For discussion **FCR(2009-10)48**
on 22 January 2010

ITEM FOR FINANCE COMMITTEE

HEAD 155 – GOVERNMENT SECRETARIAT : INNOVATION AND TECHNOLOGY COMMISSION
Subhead 700 General non-recurrent
New Item "Research and Development Cash Rebate Scheme"

Members are invited to approve the creation of a new commitment of $200 million for setting up a "Research and Development Cash Rebate Scheme".

PROBLEM

We need to provide further financial incentives to encourage enterprises to participate in Research and Development (R&D), which is conducive to innovation and technology development in Hong Kong.

PROPOSAL

2. The Commissioner for Innovation and Technology, with the support of the Secretary for Commerce and Economic Development, proposes to create a new commitment of $200 million to launch a R&D Cash Rebate Scheme.

JUSTIFICATION

The Proposed Scheme

3. The Government is committed to driving Hong Kong to become a world-class knowledge-based economy through innovation and technology development. As part of this, in his 2009-10 Policy Address, the Chief Executive (CE) announced the launch of a new R&D Cash Rebate Scheme. The objectives of the Scheme are to –

/(a) .....

(a) inculcate a research culture among enterprises; and

(b) encourage them to establish long-term partnership with research institutions.

Coverage and Expected Benefits of the Scheme

4. Under the Scheme, we will provide a 10% cash rebate to private companies investing in R&D. Two categories of R&D projects will be covered by the Scheme –

(a) Innovation and Technology Fund (ITF) projects

the Scheme will apply to projects receiving funding support from the ITF (except the General Support Programme (GSP) – please see paragraph 22 below); and

(b) Non-ITF projects

the Scheme will apply to R&D projects funded entirely by enterprises in partnership with designated local research institutions. Designated institutions include –

(i) local universities;

(ii) R&D Centres under the ITF i.e. –

(1) Automotive Parts and Accessory Systems R&D Centre (APAS);

(2) R&D Centre for Logistics and Supply Chain Management Enabling Technologies (LSCM);

(3) Hong Kong Research Institute of Textiles and Apparel (HKRITA);

(4) Nano and Advanced Materials Institute (NAMI); and

(5) R&D Centre for Information and Communications Technologies (ICT) under the Hong Kong Applied Science and Technology Research Institute (ASTRI);

(iii) Hong Kong Jockey Club Institute of Chinese Medicine (HKJCICM) (also under ASTRI);

/(iv) .....

(iv) Hong Kong Productivity Council (HKPC); and

(v) Vocational Training Council (VTC).

5. It should be noted that certain types of R&D projects will not be eligible under the Scheme. These include –

(a) product enhancement/customisation and related work, conventional operation and business activities without any research content, such as product design and general system automation;

(b) private companies' in-house R&D work (except the Small Entrepreneur Research Assistance Programme (SERAP) projects funded under the ITF); and

(c) research projects outside the science and technology fields such as market research and management studies.

We will draw up and promulgate guidelines on the applied research projects to be covered by the Scheme.

Modus Operandi

6. The Scheme will be administered by the Innovation and Technology Commission (ITC) which will accept applications year round. At this stage we do not intend to set any restriction on the number of applications that may be submitted by a company, nor specify a ceiling on the amount of cash rebate to be received by a company in a given period.

(a) Application and Payment

ITF projects

7. Investments by private companies in R&D projects under the ITF are mainly on two funding modes –

(a) under platform projects, the project team is required to secure industry contribution of at least 10% of the estimated project cost, while the ITF will fund up to 90% of the project expenditure; whereas

(b) under collaborative projects, the industry partners are normally required to contribute 50% of the R&D project cost i.e. the ITF provides a 50-50 matching grant.

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8. Following approval of the ITF funding for a platform project, a company can submit the cash rebate application to ITC upon full payment of its pledged financial contribution. In the case of collaborative projects, we will adopt a two-stage payment approach to facilitate the early release of cash rebates. Companies can apply for the first instalment (50%) of the cash rebate after the actual R&D expenditure incurred exceeds 50% of the project budget while the remaining sum of the rebate will be disbursed after project completion and the final project report and expenditure accounts accepted by ITC.

