

ITEM FOR FINANCE COMMITTEE

INNOVATION AND TECHNOLOGY FUND

HEAD 111 – INNOVATION AND TECHNOLOGY

New Subhead “Establishment of Research and Development Centre for Nanotechnology and Advanced Materials”

New Subhead "Establishment of Research and Development Centre for Textile and Clothing"

New Subhead "Establishment of Research and Development Centre for Automotive Parts and Accessory Systems"

New Subhead "Establishment of Research and Development Centre for Logistics and Supply Chain Management Enabling Technologies"

New Subhead "Establishment of an Incubation-cum-Training Centre to support Digital Entertainment Development by the Hong Kong Cyberport Management Company Limited"

New Subhead "Development of technologies and facilities to design and build mechanical watch movements by the Chinese University of Hong Kong"

Members are invited to approve the creation of the following new subheads under Head 111 "Innovation and Technology" with the following commitments –

- (a) \$61.4 million for the establishment of a research and development centre for nanotechnology and advanced materials;
- (b) \$60.3 million for the establishment of a research and development centre for textile and clothing;
- (c) \$100 million for the establishment of a research and development centre for automotive parts and accessory systems;

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- (d) \$52.2 million for the establishment of a research and development centre for logistics and supply chain management enabling technologies;
- (e) \$30.8 million for the establishment of an incubation-cum-training centre for digital entertainment development by the Hong Kong Cyberport Management Company Limited; and
- (f) \$54 million for the development of technologies and facilities to design and build mechanical watch movements by the Chinese University of Hong Kong.

PROBLEM

In order to ensure that Hong Kong's applied research and development (R&D) efforts will be driven towards focus areas relevant to the industry, we need to adopt a new funding approach for innovation and technology development through the establishment of R&D Centres and funding R&D projects under specific focus themes which could upgrade and enhance the competitiveness of our industries.

PROPOSAL

2. The Commissioner for Innovation and Technology (CIT), with the support of the Secretary for Commerce, Industry and Technology, proposes to allocate a total of \$358.7 million from the Innovation and Technology Fund (ITF) to support the following –

- (a) the establishment of an R&D Centre for nanotechnology and advanced materials with a commitment of \$61.4 million for its operating cost for five years;
- (b) the establishment of an R&D Centre for textile and clothing with a commitment of \$60.3 million for its operating cost for five years;

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- (c) the establishment of an R&D Centre for automotive parts and accessory systems with a commitment of \$100 million for its operating cost for five years;
- (d) the establishment of an R&D Centre for logistics and supply chain management enabling technologies with a commitment of \$52.2 million for its operating cost for five years;
- (e) the establishment of an incubation-cum-training centre for digital entertainment development by the Hong Kong Cyberport Management Company Limited (Cyberport) with a commitment of \$30.8 million; and
- (f) the development of technologies and facilities to design and build mechanical watch movements by the Chinese University of Hong Kong (CUHK) with a commitment of \$54 million.

3. Since all the six projects are proposed under the new strategy of innovation and technology development as detailed in this paper, they are presented in an integrated submission for Members' consideration and funding approval. The proposed allocation will be met from the existing ITF and will not call for any new injection into the Fund.

JUSTIFICATION

4. The Government has been promoting the development of innovation and technology, mainly through the funding of applied R&D projects and the provision of infrastructural support. The ITF was set up in 1999 to finance projects that contributed to innovation or technology upgrading in industry, and Members approved an appropriation of \$5 billion to the Fund. As at the end of March 2005, the ITF has already supported more than 700 projects at about \$1.8 billion. As for infrastructural support, the Applied Science and Technology Research Institute Company Limited (ASTRI) was established in 2000 to perform high quality R&D for transfer to industry. As at the end of March 2005, ASTRI has undertaken 32 R&D projects, which are also funded by the ITF.

5. Having reviewed the operation and experience of the ITF so far, the Government decides to adopt a new strategy of innovation and technology development which emphasizes five key elements, i.e. focus, market relevance, industry participation, leverage on the Mainland, and better coordination among different elements of the innovation and technology programme. To implement the new strategy, we have adopted a new three-tier funding model of the ITF to support applied R&D in Hong Kong. Tier 1 involves the establishment of R&D Centres to provide a focal point for conducting applied R&D in specific focus areas for application in the relevant industries in order to enhance their competitiveness and longer-term technology development of the relevant industries in order to help transform Hong Kong's industries into high technology and high value-added industries. Tier 2 involves the funding of R&D projects under different focus themes with a much more specific and defined scope with a view to helping relevant industries meet their identified technology needs and requirements. Tier 3 involves the funding of more forward-looking and innovative R&D projects.

TIER ONE - R&D CENTRES

A. Selection of Technology Focus Areas

6. The Government identified a number of technology focus areas in 2004 for which R&D Centres might be set up. In June 2004, we issued a consultation paper to invite the public's views on these areas and the proposal of setting up R&D Centres. Based on the feedback received, we saw general and industry support for setting up R&D Centres in the following areas –

- (a) nanotechnology and advanced materials;
- (b) textile and clothing;
- (c) automotive parts and accessory systems;
- (d) logistics and supply chain management enabling technologies; and
- (e) information and communications technologies (including communications technologies, consumer electronics, intergrated circuit (IC) design and opto-electronics).

7. In selecting these areas, we have adopted the following criteria –

- (a) existing research capability - the R&D Centre are expected to work closely with local universities and R&D institutions. It is imperative that universities and R&D institutions possess considerable research strengths in the technology focus areas such that the R&D centre could leverage on their resources and competitive edge;

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- (b) competitive advantage - it would be advantageous if the technology focus area is backed up by a strong industry base in Hong Kong or the Pearl River Delta (PRD) such that a platform of commercializing the deliverables of the future R&D Centre could be provided;
- (c) industry needs and market potential - there should be clear industry needs and market potential for the R&D deliverables under the technology focus area so as to ensure the relevance of our investments in the R&D Centre to industry and support for the continued operation of the Centre;
- (d) industry commitment and support - priority should be accorded to technology areas where industry players are committed to R&D activities and indicate substantive support for the operation of the R&D Centres; and
- (e) clearly defined objectives for R&D Centres - to ensure effective use of resources, the R&D Centres should have clearly defined objectives and a roadmap for the technology development of the focus area.

B. Institutional Arrangements and Operation Mode of R&D Centres

8. Each R&D Centre would have an initial term of operation of five years. The Centre should be set up as a separate legal entity such that the Centre could play an independent and impartial role in fostering cooperation among the R&D institutions and cooperation with industry partners. The Centre would recruit a full-time Centre Director responsible for overseeing and managing the operation of the Centre.

9. The Centre would establish a Steering Committee to give overall direction to the Centre and review performance against the roadmap and milestones of the Centre. The Steering Committee would comprise representatives from industry, academia and R&D institutions to ensure that there would be independent overview of the Centre. In addition, the Centre would have a Technology Committee, comprising representatives from the industry and relevant experts from R&D institutions, to vet individual R&D projects to be undertaken by the R&D Centre, and to provide technology direction and technical advice to the Centre. CIT or his representative would be represented at the Steering Committee and Technology Committee of each R&D Centre.

10. Since the main objective of the R&D Centre is to conduct industry oriented R&D, each R&D Centre is required to entice industry participation and contribution to the R&D projects undertaken by the Centre. In this regard, an R&D Centre is required to consult the industry and develop a spectrum of industry focused R&D activities covering platform research, collaborative research and contract research so that industry partners could participate in different types of research activities at different levels.

11. In soliciting industry support, an R&D Centre would need to develop a mechanism to enable industry partners to support, contribute or invest in a project at different stages in the course of carrying out the R&D projects. The participation could take different forms, including, but not limited to, one or/and more of the following –

- (a) interested companies could pay a small membership fee to join the centre in order to gain access to information on project results and research outputs;
- (b) interested companies could support individual R&D projects by paying part of the R&D costs of the projects and have certain rights to further participate in the project as it progresses or to make use of project deliverables;
- (c) interested companies could bring background intellectual property (IP), which could be treated as equivalent to contribution subject to agreement with the R&D Centre on valuation; and
- (d) interested companies could invite an R&D Centre to undertake contract research for them by paying full project costs.

12. Except for contract research where participating companies would own all the IP rights by paying the full cost of the research, IPs generated from the R&D projects undertaken by the R&D Centre would normally be owned by the Centre. Depending on the terms of participation, the industry partners participating in the Centre could have one or more of the following rights and benefits from the R&D projects or in other forms –

- (a) having non-exclusive rights to license project IP and utilizing research output for commercial exploitation on reasonable terms to be agreed by project participants; and
- (b) sharing IP benefits in direct proportion to project contribution, provided that the project contribution exceeds the threshold (say a minimum of 5% of the project costs or a figure as determined by the Steering Committee of the R&D Centre).

13. The owner of project IP should grant licences to participants of the project on a need-to-use basis and on fair terms to be agreed by project participants.

