ITEM FOR FINANCE COMMITTEE

HEAD 156 – GOVERNMENT SECRETARIAT: EDUCATION BUREAU
Subhead 871 Vocational Training Council
New Item "Enhancement of information technology infrastructure and services"

> Members are invited to approve a new commitment of $67.218 million for the Vocational Training Council to enhance its information technology infrastructure and services.

PROBLEM

The Vocational Training Council (VTC) needs to enhance its existing information technology (IT) infrastructure and services to better meet the modern day needs of teaching and learning for its vocational education and training programmes, and to improve its IT security infrastructure to guard against possible information security attacks.

PROPOSAL

2.   The Secretary for Education proposes to create a new commitment of $67.218 million under Head 156 – Government Secretariat: Education Bureau for the enhancement of the IT infrastructure and services of VTC.

JUSTIFICATION

3.   Since the last major enhancement of VTC's IT infrastructure and services in 2000, there have been technological advancement and developments in the education field which call for more diverse, better and faster IT systems and services to support learning and teaching for the 250 000 students and 7 000 staff of VTC. The major areas requiring attention are –

/(a) …..

(a)   increasing demand in terms of both volume and speed for mobile access to support e-learning and various on-line services to enhance learning and teaching for post-secondary and vocational training programmes;

(b)   the need for enhanced IT systems to support the introduction of new curriculum structure; and

(c)   the need for enhancement of IT security infrastructure in view of increasing risks of cyber attack and unauthorised access.

VTC sees the need to implement the proposed IT enhancement to address the needs in the above areas.

The proposed enhancement and its benefits

Mobile access and applications

4.   To capitalise on the potential of mobile devices in the teaching and learning of vocational education and training programmes, VTC proposes to enhance the support to e-learning and student support services through better access to VTC's internal network by mobile devices, by –

(a)   enhancing access by mobile devices to IT services (e-learning and student self-services) at 17 campuses of the Institutes of Vocational Education and Youth College by installing additional advanced servers, providing Wi-Fi access points with latest access protocol (802.11ac) with up to 1GB of transfer speed and associated ultra-high bandwidth network equipment; and

(b)   developing and introducing free mobile apps and new mobile-based IT services to enable the dissemination of information, access to learning and teaching materials, as well as self-help services like library services, activities enrolment, facilities booking, etc.

The above will facilitate the extensive utilisation of various e-learning services to enhance learning (e.g. interactive learning materials and activities, easier access to extended learning materials, and discussion forum with peers and teachers). This will also enable students to learn in a more flexible and versatile manner and encourage self-learning, as well as provide more convenient and efficient student support services.

Support for new curriculum structure of VTC and strengthened career guidance

5.   To promote flexible and diverse pathways with multiple entry and exit points, VTC has introduced a flexible credit-based module-accumulation curriculum structure for its various programmes to tie in with the introduction of the new senior secondary curriculum. The first cohort of Hong Kong Diploma of Secondary Education graduates has entered the post-secondary sector since the 2012/13 academic year. Under the credit-based module-accumulation curriculum structure, students may choose available modules from their own discipline as well as those from other disciplines and accumulate credits at their own pace for acquiring the targeted qualification.   This approach allows students more flexibility in learning.

6.   The migration to this new curriculum structure entails elaborate IT support. To enable the early introduction of this flexible curriculum structure for the benefit of students, VTC has made necessary adaptations and basic enhancement to its existing IT infrastructure to the extent possible. However, these adaptations only provide the primary core functions for meeting the basic requirements in programme curriculum and module maintenance, timetabling, and online module selection. To enable students to reap the full benefits of the new curriculum structure, VTC proposes to upgrade its IT systems to better integrate the various services to allow students to navigate these different services via a single platform (i.e. the Student Portal) and enhance each of the various services (e.g. student admission and registration, timetabling and module selection services, and student data management services across different modules) to make available more advanced features.

7.   To promote the employability of students, VTC has strengthened career development and advisory services for students in vocational education and training. To tie in with these strengthened career-related services, VTC has introduced basic IT services to disseminate information about jobs, progression pathways and career development. VTC now proposes to put in place a better and more user-friendly interactive platform to support the matching of students with employers for industrial attachment and job opportunities, to enhance integration with social network platform for information sharing, and to enhance job searching facility to enable peer sharing and referral of job opportunities.

Information security and software asset management

8.   To ensure adequate protection to counter information security attacks, VTC will implement enhancement covering the following areas –

/(a) …..