9. A flowchart indicating the application and payment process and timeline for the ITF projects is at Enclosure 1. Encl. 1

"Non-ITF" projects

10. Regarding R&D projects undertaken by designated research institutions and funded entirely by companies, after the project proposal is agreed with the institution, the project proposal must be pre-registered with ITC before work commences. This is primarily for budget planning purpose. As regards the contents of the R&D projects, there will not be any separate requirement for the institutions and companies concerned to seek the prior approval of ITC. Since the projects are initiated and funded by enterprises, we believe that it should already be a good test for the technical merits and market relevance of the R&D projects. As long as the projects do not fall under the ineligible categories set by ITC and the expenditure is in order (paragraph 11 below), ITC will provide the cash rebate.

11. We will adopt a similar two-stage payment approach for "non-ITF" projects viz. companies can apply for the first instalment (50%) of cash rebate after the actual project expenditure incurred exceeds 50% of the project budget. When processing the application, we will request the relevant designated institution to submit a report certifying that the scope of the R&D project undertaken is within the ambit of the Scheme and that project expenditure is in order. The remaining sum of the rebate will be disbursed upon project completion and submission of a final report by the institution for ITC's acceptance.

12. A flow chart indicating the application and payment process and timeline for non-ITF projects is at Enclosure 2. Encl. 2

/(b) .....

(b) Launching of the Scheme

13. Subject to Members' approval, we propose to launch the Scheme at the beginning of the next financial year i.e. 1 April 2010. The Scheme will cover ITF projects approved on or after 1 April 2009 (so that the impact of the Scheme can be felt earlier), and "non-ITF" projects which are pre-registered with ITC on or after 1 April 2010.

14. In consultation with the parties concerned, we will draw up detailed application guidelines and procedures. We will upload the application guidelines and procedures onto ITC's web site. We will also conduct seminar(s) for potential applicants to enable them to better understand the details of the Scheme.

(c) Monitoring

15. For ITF projects, the existing ITF project monitoring and reporting mechanism (e.g. periodic progress reports, audited expenditure accounts, etc.) will apply. We will continue to verify the status of the companies, the financial contributions paid and the project expenditure.

16. For "non-ITF" projects, we will work closely with the designated institutions to monitor the operation of the Scheme. As mentioned in paragraph 11 above, the designated institutions are required to submit reports on the R&D projects undertaken under the Scheme. The R&D institutions will need to confirm that the projects undertaken are within the scope of the Scheme and the expenditure is proper. We will also conduct random checks to ensure compliance with the relevant guidelines and requirements as well as introduce other measures as necessary to prevent abuse.

(d) Evaluation

17. We will regularly review the Scheme, and put in place improvement measures in the light of operating experience and promulgate them on ITC's web site. We will also report progress of the Scheme to the Legislative Council Panel on Commerce and Industry (C&I Panel) on an annual basis. In addition, we will conduct a full review of the Scheme after three years to assess the impact on the level of private sector investment in R&D and consider the way forward.

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FINANCIAL IMPLICATIONS

18. To meet expenditure under the Scheme, we propose to create a non-recurrent commitment of $200 million. Subject to the timing of the applications to be received and the disbursement schedules of successful applications, our preliminary forecast on the amount of cash rebate to be disbursed under the Scheme in the coming five years is as follows -

Financial year	$ million
2010-11	20[1]
2011-12	40
2012-13	45
2013-14	45
2014-15	50
Total:	**200**

Having regard to past ITF statistics and survey findings from the Census and Statistics Department, we estimate that about $300 million of R&D expenditure will meet the requirements of the Scheme each year. With the introduction of the Scheme, the private sector will be encouraged to incur more R&D expenditure, both in supporting ITF projects and in undertaking more R&D work in collaboration with the designated local research institutions, and hence a bigger increase in the cash rebate for 2011-12 mainly from non-ITF projects is assumed. A more steady increase of about 10% every two years (which is the typical duration of a R&D project) is adopted in subsequent years' projections.