14. Exclusive licensing is generally not encouraged for platform-type R&D projects unless at least the following terms and conditions are met –

- (a) a company has contributed at least 50% of the project cost; and
- (b) the exclusive licensee would have a significant presence of industry activities in Hong Kong; or
- (c) the exclusive licensing arrangement was necessary to enable commercialisation of the IP to form industry cluster; or
- (d) the exclusive licensing arrangement could generate significant economic benefits to Hong Kong.

15. The specific terms and conditions for the assignment of exclusive licence is subject to negotiations between project participants, and the granting of exclusive licence to participating companies would be subject to the assessment and approval by the respective Steering Committee and the ITC. An exclusive licence should only be granted to the intended licensee for a defined period. If the licensee does not commercialize the IP within that period, the R&D Centre would reserve the right to grant the licence to other interested parties. Notwithstanding this, the R&D Centre should also retain a royalty-free right to use, for future research purposes only, any project IP generated from a project undertaken by the Centre, regardless of whether the IP has been granted to a company exclusively or non-exclusively.

16. Each R&D Centre is required to evaluate its performance regularly according to a set of performance indicators. The performance indicators should include, but not limiting to –

- (a) industry participation as measured by the number of companies involved in R&D projects and the level of contribution made by them;
- (b) project performance as measured by whether the pre-set milestones are met timely and cost-effectively;
- (c) quality of R&D programme as measured by the number of patents granted, other IPs generated, etc.;

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- (d) utilisation of research output as measured by the adoption of research output by the industry and the number of licensing agreements signed and consulting services offered, etc.;
- (e) amount of revenue generated from R&D projects;
- (f) number of researchers trained and participated in R&D projects; and
- (g) overall contribution to the economy of Hong Kong.

C. Corporate Governance

17. Each R&D Centre is required to establish detailed guidelines on its corporate governance, including –

- (a) the management and control of the operation of the Centre;
- (b) mechanism for periodic update and review of the R&D programme;
- (c) project vetting, management and administration, and review mechanism;
- (d) reporting requirement, submission of annual report of the Centre and progress report of the projects to the Technology Committee and Steering Committee; and
- (e) control and auditing arrangements.

D. R&D Centre Proposals

18. Against the above establishment framework, we have invited different organizations which have expressed interest in hosting R&D Centres during the consultation exercise in June 2004 to submit detailed proposals on the selected technology focus areas identified in paragraph 6.

Nanotechnology and Advanced Materials

19. Nanotechnology and advanced materials technology offer a powerful enabling technology platform that could lead to a wide spectrum of innovative products. They present immense opportunities for Hong Kong industries to upgrade their products as well as improve their manufacturing processes and productivity. Recognizing the importance and potential of this area, the ITF has already supported the establishment of the Institute of NanoMaterials and

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NanoTechnology at the Hong Kong University of Science and Technology (HKUST). To build on the existing infrastructure, HKUST proposes to expand the scope of the Institute and set up an R&D Centre on Nanotechnology and Advanced Materials.

20. HKUST's proposal aims to develop new and value-added products; improved manufacturing processes through nanotechnology; and advanced material technologies for various local industries and industries in the PRD region. The Centre targets to conduct about 75 projects related to four technology areas, namely, Nanomaterials, Nanoparticles, and Nanotechnology Enabled Products; Nanoelectronics; Advanced Materials; and Advanced Manufacturing. In addition, the Centre proposes to establish a demonstration production line for high performance display.

21. In response to the advice of its International Advisory Committee, the Centre will also provide fast response technical services particularly to small and medium enterprises (SME), enhancing human resources in nanotechnology, and act as an information centre for latest technology development including safety and environmental regulations in the areas.

Textile and Clothing

22. Textile and clothing is one of the major manufacturing sectors in Hong Kong, employing a total of 45 816 workers in 2003. With the increasingly globalized economy and the complete removal of quotas this year under the World Trade Organization Agreement, the industry is facing enormous changes. To remain competitive, the local textile and clothing industry needs to build on its strong foundation and adopts new and innovative technologies to excel in high value-added manufacturing. Build on its on-going work on R&D in textile and clothing, the Hong Kong Polytechnic University (PolyU) proposes to host an R&D Centre for textile and clothing.

23. PolyU's proposal aims to set up a leading centre of excellence in research, development and technology transfer in fashion and textile technologies. It would be a Hong Kong-wide R&D Centre to support the continual development of technologies to enhance the competitiveness of the local fashion and textile industry. The Centre will initiate around 105 projects and focus on four areas, namely, new materials, textiles, and apparel products; advanced textile and clothing production technologies; product design and evaluation technologies; and enhanced industrial systems and infrastructure.

Automotive Parts and Accessory Systems

24. Various industry sectors are of the view that the rapid growth of the Mainland automotive industry has presented enormous opportunities for Hong Kong industry. Given Hong Kong's strong base of foundation industries, local manufacturers could provide the necessary technologies and components to support the development of Mainland automotive industry. With the rich experience in assisting the local foundation industries, the Hong Kong Productivity Council (HKPC) proposes to host an R&D Centre for automotive parts and accessory systems.

25. HKPC's proposal aims to provide an establishment to undertake market led R&D projects as well as to commercialize the R&D results with the collaboration of industry, universities and technology institutes in this area of automotive parts and accessory systems. The Centre would assist the industry to develop competitive new products and technologies to capture market opportunities and enhance the capabilities of industry in market intelligence, management, product design, quality standards and technical skills for meeting international standards. As part of the R&D Centre proposal, HKPC also proposes to upgrade Hong Kong's testing facilities in the local institutions to carry out testing of automotive parts/components and system. This plays an important part in the development of the automotive parts and accessory systems industry in Hong Kong as the Centre would need to ascertain that products developed from the R&D project deliverables could meet specified standards of the automotive industry. The Centre would initiate about 110 projects falling under three technology areas, i.e. electronic and software, safety systems and advanced materials and manufacturing technologies.

Logistics and Supply Chain Management (LSCM) Enabling Technologies

26. To consolidate its role as a major logistics hub and supply chain management base, Hong Kong should continue to develop the necessary knowledge base in LSCM enabling technologies to support the growth of the LSCM industry. In particular, radio frequency identification (RFID) technology presents immense opportunities for revolutionizing the industry by providing an unprecedented level of data collection and networking capability to LSCM solution providers. Over the years, Hong Kong has developed a solid R&D base in LSCM enabling technologies. The University of Hong Kong (HKU), CUHK and HKUST propose to co-host an R&D Centre for LSCM Enabling Technologies.

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27. HKU, CUHK and HKUST's joint proposal aims to foster the development of core competencies in applied R&D in LSCM related technologies, with initial focus on RFID, and to facilitate the adoption of these technologies by industries in Hong Kong and the Mainland. The Centre targets to conduct about 80 projects in five years and will initiate projects in three major technology areas, namely, RFID tag and reader technologies; networking and infrastructure technologies; and applications and decision support technologies.

Information and Communications Technologies (ICT)

28. The mission of ASTRI is to perform R&D activities to enhance Hong Kong's competitiveness in technology-based industries. ASTRI has identified four key areas under the Information and Communications Technologies as research priority areas, namely, Communications Technologies, Consumer Electronics, IC design and Opto-electronics. It plans to initiate about 100 R&D projects covering these four technology areas.

29. On communications technologies, ASTRI's proposal aims to provide world-class innovative and competitive wireless communications technologies addressing the needs of industries in Hong Kong, the PRD Region, and the Greater China region. The Centre will initiate projects in four key focus areas, namely, advanced personal and home networking technologies; broadband wireless access mobile platforms; cellular communications solutions and applications; and digital TV broadcast technologies and applications.

30. On consumer electronics, ASTRI's proposal aims to enable Hong Kong to become the innovation and design hub for consumer electronics in the Greater China region. The Centre will focus on providing key technologies and platforms to enable innovative product development. It will also provide infrastructure to support product realization, facilities and tools for standards compliance and testing, technical training and market intelligence. Five major technology areas have been identified for R&D: digital broadcasting technology, home media technology, portable media technology, multimedia communications technology and pervasive service technology.

31. On IC design, ASTRI's proposal aims to build up advanced IC design expertise in Hong Kong and to disseminate these technologies to companies in Hong Kong, the PRD and the Greater China region. The R&D programme will focus on developing application specific IC cores, nurturing local IC design expertise, and building up local IC design infrastructure and standard-knowledge bases. Four focus areas have been identified for development: lower power design, analog and mixed signal design and integration, embedded software, and integration and test.

32. On opto-electronics, ASTRI's proposal aims to stimulate the growth in the germinating opto-electronics industry in Hong Kong and PRD. The R&D programme will focus on the development of core photonics technologies and consumer opto-electronics. Five core technology platforms have been identified for development: polymer optical fiber, opto-electronics IC, optical devices, opto-electronic packaging and sensor technology.

