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Panel on Commerce and Industry

Meeting on 16 November 2010

**Updated background brief on
Research and Development Centres
under the Innovation and Technology Fund**

Purpose

This paper provides background information on the review of the Research and Development (R&D) Centres under the Innovation and Technology Fund (ITF)¹ and creation of a favourable ecological environment to facilitate the realization of research and development results, and a summary of views and concerns expressed by Members at previous discussions.

Background

2. Following public consultation in 2004, the Government promulgated a new strategic framework in early 2005 which aimed for a more focused approach to promote innovation and technology development.
3. After consulting the Panel on Commerce and Industry (the Panel) on 17 May 2005 on the proposal to implement the new strategic framework, the Administration submitted a funding proposal to allocate a total of \$358.7 million from the ITF to take forward the new strategic framework. The proposal was approved by the Finance Committee (FC) on 24 June 2005.
4. In April 2006, the Government set up the following five R&D Centres to drive and coordinate applied R&D in the selected focus areas and to promote

¹ The ITF was set up as a statutory fund under the Public Finance Ordinance (Cap. 2) by resolution of the Legislative Council on 30 June 1999. On 9 July 1999, the Finance Committee approved the proposed injection of HK\$5 billion into ITF which came into operation on 1 November 1999. The ITF is currently administered by Innovation and Technology Commission (ITC) and comprises four programmes, namely the Innovation and Technology Support Programme, University-Industry Collaboration Programme, General Support Programme and Small Entrepreneur Research Assistance Programme.

commercialization of R&D results and technology transfer:

- (a) Automotive Parts and Accessory Systems R&D Centre (APAS);
- (b) R&D Centre for Logistics and Supply Chain Management Enabling Technologies (LSCM);
- (c) Hong Kong Research Institute of Textiles and Apparel (HKRITA);
- (d) Nano and Advanced Materials Institute (NAMI); and
- (e) R&D Centre for Information and Communications Technologies (ICT)² under the Hong Kong Applied Science and Technology Research Institute (ASTRI).

Review of R&D Centres

5. 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 (i.e. the mid-term review and the comprehensive review), one in 2007 and the other in 2010. The mid-term review should 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.

The mid-term review aimed to provide input to the Administration to decide whether the R&D Centre should continue to exist and receive funding support from the ITF.

6. The comprehensive review, to be conducted in 2010, 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;

² Unlike the other four R&D Centres which are established as independent legal entities, ICT is established within the existing operational infrastructure of ASTRI, which is a limited company wholly owned by the Government. The operating cost of ICT is funded separately by the Government's annual subvention to ASTRI.

- (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.

7. 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.

Previous discussions

8. The Panel has followed closely the development of the R&D Centres since 2005. The Administration periodically updated the Panel on the income and expenditure of the R&D Centres and their progress achieved since their establishment in April 2006 up to June 2010. In general, Panel members supported the role of R&D Centres to spearhead the advancement of R&D of Hong Kong, and hoped that the R&D results could help the local industries in the long run.

Mid-term review of the R&D Centres

9. At the meetings on 21 April and 19 May 2009, the Panel followed up on the mid-term review of the operation of the R&D Centres and discussed the funding proposal to extend the operation of the four R&D Centres, namely APAS, HKRITA, LSCM and NAMI, up to 2013-2014. Panel members in general supported the continuous development of the R&D Centres, and welcomed the Administration's proposal to adjust the industry contributions to platform projects from 40% to 15% in response to members' suggestions.

10. Some Panel members pointed out that not many exhibitors and manufacturers had established a working relationship with the R&D Centres. These members suggested that efforts should be stepped up for staging trade shows to strengthen the connection between the Centres and the industry. The Administration should also review if the R&D projects matched with the needs of the industry, and whether the Centres had difficulties in promoting their R&D deliverables. Panel members urged the Administration to speed up the commercialization of R&D deliverables, especially in the Mainland market. They also suggested that the market strategy of R&D products should be competitive in terms of creativity rather than price, and the R&D Centres should play a critical role in providing novel ideas to the enterprises. As Hong Kong's competitiveness in R&D lagged behind other Mainland cities, members called on the Administration to strengthen cooperation with local and Mainland

universities/institutions to fully leverage on their technical hardware and software, and also help the R&D Centres forge closer ties with the manufacturers in the Pearl River Delta Region.