19. The annual recurrent expenditure arising from the Scheme is about $4.3 million. This is mainly for the engagement of non-civil service contract staff to implement the Scheme, publicity and promotion, etc.

PUBLIC CONSULTATION

20. We have consulted local universities, R&D Centres under the ITF, chambers of commerce, etc. on the proposal. They have indicated support for the Scheme and their comments will be taken into account as we draw up the guidelines for the Scheme.

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[1] A more conservative estimate for 2010-11 is adopted assuming there is a lead time before the Scheme will be operating in full swing.

21. We consulted the C&I Panel on the Scheme on 20 October and 15 December 2009. Panel members supported the proposal. Some Panel members requested for additional information about R&D investment in Hong Kong (as well as comparison with other places) and the outcome of commercialisation and technology transfer under ITF projects over the years. We have provided the relevant information in Enclosures 3 and 4.

Encl. 3&4

BACKGROUND

ITF

22. The $5-billion ITF was established in 1999 with the aim of providing funding support for projects that contribute to innovation and technology upgrading in manufacturing and service industries. At present, there are four major funding programmes under the Fund –

(a) Innovation and Technology Support Programme which requires –

(i) for platform projects, industry contributions from two companies of at least 10% of the project cost as an indication of market needs and potential; and

(ii) for collaborative projects, the company to contribute 50% of the R&D project expenditure;

(b) University-Industry Collaboration Programme under which the company is required to contribute no less than 50% of the project expenditure;

(c) GSP which mainly finances non-R&D projects like conferences, surveys, events, etc. to promote innovation and technology and its sub-programmes (viz. the Patent Application Grant Scheme and the Internship Programme); and

(d) SERAP which operates as a matching grant i.e. company contributing 50% of the project expenditure and the remaining 50% funded by the ITF subject to a ceiling of $4 million per project.

Except for GSP, these programmes provide funding support for various types of R&D projects undertaken by local research institutions, industry support bodies and private sector companies. As at end November 2009, the ITF had funded over 1 700 projects with a total commitment of $4.6 billion. Taking into account the income accumulated over the years, the uncommitted balance of the ITF (i.e. funding available to fund new projects) as at end November 2009 was $2.7 billion. Between April and November 2009, a total of 159 R&D projects were approved under the ITF and the total amount of industry contributions involved is $109 million from 210 companies.

/*Designated .....*

Designated Local Research Institutions

23. The ASTRI was established in 2001 with the mission to perform high quality R&D for technology transfer to industry, develop needed technical human resources and act as a focal point that brings together industry and university R&D assets. The HKJCICM was set up in the same year as a subsidiary of ASTRI to serve as the local focal point for action and coordination to steer Chinese medicine development.

24. In April 2006, the Government set up the following R&D Centres to provide a focal point for driving and coordinating applied R&D –

(a) APAS;

(b) LSCM;

(c) HKRITA; and

(d) NAMI.

Under ASTRI, an R&D Centre for ICT was set up as part of the R&D Centre programme.

25. HKPC was established by statue in 1967 to promote increased productivity of local industry. Taking into account the latest development in the industry, the current mission of HKPC is to promote productivity excellence through the provision of integrated support across the value chain of Hong Kong firms, in order to achieve a more effective utilisation of resources, to enhance the value-added content of products and services, and to increase international competitiveness.

26. Established in 1982, VTC is the largest vocational education, training and professional development group in Hong Kong. Apart from running pre-employment and in-service programmes, individual faculties of VTC provide consultancy services on latest technology in industrial and information processes and where appropriate, conduct applied research projects to assist local industry in different technology areas. Since the setting up of the ITF, VTC has undertaken seven R&D projects involving a total funding of $25.8 million.

