Annual Report on Activities and Advancement of Knowledge Transfer

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FY2016-17

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PolyU

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

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1. Executive Summary: KT @ PolyU

1.1. Review of KT Activities in FY2016-17

This report summarizes key KT activities and developments of PolyU in FY2016-17. Observations and suggestions from UGC in the past have been duly considered for improving related KT developments and practices. The recurrent UGC KT fund also enabled the University to embark on a longer term roadmap in its latest strategic planning exercise, with refined positioning to create higher impact in various KT and Entrepreneurship activities.

Income generated from mainstream KT activities, namely, consultancy, contract research under consultancy and licensing[1] amounted to $110.1 million, (LY: $115.1 million, -4.3%). The aggregate value of on-going collaborative research projects on hand was $524 million. For entrepreneurship, a new co-creation and co-working space, PolyU InnoHub, was established to promote multi-disciplinary and cross-sector collaborations in the region. In addition to the five seed and acceleration start-up support funds, a new pre-seeding proof-of-concept fund was added to support student innovations at the pre-seeding stage for building and validating their business/technology prototypes. More details are reported in Section 4.

Over the years, PolyU has been partnering with industries in applied R&D and their commercialization, generating impact to industries and society at large. In FY2016-17, several new research centres/institutes were established with strong industry support, the most recent one being the Huawei-PolyU Joint Research Laboratory on Optical Communications. The opening of the University Research Facilities in 3D Printing also readily introduce collaboration opportunities using state-of-the-art equipment.

1.2. Fostering KT and Entrepreneurship as University Strategy

(a) KT as a Core Strategic Direction

Under the guidance of the council-level KT Committee, PolyU has continuously refined related KT policies to enhance governance for KT in a disciplined manner, while at the same time paying equal attention to market expectations regarding timeliness and time-to-market concerns.

With the University's current 6-year strategic plan ending in mid 2018, PolyU has commenced a new planning cycle for its next 6-year strategic plan. KT, entrepreneurship and community engagement are again enlisted as core strategic components supporting education and research. In the proposed plan, PolyU aims to become a leading institution for KT and entrepreneurship, with the following key strategic goals:

1. **Conducive Ambience:** to create an ambience that promotes application of research results and recognizes KT, entrepreneurship and social innovation for industry and societal impact.
2. **Technology Development:** to advance the technology development of domain expertise to increase their technology readiness level/readiness for industrial exploitation.
3. **Technology Commercialization:** to maximize and realize commercialization opportunities of PolyU's technology and know-how of higher readiness level through the concerted efforts with internal and external stakeholders.
4. **KT through Education and Social Innovation:** to broaden the knowledge diffusion and transfer to create greater societal impact, locally and regionally.
5. **Centre of Excellence for Entrepreneurship:** to be a centre of excellence for staff- and student entrepreneurship through a two-tier strategy addressing both broad practice and depth.

[1] Recognized through PolyU's wholly owned subsidiary, PolyU Technology and Consultancy Co. Ltd. (PTeC), contract research income through the Research Office has not been included.

6. **KT Governance:** to ensure KT activities are conducted in a governed manner, addressing and balancing the interests of stakeholders with no hidden conflict of interests.

With increased interest and support in commercializing research deliverables through technology ventures, the University is moving towards a more accommodating policy in readily allowing the use of student IP in start-ups, with stipulated mechanisms to clearly address conflicts of interest issues. The transparent guiding principles will in turn facilitate faculty and students' participation at start-ups to commercialize their own inventions.

2. Creating Impact for Industry and Society

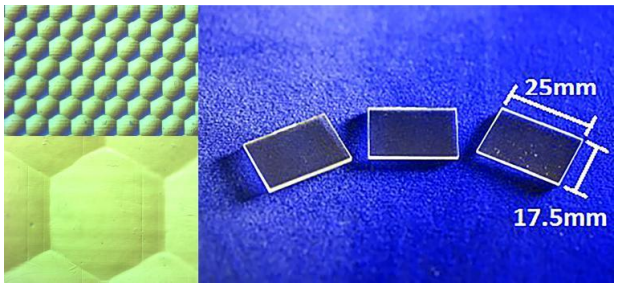
While it has always been PolyU's heritage to support community development through KT, the consideration to include impact as an RAE component has prompted departments and faculty staff to give more thoughts and focus in related undertaking. The followings are selected examples that demonstrate the wide range of development and KT undertakings across many disciplines.

