

For discussion  
on 15 January 2019

**Legislative Council  
Panel on Commerce and Industry**

**Progress of the Innovation and Technology Fund and  
Continuing the Funding Support to Promote Technology Transfer and  
Commercialisation of Research and Development Results  
after 2018-19**

**PURPOSE**

This paper briefs Members on the implementation progress of various funding schemes under the Innovation and Technology Fund (“ITF”) and seeks Members’ support for the proposal to continue and increase the funding support through the ITF for State Key Laboratories (“SKLs”), Hong Kong Branches of Chinese National Engineering Research Centres (“CNERCs”), Technology Transfer Offices (“TTOs”) of designated local universities, and the Technology Start-up Support Scheme for Universities (“TSSSU”).

**BACKGROUND**

2. Since its establishment in 1999, the ITF has been financing projects that contribute to innovation and technology (“I&T”) upgrading in our manufacturing and services industries to promote the long-term development of Hong Kong. There are various funding schemes under the ITF, each having its own objectives, scope, and modus operandi. They can be categorised as follows:

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

- (a) Innovation and Technology Support Programme (“ITSP”): supports R&D projects undertaken by local universities<sup>1</sup> as well as public research institutions (i.e. Hong Kong Productivity Council, Hong

---

<sup>1</sup> Institutions funded by the University Grants Committee (“UGC”) and other local universities have been eligible for applications since 1999. Local self-financing degree-awarding institutions registered under the Post-Secondary Colleges Ordinance (Cap. 320) have also been eligible since July 2017.

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”), Automotive Parts and Accessory Systems R&D Centre (“APAS”), Vocational Training Council (“VTC”), Clothing Industry Training Authority and Hong Kong Institute of Biotechnology). As at end November 2018, 2 360 projects have been funded, with total funding of over \$8.3 billion. Some of the projects have been commercialised or spun off into technology start-ups;

- (b) Guangdong - Hong Kong Technology Cooperation Funding Scheme: funds projects that include an element of Guangdong/Hong Kong cooperation (such as projects involving collaboration between research institutions and/or enterprises in Guangdong/Shenzhen and Hong Kong) to enhance R&D collaboration between the two places. As at end November 2018, 265 projects have been funded, with total funding of some \$863 million;
- (c) University-Industry Collaboration Programme (“UICP”): provides dollar-for-dollar matching funding for R&D jointly undertaken by private companies and local universities. As at end November 2018, 348 projects involving six universities and 245 private companies have been funded, with total funding of some \$425 million;
- (d) Enterprise Support Scheme (“ESS”): introduced in 2015 to provide dollar-for-dollar matching funding of up to \$10 million for private companies to carry out R&D projects. As at end 2018, the ESS Assessment Panel has considered 345 applications, of which 96 were supported. They involved 86 private companies, with private sector contribution of \$365 million and ITF contribution of \$306 million;
- (e) Cash Rebate Scheme: introduced in 2010 to provide cash rebate to private companies for their expenses in ITF R&D projects, or other R&D projects funded by these companies and undertaken by local universities/public research institutions. The level of cash rebate was 10% in 2010, and was increased to 30% in 2012, then to 40% in 2016. As at end November 2018, 1 189 companies have been granted cash rebate of about \$424 million;

- (f) Midstream Research Programme: introduced in 2016 to fund midstream research projects undertaken by UGC-funded institutions. The first two rounds accepted applications for R&D project funding fitting the theme “Elderly Health and Care”. As at end 2018, 18 projects have been funded, involving funding of some \$78 million;

### ***Facilitating Technology Adoption***

- (g) Public Sector Trial Scheme: supports public sector bodies to try out new technologies or products developed in ITF projects and by incubatees/graduate tenants of the Hong Kong Science and Technology Parks Corporation (“HKSTPC”) and Cyberport. As at end November 2018, 190 projects have been funded with funding of some \$311 million, benefitting over 270 organisations;
- (h) Technology Voucher Programme: introduced in 2016 to subsidise local enterprises on a 2:1 basis to use technology solutions to improve productivity, or facilitate the upgrading/transformation of their business process. So far, 1 564 companies have submitted applications, 181 of them were returned as they were incomplete. For the 1 031 applications that have undergone assessment, 986 were supported with total funding of about \$138 million. The success rate is 96%;