11. Following consultation with the Panel, the Administration obtained the approval of FC on 19 June 2009 to further allocate a total of \$369 million from the ITF to support the continued operation of the four R&D Centres up to 2013-2014. The Administration undertook to:

- (a) conduct a review in 2010 to look into the modus operandi and operating costs of the R&D Centres to see if there was any room for achieving greater savings and higher cost-effectiveness;
- (b) conduct a full review in 2011 on the R&D Centres' operation and overall performance for the first five-year period, taking full account of their experience in technology transfer and commercialization; and
- (c) review the targeted level of industry contributions (which was adjusted from 40% in the original 2005 proposal to 15% in the context of the 2009 mid-term review).

Interim report on the comprehensive review of R&D Centres

12. At the Panel meeting on 15 June 2010, the Panel was briefed on the progress report of the R&D Centres in 2009-2010 and the interim report on the comprehensive review of the R&D centres. Panel members noted that the key issues to be addressed in the comprehensive review included operating cost, governance structure and role of the R&D Centres, as well as the achievements and cost-effectiveness of the Centres. The Administration would also review the operation of the ITF in view of the feedback from R&D Centres and other stakeholders on the difficulties encountered in meeting the ITF funding and procedural requirements. A list of the initial observations on problems encountered in the administration of ITF and possible areas of improvements provided by the Administration is in the **Appendix**.

13. Some Panel members urged the Administration to simplify the relevant procedures, widen the scope of application of R&D deliverables, and ensure that the ITF funding could be extended to sustain the development of the R&D projects to achieve the commercialization of the research deliverables. They were also concerned that the manpower establishments of individual R&D Centres were weak and not sufficient enough to perform corporate management duties and provide audited financial reports. They called for the reorganization and integration of the Centres to achieve economies of scale and lower the operating cost of the Centres. The Administration advised that ITC was looking into the feasibility of providing some form of central support to help the centres strengthen the corporate governance front. This would help them focus valuable resources on actual R&D and commercialization work, with a view to achieving synergy and lowering the operating costs.

14. Panel members welcomed the Administration's initiative to promote the R&D deliverables in the public sector. Members expected that with the wider use of such R&D deliverables as the radio frequency identification technology and the light-emitting diode lighting amongst Government departments and public bodies, the cost of development and production would be lowered to enable more popular use of such technologies in the private sector. The Administration agreed that efforts should be focused on the promotion of the research deliverables by providing a reasonable number of prototypes for trial use by both the private and public organizations. A "demand-led" rather than a "supply-led" approach would be adopted in undertaking and funding applied R&D projects in future.

15. Some Panel members expressed concern about the sufficiency and transparency in the sharing of knowledge with the small and medium enterprises (SMEs) relating to R&D deliverables. They also suggested that the R&D Centres should enlist the assistance of trade associations in promoting research deliverables to the private sector. The Administration advised that apart from online information made available at Centres' websites, the Centres continued to network with different industry sectors, including major players in the Mainland, and seek to establish greater collaboration in research and commercialization.

Latest position

16. The Administration will brief the Panel on 16 November 2010 on the review of the operating costs of the R&D Centres and possible areas of improvement as well as the creation of a favourable ecological environment to facilitate the realization/commercialization of R&D results.

Relevant papers

Information papers provided by the Administration for the Commerce and Industry Panel meeting on 17 May 2005

<http://www.legco.gov.hk/yr04-05/english/panels/ci/papers/ci0517cb1-1496-3e.pdf>

Background brief prepared by the Legislative Council Secretariat for the Commerce and Industry Panel meeting on 17 May 2005

<http://www.legco.gov.hk/yr04-05/english/panels/ci/papers/ci0517cb1-1497e.pdf>

Minutes of the Commerce and Industry Panel meeting on 17 May 2005

<http://www.legco.gov.hk/yr04-05/english/panels/ci/minutes/ci050517.pdf>

Information paper provided by the Administration for the Finance Committee meeting on 24 June 2005

<http://www.legco.gov.hk/yr04-05/english/fc/fc/papers/f05-21e.pdf>

Minutes of the Finance Committee meeting on 24 June 2005

<http://www.legco.gov.hk/yr04-05/english/fc/fc/minutes/fc050624.pdf>

Information papers provided by the Administration for the Commerce and Industry Panel meeting on 21 February 2006

<http://www.legco.gov.hk/yr05-06/english/panels/ci/papers/ci0221cb1-903-5e.pdf>

Background brief prepared by the Legislative Council Secretariat for the Commerce and Industry Panel meeting on 21 February 2006