2.1. Advancing Innovations and Technologies

(a) University Research Facility in 3D Printing

Launched in April 2017, PolyU's 'University Research Facility in 3D Printing' is the first institutional level 3D printing research centre among Hong Kong universities, supporting education, research, and university-industry collaborations. As an illustration, PolyU's researchers collaborated with Queen Elizabeth Hospital to develop a Transcatheter Aortic Valve Implantation (TAVI) simulation training model using 3D printing skills. Doctors and nurses can now be trained to conduct trans-catheter cardiac interventions using the training model. Together with other 3D biomedical models, the platform allows medical staff to have better training, pre-operative planning & rehearsal, and patient education especially for the complex surgical procedures.

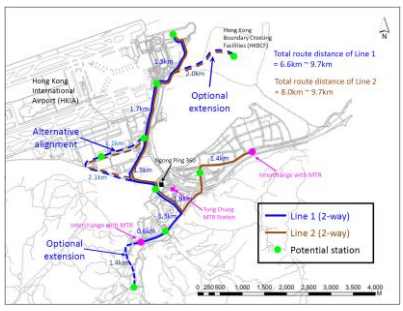
(b) Compound Eye for Novel High Definition 3D imaging



Adopting microlens arrays composed of over 10,000 microlenses (with lens diameter down to 0.05mm) mimicking flies' compound eyes, this technology can acquire depth information of a scene by a single light-field snapshot. With the collected depth information, refocusing images or constructing 3D images from a plain shot become possible. The technology can be broadly applied in imaging applications such as those in the AR/ VR field, as well as high precision metrology. The technology is licensed to a Hong Kong based company for developing 3D video capture and broadcast systems.

2.2. Innovating for Sustainability & Green Environment

(a) Green Transport Study for Tung Chung Town



With Tung Chung targeted to become a new major town development initiative, its sustainable development is of concern to all. Since travel out of Tung Chung is already well served by public transportation means, our researchers' main study focus was on green transport system for serving internal travel demands. The

key findings and recommendations for an eco-friendly transport system were presented to various public and community stakeholders. If effectively implemented, it will improve air quality, reduce greenhouse gas emissions and bring positive impact to the environment and human health, serving as a model for other new towns' transport system.

(b) Natural Ventilation, Noise Reduction Technology for High Rise Buildings

Statutory regulations in Hong Kong now require apartments in new residential buildings to adopt an acceptable level of natural ventilation and sound insulation. Our researchers have developed natural ventilation-enabling sound insulation devices for use on residential building facades, which include acoustic balconies, double layer ventilation windows (known as plenum windows) and plenum balconies. The balconies and windows are used in a number of sites across town with excellent performance on balance.

Acoustic Balcony

(c) Sustainable Solution for Waterworks Sludge

About 50 tonnes of dewatered sludge generated from water treatment plants is added to Hong Kong landfill sites every day. Working with Water Supplies Department, our researchers investigated the potential use of waterworks sludge as construction fill materials. If the pilot recycling is proven feasible, not only the loading to existing landfills can be reduced, but it also provides the community a long-term solution for waste recycling, resources management as well as environmental pollution control.

2.3. Promoting Healthy Living & Wellbeing

(a) Radiation Free Assessment of Scoliosis

PolyU researchers have developed 'Scolioscan', a radiation-free imaging device for scoliosis assessment using 3D ultrasound imaging. Unlike X-rays, Scolioscan allows healthcare workers to detect scoliosis at an early stage or avoids unnecessary treatments for patients with stable spinal angles. It also allows close follow-up monitoring, easy evaluation of treatment outcome and provides a unique method for research of the origin of scoliosis and development of new treatment modalities for scoliosis. A licensee has taken up the technology and it is now available as a commercial product. In Hong Kong alone, over 2,000 children have been scanned using Scolioscan. Units have been installed in various hospitals across Hong Kong, Macau, China and Netherlands for further clinical trials and research work.