### ***Nurturing Technology Talent***

- (i) Internship Programme: funds ITF recipients and incubatees/I&T tenants of HKSTPC and Cyberport to hire local graduates as R&D interns, thereby nurturing more I&T talent<sup>2</sup>. Since its launch in 2004, the programme has supported over 3 700 interns with funding of over \$865 million. Some 70% of them indicated that they would either continue their career or had planned to pursue a career in I&T-related areas;
- (j) Postdoctoral Hub: funds ITF recipients and incubatees/I&T tenants of HKSTPC and Cyberport to recruit up to two postdoctoral talent for R&D work. The ITF provides a monthly allowance of \$32,000 for each postdoctoral researcher for up to 24 months. The programme has received positive response since its launch in

---

<sup>2</sup> The Internship Programme provides a maximum monthly allowance of \$16,000 and \$19,000 for interns with a Bachelor’s degree and those with a Master’s degree respectively.

August 2018. As at end 2018, we have approved 310 applications with funding of some \$153 million. The average engagement period of postdoctoral talent is 15 months;

- (k) Reindustrialisation and Technology Training Programme (“RTTP”): subsidises local enterprises on a 2:1 matching basis to train their staff in advanced technologies, especially those related to “Industry 4.0”. RTTP, launched in August 2018, is administered by 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 2018, the RTTP has approved 95 applications for registering public courses, involving technology areas such as Industry 4.0-related technologies, information technology, textile and clothing, biomedicine and medical care, automotive technology and environmental technology, etc. Funding of about \$1.8 million has been approved for 275 trainees to receive trainings in advanced technologies;

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

- (l) TSSSU: launched in 2014 to support university professors and students to start technology businesses and commercialise their R&D results. So far, a total of about \$114 million has been provided for 188 start-ups;
- (m) Innovation and Technology Venture Fund: rolled out in September 2017 to co-invest with private venture capital funds in local I&T start-ups with an overall matching ratio of approximately 1:2;

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

- (n) General Support Programme: supports non-R&D projects that help upgrade local industries and promote an I&T culture in Hong Kong. As at end November 2018, the programme has funded 211 projects with some \$310 million; and
- (o) Patent Application Grant: provides funding support for first-time patent applicants. As at end November 2018, 2 168 applications have been funded, involving about \$411 million and resulting in 729 applicants with patents granted.

## **Funding Schemes to be launched in 2019**

3. We will launch the following funding schemes in 2019:

### ***Partnership Research Programme***

- (a) We will launch the Partnership Research Programme (“PRP”) by the end of this month to merge the UICP and the collaborative stream of the ITSP. At present, both funding schemes support R&D collaborative projects. The former supports collaborative projects jointly undertaken by private companies and local universities, and the latter supports collaborative projects between local public research institutions and private companies<sup>3</sup>. The consolidated PRP<sup>4</sup> would adopt more flexible arrangements to encourage more collaborative R&D projects;

### ***Mainland-Hong Kong Joint Funding Scheme***

- (b) To encourage further R&D collaboration between institutions in Hong Kong and various provinces in the Mainland, we signed the “Agreement on Commencing Jointly Funded Projects between the Ministry of Science and Technology (“MOST”) and the Innovation and Technology Bureau of the Hong Kong Special Administrative Region Government” with the MOST in September 2018 for launching the new Mainland-Hong Kong Joint Funding Scheme. We will announce the particulars of the scheme once the relevant details have been confirmed. The scheme is expected to be launched in the first half of 2019; and

### ***Reindustrialisation Funding Scheme***

- (c) To expedite the realisation of “re-industrialisation”, the Chief Executive proposed in the 2018 Policy Address to establish a \$2 billion Re-industrialisation Funding Scheme to subsidise manufacturers on a matching basis to set up smart production lines in Hong Kong. We are now studying and formulating relevant operational details, such as application criteria, vetting mechanism

---

<sup>3</sup> Upon the introduction of the PRP, the ITSP would focus on supporting platform (viz. benefitting the industry as a whole) and seed (viz. exploratory and forward-looking) R&D projects conducted by local universities and local public research institutions. The ESS would continue to provide funding support for private companies to carry out R&D projects.

<sup>4</sup> The PRP would accept applications all year round. The ITSP, which currently invites applications half-yearly, would be open for application once a year.

and criteria, funding ceiling, etc. We will consult the Panel and the Finance Committee in due course.