<http://www.legco.gov.hk/yr05-06/english/panels/ci/papers/ci0221cb1-904-e.pdf>

Minutes of the Commerce and Industry Panel meeting on 21 February 2006

<http://www.legco.gov.hk/yr05-06/english/panels/ci/minutes/ci060221.pdf>

Information papers provided by the Administration for the Commerce and Industry Panel meeting on 21 November 2006

<http://www.legco.gov.hk/yr06-07/english/panels/ci/papers/ci1121cb1-278-3-e.pdf>

<http://www.legco.gov.hk/yr06-07/english/panels/ci/papers/ci1121cb1-278-4-e.pdf>

Background brief prepared by the Legislative Council Secretariat for the Commerce and Industry Panel meeting on 21 November 2006

<http://www.legco.gov.hk/yr06-07/english/panels/ci/papers/ci1121cb1-279-e.pdf>

Minutes of the Commerce and Industry Panel meeting on 21 November 2006

<http://www.legco.gov.hk/yr06-07/english/panels/ci/minutes/ci061121.pdf>

Information paper provided by the Administration for the Commerce and Industry Panel meeting on 17 July 2007

<http://www.legco.gov.hk/yr06-07/english/panels/ci/papers/ci0717cb1-2088-4-e.pdf>

Minutes of the Commerce and Industry Panel meeting on 17 July 2007

<http://www.legco.gov.hk/yr06-07/english/panels/ci/minutes/ci070717.pdf>

Information paper provided by the Administration for the Commerce and Industry Panel meeting on 17 June 2008

<http://www.legco.gov.hk/yr07-08/english/panels/ci/papers/ci0617cb1-1865-3-e.pdf>

Background brief prepared by the Legislative Council Secretariat for the Commerce and Industry Panel meeting on 17 June 2008

<http://www.legco.gov.hk/yr07-08/english/panels/ci/papers/ci0617cb1-1865-4-e.pdf>

Minutes of the Commerce and Industry Panel meeting on 17 June 2008

<http://www.legco.gov.hk/yr07-08/english/panels/ci/minutes/ci080617.pdf>

Information paper provided by the Administration for the Commerce and Industry Panel meeting on 21 April 2009

<http://www.legco.gov.hk/yr08-09/english/panels/ci/papers/ci0421cb1-1286-7-e.pdf>

Updated background brief prepared by the Legislative Council Secretariat for the Commerce and Industry Panel meeting on 21 April 2009

<http://www.legco.gov.hk/yr08-09/english/panels/ci/papers/ci0421cb1-1286-8-e.pdf>

Minutes of the Commerce and Industry Panel meeting on 21 April 2009

<http://www.legco.gov.hk/yr08-09/english/panels/ci/minutes/ci20090421.pdf>

Information paper provided by the Administration for the Commerce and Industry Panel meeting on 19 May 2009

<http://www.legco.gov.hk/yr08-09/english/panels/ci/papers/ci0519cb1-1551-5-e.pdf>

Updated background brief prepared by the Legislative Council Secretariat for the Commerce and Industry Panel meeting on 19 May 2009

<http://www.legco.gov.hk/yr08-09/english/panels/ci/papers/ci0421cb1-1286-8-e.pdf>

Minutes of the Commerce and Industry Panel meeting on 19 May 2009

<http://www.legco.gov.hk/yr08-09/english/panels/ci/minutes/ci20090519.pdf>

Information paper provided by the Administration for the Finance Committee meeting on 19 June 2009

<http://www.legco.gov.hk/yr08-09/english/fc/fc/papers/f09-27e.pdf>

Minutes of the Finance Committee meeting on 19 June 2009

<http://www.legco.gov.hk/yr08-09/english/fc/fc/minutes/fc20090619a.pdf>

Information paper provided by the Administration for the Commerce and Industry Panel meeting on 15 December 2009

<http://www.legco.gov.hk/yr09-10/english/panels/ci/papers/ci1215cb1-614-3-e.pdf>

Minutes of the Commerce and Industry Panel meeting on 15 December 2009

<http://www.legco.gov.hk/yr09-10/english/panels/ci/minutes/ci20091215.pdf>

Information papers provided by the Administration for the Commerce and Industry Panel meeting on 15 June 2010