(b) Food Hygiene Standard Certification System

With the staunch support by the Hong Kong Council for Testing and Certification (HKCTC), Food Safety and Technology Research Centre (FSTRC) of PolyU has developed a new Food Hygiene Standard (FHS) and related Food Hygiene Standard Certification System (FHSCS) to recognize domestic catering establishments in attaining a certain food hygiene standard. The FHSCS adopts Hazard Analysis and Critical Control Point (HACCP) principles and is applicable to food and beverage establishments where food is prepared and served for human consumption, for example, restaurants and canteens. The FHSCS is tailor-made to cope with the typical characteristics of local catering industry. It helps the catering establishments set up proper food hygiene systems with minimum resource input, yet being able to achieve certification.

Collaborating with PolyU, a globally recognized certifying body will audit and certify interested applicants. For each qualified catering establishment, a certification mark will be issued as recognition of attainment of quality assurance conformance according to the FHS. The FHSCS provides a practical way to promote the hygiene quality of small and medium catering establishments with good practices and audit. The certified restaurants may use the certification mark (FHS Logo) for their marketing and promotion, thereby uplifting the food hygiene and safety standard and practice of the operators in the long run.

3. Collaboration & Engagement

One of the University's core strategies in community engagement is cultivating collaborative networks and partnerships with industry, thereby maximizing the value and impact of commercialization, innovation and entrepreneurship development. At the same time, both conventional marketing channels as well as the online and social platforms are used to disseminate relevant information to targeted trade segments and the general public, reinforcing PolyU's strong advocacy in applied research and KT in Hong Kong.

3.1. Engaging Industries for KT Partnerships

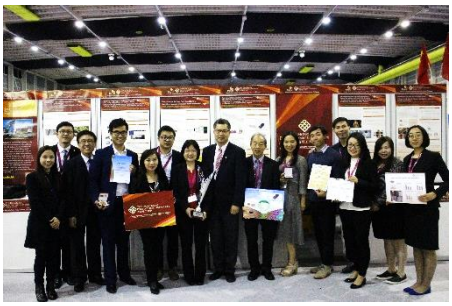
(a) Stars Connected

To reinforce PolyU's advocacy and achievement in KT, a high profile event "Stars Connected" was produced to highlight the Distinguished Knowledge Transfer Awards in the past 5 years, accompanied with a gala dinner and a mini exhibition featuring international award-winning projects. With the Hon. Nicholas Yang, the Secretary for Innovation and Technology as the Guest of Honour, the event gathered over 300 guests from government, researchers, industrialists, intermediaries and start-up community members to appreciate PolyU's university-industry partnership and KT achievements.

(b) International Invention Expos

PolyU took pride in its achievements in major international invention expos, which further established its all-round leading position in research and innovation. To commence the fiscal year, the 4 inventions competing at the International Invention Innovation Competition in Canada (iCAN 2016) won 2 gold medals and 2 silver medals in the summer of 2016.

In March 2017, PolyU was honoured with 11 prizes, namely 1 grand award, 5 special gold medals, 1 gold medal, 1 silver medal and 3 special merit awards, for its 7 inventions entries at the 45th International Exhibition of Inventions of Geneva. The event generated extensive media coverage and awareness. The award-winning projects, among others, were showcased in a celebratory event at the Government Headquarters in May. The Chief Executive reception also attracted key figures in the industry and trade, with the Swiss Consul-General as the honoured diplomat.



Three of PolyU's innovations received the 2017 Global Innovation Awards at the TechConnect World Conference & Expo held in Washington D.C., USA. PolyU was proud to be the only awardee from Hong Kong, alongside with 26 other award recipients worldwide.

(c) Trade Shows

In the year under review, PolyU actively participated in a range of trade shows, demonstrating its research expertise to visitors from various industrial sectors. In the Hong Kong International Medical Devices and Supplies Fair 2017, PolyU presented a number of healthcare and rehabilitation technologies to industry visitors. Selected ICT technologies were also featured at the Hong Kong Electronics Fair 2016 (Autumn Edition) and Hong Kong ICT Expo 2017.

