

For discussion  
on 21 April 2020

**Legislative Council  
Panel on Commerce and Industry**

**Latest Progress of the Innovation and Technology Fund**

**PURPOSE**

This paper briefs Members on the latest progress and enhancement measures of various funding schemes currently under the Innovation and Technology Fund (“ITF”), and new funding schemes to be introduced under the ITF.

**BACKGROUND**

2. Established in 1999, the ITF is administered by the Innovation and Technology Commission (“ITC”). All along, the ITF has been financing projects that contribute to the innovation and technology (“I&T”) upgrading in our manufacturing and services industries to promote the long-term development of Hong Kong.

**FUNDING SCHEMES**

3. Currently, there are 16 funding schemes under the ITF, each having its own objectives, scope, and modus operandi. Information on the numbers of applications received and approved, the amount of funding approved and the effectiveness of the funding schemes since their launch is set out below:

***Supporting Research and Development (“R&D”)***

- (a) Innovation and Technology Support Programme (“ITSP”): introduced in 1999, the ITSP funds applied R&D projects

undertaken by local R&D Centres<sup>1</sup>, universities<sup>2</sup> as well as other designated public research institutes<sup>3</sup>. As at end February 2020, 2 622 projects have been funded, with total funding of over \$9.4 billion. These funded projects involve different technology areas, including biotechnology, Chinese medicine, electrical and electronics, environmental technology, information technology, manufacturing technology, materials science, nanotechnology, etc. Since 2017, the funded projects have generated over 210 intellectual property (“IP”) rights<sup>4</sup>.

Many R&D projects funded by the ITSP have achieved good results. For example, under the current novel coronavirus epidemic, a local university applied the R&D outcomes of a number of R&D projects funded by the ITSP to develop a multilevel coating which could kill bacteria and viruses. When sprayed on surfaces of materials, the coating will form an anti-bacteria film which could kill 99.9% of bacteria and highly contagious viruses. The coating has been commercialised and used by various organisations. A number of Government departments are considering using the coating to combat the epidemic. Moreover, the ITSP has funded an R&D project relating to big data analysis. A smart fever screening system has been developed by a local university based on the R&D outcomes of the relevant project. This system has already been adopted at a number of border control points and Government buildings to combat the epidemic.

On the other hand, the HKRITA has been funded by the ITSP to successfully develop an advanced production system for recycling post-consumer garment. The system could turn used garment into new clothes by going through the cycle of

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<sup>1</sup> The R&D Centres are the Hong Kong Applied Science and Technology Research Institute, Nano and Advanced Materials Institute (“NAMI”), Logistics and Supply Chain Multitech R&D Centre (“LSCM”), Hong Kong Research Institute of Textiles and Apparel (“HKRITA”), and Automotive Platforms and Application Systems R&D Centre (“APAS”).

<sup>2</sup> Including institutions funded by the University Grants Committee (“UGC”) and other local universities.

<sup>3</sup> Including all local self-financing degree-awarding institutions registered under the Post-Secondary Colleges Ordinance (Cap. 320), the Hong Kong Productivity Council, the Vocational Training Council, the Clothing Industry Training Authority and the Hong Kong Institute of Biotechnology.

<sup>4</sup> Since 2017, funded organisations have been invited to provide relevant information about IP rights in the post-project evaluation forms submitted after completion of the projects. As some organisations have yet to submit the evaluation form, the information has not fully reflected the total number of IP rights generated by all funded projects.

recycling, sterilisation, processing, spinning and fabrication. The project has solved various issues encountered by the local textile recycling industry in relation to space, machine setting and production during the recycling process of clothing. The system has won a gold medal in the “47<sup>th</sup> International Exhibition of Inventions Geneva”, the “Red Dot Award: Product Design 2019” and the “Fast Company’s Innovation by Design Awards for 2019”. In addition, the ITSP has funded a local university to develop “NanoBuilder”, a nano-printer which has combined the technologies of two-photon microscope and three-dimensional nano-printing. The “NanoBuilder” has received the “2018 R&D 100 Award” presented by the “R&D Magazine” of the United States and been internationally recognised as one of the top 100 revolutionary technologies in 2018. The relevant technology has been transferred to a local company, which successfully sold the first set of product to the Department of Biomedical Engineering of a local university in 2019.