Private Sector R&D expenditure

27. Between 1999 and 2007, our total public and private R&D expenditure has shown an increase from 0.47% to 0.77% of our Gross Domestic Product. That said, the percentage remained relatively low when compared to our neighbouring economies (see Enclosure 3). However, the share by the business sector increased from less than 30% in 2001 to nearly 50% in 2007. It should also be noted that unlike these countries and economies, Hong Kong does not invest in national defence which requires substantial R&D investments in certain technology areas by both public and private sectors.

Taskforce on Economic Challenges

28. In June 2009, the Task Force on Economic Challenges (TFEC) appointed by the CE outlined a series of recommendations to further develop the six economic areas where Hong Kong enjoys clear advantages, namely:

(a) medical services;

(b) environmental industry;

(c) education services;

(d) innovation and technology;

(e) cultural and creative industries; and

(f) testing and certification.

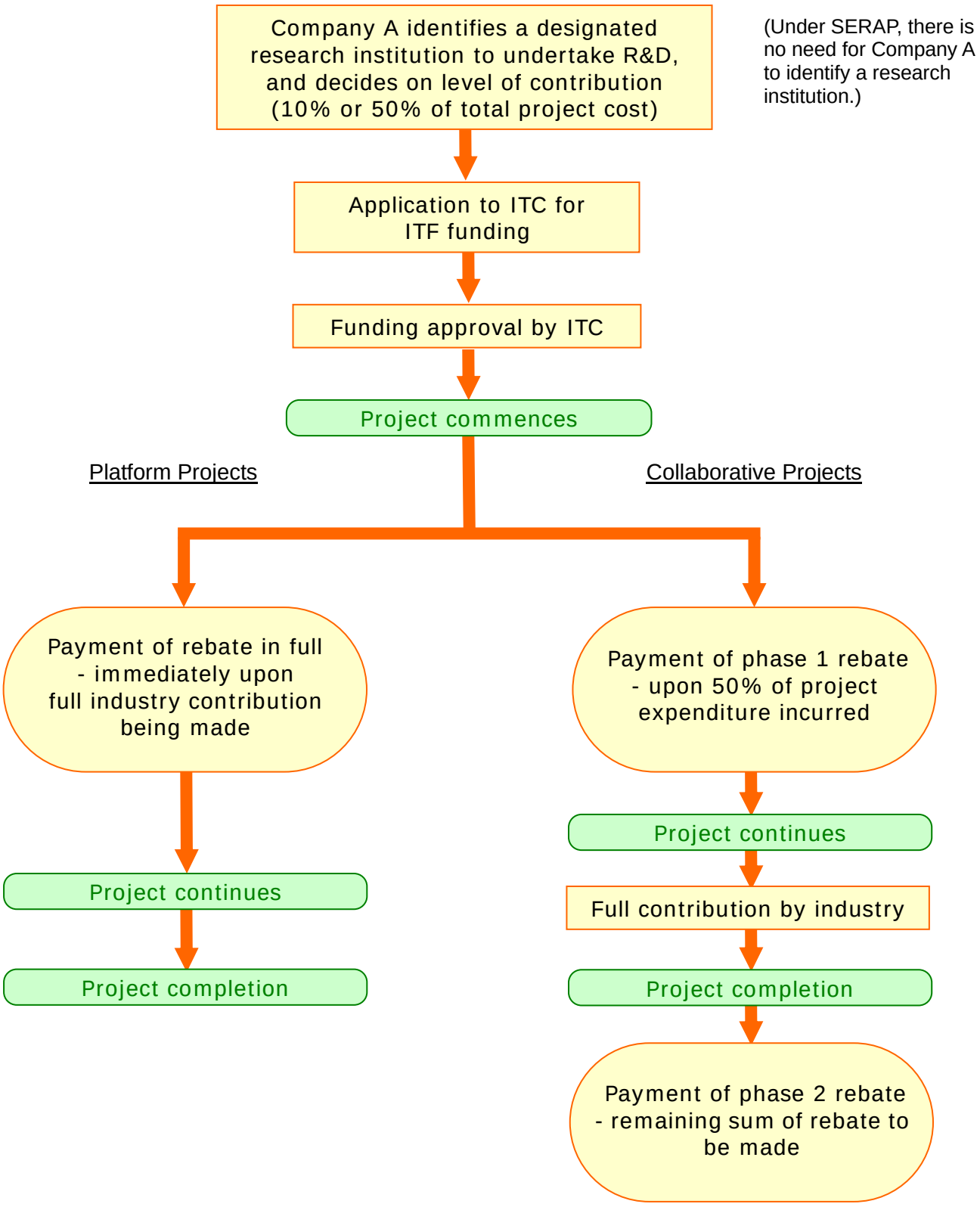
Under "Innovation and Technology", one of TFEC's recommendations is that Government should explore the provision of financial and policy incentives to encourage more R&D investment in the private sector.