For the region, PolyU's technologies in the areas of textiles, biochemistry, multisensory 3D measurement and railway monitoring were showcased at TechInnovation 2016 in Singapore and Rail Solutions Asia 2017 in Malaysia.

(d) Industry-specific Promotion of Technologies

A number of activities, such as presentations and business matching sessions, were organized to promote PolyU's research strengths and technologies to target industries and trade associations. Topics covered smart city, 3D modelling, next-generation electronics, advanced farming, and IoT-based applications. A series of technology networking seminars were also organized to enhance industry's understanding of PolyU's technologies and expertise. Along the same line, orientation tours to the University Research Facilities were organized for collaborating industry and business affiliates.

(e) Networks and Partnership

Continuous efforts have been made to approach industrial communities to promote the University's KT and entrepreneurship activities. One such community is Poly-preneurs, PolyU's alumni entrepreneur community, with over 730 members to date. In the year of reporting, a panoply of activities, such as the entrepreneurs sharing series (seminars and monthly stories), the PolyU volunteer programme, enrichment workshop, visits to Poly-preneurs' working space and social gathering functions, were organized to strengthen the network among themselves and their bond with PolyU.

A number of crossover networking activities were organized to bring synergy across varying stake holding communities, such as PolyU academia, Poly-preneurs, the CEO Club, Bauhinia Cup Outstanding Entrepreneurships Association, start-up companies and industry at large. Major trade and industry associations including The Hong Kong General Chamber of Commerce, the Federation of Hong Kong Industries, the Chinese General Chamber of Commerce, and the Chinese Manufacturers' Association of Hong Kong were actively engaged to promote the University's innovations and technologies. PolyU's endeavours in fostering strong university-industry partnership rendered it a 12-time winner of "SME Best Partner Award" organized by the Hong Kong General Chamber of Small and Medium Business.

The University continues to partner with international institutes, governmental bodies and organizations to bring about positive influence and impact in issues of strategic interest. In June 2017, PolyU played host to the Times Higher Education (THE) Innovation & Impact Summit to explore how to enhance universities' impacts through innovative research and teaching. The 3-day summit kicked off with PolyU Showcase which highlighted 4 areas which PolyU prides herself in creating application impacts through long term university-industry partnership. Soon after in the same month, PolyU also co-organized EmTech Hong Kong 2017 with MIT Technology Review.

(f) KT Communication

In the past year, PolyU helped to stage various events for KT stakeholders to exchange ideas and share experiences. A case in point was the AUTM Asia 2017 co-organized with local universities and Science Park to share the best tech transfer practices from all over the world, with strategic focus on the emergent Asian markets. PolyU also staged regular seminars on KT and collaborative research seminar with international experts sharing their insights and latest development with local audience.

3.2. Disseminating Knowledge for Community Benefits

(a) Publicity, Publications and Online Marketing

Various publicity channels were deployed to communicate PolyU technologies to target audiences. In the past year, a number of press conferences and interviews were held to introduce PolyU's technologies to the public. PolyU's research outcomes also appeared in feature stories in partnering trade magazines (e.g. Hong Kong Entrepreneurs published by the Chinese Manufacturers' Association).

PolyU's innovations were regularly featured in the University's printed or electronic publications, including "Technology Frontier", "excel@PolyU" and "PolyU Milestones". With exponential growth in on-line media communication space, more resources were put on on-line marketing and social media platforms to publicize technology related news and events, as well as exemplifying research achievements. Efforts were also stepped up to promote the Tech Portal on the Institute for Entrepreneurship (IfE) website, where users can access hundreds of PolyU's applied technologies.

(b) House of Innovation (HoI)

Serving as the University's innovation and technology showroom, HoI is regularly accessible to the public through open days and arranged tours. Advanced facilities employing technologies such as hologram and AR help present the research projects developed by PolyU in a more vivid way. During the reporting period, more than 220 visits involving close to 6,000 people visited the HoI.