33. In order to create better synergy and coordination among the four technology areas and to avoid overlapping, ASTRI would establish a single R&D Centre for ICT covering these four R&D programmes. Since ASTRI is an applied research institution set up as a limited company wholly owned by the Government, the organisation and management infrastructure is already in place. The Institute does not propose to establish a separate legal entity to run the R&D Centre. On the contrary, the Centre would be subsumed as a unit within ASTRI and ASTRI's Chief Executive Officer would be responsible for overseeing and managing the operation of the Centre. Other than the institutional structure, the operation of ASTRI's R&D Centre for ICT is similar to those proposed by other institutions and it is in line with the operation model and general guidelines stipulated for the Centres.

TIER II - FOCUS THEMES

34. During the public consultation conducted in June 2004, we identified two specific areas that were supported by some industry sectors and the academia, namely, digital entertainment and mechanical watch movements. While these areas are not of a sufficient scale or with industry contribution necessary for setting up R&D Centres, they fit well under the focus themes of the new three-tier funding model of the ITF.

A. Digital Entertainment

35. Digital entertainment is a relatively new and evolving industry with huge market potential. The digital entertainment industry in Hong Kong comprises mostly new and small companies which are in need of infrastructure and advisory support as well as supply of local talents. Unlike foundation industries which require technological upgrade to maintain their competitiveness, it would be more efficient to support the local digital entertainment industry through the provision of incubation services and training opportunities.

36. The Hong Kong Cyberport Management Company Limited (Cyberport) proposes to establish an incubation-cum-training centre at Cyberport to support high-growth start-up companies in innovative digital entertainment development in Hong Kong. The incubation-cum-training centre aims to nurture

up to 45 local companies to develop digital entertainment products and services, with initial focus on game development. Incubatees will be provided with rent free office space, equipment and advanced digital media production facilities at favourable terms, and other support in business development, promotion and marketing, partnership matching, technology and entrepreneurship training at subsidized rate. The expertise and facilities of the Digital Media Centre and the iResource Centre at Cyberport will be leveraged to enhance the services.

B. Mechanical Watch Movements

37. Hong Kong's watch manufacturing industry is the second largest in the world. Contributing some \$41 billion per year, it is also the fourth largest industry sector in the region. However, in the increasingly globalized economy, local manufacturers are facing severe competition from their overseas counterparts. The world leader in mechanical movements of watches is Switzerland while the electronic (quartz) movements are mostly made by Japan. In view of the lack of core technology for mechanical watch movements in Hong Kong, it would be difficult for the local watch industry to develop its own brand names and develop high-end products.

38. CUHK's proposal aims to develop the associated design method, materials selection, and manufacturing technologies in the fabrication of the mechanical watch movement in Hong Kong. With industry participation and collaboration with the R&D partners, the project would develop the required technology platform in fabricating a three-hand mechanical watch movement in Hong Kong, with quality comparable to a Swiss product. A pilot production facility would also be established to demonstrate the developed technologies for technology transfer and the production of the prototypes.

RECOMMENDATIONS MADE BY THE ASSESSMENT PANEL

39. An assessment panel comprising local industrialists and experts in the relevant fields was set up to assist the Government in assessing the R&D Centre proposals and the two applications submitted under the focus themes.

40. The Panel concluded that setting up R&D Centres in the selected technology areas would help improve the relevance of applied R&D to the needs of industry and enhance the coordination among different R&D institutions and the industry. Also, the R&D Centres could leverage on industry's resources through their contribution and participation in R&D projects. It supports the establishment of the five R&D Centres and has recommended that grants under the ITF be made to support the operating cost of the Centres for its initial five years and part of the R&D project costs.

41. The Panel also supports the establishment of the incubation-cum-training centre for digital entertainment at Cyberport as this could help cultivate an environment for start-ups and training more professionals in the digital entertainment industry. The Panel also supports CUHK's proposal to develop technologies and facilities to design and build mechanical watch movements as the proposal should meet the needs of the watch industry. With the capability in manufacturing watch movement locally, manufacturers could benefit from a more reliable local source of supply for their products.

FINANCIAL IMPLICATIONS

A. R&D Centres

42. To enable the operation of the R&D Centres, ITF would provide funding for setting up and maintaining the operation of the centres for the initial five years subject to the arrangement to be made for ASTRI as set out in paragraph 45 below. The Fund would also support individual R&D projects submitted by the R&D Centres on a case-by-case basis using the current established mechanism.

43. As regards the start-up cost and operating cost for the first five years of operation, a grant of **\$273.9 million**, broken down as follows, is required from ITF –

| Cost centre | \$'000 |
|--|----------------|
| (a) Establishment of an R&D Centre for nanotechnology and advanced materials | 61,400 |
| (b) Establishment of an R&D Centre for textile and clothing | 60,300 |
| (c) Establishment of an R&D Centre for automotive parts and accessory systems ^(Note 1) | 100,000 |
| (d) Establishment of an R&D Centre for logistics and supply chain management enabling technologies | 52,200 |
| Total | 273,900 |

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(Note 1) The establishment cost of the R&D Centre for automotive parts and accessory systems comprise \$65 million for setting up and maintaining the centre and \$35 million for the testing and certification facilities mentioned in paragraph 25.

Encls. 1 - 4

44. The above projected operating cost for each R&D Centre represents on average 16% of the total R&D expenditure for R&D projects expected to be undertaken by respective Centre ^(Note 2) in the first five years of operation, which is in the same magnitude of the overheads charged by UGC-funded universities for undertaking R&D projects funded by non-UGC grants. Details of the four R&D Centres' proposals, together with the breakdown of the budget and the cashflow for the five-year operation are at Enclosures 1 to 4. Subject to the outcome of the review and its ability to obtain adequate industry contribution as mentioned in paragraphs 60 and 61 below, the R&D Centre is expected to operate on a self-financing basis if it continues operation beyond the five-year period.

45. ASTRI has estimated that the establishment of the R&D Centre for ICT within ASTRI's existing organisational infrastructure would require extra operating expenses in the order of \$60 million per annum over the five-year period. As Government has already been supporting ASTRI's operating cost through recurrent subvention, we are critically reviewing how the extra R&D-related operating expenses could reconcile with the recurrent subvention to ensure optimal and cost effective use of public resources. We will seek Members' approval to fund ASTRI's requirements as appropriate.

46. Other than ITF's funding support to the centres' five-year operating cost, we expect substantial commitment and support from the industry on the projects to be conducted in the R&D Centres since the centres have been designed to meet the current and future expected demands of the industry in Hong Kong and the PRD. On this basis, the ITF would meet part of the indicative project expenditure while the Centres would need to meet the remaining cost through industry contributions. In addition, as the R&D Centres ramp up their operation, we expect them to generate income from its R&D projects through IPs and commercialisation of the project deliverables. The income so generated would be ploughed back to the ITF, but could be reserved for meeting the R&D Centre's project expenditure in the future. According to the initial business plans of the Centres, many of them are expected to be able to have up to 40% contributions from the industry as they ramp up to the fifth year of operation.

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(Note 2) The total R&D expenditure for R&D projects includes the net amount of project funding from ITF, contribution from the relevant industries and income generated from the projects. The support level of the operating cost for individual centres are as follows :

- 18% for the R&D Centre for nanotechnology and advanced materials;
- 17% for the R&D Centre for textile and clothing;
- 15% for the R&D Centre for automotive parts and accessory systems; and
- 13% for the R&D Centre for logistics and supply chain management enabling technologies.

47. Based on the current work plan and project estimates of the R&D Centres, the indicative amount for the various centres for implementing the proposed projects in the coming years are as follows –

| Indicative net project expenditure | \$'000 |
|--|------------------|
| (a) R&D Centre for nanotechnology and advanced materials | 209,000 |
| (b) R&D Centre for textile and clothing | 215,000 |
| (c) R&D Centre for automotive parts and accessory systems | 250,000 |
| (d) R&D Centre for logistics and supply chain management enabling technologies | 255,000 |
| (e) R&D Centre for information and communications technologies | 1,407,000 |
| Total | 2,336,000 |

48. Each R&D project to be undertaken by the centres will be subject to vetting by the respective Technology Committee and approval by the Administration before it can be rolled out. If the amount of ITF funding required for implementing individual R&D projects exceeds \$15 million, i.e. the ceiling of authority delegated to the Administration to approve other R&D projects under the ITF, we will seek Members' approval for these projects in due course.

B. Focus Themes

Digital Entertainment Incubation cum Training Centre

49. The total cost of Cyberport's project is \$31.6 million. It includes a 40-month operating cost of the Centre of \$7.9 million and programme costs for incubation and training at \$23.7 million. Cyberport estimates that it could secure a sponsorship from the industry and generate an income of \$0.8 million, and the net amount requested from the ITF is \$30.8 million. Details of Cyberport's project, together with the breakdown of the budget and the cashflow is at Enclosure 5.

Encl. 5

Mechanical Watch Movements

50. The total cost of CUHK's project is \$60 million, and the University has already secured a sponsorship from the watch industry of \$6 million. The net amount requested from the ITF is \$54 million. Details of CUHK's project, together with the breakdown of the budget and the cashflow is at Enclosure 6.