- (b) Mainland-Hong Kong Joint Funding Scheme (“MHKJFS”): introduced in April 2019, the MHKJFS funds applied R&D projects jointly conducted by Hong Kong and the Mainland to further enhance R&D cooperation between the two places. The application period of the scheme ended in early July of the same year, and the two sides are assessing the 113 applications received.
  
- (c) Guangdong - Hong Kong Technology Cooperation Funding Scheme (“TCFS”): introduced in 2010, the TCFS funds applied R&D projects that include an element of cooperation between Guangdong and Hong Kong (i.e. projects involving collaboration between research institutes and/or enterprises in Guangdong/Shenzhen and Hong Kong) to enhance R&D collaboration between Hong Kong and Guangdong Province. As at end February 2020, 288 projects have been funded, with total funding of about \$896.3 million. Many projects funded by the scheme have already delivered results. For example, a local university announced in early February this year that it had successfully developed the world’s fastest coronavirus detection device by adopting the outcomes of an R&D project previously funded by the scheme.

- (d) Partnership Research Programme (“PRP”): launched in January 2019, the PRP consolidates the previous University-Industry Collaboration Programme and the collaborative stream of the ITSP to fund collaborative R&D projects jointly conducted by R&D Centres, universities and other designated public research institutes with private companies. As at end February 2020, 35 projects have been funded involving funding of about \$61.5 million. The funded enterprises can own the IP rights of the project and commercialise the R&D outcomes if it sponsors 50% of the project cost.
- (e) Enterprise Support Scheme (“ESS”): introduced in 2015, the ESS provides dollar-for-dollar matching funding of up to \$10 million for private companies to carry out in-house R&D projects. As at end February 2020, the ESS Assessment Panel has assessed 453 applications, of which 134 were supported. They involved 116 private companies, with private companies contributing about \$507 million and the ITF contributing about \$433 million.
- (f) R&D Cash Rebate Scheme (“CRS”): introduced in 2010, the CRS provides cash rebates to private companies for their expenditure in ITF-funded R&D projects and other R&D projects fully funded by the private companies and undertaken by local universities or other designated public research institutes. The level of cash rebate was 10% in 2010, and was increased to 30% in 2012, then to 40% in 2016. As at end February 2020, 1 390 companies have been granted cash rebates of about \$602 million.
- (g) Midstream Research Programme for Universities (“MRP”): launched in 2016, the MRP funds midstream R&D projects undertaken by UGC-funded institutions. The theme of the first two rounds of application was “Elderly Health and Care”. As at end February 2020, a total of 25 projects have been funded involving funding of about \$121 million. Of which, 12 projects are collaboration R&D projects involving multiple institutions. The third round of application invited funding applications for R&D projects under the theme of “Health Technologies for Diagnosis”, and the deadline for applications was 20 April.

## *Facilitating Technology Adoption*

- (h) Public Sector Trial Scheme (“PSTS”): introduced in 2011, the PSTS supports public sector bodies to try out new technologies or products developed from ITF-funded projects and by incubatees/graduate tenants of the Hong Kong Science and Technology Parks Corporation (“HKSTPC”) and the Cyberport with a view to assisting the relevant enterprises/organisations to apply local R&D outcomes to local use and enhance the prospects of realisation and commercialisation. As at end February 2020, 240 projects have been funded with funding of about \$447 million, benefitting over 140 organisations to undergo more than 320 trials.

For example, the Water Supplies Department has tried out a novel inline hydropower and energy storage system developed by a local university. The system can provide power supply to the data monitoring system of medium water pipelines, which significantly enhances the reliability of the information system of the water supply network. As a result, the system helps improve the water supply management of the city and allows more effective control and early warning of water pipeline leakage. In addition, the PSTS has supported the HKRITA to provide quality and comfortable compression socks for the elderly to try on. The project helped the HKRITA analyse the pressure distribution on the feet of the elderly, thereby improving the surface structure of the compression socks with the aim to improving the blood circulation of the elderly’s feet.