(c) Themed Showcases

In the past year, PolyU participated in a number of public exhibitions to raise awareness of PolyU's innovation and technology. In the 9-day InnoCarnival 2016, PolyU's robotic technologies and computer game development were showcased. The futuristic pavilion attracted the attention of VIPs, media, industry and the general public, and was voted "My Favourite Booth". In China Hi-Tech Fair 2016, the University's award-winning "Star Techs" were presented. At the Gerontech and Innovation Expo 2017, PolyU again demonstrated her strength and commitment to the ageing society through an array of healthcare innovations and services.

4. Spearheading Regional Entrepreneurship Development

In partnership with key stakeholders in the start-up community, PolyU has been running innovation and entrepreneurship programmes for its students and young graduates since 2011. The InnoHub expanded our efforts to develop regional partnerships with institutions and entrepreneurial intermediaries, bringing synergy to win-win programmes and activities for key stakeholders.

4.1. Cultivating "Do Well Do Good" Entrepreneurship Practice & Education

(a) Entrepreneurial Practice with Seed Fund

PolyU has established different start-up funding programmes in collaboration with local and regional partners, exerting different focus along the start-up value chain. Hitherto, PolyU has supported more than 200 start-up ventures through the funding schemes, providing over 60,000 hours of training hours to individuals. The outcome of the supported start-ups has been positive, with around 75%[2] still being active in operation. A good number of them secured further incubation/funding support and investment that amounted to more than $180 million, and won over 100 international and regional awards.

In 2017, a new initiative named "Student Entrepreneurial Proof-of-Concept Fund" (POC Fund) was launched to further promote student innovations and potential downstream commercialization. 13 projects were funded to develop prototypes and carry out market validation of their concepts.

[2] The sustainability rate is calculated as the total number of start-ups (supported for more than 1 year) still actively operating as of 30 June 2017, divided by the total number of funded start-ups as of 30 June 2016.

(b) Experiential Entrepreneurial Education

As a higher education institution, PolyU offers a wide range of entrepreneurship education courses for students aspired to be entrepreneurs, including credit-bearing academic courses and extra-mural activity-based learning on entrepreneurship and leadership development. In FY2016/17, the University established the Global Student Network of Entrepreneurship (GSNE), together with 9 other institutions from the Chinese mainland, Taiwan, Singapore and Israel. The GSNE provides a global platform to connect students for entrepreneurship learning.

Through IfE, the University also put forth resources to develop practical entrepreneurship training programmes and activities, for students, graduates and research staff with different focuses and learning objectives. Regular programmes include entrepreneurship bootcamps in Hong Kong and Shanghai to help students formulate their start-up ideas and business propositions. The physical classroom learning was also augmented by "The Practicum" – an online entrepreneurship learning platform for flipped classroom learning.

For young yet experienced entrepreneurs, the annual High Potential Entrepreneurial Leadership (HiPEL) Programme had commenced admitted its 5th intake in June 2017, with more than 30 participants from Hong Kong, Shanghai and Taiwan. Over the years, the 100+ alumni of the programme formed a community of practice with regular sharing and exchange among the group on life-long learning along their entrepreneurship journey.

Since 2014, a programme named "From Research to Business" has been organized to research students and staff to turn their research output into applications for potential technology venturing and commercialization. In FY2017/18, PolyU plans to collaborate with NUS to adopt the Lean Launchpad Programme (LLP), with particular focus to develop research students and staff into techno-preneurs, for accelerating the commercial exploitation of their own research achievement.

4.2. Building a Regional Entrepreneurial Community

(a) PolyU InnoHub – Cultivating Regional Partnership

In order to further develop entrepreneurial ambience within the campus environment, the University has established the PolyU InnoHub in March 2017. The Hub is a dedicated space to facilitate co-creation and co-incubation activities, leveraging both internal (faculties' research expertise, students' creativity and innovations, alumni network) and external resources through partnering with investors, incubators and higher education institutions both locally and in the region. As an innovation commons, InnoHub also serves as a meeting space for exchange and joint collaborations among regional partners. A number of joint activities like MIT Innovation Node Hong Kong, Alibaba, Techstar (Startup Weekend) and AppWorks from Taiwan have been co-hosted since March 2017.