<http://www.legco.gov.hk/yr09-10/english/panels/ci/papers/ci0615cb1-2191-6-e.pdf>

<http://www.legco.gov.hk/yr09-10/english/panels/ci/papers/ci0615cb1-2191-7-e.pdf>

Updated background brief prepared by the Legislative Council Secretariat for the Commerce and Industry Panel meeting on 15 June 2010

<http://www.legco.gov.hk/yr09-10/english/panels/ci/papers/ci0615cb1-2191-8-e.pdf>

Minutes of the Commerce and Industry Panel meeting on 15 June 2010

<http://www.legco.gov.hk/yr09-10/english/panels/ci/minutes/ci20100615.pdf>

**Review of ITF ^(Notes)
Funding Mechanism**

Problems Observed	Possible Areas of Improvement
<p>(1) <u>Need to improve the overall framework of ITF</u></p> <p>The ITF mechanism was first introduced in 1999. Its framework has been revised over the years to meet various needs at different junctures. As a result it is quite complicated. There may also be overlap among different funding programmes, e.g. collaborative projects under the R&D Centres and under the University-Industry Collaboration Programme. There hence appears to be a need to rationalize and simplify the mechanism so it is easier for applicants (especially new comers) to understand as well as making it more "user friendly".</p>	<p>A comprehensive review will be undertaken with a view to consolidating, simplifying and improving upon the whole mechanism.</p>
<p>(2) <u>Need to shorten the process</u></p> <p>The entire process is lengthy. On average, it takes 6 to 10 months to process a project. In cases where the industry</p>	<p>There is a need to speed up the process, in particular the collaborative projects where the industry contribution is over 30%.</p>

- Notes
- There are at present four major programmes under ITF –
- (a) Innovation and Technology Support Programme (ITSP) – there are 2 categories:
 - platform projects which require industry contribution of at least 10% of the project cost. The industry sponsors will not be entitled to own the project IP; and
 - collaborative projects which require industry contribution of at least 30% (for R&D Centres' projects) or 50% (for non-R&D Centres' projects) of the project cost. Upon provision of industry contribution, the industry partner(s) will be entitled to exclusive right to utilise the project IP for a defined period or own the project IP;
 - (b) University-Industry Collaboration Programme (UICP) - under which the company is required to contribute no less than 50% of the project expenditure;
 - (c) General Support Programme (GSP) – under which non-R&D projects and activities are supported, e.g. surveys, seminars, etc; and
 - (d) Small Entrepreneur Research Assistance Programme (SERAP) - which operates as a matching grant for companies under the size of 100, i.e. company contributing 50%.

Problems Observed	Possible Areas of Improvement
<p>sponsor is keen to bring this to the market speedily, this will be a problem, i.e. it hampers commercialization.</p> <p>There also appears to be a need to rationalize the roles of parties involved in the vetting process – the vetting team in the R&D Centre, the Technical Committee of the Board, the technical vetting team in ITC, the admin and finance vetting team in ITC, etc.</p>	<p>At present, the Administration has introduced on a pilot basis a Focused Project Facilitation Programme (FPFP) to speedily deal with those projects of great potentials under the R&D Centres. The outcome will be reviewed.</p> <p>The roles of the parties involved in vetting will be reviewed to see if there is any room for streamlining. Also the Administration will see if certain steps can be done in parallel instead of consequential to speed up the process.</p>
<p>(3) <u>Need to extend the scope of ITF to provide sustainability</u></p> <p>The current ITF mechanism stops too early (usually upon submission of a report which summarizes the technological achievement and financial position of the project). There is no provision for actual production of prototype and samples. Without these, it will be difficult to test the products in a real setting and hence be refined to meet users' needs. Hence commercialization/realization of invention is more difficult.</p> <p>Also, an ITF project usually takes 18 to 24 months. Once the project is completed, even though there is need for further research to bring the "innovation" to a more mature stage, there is no guarantee for the next phase of funding which is subject to another round of application. The employment of the research assistants hired will have to be discontinued. Eventually even if funding can be satisfactorily attained, there will be a need to start everything afresh leading to a waste in effort.</p>	<p>Having regard to the feedback from the industry and research institutions, the Administration shall explore if the scope of ITF funding should be expanded to production of tools, prototype and samples which are essential in the commercialization process of the relevant new technologies. The Administration also need to consider when and how to fund the production of these prototypes amongst completed ITF projects.</p> <p>The above refers to extending the ITF "vertically" to provide for greater flexibility and assisting in realization.</p>