Encl. 6

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C. Funding Arrangement

51. Subject to Members' approval, we will meet the cashflow of the four proposed R&D Centres and two proposed projects under the focused themes for 2005-06 by offsetting an equivalent amount under Subhead 101 Innovation and Technology (block vote). We will include the necessary provisions in the Estimates for future years.

CONTROL MECHANISM

A. R&D Centres

52. We have set in place a comprehensive control mechanism to monitor the operation of the centres and their projects. Detailed measures are elaborated in the ensuing paragraphs.

53. Firstly, at the institutional level, the composition and appointment of the Steering Committee and Technology Committee of each R&D Centre would need to be accepted by the Administration in order to ensure that there would be independent overview of the Centre. CIT or his representative would be represented at the Steering Committee and Technology Committee of each R&D Centre.

54. Each R&D Centre is required to establish detailed guidelines on its corporate governance as set out in paragraph 17 above. The guidelines would need to be endorsed by the Centre's Steering Committee and approved by the Administration.

55. The Administration would monitor and control all the R&D Centres at two levels. For the five-year operating cost of the R&D Centres, all R&D Centres are required to conduct regular annual reviews, which critically assess the performance of the R&D Centre as a whole against its milestones as stated in the R&D Centre proposal during the five-year funding period. Each Centre is required to submit annual reports during the five-year period describing the operation and achievement of the Centre including the evaluation against the set of performance indicators as described in paragraph 16 above. In addition, each R&D Centre is required to submit quarterly financial statement to the Administration reporting on the income and expenditure of the Centre and the cashflow requirements. ITF grants will be disbursed by instalments on a quarterly basis, and the disbursement will be contingent upon acceptance of the quarterly financial statement and the annual report by the Administration.

56. To ensure that the ITF fund has been fully and properly applied to the operation of the Centre, each R&D Centre is required to submit annual and final audited accounts for the operation of the Centre audited by an independent auditor.

57. The Administration would report on the operation and performance of the R&D Centres to the LegCo Panel on Commerce and Industry annually in order to ensure transparency and public accountability.

58. Apart from conducting regular annual reviews on the performance of the Centres and project review of individual R&D projects, all R&D Centres are required to conduct two major reviews, one in the second year and the other in the fourth year. The first major review will critically examine, inter alia, –

- (a) whether the R&D programme and direction could actually meet the industry demand as reflected by the industry contribution and participation; and
- (b) whether the planned R&D programme would need to be adjusted to ensure that adequate industry contribution and income could be generated to sustain the programme for the whole five-year period.

59. The results of the review would provide input to the Administration to decide whether the R&D Centre should continue to exist and receive funding support from the ITF.

60. The second major review will critically examine, inter alia, –

- (a) whether the R&D Centre would likely meet the objectives and target set at the beginning of its operation;
- (b) whether it is necessary for the Centre to continue to operate after the five-year funding period;
- (c) the funding source of the Centre beyond the five-year funding period if the Centre continues to operate; and
- (d) the plan to wind down the Centre if it ceases operation.

61. If an R&D Centre is to continue operation beyond the five-year period, it is expected to do so on a self-financing basis, counting on its ability to obtain adequate industry contribution and generate income to meet its operating cost. However, if the Centre has already completed its mission or for other reasons, ceases operation before or after the five-year funding period, all the residual funds and any surplus income generated from the ITF funding during the project period will be returned to the ITF.

B. Focus Themes

62. The review and control mechanism for the two projects supported under the focus themes will follow the established mechanism of the ITF. Cyberport and CUHK will be required to submit half-yearly progress reports to the Administration. The project progress report will describe the progress against its milestones stated in the project proposal. ITF grants will be disbursed by instalments, and the disbursement will be contingent upon acceptance of the progress report by the Administration. The Administration has the right to terminate the funding of the project at any time if the project lacks on-going industry support or lacks progress in a material way or there is evidence that the chance of completing the project in accordance with the approved project proposal is low.

63. To ensure that the R&D project funds have been fully and properly applied to the approved project, Cyberport and CUHK will be required to submit annual and final audited accounts for the two projects audited by an independent auditor.

REVIEW OF PERFORMANCE OF THE NEW STRATEGY

64. Apart from the review, control and reporting mechanism in monitoring the performance of the R&D Centres and the two projects supported under the focus themes as set out in paragraphs 53 to 63 above, the Administration will also evaluate the overall performance of the new strategy on innovation and technology development.

65. The Administration would in due course undertake a study to analyse the economic and social benefits generated from the R&D Centres and the two projects with a view to assessing the overall impacts of these initiatives on the development of our industries. The Administration would report the findings to the Legislative Council (LegCo) Panel on Commerce and Industry when the study is completed.

CONSULTATION WITH LEGISLATIVE COUNCIL PANEL

66. We consulted the LegCo Panel on Commerce and Industry on 17 May 2005. The Panel supported the proposal and stressed the importance of putting in place a control mechanism to monitor the use of funds as well as the progress of the projects. While assuring that the R&D Centre proposal would address all concerns of the Members, the Administration also undertook to report on the operation and performance of the Centres to the Panel annually.

BACKGROUND INFORMATION

67. The ITF was established on 30 June 1999 to finance projects to help promote innovation and technology upgrading in manufacturing and service industries with a view to enhancing Hong Kong's economic development. Members approved, on 9 July 1999 vide FCR(1999-2000)36, an appropriation of \$5 billion to the ITF and the arrangement whereby the Financial Secretary has delegated authority to approve individual projects not exceeding the prevailing funding ceiling of a Category D project in the Public Works Programme (currently at \$15 million). Projects exceeding the \$15 million funding ceiling will require Members' approval under a separate individual subhead in Head 111.

Commerce, Industry and Technology Bureau
June 2005

HKUST's Proposal
R&D Centre: Nanotechnology and Advanced Materials

1. Project title

Nano and Advanced Materials Incorporated (NAMI)

2. Objectives

To establish an R&D Centre in partnership with industries and other research institutions for developing core competence in critical areas of nanotechnology and advanced materials that can lead to potentially new commercial products, processes and enhancing existing foundation industries in Hong Kong and the PRD region.

3. Institutional arrangement

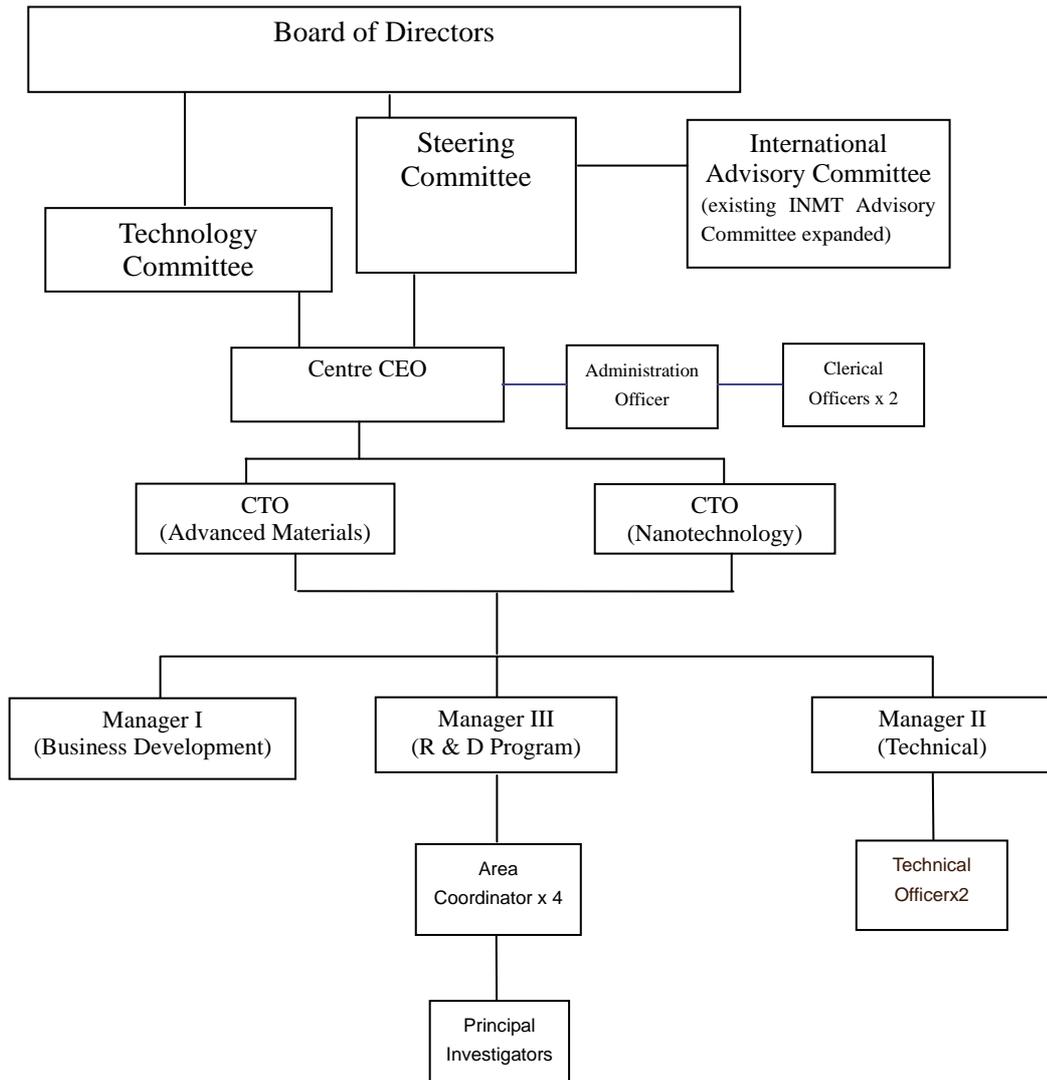
The Centre will be established as a non-profit limited company, wholly owned by HKUST, guaranteed with a Board of Directors comprised of the President and three Vice Presidents of HKUST. There will be a Steering Committee and Technology Committee with the following proposed composition:

