TID has drawn up a phased plan for relocation and re-provisioning to minimise as much as possible the service interruption to the department itself, the trading community and the public. In this regard, the relocation of IT systems and facilities will be carried out in two batches to ensure successful completion of system testing prior to the actual relocation of the primary servers<sup>4</sup>. The TID will also put in place measures to ensure the reliability of systems, the service resumption as scheduled, and data security during the transition.

8. The proposed project has the support of the Office of the Government Chief Information Officer (OGCIO).

## **BENEFITS OF THE PROPOSED PROJECT**

9. As IT support service forms an integral part of the operation of the department, the TID will need to ensure that the re-provisioning of IT facilities be carried out in a timely and secure manner. With the enhanced IT infrastructure, the project will also bring about the following benefits –

- (a) we will adopt the latest IT standards such as Internet Protocol (version 6)<sup>5</sup> (IPv6) in order to cater for the demand from SMEs and the public;
- (b) we will adopt the latest standard on green IT management such as servers virtualization and mail archiving solution whereby systems will be operated with less physical servers thus consuming less energy. We will also upgrade the equipment racks with efficient cooling feature, which are more environmental friendly installations;
- (c) the new dual source power supply system of the proposed IT infrastructure will minimise the chance of suspension of the TID's e-services provided to the trading community, hence ensuring a more competent and reliable performance;
- (d) the new IT facilities will improve the throughput of the network and security

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<sup>4</sup> When the network and security infrastructure is ready, the secondary servers of application systems together with an additional SAN will be relocated to the TI Tower for testing first, so as to ensure that the new network and security infrastructure can work seamlessly with the application systems. With successful completion of the necessary testing, relocation of the primary servers will coincide with the designated office removal date. In case any of the primary servers could not resume service after the relocation, the corresponding secondary server which has been tested successfully will take up the production service immediately.

<sup>5</sup> As the successor to the current Internet Protocol, IPv4, IPv6 is critical to the Internet's continued growth as a platform for innovation and economic development.

infrastructure, hence enhancing the work efficiency and productivity;

- (e) the new data encryption technology adopted in the new IT system could enhance application data security, hence better protecting the interest of the trading community;
- (f) the upgraded infrastructure will better support the use of multi-media information, and will improve the communication with the trading community via multi-media channels; and
- (g) the consolidation of server rooms will reduce overheads for supporting IT facilities, hence enhancing operational efficiency and management of servers.

## FUNDING PROPOSAL

### *Non-Recurrent Expenditure*

10. It is estimated that the proposed project will incur a total non-recurrent expenditure of \$52.542 million over a four-year period from 2012-13 to 2015-16 for acquiring hardware, software and professional services. A detailed breakdown is as follows -

	2012-13 (\$'000)	2013-14 (\$'000)	2014-15 (\$'000)	2015-16 (\$'000)	Total (\$'000)
(a) Hardware and Software *	-	1,090	2,905	26,055	30,050
(b) Communication Network	-	-	-	515	515
(c) Implementation Service	-	100	356	2,981	3,437
(d) Contract Staff	359	847	3,829	7,778	12,813
(e) Site Preparation	-	-	-	950	950
<b>Sub-total</b>	<b>359</b>	<b>2,037</b>	<b>7,090</b>	<b>38,279</b>	<b>47,765</b>
(f) Contingency	<b>36</b>	<b>204</b>	<b>709</b>	<b>3,828</b>	<b>4,777</b>
<b>Total</b>	<b>395</b>	<b>2,241</b>	<b>7,799</b>	<b>42,107</b>	<b>52,542</b>

\* Including \$6.507 million for replacement of hardware reaching limit of serviceable life span.

11. On item (a) "Hardware and Software" above, the amount of \$30.050 million is for the acquisition of hardware (e.g. servers and network equipment), software (e.g. server software and network software) and related facilities (e.g. back-up devices) for the implementation of the new network and security infrastructure, replacement servers and ancillary facilities. These include replacement of the aged servers. To ensure

continuation and reliability of service, new server room facilities and network and security infrastructure equipment will be in place before the actual relocation for testing purpose.