Problems Observed	Possible Areas of Improvement
<p>(4) <u>Need to extend the scope of ITF to provide synergy and enhance impact</u></p> <p>Under the current mechanism, ITF projects are conducted very much on an "individual" basis. While this is understandable in most cases, there would be a need to see if it is possible to create synergy among the various projects so as to move more speedily towards productization/commercialization and create a greater/splash effect.</p>	<p>ITC will play a more active role to identify projects with possible interface with other parties and bring all together. For example, in the case of LED lighting, at present, ASTRI, a number of universities, HKPC and private companies are all conducting research on this. The Administration will bring them together to see if there is a chance of cooperation.</p> <p>If there are a few applications all in the same area (e.g. how to combat water pollution) but on different aspects (e.g. odour, lack of oxygen, bacteria level), while the projects will still need to be assessed based on their individual merit, the Administration will also consider them from a macro angle to see if they together can bring a much wider positive impact to the community. If yes, the Administration will fund them accordingly – the "cluster project approach" or <u>extending the ITF "horizontally"</u>.</p>
<p>(5) <u>Need to refine the current vetting criteria to give greater emphasis to relevant factors apart from the scientific factor</u></p> <p>At present, the vetting criteria focus mainly on the scientific aspect. There is also no clear marking scheme made known to applicants. While this is understandable, there will be need to give regard to other factors which may be relevant and will bring a good outcome to the project.</p>	<p>The Administration will review the criteria to take into account other relevant aspects, for example:</p> <ul style="list-style-type: none"> - whether the proposal can dovetail Government policies or have a good social value – In the process of vetting, the Administration will hence seek the input of relevant bureaux/departments as appropriate; and - whether the proposal has a reasonable

Problems Observed	Possible Areas of Improvement
	commercialization/realization plan (e.g. support from university technology transfer office; indications of interest by Government departments; interested industry partners to adopt the R&D results; etc). If yes, the chance of success will be higher.
<p>(6) <u>Need to review the ITF mechanism to meet latest developments</u></p> <p>The ITF mechanism needs to be reviewed to see if it can meet the following:</p> <ul style="list-style-type: none"> - best promote technology collaboration with Mainland given the rapid developments in recent years, e.g. the "12-5" National Development Plan, setting up of Partner State Key Laboratories, etc; - able to dovetail effort on the testing and certification side with the issue of the report in late March 2010; and - provide more assistance to the SMEs. 	<p>The Administration will review the situation and propose improvements where appropriate, e.g. opening a new "line" on R&D for new testing methods.</p>
<p>(7) <u>Need to review the existing industry contribution models and the IP and benefit sharing arrangements</u></p> <p>There is a need to encourage more contribution from the industry (in HK, the percentage of R&D expenditure by the private sector is around 50% which is lower than the usual 70% in other developed economies), shorten the period of negotiation among parties in benefit sharing and motivate all parties concerned to conduct more R&D.</p>	<p>This is a most complex area and ITC will form a task force to review the situation to ensure a fair, transparent model for distributing the commercial benefits amongst all parties concerned - researchers/professors, universities, R&D Centres, industry sponsors, etc.</p>

Problems Observed	Possible Areas of Improvement
<p>(8) <u>Need to overcome the difficulty in securing 10% industry contributions in exceptional cases</u></p> <p>This is not a common problem. However, it may occasionally arise in cases where the research has a high social value but little commercial value, e.g. devising a super-CCTV system to detect falling objects from high buildings.</p>	<p>To consider in exceptional cases for waiving the industry contributions where there is strong policy support from Government bureaux/departments and the R&D results will bring exceptional benefit to the community.</p>
<p>(9) <u>Need to make greater use of GSP to enhance innovation and technology and build up a culture</u></p> <p>The GSP is a programme under ITF to support projects which seek to foster an innovation and technology culture in Hong Kong, e.g. studies, surveys, conferences, exhibitions, promotional and training programs. In the past three years (2007 to 2009), only 10 projects were supported with a total funding of about \$10 million which is quite low.</p>	<p>There is a need to enhance the usage of this Programme. The Administration feels that with greater effort, it can be a most useful vehicle to promote an innovation and technology culture in Hong Kong. The Administration will review the Programme to see how best it can be improved as well as publicize it to attract more applications (from universities, trade associations, NGOs, Government departments, etc).</p>