To assist more local technology companies to realise and commercialise their R&D outcomes and to encourage public sector organisations in utilising more local R&D outcomes, we have extended the funding scope of the PSTS to cover all technology companies conducting R&D activities in Hong Kong since 30 March this year to support them to produce prototypes/samples of their R&D outcomes and/or conduct trials in the public sector. The maximum funding amount for each project is \$1 million.

- (i) Technology Voucher Programme (“TVP”): introduced in 2016 as a pilot programme, the TVP subsidises eligible local enterprises and organisations on a matching basis to use

technology solutions to improve their productivity, or to upgrade/transform their business processes. A number of enhancement measures were announced in the 2019-20 Budget and 2020-21 Budget.

Since 27 February 2019, the TVP has been made a regular programme under the ITF. The eligibility criteria have been expanded to cover companies incorporated and registered in Hong Kong under the Companies Ordinance that are exempted from business registration, and statutory bodies set up in Hong Kong (these companies/organisations should not be receiving Government recurrent subvention). The funding ceiling per enterprise/organisation had been doubled from \$200,000 to \$400,000, and the maximum number of approved projects had been increased from three to four.

Since 1 April 2020, with a view to encouraging the wider use of technology solutions among local enterprises/organisations to increase their productivity and competitiveness, we have further enhanced the TVP by raising the Government's funding ratio in each approved project from two-thirds to three-quarters and increasing the funding ceiling per applicant and the maximum number of approved projects from \$400,000 and four to \$600,000 and six respectively.

As at end February 2020, the TVP has received a total of 3 442 applications (excluding those subsequently withdrawn or unable to be processed due to ineligibility/missing documents). Of the 2 318 applications assessed so far, 2 117 have been approved, involving a total funding amount of about \$320 million and representing a success rate of about 91%.

To evaluate the effectiveness of the TVP, applicants are required to submit an evaluation report to the Innovation and Technology Commission (ITC) six months after project completion on the extent the projects have enhanced their competitiveness through increasing productivity or upgrading or transforming their business processes. So far, 398 beneficiary enterprises have completed their projects and submitted evaluation reports to the ITC. 97% of them were of the view that the projects were conducive to enhancing their competitiveness. Almost all of them indicated that the ITC should continue to implement the TVP.

## *Nurturing I&T Talents*

- (j) Researcher Programme (“RP”): introduced in 2004, the RP funds enterprises/organisations undertaking R&D projects funded by the ITF, incubatees and I&T tenants of the HKSTPC and the Cyberport as well as start-ups selected for investment under the Innovation and Technology Venture Fund to hire a maximum of two local graduates as researchers, thereby nurturing more I&T talents.

To encourage more local graduates to pursue a career in I&T, with effect from 27 February 2019 (i.e. the date of announcement of the 2019-20 Budget), we have increased the maximum monthly allowance for researchers with a Bachelor degree from \$16,000 to \$18,000, and the maximum monthly allowance for researchers with a Master degree from \$19,000 to \$21,000. The maximum funding period for each researcher under the RP has also been extended from 24 to 36 months.

As at end February 2020, the RP has approved nearly 4 800 applications with funding of about \$1.28 billion. The average engagement period of researchers is over 14 months. About 70% of the researchers who have completed engagement under the RP indicated that they are being employed in the I&T field or plan to pursue a career in R&D.

To further enlarge the I&T talent pool in Hong Kong, the funding scope of the RP has been expanded to cover all technology companies conducting R&D activities in Hong Kong since 9 March this year such that more technology companies could hire R&D talents through the RP to assist in R&D projects.

- (k) Postdoctoral Hub (“PH”): introduced in 2018, the PH funds enterprises/organisations undertaking ITF R&D projects, incubatees and I&T tenants of the HKSTPC and the Cyberport as well as start-ups selected for investment under the Innovation and Technology Venture Fund to hire a maximum of two postdoctoral talents to engage in R&D work. The maximum monthly allowance for each postdoctoral talent is \$32,000.