12. On item (b) “Communication Network” above, the amount of \$0.515 million is for the installation and provision of communication lines before the TID’s offices are relocated -

- (i) to connect the TIDT and the TI Tower for system testing and temporary operation; and
- (ii) to connect the TI Tower to the Headquarters of the Electrical and Mechanical Services Department at Kowloon Bay and the Tsuen Wan Data Centre for disaster recovery of licensing and certification data respectively.

13. On item (c) “Implementation Service” above, the amount of \$3.437 million is for hiring IT professional services in preparation for the relocation (e.g. security risk assessment and audit, wireless network implementation), and for the actual relocation of the TID’s IT facilities (e.g. the hiring of engineers, labour and transportation service for the physical relocation of network equipment, servers, personal computer (PC) workstations, printers, etc.).

14. On item (d) “Contract Staff” above, the amount of \$12.813 million is for hiring contract IT professional staff to operate server rooms in the TI Tower before relocation, and provide day-to-day project management and other technical services in preparation for the relocation. The estimate also covers the cost required in 2015-16 for hiring contract technical staff in reconfiguring users’ PC workstations and network printers after the relocation.

15. On item (e) “Site Preparation” above, the amount of \$0.950 million is for the network cabling in server rooms and office premises of the TI Tower.

16. On item (f) “Contingency” above, the estimate of \$4.777 million represents a 10% contingency on the total cost covering items (a) to (e).

*Other Non-Recurrent Expenditure*

17. The implementation of the proposal will also entail a total non-recurrent staff cost of \$4.699 million over a period of three years from January 2013, for overseeing

the implementation of the project, carrying out procurement exercise, liaising with contractors for installation and configuration as well as testing from the technical aspect and user acceptance. The TID will absorb the non-recurrent cost within its existing resources.

#### *Recurrent Expenditure*

18. The proposed new and replaced equipment will incur net additional maintenance expenses for hardware and software of \$0.116 million in 2014-15. The net additional expenditure will increase gradually to \$2.927 million per annum from 2016-17 onwards due to expiry of free warranty periods. Details are as follows -

	2014-15 (\$'000)	2015-16 (\$'000)	2016-17 onwards (\$'000)
Gross maintenance expenditure (a)			
• Hardware and software maintenance	116	380	4,646
• Communication Network	-	-	740
<b>Sub-total for (a)</b>	<b>116</b>	<b>380</b>	<b>5,386</b>
<i>Less</i> : Expenditure on existing equipment to be decommissioned (b)	-	252	2,459
<b>Net additional expenditure (a)-(b)</b>	<b>116</b>	<b>128</b>	<b>2,927</b>

19. The TID will absorb the net additional recurrent maintenance cost within its existing resources.

#### *Cost Savings/Avoidance*

20. The proposed project is expected to bring about annual cost savings/avoidance of \$5.396 million from 2016-17 onwards comprising -

- (a) realisable savings in maintenance cost of existing equipment to be decommissioned, estimated at \$2.459 million in a year, which will partially offset the maintenance cost of newly acquired equipment proposed by the project;
- (b) notional savings, estimated at \$2.402 million in a year, arising from efficiency gain through enhanced office automation process and upgraded network throughput, and other relevant maintenance costs; and

- (c) avoidance of \$0.535 million in a year of additional staff cost for monitoring the departmental websites and periphery facilities, which would otherwise be required to oversee individual system consoles in a decentralised manner.

## **IMPLEMENTATION PLAN**

21. Subject to the approval of funding, we plan to commence the project in January 2013 for completion in December 2015. The proposed implementation plan is at **Annex B**.

## **ADVICE SOUGHT**

22. Subject to Members' views on this proposal, we plan to seek funding approval from FC in January 2013.

**Commerce and Economic Development Bureau  
Trade and Industry Department  
November 2012**

**Key Recommendations in the  
Feasibility Study/Technical Study on TID's IT Infrastructure**

*(a) Minimise service suspension during relocation*

To minimise service interruption during relocation, the network and security infrastructure must be in place at the new TI Tower for testing by various application systems prior to the relocation. The proposed arrangement should enable ample testing of the facilities to ensure system accuracy, stability and reliability before the resumption of business and hence minimise adverse impact on the TID's business.