- (a) a Steering Committee consisting of some representatives from industry, Government, other research institutions, HKUST as well as some professional representatives with financial and legal background, Centre's Chief Executive Officer (CEO) (Ex-Officio); and
- (b) a Technology Committee with a member of Steering Committee to chair and consisting of some Steering Committee members with technology background; industry and university representatives with technical expertise; representatives from Government, industry and HKUST; overseas experts; Centre CEO (Ex-Officio).

The existing International Advisory Committee of HKUST's Institute of Nanotechnology and Materials (INMT) (e.g. Neal Lane and Claude Weisbuch) will be retained to provide advice to the Steering Committee.

4. Organisation chart

There will be six key Centre staff including one Centre CEO, one Chief Technology Officer (CTO) for nanotechnology, one CTO for advanced materials and three Managers for project coordination, technical support and business development respectively.



5. R&D programme

The Centre targets to conduct about 75 projects in five years and focused on four core technology areas, namely -

- (a) **nanomaterials and Nano Enabled Products** – nanomaterials, nanoparticles and nanostructures with desired properties will be developed safely, environmental-friendly and at a low cost for a series of nanotechnology enabled products such as sensors, healthcare products, energy storage devices and a variety of consumer appliances;
- (b) **nanoelectronics: display and lighting** – it aims to apply nanotechnology to highly demanding nanoelectronics, displays and lighting applications by enhancing their performance and lowering their material and manufacturing cost;
- (c) **advanced materials: electronic packaging and assembly** – new and advanced electronic packaging materials and manufacturing technologies will be developed to enable the technology advancement of microelectronic packaging industry to meet the demanding package schemes and environmental requirements; and
- (d) **advanced manufacturing: technologies for advanced forming, surface treatment and environmental sustainability** – this will lead to upgrading of the production technologies for advanced materials, coatings, composites and catalysts related processes in the manufacturing sector. It emphasizes on improvement of process flexibility, productivity, product performance and reduction of manufacturing cost.

6. Collaboration parties

HKU, CUHK, City University of Hong Kong (CityU), Hong Kong Science and Technology Parks Corporation (HKSTP) and HKPC will participate in individual R&D projects as well as in the Steering Committee and the Technology Committee. Over 80 industry partners and industry associations including 59 local companies, 16 Mainland companies, seven overseas companies and three industry associations have indicated to support the R&D Centre. The industry partners will participate in the Steering Committee and Technology Committee. They may also join as sponsors, form consortium, collaboration, contract research and participate in individual projects.

7. Budget and cashflow

| | 2005-06* | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11* | Total |
|---|--------------|---------------|---------------|---------------|---------------|--------------|---------------|
| | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 |
| Funding required from ITF for the 5-Year Centre Setting Up and Operating Costs | | | | | | | |
| Staff (1) | 3,586 | 7,180 | 7,289 | 7,492 | 7,707 | 3,908 | 37,162 |
| Equipment and other capital cost (2) | 1,157 | 114 | 114 | 114 | 114 | 57 | 1,670 |
| Other direct costs (3) | 2,257 | 4,514 | 4,513 | 4,514 | 4,513 | 2,257 | 22,568 |
| Total establishment cost | 7,000 | 11,808 | 11,916 | 12,120 | 12,334 | 6,222 | 61,400 |

*part year

| Indicative R&D Project Costs from ITF | | | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|--------------|----------------|
| R&D expenditure | 25,030 | 53,518 | 51,048 | 41,166 | 22,884 | 5,266 | 198,912 |
| Pilot line for display | 0 | 26,840 | 114,610 | 10,350 | 0 | 0 | 151,800 |
| <u>Less</u> | | | | | | | |
| Industry contribution and income generated from R&D projects | (2,471) | (26,342) | (87,771) | (16,485) | (6,571) | (2,471) | (142,111) |
| Total indicative project funding from ITF | 22,559 | 54,016 | 77,887 | 35,031 | 16,313 | 2,795 | 208,601 |

Explanatory notes

- (1) Salaries, Mandatory Provident Fund (MPF) contribution and benefits for Centre staff including a Centre CEO, two CTO (part-time), three Managers, an administration officer, two technical officers and two clerical officers.
- (2) Expenditure for office equipment, facilities, re-structuring and re-allocation charges for office and laboratory, etc.
- (3) Expenditure for rental charges, consultancy fees, contract services for finance, purchasing, personnel, technology transfer and information technology, maintenance fees, travel expenses, office consumables and audit fees, etc.

PolyU's Proposal
R&D Centre: Textile and Clothing

1. Project title

Hong Kong Research Institute of Textiles and Apparel (HKRITA)

2. Objectives

HKRITA aims to set up a leading centre of excellence in research, development and technology transfer in fashion and textile technologies. It would be a Hong Kong-wide R&D Centre to support the continual development of technologies to enhance the competitiveness of the fashion and textile industry as to increase the Hong Kong economic development.

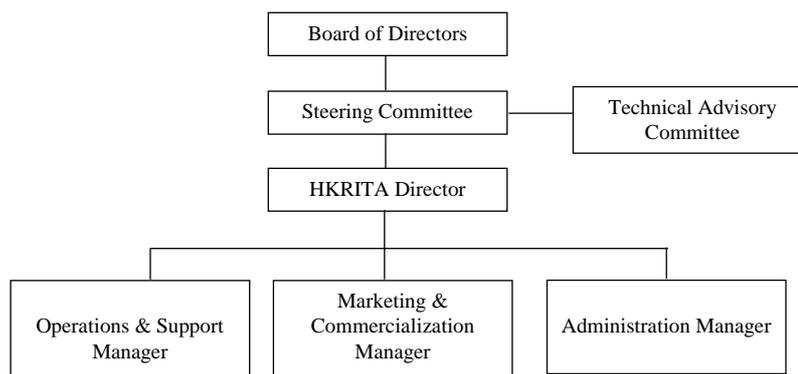
3. Institutional arrangements

It would be set up as an independent non-profit distributing company directly owned by the PolyU. The Board of Directors will consist of up to five members from the PolyU. The Steering Committee (SC), which is to set the direction and strategy of the Centre, will consist of representatives from academic institutions, industry, associations, industrial supporting organisations and the Government. The Technology Advisory Committee (TAC), which is to provide advice on technological development, technology road maps and strategies and to vet the projects submitted, will also consist of representatives from academic institutions, industry, associations, industrial supporting organisations and the Government.

4. Organisational chart

The Centre will consist of four key Centre staff including a Centre Director, a Marketing and Commercialisation Manager, an Administration Manager and an Operations & Support Manager. The Centre also has supporting staff of six for the 1st year rising to 16 for the 5th year.

/Board



5. R&D programme

28 projects will be commenced initially. As a whole, the Centre will carry out about 105 projects in five years under four technology focus areas, i.e.

- (1) **new materials and textile and apparel products** – this refers to the materials for the high-end textile/apparel, such as nano-materials, smart, intelligent and functional materials for the apparel products including the related processing technologies.
- (2) **advanced textile and clothing production technologies** – this includes the novel yarn production, seamless and fine-gauge knitting, 3D pattern design, multiple functional treatment and finishing, innovative garment washing, etc.
- (3) **innovation design and evaluation technologies** – this refers to the various innovative design and quality evaluation systems, such as the evaluation systems conducted by the sweating mannequin and soft ladies' mannequin and garment fit technology, etc.
- (4) **enhanced industrial systems and infrastructure** – this includes all necessary infrastructures such as the knowledge portal, design and technology database, technical training and consultancy, etc.

6. Collaboration parties

Many organisations have expressed interests to participate in the Centre's operation. In summary, this includes five local research institutions, over 28 industry partners, 11 industrial supporting organizations, trade and professional bodies, 11 overseas/Mainland research institutions and three Mainland professional bodies. Collaboration projects are basically classified under four categories of platform technologies, special advanced technologies, short-term projects and contract research.