4. In addition to funding schemes, the ITF also funds, in full or in part, the operation of research centres, laboratories and TTOs of universities to enable them to carry out more R&D work and technology transfer, or commercialise their R&D outcome. The entities supported include:

- (a) four R&D centres (i.e. NAMI, LSCM, HKRITA and APAS);
- (b) the TTOs of universities;
- (c) the 16 SKLs in Hong Kong;
- (d) the six Hong Kong Branches of CNERCs; and
- (e) research centres/laboratories to be set up in the research clusters.

## **PROPOSALS AND JUSTIFICATIONS**

5. There is excellent scientific research talent in various local universities. To fully unleash our strengths in scientific research, foster technology transfer as well as realisation of R&D results, the Chief Executive proposed in her 2018 Policy Address to double the relevant funding ceilings from 2019-20 onwards. We also propose providing such funding support on a recurrent basis and implementing some enhancement measures to support R&D and the transformation of R&D outcomes. Details are as follows:

- (a) to increase the annual funding for each SKL and Hong Kong Branch of CNERC from the existing \$5 million to \$10 million, and to extend the funding scope to cover R&D-related services;
- (b) to increase the existing annual funding of up to \$4 million for TTO of each designated university<sup>5</sup> to \$8 million; and

---

<sup>5</sup> Designated universities are 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, the Education University of Hong Kong (“EdUHK”) and the Hong Kong Polytechnic University. EdUHK has become a UGC-funded university since 2016. Its knowledge transfer office has made considerable efforts to promote the transfer of knowledge and technology of teaching-related software, teaching materials and instruments, etc. in recent years. It will therefore receive the relevant funding support starting from 2019-20.

- (c) to increase the maximum annual funding for each of the six universities<sup>6</sup> under TSSSU from the existing \$4 million to \$8 million, and to increase the maximum annual funding for each funded start-up from the existing \$1.2 million to \$1.5 million.

### ***Funding Support for the SKLs and the Hong Kong Branches of CNERCs***

#### Existing Arrangement

6. The SKL Scheme is one of the major national science and technology development schemes managed by the MOST. High-quality research teams and good research equipment are prerequisites for becoming SKLs. Meanwhile, research institutions approved by the MOST as CNERCs serve as major impetus in providing engineering research and consultancy support to the industries. They need to possess strong R&D capabilities and enjoy leading positions in their areas of expertise both in the Mainland and internationally. Details of the 16 SKLs<sup>7</sup> and six Hong Kong Branches of CNERCs are listed at **Annex A**.

7. The Innovation and Technology Commission (“ITC”) currently provides an annual funding of up to \$5 million to each SKL in Hong Kong and each Hong Kong Branch of CNERC as an additional source of funding to meet the expenditure on manpower, equipment and consumables, so as to build up the necessary infrastructural support, strengthen their research capability and explore new technology areas. The funding support concerned will expire on 31 March 2019<sup>8</sup>.

#### Latest Development and Proposals

8. The SKLs and the Hong Kong Branches of CNERCs have achieved remarkable R&D achievements and applications of R&D results since their establishment. Pursuant to the MOST’s requirements, we carried out a reassessment exercise on the 12 SKLs set up in 2010 or before from 2016 to 2017. Seven of these laboratories, equivalent to about 58%, were ranked as “outstanding” in the exercise, indicating that the overall research capability and results of these laboratories were well recognised by the MOST as well as the overseas, Mainland and local experts of the assessment

---

<sup>6</sup> The six universities are 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.

<sup>7</sup> Partner State Key Laboratories (“PSKLs”) were officially renamed as SKLs by MOST in September 2018, allowing the laboratories more flexibility to collaborate with other R&D institutions.

<sup>8</sup> Vide LC Paper No. CB(1)436/15-16(06).

panels. Some of the outstanding R&D achievements and awards received by the SKLs and the Hong Kong Branches of CNERCs are set out at **Annex B**.

9. In view of the positive progress and achievements made by the SKLs and the Hong Kong Branches of CNERCs, we propose to continue our recurrent funding support to them on an annual reimbursement basis through the ITF, and to increase the maximum annual funding for each of them from \$5 million to \$10 million from 2019-20 onwards to further enhance their R&D capabilities.