*(b) Capacity constraints of the existing network and security infrastructure*

The existing network throughput at the TIDT is 1 Gigabit per second (Gbps). In view of the growing needs to access multi-media information (such as video/image records of seminars and exhibitions for Small and Medium Enterprises (SMEs) organised/sponsored by the TID, and the technical drawings/complex specifications which are large in terms of file size in processing applications) in the daily operation of the TID, it is envisaged that the current throughput of 1 Gbps will soon become insufficient. With the limited throughput, the existing network and security infrastructure will be prone to slow response which affects productivity and the smooth operation of the TID. In anticipation of a growing need for coping with multi-media information, the new network and security infrastructure should be able to support 10 Gbps throughput.

In addition, the TID should adopt the latest technology and standards in re-provisioning the network and security infrastructure with a view to meeting the business development needs of the TID.

*(c) Emergence of data security risks*

While the network data security, the security infrastructure and the application systems of the TID fully comply with relevant government regulations and guidelines, one cannot totally preclude the possibility of loss of data during the physical movement of some 40 units of data hard disks during office removal. In light of the potential security challenges, the TID should employ the latest technology to encrypt the application data prior to the relocation.



*(d) Scattered server rooms and distributed system monitoring*

The 32 IT application systems are currently housed in five server rooms on different floors of the TIDT, with the monitoring equipment scattered in various server rooms. As such, IT staff have to attend to individual server rooms separately and travel among five different floors. This induces unnecessary overhead to the operation and has an adverse impact on work efficiency. The TID should consider improvement measures.

*(e) Need to replace aged IT systems*

15 IT application systems will approach the end of serviceable life span by 2015-16. Instead of replacing the servers of the application systems concerned separately, the TID should consider a replacement in one go to tie in with the relocation in order to minimise the administration overheads and capture any possible economies of scale. By doing so, the new servers can be used for testing at the TI Tower beforehand so as to secure timely service resumption upon relocation.

*(f) Need to meet up-to-date server room facilities standard*

The existing fire suppression systems in the server rooms use water as the suppression agent. In case of fire, the water discharged from the existing fire suppression systems will ruin the servers and equipment in the server rooms. The TID should consider adopting gaseous type fire suppression systems in the new TI Tower in line with the latest standard for server rooms.

The traditional installation of Air Handling Unit (AHU) in the existing server rooms only blows out cold air below raised floor which is inefficient and results in ineffective use of energy with reference to the latest industry standard. The TID should consider employing the hot/cold aisle design and airflow control to raise the overall cooling efficiency in the new server rooms.

Currently, the monitoring of uninterruptible power supply (UPS) is carried out manually by the corresponding support team of the respective IT systems. Hence, faults of the UPS may not be discovered in a timely manner. The TID should consider adopting a centralised monitoring approach in the new TI Tower so as to promptly identify any faulty performance of the UPS.

**Implementation Plan for the Relocation and Re-provisioning of  
Information Technology Systems and Facilities to the Trade and Industry Tower  
for the Trade and Industry Department**

<b>Activity</b>	<b>Timing</b>
<b>(a) Phase 1 - Preparation Stage</b>	January 2013 to December 2014
(i) Systems analysis and design	
(ii) Procurement	
<b>(b) Phase 2 - TI Tower Site Preparation Stage</b>	January 2015 to July 2015
(i) Site preparation of server rooms	
(ii) Provisioning of network and security infrastructure	
(iii) Security risk assessment on the newly established network and security infrastructure	
<b>(c) Phase 3 - IT Facilities Relocation Stage</b>	July 2015 to August 2015
(i) Relocation (1 <sup>st</sup> batch)	
(ii) Testing for production readiness	
(iii) Relocation (final batch)	
<b>(d) Phase 4 - Nursing and Wrap Up Stage</b>	August 2015 to December 2015
(i) System nursing	
(ii) Project wrap up	