7. Budget and cashflow

| | <u>2005-06*</u> | <u>2006-07</u> | <u>2007-08</u> | <u>2008-09</u> | <u>2009-10</u> | <u>2010-11*</u> | <u>Total</u> |
|---|-----------------|----------------|----------------|----------------|----------------|-----------------|---------------|
| | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 |
| Funding required from ITF for the 5-Year Centre Setting Up and Operating Costs | | | | | | | |
| Staff (1) | 3,250 | 7,000 | 7,800 | 8,600 | 9,600 | 3,250 | 39,500 |
| Equipment and other capital cost (2) | 1,500 | 0 | 750 | 0 | 0 | 0 | 2,250 |
| Other direct costs (3) | 1,400 | 3,100 | 3,900 | 4,150 | 4,550 | 1,400 | 18,500 |
| Total establishment cost | 6,150 | 10,100 | 12,450 | 12,750 | 14,150 | 4,650 | 60,250 |

* part year

| Indicative R&D Project Costs from ITF | | | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| R&D expenditure | 49,500 | 66,000 | 74,000 | 77,000 | 77,000 | 16,500 | 360,000 |
| <u>Less</u> | | | | | | | |
| Industry contribution and income generated from R&D projects | (16,875) | (24,250) | (28,500) | (32,000) | (37,500) | (6,125) | (145,250) |
| Total indicative project funding from ITF | 32,625 | 41,750 | 45,500 | 45,000 | 39,500 | 10,375 | 214,750 |

Explanatory notes

- (1) Salaries, Mandatory Provident Fund (MPF) contribution and benefits for the operation of HKRITA with four key Centre staff including a Centre Director, a Marketing and Commercialisation Manager, an Administration Manager and an Operation and Support Manager; and six support staff for the 1st year rising to 16 for the 5th year.
- (2) Expenditure for the basic office set up cost of the Centre at start-up phase including furniture, computers and the necessary audio-visual equipment.
- (3) Expenditure for office rental charge, legal support, general marketing and other outsourced support such as finance/accounting and human resources provided by the PolyU.

HKPC's Proposal
R&D Centre: Automotive Parts and Accessory Systems

1. Project title

Automotive Parts and Accessory Systems R&D Centre

2. Objectives

The objective of the Automotive Parts and Accessory Systems (APAS) R&D Centre is to provide a physical establishment to undertake market led R&D programmes as well as commercialising the R&D results with collaboration of industry, universities and technology institutes for the development of APAS industry. The Centre will provide support with an aim of enhancing the capabilities and competitiveness of industry including market intelligence, management, product design, quality standards and technical skills for meeting international requirements.

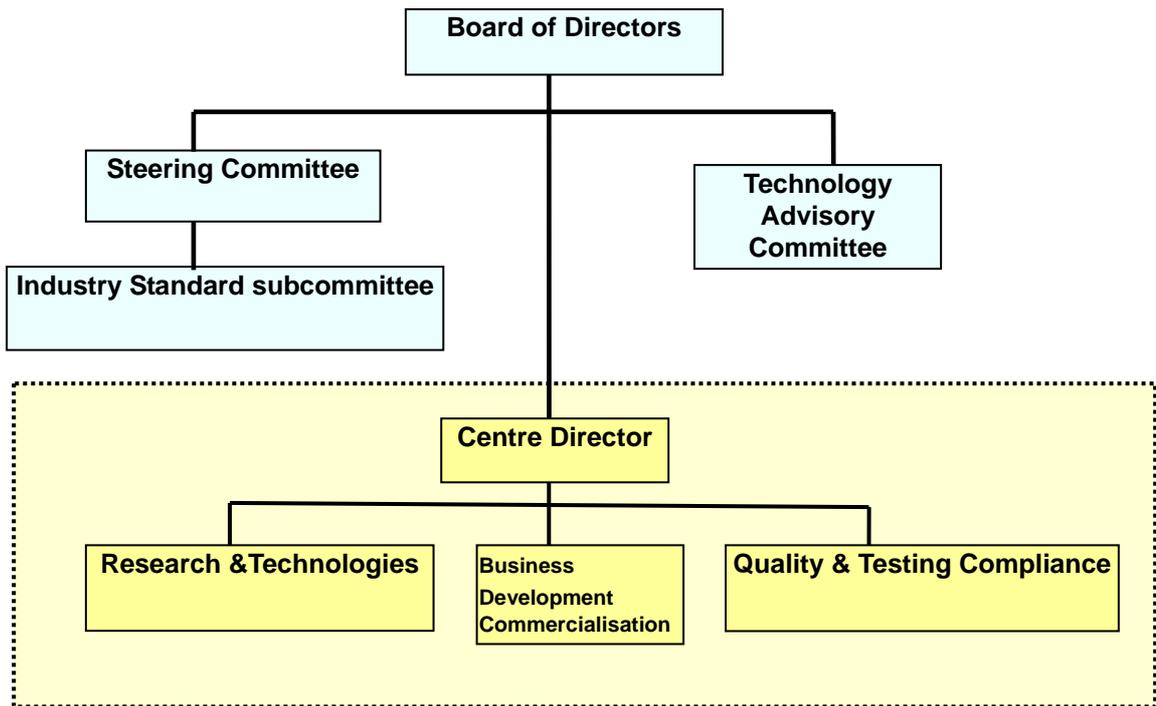
3. Institutional arrangement

The Centre is proposed to be a non-profit distributing limited Company directly managed by HKPC. It would consist of a Board of Directors (five members from HKPC and the R&D Centre Director), a Steering Committee (SC), a Technology Advisory Committee (TAC) and Industry Standards Sub-committee (ISS). The members of these committees would be invited from academic and research institutions, industry associations, financial and legal professionals, the government and technology experts according to the needs of the Committees. The SC would formulate policies in support of the strategies set out by the Board of Directors and the TAC is responsible in reviewing the projects submitted and making the recommendations. The ISS is to advise on industry standard matters.

4. Organisation chart

There would be five key Centre Staff, including a Centre Director, two principal Engineers, two Senior Engineers and eight other supporting staff. The organization chart is as below:

/Board



5. R&D programme

In the five year period, about 110 projects of different nature would be carried out. They are basically under three technology areas: electronic and software; safety systems; and advanced materials and manufacturing technologies. The projects would cover short term, medium term and long term projects under the nature of platform, collaboration and contract research categories.

12 projects will be commenced initially. As a whole, the Centre will carry out about 110 projects in five years under three technology focus areas, i.e.

(a) Electronics and software

Electronics subsystems are fast becoming important parts and delivering vital functions in automobiles. Electronics are important in in-vehicle entertainment, security, safety, navigation, engine and drive control and others. Working hand in hand with the electronics hardware is software that controls the workings of the systems.

(b) Safety systems

Safety systems are high value adding systems in an automobile. Safety systems are vital in preventing accident from happening and lowering the severity of injuries to the occupants of the vehicle in the events of an accident. Safety systems are mostly electro-mechanical in nature and require research and development of sensors and transducers.

/(c)

(c) **Advanced materials and manufacturing technologies**

Very often novel material has to be developed and used in order to satisfy the stringent operational and environmental requirements of automotive parts and systems. Advance manufacturing technologies are required to work with the new material. The manufacturing technologies have to be precise, repeatable and dependable.

6. Collaboration parties

The R&D Centre would implement projects in collaboration with eight major local research institutions (HKUST, PolyU, CityU, CUHK, Hong Kong Institute of Vocational Education, ASTRI, HKU and HKSTP), six HK industry Associations (Auto Parts, Foundry, Metal Finishing, Plastic Machinery, Optoelectronics & Screw and Fastener) and seven Mainland technology partners.

7. Budget and cashflow

| | <u>2005-06*</u> | <u>2006-07</u> | <u>2007-08</u> | <u>2008-09</u> | <u>2009-10</u> | <u>2010-11*</u> | <u>Total</u> |
|---|-----------------|----------------|----------------|----------------|----------------|-----------------|----------------|
| | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 |
| Funding required from ITF for the 5-Year Centre Setting Up and Operating Costs | | | | | | | |
| Staff (1) | 4,050 | 8,500 | 8,900 | 8,650 | 8,150 | 5,450 | 43,700 |
| Equipment and other capital cost (2) | 1,700 | 2,000 | 500 | 350 | 300 | 150 | 5,000 |
| Other direct costs (3) | 1,540 | 3,080 | 3,180 | 3,330 | 3,430 | 1,740 | 16,300 |
| Automotive parts testing and certification facilities (4) | 4,000 | 10,000 | 10,000 | 6,500 | 3,500 | 1,000 | 35,000 |
| Total establishment cost | 11,290 | 23,580 | 22,580 | 18,830 | 15,380 | 8,340 | 100,000 |

* part year

| Indicative R&D Project Costs from ITF | | | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| R&D expenditure | 24,150 | 80,850 | 119,700 | 111,300 | 76,650 | 28,350 | 441,000 |
| <u>Less</u> | | | | | | | |
| Industry contribution and income generated from R&D projects | (9,135) | (32,340) | (51,030) | (49,770) | (35,385) | (13,440) | (191,100) |
| Total indicative project funding from ITF | 15,015 | 48,510 | 68,670 | 61,530 | 41,265 | 14,910 | 249,900 |