10. Besides, given the fine division of labour in the research work, the SKLs and the Hong Kong Branches of CNERCs may need to procure services (e.g. DNA or RNA sequencing, animal husbandry for experimental purpose, testing or inspection services, etc.) from other service providers in conducting their R&D projects for higher effectiveness in achieving outcomes. In view of this, we propose to extend the funding scope from covering only manpower, equipment and consumables to including R&D-related services, and to raise the ceiling of funding to be used for expenditures other than manpower and equipment expenses from 30% to 40%, thereby providing the SKLs and the Hong Kong Branches of CNERCs with greater flexibility in using their financial resources.

### ***Funding Support for TTOs of the Universities***

#### **Existing Arrangement**

11. Universities are a major nurturing ground for innovation and discoveries. Through technology transfer, innovative ideas and R&D results of scientific research talent in universities are developed into new products or services that benefit our society and create economic value. Starting from 2013-14, ITC has been providing extra funding through the ITF to TTOs of six universities<sup>9</sup> with a view to enhancing their technology transfer capabilities.

12. ITC's funding could enhance TTOs' work including transferring technology and realising R&D results, building up the necessary professional support services (e.g. contract negotiation, protection of intellectual property ("IP"), promotion, etc.), and facilitating liaison with the research community and industry. The annual funding ceiling for each university is \$4 million. The funding support will expire on 31 March 2019<sup>10</sup>.

---

<sup>9</sup> See footnote 6.

<sup>10</sup> Vide LC Paper No. CB(1)436/15-16(06).



### Latest Development and Proposals

13. According to the funded TTOs of the universities, ITC's funding has enhanced the universities' capabilities in IP protection, and facilitated their procurement of professional services and recruitment of professionals in related areas to assist in expanding their networks in the industry, etc. Besides, the funding support has enabled the TTOs to organise various activities for promoting entrepreneurship (e.g. seminars and workshops on business management, pitching skills, negotiation skills, contract management, IP management, etc.), and proactively connect with industry players, investors, public and private incubators/accelerators, as well as the local, Mainland and overseas R&D communities. All these efforts have provided pertinent assistance to technology start-ups incubated by the universities. Key performance indicators of TTOs of the universities and some examples of the outcome of their work are set out at **Annex C**.

14. In view that the ITF funding has been effective in facilitating TTOs of the universities to deepen the understanding of their professors and students in technology transfer and strengthen their technology transfer capabilities through various services, we propose to continue our funding support to them recurrently through the ITF, and increase the maximum annual funding for each TTO to \$8 million from 2019-20 onwards.

### ***TSSSU***

#### Existing Arrangement

15. TSSSU was launched in September 2014. ITC, through the ITF, provides an annual funding of up to \$4 million each to six universities<sup>11</sup> to support their teams in starting technology businesses and commercialising their R&D results. Each start-up may receive up to \$1.2 million each year for no more than three years. The funding support concerned will expire on 31 March 2020<sup>12</sup>.

### Latest Development and Proposals

16. Since the inception of TSSSU, a total of about \$114 million was provided for 188 start-ups. Funding received by individual start-ups ranged from \$100,000 to \$3.28 million and the average funding provided to each start-up was about \$390,000. The 188 TSSSU-funded start-ups are engaged

---

<sup>11</sup> See footnote 6.

<sup>12</sup> Vide LC Paper No. CB(1)311/16-17(07).

in different technology areas, the majority of which are information and communication technologies (44.7%), biotechnology (25%) and electronics (11.7%). Most of the funded start-ups have made satisfactory progress. Major achievements of TSSSU so far and some examples of the start-ups are set out at **Annex D**.

17. With the funding support from the ITF, the universities' efforts in scientific research and commercialisation of outputs were intensified and progressively extended. With a flourishing atmosphere of technopreneurship at the university campuses, more professors, students and graduates are interested in pursuing a career in technology. The technology start-ups of the universities have started to grow and thrive, injecting new impetus to the technology industry. In view of this, we propose to continue our funding support to them through the ITF recurrently, increase the maximum annual funding for each university under TSSSU to \$8 million, and increase the maximum annual funding for each funded start-up from the existing \$1.2 million to \$1.5 million from 2019-20 onwards so as to enhance the support for start-ups.

## **MONITORING AND REVIEW**

18. The funded institutions of the above schemes (namely TTOs of the universities, universities' technology start-ups, the SKLs and the Hong Kong Branches of CNERCs) shall continue to submit annual reports. We will regularly review the funding arrangement of the schemes to ensure that the funding is disbursed and used properly.