Commerce and Economic Development Bureau
January 2010

R&D Cash Rebate Scheme

ITF Projects

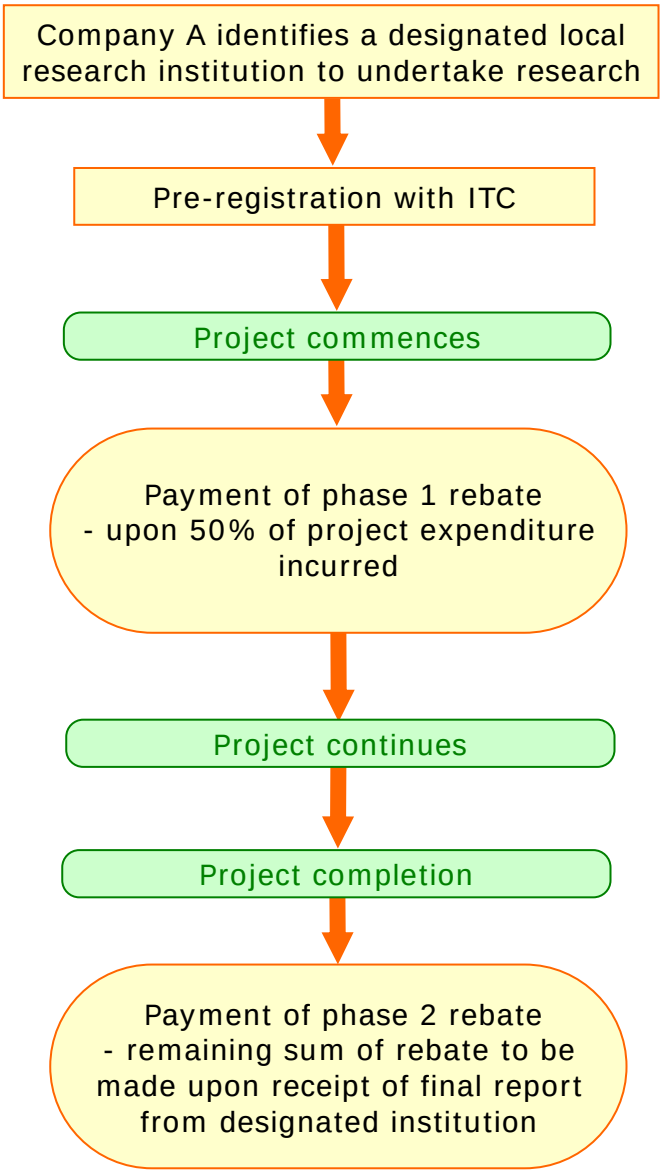
Remarks



R&D Cash Rebate Scheme

Non-ITF Projects

Remarks



(i) Designated institution to certify project scope and expenditure.
(ii) ITC will disburse phase 1 rebate if the report is found to be in order.

(i) Designated institution to certify project scope and expenditure.
(ii) ITC will disburse phase 2 rebate if the report is found to be in order.