/Explanatory

Explanatory notes

- (1) Salaries, Mandatory Provident Fund (MPF) contribution and benefits for the operation of the APAS R&D Centre. Key staff members include a Centre Director who is responsible for the overall management and operation of the Centre, two principal engineers, two senior engineers and eight clerical support staff to support the management and engineers. Staffing will be minimized at a level of 11 staff members at the start-up phase of the Centre and be expanded to 13 later.
- (2) Expenditure for major office and laboratory equipment and fitting out, hardware and software license (e.g. CAD/CAM/CAE software) and laboratory research facilities.
- (3) Expenditure for rental and management fee of centre office, centre laboratory area, hardware equipment and software maintenance fees, administrative support fees, indemnity insurance (max. indemnity amount \$20 million), IPs maintenance and training and promotion expenses, etc.
- (4) This item is to cover the cost for major equipment that is necessary for the testing and certification of R&D project deliverables in support of the implementation of the projects. The equipment would include Tenney vibration test system, dynamic cornering fatigue machine, radial fatigue, nondispersive infrared analyzer, flame ionization detector, chemiluminescent analyzer, labsphere goniophotometer, MI technologies antenna measurement system, semi anechoic chamber, reverberation chamber, EMI test receiver, bond strength tester, X-ray NDT machine, linear spherometer and scanning spectrophotometer, etc.

**HKU, CUHK and HKUST's Proposal
R&D Centre: Logistics and Supply Chain Management
Enabling Technologies**

1. Project title

Logistics and Supply Chain Management Enabling Technologies R&D Centre

2. Objectives

The goal is to establish the Logistics and Supply Chain Management Enabling Technology Centre to foster the development of core competencies in applied R&D in logistics and supply chain related technologies, with initial focus on RFID, and to facilitate adoption of these technologies by industries in Hong Kong and the Mainland to enhance their competitiveness.

3. Institutional arrangement

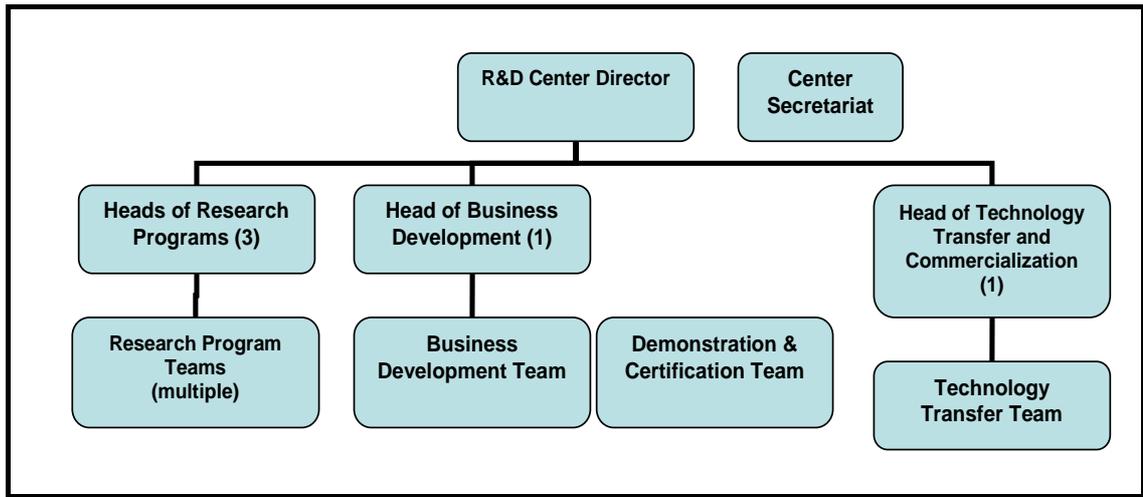
The Centre will be a non-profit limited company by guarantee with a Board of Directors (three members - one from each university on an equal share basis). There will be a Steering Committee and Technology Committee with the following proposed composition –

- (a) a Steering Committee consisting of a maximum of 15 members with representatives from Government, host universities, strategic partners, direct relevant industry & other sectors; other experts and the Centre director (Ex-officio); and
- (b) a Technology Committee with a member of steering committee to chair and consisting of other steering committee members with technology background; representatives from industry and trade organizations, universities and other institutions; Government; technology experts by invitation; and the Centre director (Ex-officio).

4. Organisation chart

There will be six key Centre staff including one Centre Director, three associate directors, one technology transfer manager, and one business development manager. The total full-strength headcount will amount to 14 in the 4th year.

/R & D



5. R&D programme

The Centre will be executed in three phases, namely, incubation phase (15 months), development phase (24 months) and maturity phase (21 months).

The Centre targets to conduct a total of 80 projects in five years in three major technology areas, namely –

- (a) **RFID tag and reader technologies** – to develop core design capabilities, system implementation and manufacturing processes of RFID tags and readers that are related to targeted logistics management applications. Key research areas include IC technologies, packaging and manufacturing of passive tags, passive and active RFID systems, antenna technologies and advanced technologies for RFID systems;
- (b) **networking and infrastructure technologies** – to develop an infrastructure including networking and standardization components to support both enterprise and inter-enterprise applications. Key research areas include standardization methodologies and tools IC technologies, EPC network components/ infrastructure, web services-based components repository, data synchronization and integration infrastructure, privacy and security, distributed technologies (P2P), RFID embedded systems, IPv6/wireless networking technologies, benchmarking and infrastructure middleware; and

/(c)

- (c) **applications and decision support technologies** – to reinforce Hong Kong's position as a world-class logistics hub with advanced technologies and to assist manufacturers and suppliers in this region to fulfill RFID adoption requirements set by their global buyers. Key research areas include RFID-enabled warehouse management system, decision support, cross border, return on investment evaluation tool for implementing RFID/EPC technology, retailing, manufacturing and decision technologies.

6. Collaboration parties

The Centre has engaged three strategic partners –

- (a) Hong Kong Article Numbering Association on standardization and compliance;
 (b) HKPC on industrial liaison and training; and
 (c) HKSTP on demonstration and certification centre.

Other industry partners will participate in the Steering committee and/or Technology committee. They may also join as sponsors, form consortium, collaboration and contract research.

7. Budget and cashflow

| | <u>2005-06*</u> | <u>2006-07</u> | <u>2007-08</u> | <u>2008-09</u> | <u>2009-10</u> | <u>2010-11*</u> | <u>Total</u> |
|--|-----------------|----------------|----------------|----------------|----------------|-----------------|---------------|
| | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 |
| <u>Funding required from the ITF for the 5-Year Centre Setting Up and Operating Costs</u> | | | | | | | |
| Staff (1) | 1,945 | 5,030 | 6,170 | 6,395 | 6,620 | 3,310 | 29,470 |
| Equipment and other capital cost (2) | 1,000 | 2,250 | 2,250 | 1,500 | 750 | 250 | 8,000 |
| Other direct costs (3) | 910 | 2,485 | 3,150 | 3,220 | 3,290 | 1,645 | 14,700 |
| <i>Total establishment cost</i> | 3,855 | 9,765 | 11,570 | 11,115 | 10,660 | 5,205 | 52,170 |

* part year

| <u>Indicative R&D Project Costs from ITF</u> | | | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| R&D expenditure | 12,000 | 46,250 | 89,750 | 122,000 | 107,750 | 41,250 | 419,000 |
| <u>Less</u> | | | | | | | |
| Industry contribution and income generated from R&D projects | (1,290) | (11,450) | (30,425) | (49,530) | (50,420) | (21,155) | (164,270) |
| <i>Total indicative project funding from ITF</i> | 10,710 | 34,800 | 59,325 | 72,470 | 57,330 | 20,095 | 254,730 |

/Explanatory

Explanatory notes

- (1) Salaries, Mandatory Provident Fund (MPF) contribution and benefits for six key Centre staff including a Centre director, three associate directors, a technology transfer manager and a business development manager. The total full-strength headcount will amount to 14 in the 4th year, including other support staff.
- (2) Expenditure for infrastructural equipment to facilitate the setting up and daily operation of the R&D Centre.
- (3) Expenditure for costs which are incurred for maintaining the daily operation of the R&D Centre such as accommodation and administrative costs.

Cyberport's Proposal

Focus Theme: Digital Entertainment Incubation cum Training Centre

1. Project title

An Incubation-cum-training Centre supporting high-growth start-up companies in innovative digital entertainment development in Hong Kong.

2. Objective

The goal is to establish an Incubation-cum-Training Centre (the Centre) at Cyberport to incubate companies in the digital entertainment and digital multimedia industries, initially focusing on game development. The Centre will provide a cultivating environment for start-ups and focused professional training courses and seminars to help develop commercially viable products and services with sustainable business model in the digital entertainment industry.