## **WAY FORWARD**

19. Members are invited to note the content of this paper and support the proposals as stated in paragraph 5 to increase the funding support for the SKLs, the Hong Kong Branches of CNERCs, TTOs of the designated universities and TSSSU and to continue such funding support recurrently, as well as the related enhancement measures.

**Innovation and Technology Bureau  
Innovation and Technology Commission  
January 2019**

**State Key Laboratories (“SKLs”) in Hong Kong**

	<b>Hosting Organisation</b>	<b>Name of State Key Laboratory</b>	<b>Head</b>	<b>Year of Approval</b>
1.	The University of Hong Kong	SKL of Emerging Infectious Diseases	Prof GUAN Yi Prof YUEN Kwok-yung	2005
2.	The University of Hong Kong	SKL of Brain and Cognitive Sciences	Prof Tatia LEE Mei-chun	2005
3.	The Chinese University of Hong Kong	SKL of Translational Oncology	Prof Dennis LO	2006
4.	City University of Hong Kong	SKL of Terahertz and Millimeter Waves	Prof CHAN Chi-hou	2008
5.	The Chinese University of Hong Kong	SKL of Agrobiotechnology	Prof Hon-Ming LAM	2008
6.	The Hong Kong Polytechnic University	SKL of Ultra-precision Machining Technology	Prof Benny Cheung [Acting Head]	2009
7.	The Hong Kong University of Science and Technology	SKL of Molecular Neuroscience	Prof Nancy IP Yuk-yu	2009
8.	City University of Hong Kong	SKL of Marine Pollution	Prof Paul LAM Kwan-sing	2009
9.	The Chinese University of Hong Kong	SKL of Research on Bioactivities and Clinical Applications of Medicinal Plants	Prof LEUNG Ping-chung	2009
10.	The University of Hong Kong	SKL of Liver Research	Prof Irene O.L. NG	2010
11.	The University of Hong Kong	SKL of Synthetic Chemistry	Prof CHE Chi-ming	2010
12.	The Hong Kong Polytechnic University	SKL of Chemical Biology and Drug Discovery	Prof WONG Kwok-yin	2010
13.	Hong Kong Baptist University	SKL of Environmental and Biological Analysis	Prof CAI Zongwei	2013
14.	The University of Hong Kong	SKL of Pharmaceutical Biotechnology	Prof XU Aimin	2013
15.	The Chinese University of Hong Kong	SKL of Digestive Disease	Prof Joseph SUNG	2013
16.	The Hong Kong University of Science and Technology	SKL of Advanced Displays and Optoelectronic Technologies	Prof KWOK Hoi-sing	2013

**Hong Kong Branches  
of Chinese National Engineering Research Centres (“CNERCs”)**

	<b>Hosting Organisation</b>	<b>Name of Hong Kong Branch of CNERC</b>	<b>Head</b>	<b>Year of Approval</b>
1.	Hong Kong Applied Science and Technology Research Institute	Hong Kong Branch of the National ASIC System Engineering Research Center	Mr Hugh CHOW	2012
2.	The Hong Kong Polytechnic University	Hong Kong Branch of National Engineering Research Center for Steel Construction	Prof K F CHUNG	2015
3.	The Hong Kong Polytechnic University	Hong Kong Branch of National Rail Transit Electrification and Automation Engineering Technology Research Center	Prof Yi Qing NI	2015
4.	City University of Hong Kong	Hong Kong Branch of National Precious Metals Material Engineering Research Center	Prof LU Jian	2015
5.	The Hong Kong University of Science and Technology	Hong Kong Branch of National Engineering Research Center for Tissue Restoration & Reconstruction	Prof Ben Zhong TANG	2015
6.	The Hong Kong University of Science and Technology	Hong Kong Branch of Chinese National Engineering Research Center for Control & Treatment of Heavy Metal Pollution	Prof CHEN Guang Hao	2015

**State Key Laboratories (“SKLs”)  
and Hong Kong Branches of  
Chinese National Engineering Research Centres (“CNERCs”)**

**Examples of Research and Development (“R&D”) Achievements  
and Awards Received**

The SKLs in Hong Kong and the Hong Kong Branches of CNERCs have outstanding R&D achievements since their establishment. Some examples since 2016 are set out below:

(a) Medical technologies

- Successfully developed a new model of highly effective, avirulent flu vaccine system ;
- Developed a new adiponectin-based assay technology for prediction and early diagnosis of diabetes;
- Confirmed that plasma analysis is useful for screening early asymptomatic nasopharyngeal carcinoma;
- Completed the first whole-genome sequencing study on Alzheimer’s disease in the Chinese population; and
- Proven that antioxidants play a significant role in carcinogenesis and lead to the growth of liver cancer cells.

