Innovation and Technology Development Strategy

Views and Comments from the Vocational Training Council (VTC)

1. Having carefully studied the consultation paper and consulted the VTC’s Training Boards and General Committees led by representatives from various industries, our academic staff are happy to submit the following views and comments—

The Focus Areas

Definition and scope of the 13 proposed focus areas

2. The definition and scope of the 13 proposed focus areas are considered generally appropriate. The nature of the focus areas is such that they can be categorised into generic technologies (e.g. Advanced Manufacturing Technologies, Communications Technologies) and technologies for specific industrial sectors (e.g. Chinese Medicine, Textile and Clothing). This hybrid approach may well result in a R&D activity falling under the scope of “Textile and Clothing”, or “Nanotechnology and Advanced Materials” or “Advanced Manufacturing Technologies”. There will be cross-scope issues which will need to be resolved with flexibility and a reasonable degree of central coordination would be desirable.

3. Some feel that the 13 proposed focus areas represent a very good coverage, whilst some have asked that focus areas in Environmental Protection Technologies, New Energy Sources, Building and Construction Technologies, Software Development and Applications be included also. Feedback from the majority of our contacts, however, call for more focused efforts in a smaller number of areas under the Innovation and Technology Development Strategy. It has been suggested that the Strategy could either be implemented by phases with each phase focusing on a few areas or a combination of focus areas to make it more manageable.

Key R&D topics under each of the proposed focus areas

4. The following R&D topics under the focus areas are proposed to be added:-

VTC’s response to the ITDS300804
(1) Advanced Manufacturing Technologies:

Technologies relating to the computer integration of processes for prepress, press and postpress (CIP4) for the printing and publishing industry, such as the development of business and operational logics for the manufacturing systems management suitable for both HK and PRD, and the enhancement of product production cycle.

(2) Automotive Parts and Accessory System

Technologies relating to the simulated testing and collaborative design of automotive parts and accessory system.

(3) Digital Entertainment

Enabling technologies for efficient and accurate control of the optical/analog, digital, and chemical processes in the hybrid analog/digital film making workflow, which include the film grading, digital intermediate technologies, and film finishing, etc.

Enabling technologies for shooting a film with fully virtual and/or pre-shoot set/background.

Enabling technologies relating to the building and/or integrating location-based context-aware ubiquitous computing into game engine.

(4) Logistics/Supply Chain Management Enabling Technologies

Integrating RFID-based and GPS-based application platforms for building an effective, dynamic and fluid logistics and supply chain management system, application examples include movement tracking, stock automatic replenishment and data hand-shaking at interchanging nodes.

The R&D Centres

Benefits

5. The R&D Centres will certainly facilitate the long-term economic, technology and industry development of the relevant industries in Hong Kong by commercialising R&D results. This will help build Hong Kong into a world-class
City. The concept of R&D Centres can provide an institutional framework for better coordination and management of R&D activities provided that the R&D Centres are properly steered and monitored, and assessment of the performance is conducted regularly. The R&D Centres must be fully integrated with the industries with clear, sharp and focused objectives and missions.

**Functions**

6. The R&D Centres shall have the functions of developing innovative and practical solutions for the relevant industries as well as disseminating new ideas and process know-how for widespread applications among firms (including SMEs) in Hong Kong and the Mainland. The Government could make reference to the successful experience in other countries, e.g. KAIST (Korea) and ITRI (Taiwan).

**Mode of operation and organisation**

7. It will be advisable to set up a central body to coordinate the R&D activities under individual focus areas. Relevant industries should be encouraged to work with academic institutions in undertaking the R&D projects for better outcome. Collaborative R&D Centres could be set up on the virtual centre model and governed by a Board of Directors with representatives from the participating organisations. The chairperson of the committee responsible for vetting project proposals should be independent of the participating organisations. He/she shall possess extensive experience and knowledge in the focus areas concerned and his/her main duties will be in resource management. Under this mode of operation, funding will be allocated on the sole base of the merits of the proposals.

**Funding model**

8. The Government should provide sufficient seed money for the setting up and initial running of the R&D Centres. Financial support from the private sector could be sought for the long-term operation and development of the R&D Centres.

**The need for an R&D Centre in each focus area, physical or virtual centre?**

9. The organisation of a collaborative R&D Centre can be a virtual one with satellite centres hosted by various universities, institutions and companies with the relevant competencies in the focus area concerned. The satellite R&D centres
could work together as a virtual single entity on joint or individual projects. Detailed operational guidelines should be drawn up for the satellite R&D centres to ensure timely and quality outputs within budget. A virtual centre that pools talents and resources from universities and institutions could enhance effectiveness.