Gross R&D Expenditure of Different Countries/Economies

	Total R&D Expenditure		Private R&D Expenditure		Public R&D Expenditure	
	US$ million	(as % of GDP)	US$ million	(as % of GDP)	US$ million	(as % of GDP)
Hong Kong						
2005	1,404	(0.79%)	723	(0.41%)	682	(0.38%)
2006	1,538	(0.81%)	809	(0.43%)	729	(0.38%)
2007	1,590	(0.77%)	776	(0.37%)	814	(0.40%)
Mainland China						
2005	29,907	(1.33%)	20,686	(0.92%)	9,221	(0.41%)
2006	37,671	(1.42%)	27,082	(1.02%)	10,588	(0.40%)
2007	48,773	(1.49%)	35,594	(1.09%)	13,180	(0.40%)
Ireland						
2005	2,526	(1.25%)	1,655	(0.82%)	871	(0.43%)
2006	2,784	(1.25%)	1,841	(0.83%)	942	(0.42%)
2007	3,336	(1.28%)	2,197	(0.84%)	1,139	(0.44%)
Japan						
2005	161,993	(3.55%)	118,515	(2.60%)	43,479	(0.95%)
2006	158,740	(3.61%)	117,361	(2.67%)	41,379	(0.94%)
2007	160,868	(3.67%)	120,081	(2.74%)	40,787	(0.93%)
Korea						
2005	25,177	(2.98%)	19,688	(2.33%)	5,489	(0.65%)
2006	30,638	(3.22%)	24,020	(2.53%)	6,618	(0.69%)
2007	36,411	(3.47%)	28,255	(2.70%)	8,156	(0.77%)
Singapore						
2005	2,753	(2.30%)	1,821	(1.52%)	932	(0.78%)
2006	3,153	(2.31%)	2,072	(1.52%)	1,081	(0.79%)
2007	4,206	(2.61%)	2,810	(1.74%)	1,396	(0.87%)
Taiwan						
2005	8,735	(2.45%)	5,899	(1.65%)	2,836	(0.80%)
2006	9,438	(2.58%)	6,410	(1.75%)	3,029	(0.83%)
2007	10,090	(2.62%)	7,014	(1.82%)	3,077	(0.80%)
USA						
2005	323,005	(2.56%)	240,113	(1.90%)	82,891	(0.66%)
2006	347,871	(2.60%)	262,176	(1.96%)	85,695	(0.64%)
2007	368,098	(2.61%)	280,539	(1.99%)	87,558	(0.62%)

Examples of Commercialisation and Technology Transfer for projects under Innovation and Technology Fund (ITF)

	Project Title/Project Team *(ITF funding)*	**Project details and Major R&D results**	**Details of commercialization/ technology transfer**
1.	Advanced and Affordable Magnetic Resonance Imaging (MRI) ASTRI ($1.36 million)	To develop 0.3T low-field MRI system for orthopedic and large animal imaging application.	A local company has commissioned ASTRI to develop the MRI system platform into low field MRI machines for whole body/ orthopedics to be produced at lower cost and sold at more competitive prices, targetting mainly at the Mainland market.
2.	LED for General Lighting - Area Light Source ASTRI ($12.87 million)	To develop thermal management platform (to reduce LED's temperature for spot lamp application), optical platform (with minimal mixing distance for LED spot lamp) and control platform (for embedded control application and retrofit application) for high-power LED spot-lighting applications.	Three US patents have been filed. The technologies were licensed to a local company in 2007, and the company subsequently successfully launched two new products in the worldwide market.
3.	Next Generation Antenna Sub-Assemblies ASTRI ($7.83 million)	To develop sub-assembly platform technologies for three antenna segments: multi-band and miniature antennas, beam-forming and MIMO (Multiple-Input-Multiple-Output) antennas. The technologies so developed could be applied across different wireless products for optimizing the data communication performance.	One of the project deliverables, RF jammer, has been installed at Lion Rock Tunnel in Hong Kong for avoiding double charge at road toll. Other deliverables include antenna in WiFi base stations, and RF design in wireless charger for iPhone. Royalty has been received from a number of local and overseas/Mainland companies.