(b) Biotechnologies

- Successfully developed new stress-tolerant soybean cultivars; and
- Established the world’s first scientific model for predicting metal toxicities in different marine environments and water bodies.

(c) Electronic technologies

- Successfully developed a field-sequential colour liquid crystal display which saves energy up to five times; and
- Developed a Narrowband Internet of Things Integration Circuit IP design.

(d) Others

- Developed a new type of luminescent emitters made of stable, strongly fluorescent platinum complexes; and

- Developed an ultra-precision machining and measurement technology for designing, manufacturing and measuring complex free-form and structured surfaces.

2. Personnel of the SKLs and the Hong Kong Branches of CNERCs have received numerous awards in recent years. Some examples are set out below:

- Personnel of the SKL of Emerging Infectious Diseases and the SKL of Digestive Disease received the Special Prize and First Prize of the State Scientific and Technological Progress Award respectively;
- Director of the SKL of Translational Oncology, Professor Dennis Lo, was named the “Top 20 Translational Researchers” by the world-renowned scientific journal “Nature Biotechnology” and received the “Future Science Prize – Life Science Prize”, which was co-founded by a group of scientists and entrepreneurs in the Mainland;
- Member of the SKL of Terahertz and Millimeter Waves, Professor Luk Kwai-man, received the “IEEE AP-S John Daniel Kraus Antenna Award”, the highest award in the antenna field globally;
- Member of the SKL of Pharmaceutical Biotechnology, Professor Ed X. Wu, and the Director of the Hong Kong Branch of National Precious Metals Material Engineering Research Center, Professor Lu Jian, both received the “Guanghua Engineering Science and Technology Prize”, the most prestigious award for the engineering and technology field in the Mainland awarded by the Chinese Academy of Engineering; and
- The R&D achievements of the SKL of Ultra-precision Machining Technology, the SKL of Synthetic Chemistry and the Hong Kong Branch of the National ASIC System Engineering Research Center received awards at the International Exhibition of Inventions of Geneva.

## Technology Transfer Offices (“TTOs”) of the Six Universities<sup>1</sup> funded by the Innovation and Technology Commission (“ITC”)

### Key Performance Indicators and Examples of the Outcome of Work

#### I. Key Performance Indicators

The key performance indicators of TTOs of the six funded universities from 2012-13 to 2017-18 are as follows –

Performance Indicators	2012-13	2013-14 (Note)	2014-15	2015-16	2016-17	2017-18
1. No. of patents filed	524	685	695	678	860	989
2. No. of patents granted	258	314	319	444	460	543
3. No. of patents licensed	238	289	333	382	499	523
4. No. of economically active spin-off companies	72	65	75	110	156	253
5. No. of technology transfer-related public lectures, symposium, exhibitions, etc. delivered to the industry	Information not available	243	473	656	680	893
6. No. of promotional, marketing, business development activities, etc. organised/attended by TTOs	Information not available	32	42	84	105	143
7. No. of training courses, workshops, etc. provided to staff of TTOs	Information not available	19	11	12	10	6

(Note: ITC funding commenced that year)

<sup>1</sup> The six universities are 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.

## II. Examples of the Outcome of Work

Examples of the outcome of work of the funded TTOs of the six universities are set out below –

- (a) Building up the necessary professional support services: In the past five years, the numbers of patents filed by and granted for the six universities increased by 44% and 73% respectively. Some TTOs enhanced their intellectual property (“IP”) management system or assessment process whereas some others organised activities to deepen the understanding of the university personnel on the latest trends and best practices of IP;
- (b) Facilitating collaborations with the research community and industry: Together with two Hong Kong and Macao institutions, the six universities organised the Association of University Technology Managers<sup>2</sup> (“AUTM”) Asia Conference in April 2017 in Hong Kong for the first time, drawing over 600 technology transfer practitioners from around the world to exchange and discuss the latest developments of IP, the emerging Asia markets, and the trends in technology management. The event fostered exchange and built up networks between Hong Kong technology transfer professionals and their international counterparts; and
- (c) Facilitating the realisation of research and development results: In the past five years, the number of patents licensed by the six universities increased by some 81%, and the number of their spin-off companies nearly tripled. Focusing on the needs at different stages of entrepreneurial technology transfer (from proof-of-concept, prototyping, to the establishment of technology start-ups), TTOs of the universities rolled out various incubation programmes or funding schemes to complement the innovation and technology ecosystem at the campuses.