3. Institutional arrangement

The Centre will be set up as a unit under Cyberport. An Advisory Committee will be set up with non-executive and executive directors drawn from academia, commercial sector and the Government to provide advice or mentorship to incubates, to review performance and to steer the overall direction of the Centre. A 12-member Vetting Committee will be established to evaluate incubation applications and to set initial checkpoints and milestones for each incubation applicant.

4. Organisation

The Centre will comprise four key centre staff and two supporting staff. The Centre Manager will be responsible for the overall management and as a leading public spokesman. The Business Development Manager and the Training Manager will manage business related activities and run the Digital Entertainment Academy respectively. One Technical Support Engineer will provide technical support to incubatees.

5. Programme and support

This 40-month project comprises two core programmes, namely, Incubation Programme and Digital Entertainment Academy.

- (a) Incubation Programme – The Centre targets to support up to 45 digital entertainment or media start-ups for a period up to two years with rent free office space, equipment and advanced digital media production facilities at favourable terms.
- (b) Digital Entertainment Academy – The Academy will offer the following –
 - (i) professional training series on technologies and business development;
 - (ii) SME circle workshop and visionary seminar to share business insights and to develop visionary strategies;
 - (iii) youth creativity training to provide exposure on technical skill development and industry knowledge on digital entertainment tailored for young adults from the age of 10 to 17 to help foster early creative thinking and development; and
 - (iv) web-based training courses targeted for professional skill enhancements of latest production tools and techniques.

6. Collaboration parties

The possible collaboration includes –

- (a) academic and industry partners to run the Digital Entertainment Academy on training programmes;
- (b) partners such as Invest Hong Kong, Hong Kong Trade Development Council and Canada's TRILabs will collaborate in marketing and promotional activities; and
- (c) game development bases in Mainland and Canada, particularly in the on-line game and new media areas.

7. Budget and cashflow

| | <u>2005-06</u> | <u>2006-07</u> | <u>2007-08</u> | <u>2008-09</u> | <u>Total</u> |
|---|----------------|----------------|----------------|----------------|---------------|
| | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 |
| <u>Expenditure</u> | | | | | |
| Staff (1) | 640 | 1,920 | 1,920 | 1,920 | 6,400 |
| Equipment (2) | 1,475 | 0 | 0 | 0 | 1,475 |
| Other direct costs | 0 | 20 | 20 | 20 | 60 |
| Incubation programme (3) | 4,705 | 2,371 | 2,371 | 2,371 | 11,818 |
| Training programme (4) | 0 | 3,960 | 3,960 | 3,960 | 11,880 |
| <i>Sub-total (a)</i> | 6,820 | 8,271 | 8,271 | 8,271 | 31,633 |
| <u>Income</u> | | | | | |
| Sponsorship from industry | 0 | 556 | 0 | 0 | 556 |
| Other Income | 0 | 100 | 100 | 100 | 300 |
| <i>Sub-total (b)</i> | 0 | 656 | 100 | 100 | 856 |
| Total amount to be funded from ITF [(a) - (b)] | 6,820 | 7,615 | 8,171 | 8,171 | 30,777 |

Explanatory notes

- (1) Staff cost covers the salary of a Centre Manager, a Business Development Manager, a Training Manager, a Technical Support Engineer and two Project Assistants.
- (2) Equipment includes 3D scanning equipment, facial motion capture system, finger motion capture system and multimedia workstations, etc.
- (3) Incubation programme cost includes set up costs for incubatees, game production equipment utilization fees, legal and consultant fees.
- (4) Training programme cost includes internship staff and other training expenses.

CUHK's Proposal
Focus Theme: Mechanical Watch Movements

1. Project title

Develop technologies and facilities to design and build mechanical watch movements

2. Objectives

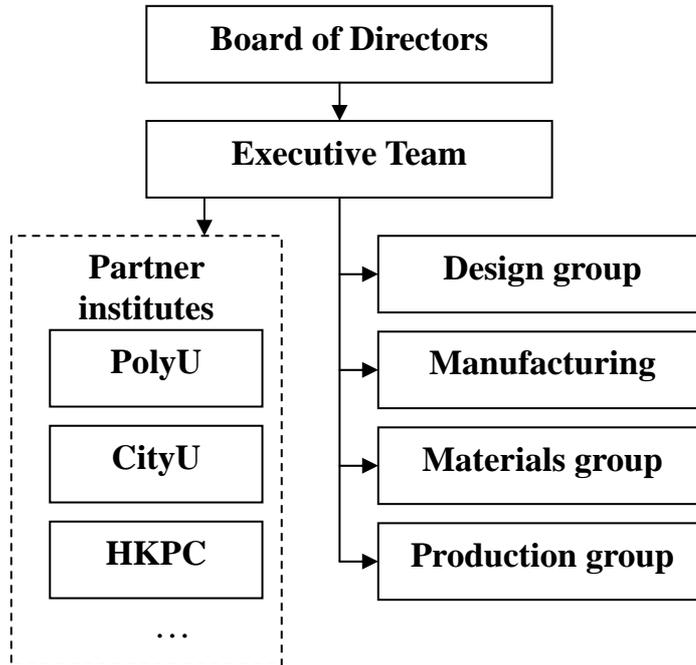
The proposal aims to develop the associated design method, material selection, and manufacturing technologies in the fabrication of the mechanical watch movement in Hong Kong. With industry's participation and collaboration with the R&D partners, the project would develop the required technology platform in fabricating a three-hand mechanical watch movement in Hong Kong, with quality comparable to the Swiss product. A pilot production facility would also be established to demonstrate the developed technologies for technology transfer and the production of the prototypes. In addition, this would train up a group of highly skilled engineers and technicians for the precision industry.

3. Institutional arrangement

A Centre will be set up under the management of CUHK for project implementation. The Board of Directors of the Centre consists of 11 members (six from industry, two from CUHK, one from collaborating R&D organisations, one from ITC and one independent). Directly under the Board is the Executive Team with four Technical Groups (design, manufacturing, materials, and production).

/4.

4. Organisation chart



The key staff of the Centre include one Centre Director, three research assistant professors and two local/overseas experts. There are 32 other supporting staff from local research institutes in implementing different projects under their respective R&D schedule.

5. R&D programme

The R&D programme involves 25 proposed projects to be carried out in three years by CUHK and its collaborating R&D partners. The programme is broadly divided into three phases with phase I projects focus on design, material and manufacturing technology development, phase II projects focus on manufacturing technology and resources development and phase III focus on new technology exploration.

As an important part of the industry driven programme, pilot production facilities will be established to produce 20 complete three-hand mechanical watch movements in the first year, 200 in the second year and then 500 in the third year in demonstrating the technologies developed.

/Following

Following are the proposed projects to be implemented in the first year –

- (1) Tolerance analysis and design optimization
- (2) Dynamic modeling and design optimization of the escapement mechanism
- (3) Dynamic balance of the hairspring / balance wheel assembly
- (4) Design and manufacturing of special gears and pinions for precision movement
- (5) Mainspring analysis and design
- (6) Precision bearing design and manufacturing
- (7) New hairspring material
- (8) Surface treatment / coating technology for precision bearings and axles
- (9) Tools and fixtures for machining precision engineering parts
- (10) Centimeter scale precision machine tools
- (11) Production of 20 Prototype mechanical movements

6. Collaboration parties

CUHK has received collaboration support from the CityU, PolyU, and HKPC. The Hong Kong Watch Manufacturers Association Limited, the Federation of Hong Kong Watch Trade and Industries Ltd. and the Watch and Clock Council of the Federation of Hong Kong Industries would be the industry partners to support the implementation of the project.

7. IP Arrangement

CUHK proposed that the IP generated would be shared based on the actual works of the collaborating R&D organizations.

8. Budget and cashflow

| | <u>2005-06</u> | <u>2006-07</u> | <u>2007-08</u> | <u>Total</u> |
|---|----------------|----------------|----------------|---------------|
| | \$'000 | \$'000 | \$'000 | \$'000 |
| <u>Expenditure</u> | | | | |
| Staff (1) | 10,230 | 11,226 | 10,230 | 31,686 |
| Equipment and other capital cost (2) | 6,000 | 3,600 | 2,400 | 12,000 |
| Other direct costs (3) | 3,305 | 5,005 | 8,004 | 16,314 |
| <i>Sub-total (a)</i> | 19,535 | 19,831 | 20,634 | 60,000 |
| <u>Income</u> | | | | |
| Cash sponsorship from industry | 3,000 | 1,500 | 1,500 | 6,000 |
| <i>Sub-total (b)</i> | 3,000 | 1,500 | 1,500 | 6,000 |
| Total amount to be funded from ITF [(a) - (b)] | 16,535 | 18,331 | 19,134 | 54,000 |

Explanatory notes

- (1) Staff cost includes the principal investigator, one to two overseas experts, three research assistant professors, five engineers, 16 research assistants and the other technical supporting personnel.
- (2) Equipment cost includes 3D laser cutting machine, three-axis CNC precision milling machine and turning machine, computer-controlled conduction oven and custom-made rolling mill, etc.
- (3) Other direct costs includes materials costs, tools and fixtures, testing materials and patent registration fees, etc.