To further nurture I&T talents, with effect from 27 February 2019 (i.e. the date of announcement of the 2019-20 Budget), we

have extended the maximum funding period for each postdoctoral talent from 24 to 36 months to allow sufficient time for them to contribute to their R&D projects.

As at end February 2020, we have approved 919 applications (including 722 graduates from local institutions and 197 graduates from non-local institutions) with funding of about \$530 million. The average engagement period of postdoctoral talent is about 16 months.

To further enlarge the I&T talent pool in Hong Kong, the funding scope of the PH has been expanded to cover all technology companies conducting R&D activities in Hong Kong since 9 March this year such that more technology companies could hire R&D talents through the PH to assist in R&D projects.

- (l) Reindustrialisation and Technology Training Programme (“RTTP”): introduced in 2018, the RTTP funds local enterprises on a 2(Government):1(enterprise) matching basis for their staff to receive training in advanced technologies, especially those related to “Industry 4.0”. The RTTP is administered by the Vocational Training Council (“VTC”) and overseen by VTC’s Innovation and Technology Training Board, which also determines the types of technology training that can be funded. As at end February 2020, the RTTP has approved 388 applications for registering public courses and funding of about \$13.67 million for 2 181 trainees to receive training in advanced technologies.

### ***Supporting Technology Start-ups***

- (m) Technology Start-up Support Scheme for Universities (“TSSSU”): launched in 2014, the TSSSU supports professors and students of six universities (i.e. the University of Hong Kong, the Chinese University of Hong Kong, City University of Hong Kong, the Hong Kong University of Science and Technology, Hong Kong Baptist University and the Hong Kong Polytechnic University) to start technology businesses and commercialise their R&D results. As at end February 2020, a total of about \$162 million has been provided for 250 start-ups.



Start-ups funded by the TSSSU have to submit an annual report on the development of their businesses via their associated universities after the close of the financial year. As at 2018-19, of the 188 funded start-ups, 41 have been presented with international awards, 111 have generated a total of more than 900 IP rights from their R&D results; 129 have rolled out in the market more than 180 products or services; and 97 have generated business revenue. In addition, 124 start-ups were successful in soliciting investment. The total investment received amounted to some over \$360 million, with some over \$260 million (around 70%) raised from private investors.

Among the above 188 start-ups, 85 and 20 were admitted to the incubation programmes of the HKSTPC and the Cyberport respectively. The funded start-ups had created over 1 000 jobs/training opportunities, 66% of which were technical positions. Apart from bringing economic benefits to Hong Kong, these positions engaging in applied R&D were also conducive to nurturing I&T talent.

- (n) Innovation and Technology Venture Fund (“ITVF”): launched in 2017, the ITVF signed agreements with six venture capital funds in the third quarter of 2018 to co-invest in local I&T start-ups with a matching ratio of about 1(Government):2(co-investment partners). The aim is to encourage private organisations to invest more in local I&T start-ups. As at mid-March 2020, the Government has invested about \$66 million through the ITVF in ten local I&T start-ups. The businesses of these start-ups cover supply chain management, e-commerce, financial technology, biotechnology and artificial intelligence (“AI”), etc. Private investment has contributed over \$200 million of funding.

### ***Promoting I&T Culture***

- (o) General Support Programme (“GSP”): introduced in 1999, the GSP supports non-R&D projects that help upgrade local industries and promote an I&T culture in Hong Kong. As at end February 2020, the GSP has funded 237 projects with funding of about \$392 million. Examples of funded projects include the “Gerontech and Innovation Expo cum Summit” (with total attendance of over 25 000 in 2019), the “Hong Kong Student Science Project Competition” (with nearly

1 000 secondary school students participating in the competition in 2019), the “Innovation and Technology Scholarship” (with 25 university students being awarded scholarship in 2019), and the “Hong Kong University Student Innovation and Entrepreneurship Competition” (with about 680 university students participating in the competition in 2019). These activities help foster knowledge and interest in I&T amongst the general public, especially youngsters.