---

<sup>2</sup> AUTM is the world’s largest non-profit organisation comprising professionals in academic technology transfer, and dedicates to supporting and advancing the work on technology transfer through education, professional development, partnerships, etc. It has more than 3 000 members from over 800 universities, research centres, hospitals, businesses and government organisations, etc.



**Technology Start-up Support Scheme for Universities (“TSSSU”)  
Major Achievements**

As at end 2018, out of the 188 start-ups funded by TSSSU, 41 won international awards; 102 generated a total of more than 880 intellectual property rights from their research and development (“R&D”) results; 118 rolled out in the market more than 170 products or services in total; and 96 generated business revenue ranging from about \$800 to \$4.85 million per year. In addition, 127 start-ups were successful in getting investment. The total investment received amounted to some \$300 million, with some \$210 million (70%) raised from private investors.

2. Among the above 188 start-ups, 69 and 18 were admitted to the incubation programmes of Hong Kong Science and Technology Parks Corporation and Cyberport respectively. The funded start-ups created around 980 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 innovation and technology talents.

3. A number of TSSSU-funded start-ups have managed to commercialise their R&D results. Examples are as follows –

**Products/Services Launched for Sale**

- (a) A start-up associated with the Hong Kong Polytechnic University has successively developed soft contact lens and spectacle lens that can retard myopia progression in children to help lower the overall risk of myopia associated eye diseases (e.g. glaucoma and retinal detachment). The start-up has launched the said products into the market in collaboration with the industry, and its related “Defocus Incorporated Multiple Segments” technology won the Grand Prix of the 46th International Exhibition of Inventions of Geneva in 2018;
- (b) A start-up associated with the Hong Kong Baptist University has developed a technology to identify the unique, major bioactive component of valuable Chinese medicines (e.g. *Dendrobii Officinalis Caulis*, *Cordyceps* and *Colla Corii Asini*), which has been patented in Hong Kong, Macao, Mainland and the United States, etc. Providing professional quality and quantity authentication services to the industry, the start-up has entered into contracts with its clients and generated revenue;

Products/Services with Potential

- (c) A medical device start-up associated with the University of Hong Kong has developed an innovative trauma and spine implant optimised for repairing hip, shoulder or spine bone fractures. It is expected that the products will be sold to hospitals in 2019 after obtaining relevant approval. The start-up won the champion at the regional chapter of a deep-tech competition held in end 2018, which entitles it to contest with 4 500 deep-tech start-ups from 120 countries in the global health track finals of a global summit to be held in Europe in March 2019;
- (d) A start-up associated with the Hong Kong University of Science and Technology has developed an ultrasound eye drug delivery device which uses non-invasive ultrasound technology, in replacement of traditional injection treatment, to gradually administer drugs into the eyes of patients suffering from wet macular degeneration or Diabetic Mellitus Retinopathy etc. It is expected that the new technology will obtain international safety certification and undergo clinical trials on humans in a few years' time. Currently, the start-up has completed its financing;
- (e) A start-up associated with the Chinese University of Hong Kong has developed an analytic system on lung radiographic images, which can automatically detect, diagnose and monitor pathological changes of pulmonary nodules in scanned lung images to facilitate early diagnosis and treatment of lung cancer. The commissioning of the system has been conducted in Australia. The start-up has completed its financing. It received the ICT Start-up (Software & Apps) Gold Award as well as the Smart Living (Smart Healthcare) Silver Award in the Hong Kong ICT Awards 2018; and
- (f) A start-up associated with the City University of Hong Kong has developed a smart thermostat for air-conditioning systems that can directly replace traditional thermostats without the need to modify the internal structure while saving energy by more than 10%. The smart thermostat has been approved for trials in the facilities of the Electrical and Mechanical Services Department.