(a)   enhance the network infrastructure including the upgrading of firewalls, intrusion detection and prevention systems, and introduce new real-time analysis and monitoring system to identify attacks;

(b)   enhance and improve the confidentiality, reliability and integrity of the Staff and Student Email Systems covering over 70 000 mail accounts[Note];

(c)   enhance the functionalities of the Computer and Network Account System for all students and staff to facilitate the provision of IT resources and authorization of access to different users based on their unique role and identity, and to improve the security of the users' identity matching process and the management of user groups; and

(d)   enhance the Software Asset Management System (SAM), which helps to monitor and minimise the risks of the use of unauthorised software, as well as to monitor the optimal use of software license.

IMPLEMENTATION PLAN

Encl.

9.   VTC plans to implement the proposal from 2014 for completion by 2018. A detailed implementation plan is at Enclosure.

FINANCIAL IMPLICATIONS

Non-recurrent expenditure

10.   The proposal will incur a non-recurrent expenditure of $67.218 million from the Government. The estimated cash flow requirement from the 2013-14 to 2017-18 financial years is shown in the table below –

/2013-14 …..

[Note]   These mail accounts are for 70 000 full-time students and staff of VTC. Students pursuing part-time or short-term in-service training programmes are not provided with mail accounts.

	2013-14 $ million	2014-15 $ million	2015-16 $ million	2016-17 $ million	2017-18 $ million	Total $ million
(a) Mobile Access and Applications	1.000	5.585	12.167	1.391	0.708	20.851
(b) Support for New Curriculum Structure	0.100	1.670	9.527	8.086	6.385	25.768
(c) Information Security and Software Asset Management	1.000	0.663	8.472	7.141	3.323	20.599
Total	**2.100**	**7.918**	**30.166**	**16.618**	**10.416**	**67.218**

11.   The expenditure in paragraph 10(a) is for the procurement of routers, switches, wireless access points and Power over Ethernet network cabling systems, and enhancement of mobile application server and secure authentication server.

12.   The expenditure in paragraph 10(b) is for the enhancement of various student services systems, including Admissions, Timetabling, Online Module Selection, Record Management, Holistic Programme Planning, and Student Portal.

13.   The expenditure in paragraph 10(c) is for the enhancement of the secure network infrastructure such as upgrading of firewalls, intrusion detection and prevention systems and Security Information and Event Management System; improving the confidentiality, reliability, and integrity of Email Systems; upgrading information security technologies, SAM, and the functionalities and availability of the Computer and Network Account System.

Recurrent expenditure

14.   VTC estimates that the enhanced IT facilities will give rise to an additional recurrent expenditure of $10.1 million upon full implementation for maintenance and operation. VTC will absorb the recurrent cost from within its existing resources.

PUBLIC CONSULTATION

15.   We consulted the Legislative Council Panel on Education on the proposal on 11 November 2013. Members supported the proposal.

BACKGROUND

16.   The Finance Committee last approved in March 2000 a commitment of $176.9 million for major enhancement of VTC's IT infrastructure and services. As a result of the enhancement, VTC has, among other things, launched a web-based teaching and learning service, expanded the Internet and e-mail facilities for use by students, installed additional personal computers and supporting equipment, and provided better integration and connectivity to campus networks to support its management systems and administrative functions.

Education Bureau
November 2013

**Implementation Plan for VTC's Proposed Enhancement of
IT Infrastructure and Services from 2014 to 2018**

	Start	**End**
IT Programme		
(i) Mobile Access and Applications		
Smart Campus	Q1 2014	Q4 2015
Mobile Applications	Q2 2014	Q1 2018
(ii) Support for New Curriculum Structure		
IT Service Development on Student Admission	Q2 2014	Q1 2018
IT Service Development on Timetabling and Module Selection	Q2 2014	Q1 2018
IT Service Development on Student Records Management	Q2 2014	Q1 2018
Lifelong ID for VTC Clients	Q2 2014	Q1 2018
Enhancements of Student Portal	Q2 2014	Q1 2018
IT Service Enhancements on Holistic Programme Planning	Q2 2014	Q1 2018
IT Service Development on Career Development and Advisory Support	Q2 2014	Q1 2018
(iii) Information Security and Software Asset Management		
Secure Network Infrastructure	Q2 2014	Q1 2018
Enhancements of Email Services	Q2 2014	Q1 2018
Enhancements on Information Security Technologies	Q1 2014	Q1 2018
Enhancements of Computer and Network Account System	Q2 2014	Q3 2017
Software Asset Management	Q2 2014	Q4 2017
Infrastructure to support the projects		
Enterprise Server Upgrade and Virtualization ** This is an essential infrastructure item for all the above areas of enhancement.*	Q1 2014	Q1 2018