- (p) Patent Application Grant (“PAG”): launched in 1998, the PAG provides funding support for first-time patent applicants. As at end February 2020, 2 355 applications have been approved, involving a total funding of about \$457 million. Over 980 applicants have been granted patents.

### ***Arrangements for Disbursing Partial Funding in Advance***

4. To assist enterprises in coping with the operating pressure under the current difficult economic environment, we have introduced arrangements to disburse partial funding in advance for the TVP, the ESS, the RTTP and the PAG according to the nature of individual funding schemes, so as to facilitate the commencement of projects or training of talent by enterprises.

### ***Special Call for Projects under the PSTS***

5. To tackle the coronavirus disease-2019 (COVID-19) epidemic, we launched a special call for projects under the PSTS on 9 March this year to support product development and application of technologies for the prevention and control of the epidemic. The target funding recipients cover local R&D Centres, universities and other designated public research institutes, as well as all technology companies conducting R&D activities in Hong Kong, so as to promote the realisation and commercialisation of local R&D outcomes related to combatting the epidemic and to encourage the public sector to use technologies for tackling the epidemic. The maximum funding amount for each project is \$2 million. The application period ended on 10 April with 332 applications received, six of which have been approved. We are processing the remaining applications.

## ***Funding Schemes and Enhancement Measures to be Launched in 2020***

6. To further support the development of I&T in Hong Kong, we will introduce the following new funding schemes and enhancement measures under the ITF to enhance the support for nurturing technology talent and “re-industrialisation”:

### Consolidation of the RP and the PH

7. In order to provide more flexibility for eligible organisations to in engaging R&D talent, we will consolidate the RP and the PH from 1 July 2020 onwards. Each eligible organisation or eligible R&D project can engage up to a total of four I&T talent with a Bachelor, Master or Doctoral degree to undertake R&D work.

### Re-industrialisation Funding Scheme

8. The Government announced in the 2018 Policy Address and the 2019-20 Budget its plan to inject \$2 billion into the ITF for launching a Re-industrialisation Funding Scheme (“RFS”) to subsidise manufacturers on a matching basis to set up new smart production lines in Hong Kong. The Government will provide funding on a 1(Government):2(enterprise) matching basis, covering a maximum of one-third of the total approved project expenditure or \$15 million per project, whichever is lower. The funding will cover expenses directly related to the establishment of the new smart production line in Hong Kong, including the costs of procurement, installation and commissioning of the machinery/equipment/apparatus, as well as fees for engaging technical consultancies for the design and setting up of the production line concerned, including testing and staff training.

9. We consulted the Legislative Council (“LegCo”) Panel on Commerce and Industry (“C&I Panel”) on the proposal in May 2019, and have submitted funding application to the LegCo Finance Committee with a view to launching the RFS in the second quarter of 2020. We will set up a vetting committee for the RFS comprising members from the trade, industry associations, I&T sector, and relevant Government departments.

### **STEM Internship Scheme**

10. In the 2018/19 academic year, the total student enrolment in STEM-related programmes (the broad disciplines of Science, Technology, Engineering and Mathematics) funded by the UGC exceeded 35 000,

representing an increase of 16% over the past five years. At present, the Government has been funding I&T companies to recruit technology talent through the RP and the PH. Nevertheless, the I&T sector still faces the problem of STEM graduates opting for other industries.

11. In the 2020-21 Budget, the Financial Secretary has set aside \$40 million to subsidise undergraduates and postgraduates taking STEM programmes in local universities to enrol in short-term internships. Through the STEM Internship Scheme, we hope to encourage STEM students to gain I&T-related work experience during their studies and to foster their interest in pursuing a career in I&T after graduation, so as to enlarge the local I&T talent pool. The ITC has invited the universities to administer the scheme and discuss the implementation details of the scheme, which includes sourcing suitable I&T-related internship opportunities, matching students with the placements available, disbursing subsidies to students, etc. Given the work involved, the universities will be entitled to administrative overheads of up to 15% of the total allowances disbursed<sup>5</sup>. The proposed details are as follows:

- (a) **Eligibility** – STEM undergraduates and postgraduates<sup>6</sup> undertaking short-term internships in I&T-related work.
- (b) **Requirement of the internship** – *Short-term internships* refer to full-time I&T-related internship work lasting no less than four consecutive weeks<sup>7</sup>. As for how to define I&T-related work, we will adopt a broad definition to allow more flexibility for the universities. Internships will be eligible as long as the actual work contains I&T elements (e.g. technology-related IP work, digital marketing, and data analysis for the manufacturing industry).
- (c) **Subsidy amount and duration** – a monthly subsidy of \$10,500<sup>8</sup>, capped at three months. Students receiving

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<sup>5</sup> We have made reference to other existing funding schemes under the ITF to determine the level of administrative overheads.

<sup>6</sup> As universities offer different STEM programmes, we are liaising with the respective universities on the lists of programmes under which students will be eligible for the scheme.

<sup>7</sup> Include local, Mainland or overseas full-time internships.

<sup>8</sup> The subsidy amount was set having regard to other government internship programmes. Should the internship period lasts for more than four weeks, the subsidy amount may be adjusted proportionately. Students must complete the entire internship programme to receive the relevant subsidy.

subsidy under this scheme cannot concurrently benefit from other internship subsidies offered by the Government.

We will continue to discuss the details with the universities, with a view to launching the scheme within 2020. Each participating university will be required to submit a report and the audited accounts to the ITC on the first year's arrangement and feedback from participating students/organisations, in order to ensure proper use of funds and to facilitate our review of the effectiveness of the scheme.

## **MONITORING AND REVIEW**

12. We would regularly review the operation of the various funding schemes to ensure that funding is properly disbursed and used. We will also introduce enhancement measures in a timely manner to meet the development and needs of the society.

## **R&D CENTRES, LABORATORIES and TECHNOLOGY TRANSFER OFFICES (“TTOs”) of UNIVERSITIES**

13. In addition to funding schemes, the ITF also funds, in full or in part, the operating expenditures of R&D Centres, laboratories and TTOs of universities to enable them to carry out more R&D work and technology transfer, or commercialise their R&D outcomes. The entities supported include:

- (a) four R&D centres (i.e. the NAMI, the LSCM, the HKRITA and the APAS);
- (b) the TTOs of seven universities<sup>9</sup>;
- (c) the 16 State Key Laboratories (“SKLs”) in Hong Kong;
- (d) the six Hong Kong Branches of the Chinese National Engineering Research Centres (“CNERCs”); and
- (e) research centres/laboratories to be established in the InnoHK research clusters in the future.

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<sup>9</sup> The seven universities are the University of Hong Kong, Chinese University of Hong Kong, City University of Hong Kong, Hong Kong University of Science and Technology, Hong Kong Baptist University, Education University of Hong Kong and the Hong Kong Polytechnic University.

14. At its meeting on 15 January 2019, the C&I Panel supported the provision of recurrent funding and the increase of funding amount for the SKLs, Hong Kong Branches of the CNERCs, TTOs of universities and the TSSSU<sup>10</sup> to support R&D work and the transfer of R&D outcomes. The relevant measures have been implemented since 2019-20.

15. The Government is pressing ahead in full steam with the establishment of the *InnoHK* research clusters in the Hong Kong Science Park, which are “*Health@InnoHK*” focusing on healthcare technologies and “*AIR@InnoHK*” focusing on AI and robotics technologies. The *InnoHK* initiative has received enthusiastic response after launch, with a total of 65 proposals received from world renowned universities and research institutes. After a rigorous assessment process, we are following up with the institutions concerned. The first batch of R&D laboratories is expected to commence operation progressively in 2020. To further promote global R&D collaboration in Hong Kong, we will explore the setting up of the third *InnoHK* research cluster.

## **WAY FORWARD**

16. Members are invited to note the content of this paper and support the proposal as stated in paragraphs 10 and 11 to implement the STEM Internship Scheme.

**Innovation and Technology Bureau**  
**Innovation and Technology Commission**  
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<sup>10</sup> LC Paper No. CB(1)406/18-19(03).