	Project Title/Project Team *(ITF funding)*	Project details and Major R&D results	Details of commercialization/ technology transfer
4.	Practical MIMO for WiMAX/LTE Device ASTRI ($13.95 million)	To develop practical MIMO (Multiple-Input-Multiple-Output) technologies for the next generation wireless standards, WiMAX and LTE, with reference design form for immediate deployment for the industry.	The technologies have been licensed to a telecommunications vendor which has successfully mounted demonstration to carry out high definition video streaming over TD-LTE (i.e. China 4G standard) at the Mobile World Congress 2009 Barcelona. The technologies have also been licensed to a China mobile operator to carry out field trial for commercialisation. The company has also been chosen by a major China telecommunications operator to provide technical demonstration of the technologies (including baseband chipset, data card and CPE terminals) at the 2010 Shanghai World Expo (viz. a commercial trial).
5.	Development of Automobile Advanced Frontlight System Automotive Parts and Accessory Systems R&D Centre (APAS)/ Hong Kong Productivity Council (HKPC) ($3.46 million)	To develop an Adaptive Frontlight System (AFS) with intelligent features in which the lamp will self-adjust the illumination angle to adapt to the driving environment. A functional prototype was developed with performance comparable with overseas' product, but at a much lower price.	A Mainland car manufacturer is evaluating the system for potential integration into its new car model.

	Project Title/Project Team ***(ITF funding)***	**Project details and Major R&D results**	**Details of commercialization/ technology transfer**
6.	Novel Ring Yarns and Production Technology / Finer Nu-Torque Cotton Yarn Production The Hong Kong Research Institute of Textiles and Apparel (HKRITA)/ The Hong Kong Polytechnic University (PolyU) ($6.63 million)	To develop a ring spinning technology for mass production of finer torque-free (namely Nu-Torque) cotton yarns for weaving and knitting.	A local textiles company, in collaboration with PolyU, developed an industrial scalable yarn modification device for utilization in its yarn production. PolyU is considering setting up a spin-off company for commercialization.
7.	RFID Enablement Middleware for Enterprise Applications Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies (LSCM)/ The University of Hong Kong (HKU) ($10.50 million)	To develop a flexible middleware linking between RFID systems and backend legacy systems to allow easy RFID enablement to existing enterprise applications. The core RFID middleware technologies were developed and patented, with an RFID Application Enablement (RAE) Middleware prototype developed.	The RAE Middleware has been licensed to various business sectors, including banking, transportation and libraries. A HKU subsidiary is further developing the technologies into a one-stop solution for commercial uses.
8.	Demonstration line for the production of low-cost humidity sensor Nano and Advanced Materials Institute (NAMI)/ The Hong Kong University of Science and Technology ($0.41 million)	To develop a low-cost sensor device with fast response and high sensitivity to humidity. Manufacturing technology demonstrating pilot line has been achieved. The humidity sensor developed has better sensitivity, faster response time and simpler programming compared with those in the market.	The project attracted two companies to invest and manufacture the humidity nano- sensors.

	Project Title/Project Team *(ITF funding)*	Project details and Major R&D results	Details of commercialization/ technology transfer
9.	Development of Miniaturized Micro/ nano-injection Moulding Machines PolyU ($9.80 million)	To design and develop a micro-injection moulding machine for the production of miniaturized plastic components, such as micro gear and medical device.	PolyU set up a joint venture company with a local company to manufacture the micro-injection moulding machines.
10.	Light Four Wheel Vehicle EuAuto Technology Ltd ($1.91 million)	To build a light four-wheel vehicle for both local and the European Union market.	First version of the electric car, MyCar, was sold to several large corporations in Hong Kong, including the MTR Corporation and the Airport Authority, as well as overseas.