**How the VTC can contribute to the Strategy**

10. Any high-technology and high-value added industry will need a pool of new breed of talents working in it. For sustainability, it is thus recommended that the missions of the R&D Centres should include education and training of manpower to implement the R&D results. The VTC occupies the strategic position as a talent provider, especially in the focus areas where the VTC has accumulated a wealth of domain knowledge and subject expertise (Annex A outlines the VTC’s missions and its Centres of Excellence). The VTC staff and students can contribute not only to the R&D activities, but also in the implementation, application and integration of the R&D results, as well as the subsequent technology transfer to end-users. Development of students’ innovative capability will be one of the key focuses of the VTC’s curricula.

**Preliminary Proposals for Hosting R&D Centres**

11. In this preliminary stage of the consultation, the VTC would like to express interests in hosting the following three R&D Centres in the focus areas of Automotive Parts & Accessory System, Logistics/Supply Chain Management Enabling Technologies, Digital Entertainment and Software Quality Assessment. These Centres are proposed on the basis that the initial operations could utilise existing facilities and R&D infrastructure. Upon successful bidding, the respective centres will be set up as operating subsidiaries of the VTC Enterprises Limited, a limited holding company of the VTC, in order to satisfy the requirement of the Innovation & Technology Commission that the host must have a separate legal identity.

12. The VTC is committed to second full-time staff members that are essential to the operation of the Centres, such as the Centre Directors. The VTC would also facilitate other centres hosted by universities and technical services institutions in tapping into existing R&D resources and subject expertise in joint projects to optimise the overall performance of the Innovation and Technology Development Strategy. VTC would also develop pre-employment and professional
development courses aligned with the directions of the R&D activities of the Centres.

13. The VTC welcomes different modes of cooperation with other institutions and the industries, whether in the form of a consortium, virtual centres, and supporting units. The VTC keeps its position open in this respect at this stage. Initial discussion was held between the HKPC and the VTC’s Department of Automotive Engineering to support the former’s consortium by providing the testing platform. ASTRI has also invited CaST of the VTC’s Information Technology Training and Development Centre to join its consortium for IC Circuit Design. Discussion with the HKPolyU for collaboration in Logistics/Supply Chain Management Enabling Technologies is under way.

14. On the mode of operation, management and corporate governance, the VTC favours the Australian model of Collaborative R&D Centres, which allows every participating organisation to contribute on an equal footing. Boards of Directors will have to be established to oversee corporate governance. The decisions on R&D directions and vetting of R&D projects would rest with a committee with representatives from participating organisations. The chair of the committee should be an independent person with ample resource and project management experience. The centres should be managed by dedicated Centre Directors. Collaboration rules should be drawn up to regulate the activities of the Centres. Cross-centre and even cross-focus areas collaboration should be encouraged.

The Automotive Parts and Accessory System R&D Centre

15. Detailed proposal is at Annex B. The proposed Centre is to be set up on the existing strength of the Department of Automotive Engineering, especially as it is to become the testing platform of the APAS. Over the years, the Department has worked with many partners, including the Consumer Council, HKPC, HKPolyU, HKU and HKUST. More recently, the Department has forged a new partnership with Philips (China) Ltd under which Philips may advise the Department on its electronics and infotainment laboratories.

Logistics/Supply Chain Management Enabling Technologies R&D Centre

16. Detailed proposal is at Annex C. The proposed R&D Centre is to be set up on the internal cross-disciplinary collaboration in the VTC. The Department of Business Administration, the Department of Business Services & Management, the
Department of Information and Communications Technology, the Department of Printing & Digital Media and the Information Technology and Training Centre will join forces to establish the Centre.

**Digital Entertainment R&D Centre**

17. Detailed proposal is at Annex D. The proposed R&D Centre is to be set up by combining the strength of the VTC’s Department of Multimedia & Internet Technology, the Department of Information & Communications Technology and the Department of Printing & Digital Media. The Centre will work on projects linked to both the Game Development and Film & Television Production.

**Software Quality Assessment Centre**

18. Detailed proposal is at Annex E. Today, most, if not all, systems involve software. The quality of the software components is a key success factor of the systems. Software quality assessment is an ultimately important issue in system development. However, the existing software quality assessment methods do not fit the purpose in many emerging technologies, such as mobile computing, (tele)communications, context-aware ubiquitous computing, automotive devices, medical devices, etc. Application domain knowledge and software quality assessment technologies are equally important in software quality assessment. With the huge amount of expertise in different application domains and software quality assessment facilities, the VTC may collaborate with the HKPC and industry to run a centre to investigate software quality assessment technologies, software quality assessment tools and software quality assessment reference standards for some of the focus areas.

**Further Information and Contacts**

19. For further communication, please contact—

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