(b) Regional Partnership Development

Pivoted around InnoHub activities, the outreach to regional start-up eco-system can be strategized. In the reporting year, the PolyU, through InnoHub/IfE, has organized 3 start-up delegations to participate in start-up events in nearby regions to seek synergistic collaboration with like-minded institutions

and organizations. The visits included Meet Taipei (November 2016), Innovfest Unbound (Singapore, May 2017) and TechCrunch China (Shenzhen, June 2017).

5. Performance Measure – Key Performance Indicators

A summary of the key performance indicators for various KT areas is presented in the table below, with figures expressed in HK$'000:

Performance Indicators	2015-16 Actual	2016-17 Actual	2017-18 Target
Patenting & Licensing			
No. of patents filed	79	91	65
No. of patents granted Note 1	54	43	50
Accumulative no. of licenses granted Note 2	110	129	140
Income generated from IPR	$3,558	$5,610	$4,200
Expenditure involved in generating income from IPR	$5,244	$5,964	$5,000
Consultancy, Collaborative / Contract Research & Spin-off / JV			
No. of collaborative research, income generated and total contract value Note 3	193 $135,316 $467,492	327 $97,392 $524,181	200 $140,000
No. of contract research, income generated and total contract value Note 4	371 $94,202 $368,970	402 $83,701 $447,428	380 $98,000
No. of consultancy projects and income generated	570 $41,758	575 $53,380	580 $43,000
No. of economically active spin-off companies Notes 5,6	17	24	33
Net income generated (or net loss arising) from spin-off companies	($282)	($63)	$100
Other Knowledge Transfer / Dissemination Activities			
No. of equipment and facility service agreements and income	291 $4,838	327 $4,512	600 $8,000
No. of student contact hours for business or CPD needs Notes 7, 8	1,231,588	1,153,835	1,275,000
Income received from CPD courses Note 8	$259,929	$260,835	$260,000
No. of public lectures / symposiums / exhibitions and speeches to community	497	686	550
No. of performances and exhibitions of creative work by staff or students	126	110	130
No. of staff engaged as members of external advisory bodies	325	299	340

Note:

1. A detailed list of patents granted is presented in Appendix 4.

2. The reported figure includes license income amounted to $307,000 generated from PolyU supported start-ups which licensed PolyU's IPs. This license income was also included in the "Net Income generated (or net loss arising) from spin-off companies" (please also see Note 6 below).
3. Collaborative research income reported is on cash-receipt basis from on-going projects in FY2016-17, with an aggregate project value of $524 million. As some of the internally funded projects also involved third parties as collaborators for KT purpose, the number of those projects was counted here but not the income nor project value.
4. Contract research projects are those involving third parties from public, private and NGO sectors. The income reported is on cash-receipt basis from on-going projects in FY2016-17, with an aggregate value of $447 million.
5. The figure includes the number of start-ups that license PolyU generated IPs with reported net income as proceeds arising from licensing. Subsidiaries set up as operating vehicles for specific functional purposes, e.g. PTeC, Hotel ICON and PolyU Base in Shenzhen are not included.
6. The reported figure includes license income amounted to $307,000 generated from PolyU supported start-ups which licensed PolyU's IPs. This license income was also included in the "Income generated from IPR" (please also see Note 2 above).
7. The student contact hours are defined to be the number of enrollments multiplied by the number of contact/course hours.
8. The CPD courses are now defined to include also award-bearing and credit-bearing programmes for learners already in work who are undertaking the course for purposes of professional development/upskilling/workforce development, in addition to short term non credit-bearing training programmes.
9. Additional KPIs on other related KT activities are presented in Appendix 3.

6. Conclusion and The Way Forward

The year 2016-17 had been a year of expanded activities in KT and entrepreneurship with institutional infrastructure being put in place to support strategic development of technology application (e.g. University Research Facility in 3D Printing) and start-up community partnership through InnoHub. The commitment of PolyU in KT underpinned by sound governance was rewarded with good performance in many measured KPI on consultancy, contract research, licensing, and start-up engagements.

With the planning of the new 6-year strategic plan underway for implementation in mid 2018, PolyU will channel resources and efforts to support multi-disciplinary and cross-sector collaborations with industry, with the ultimate aim to create impact through technology venturing and licensing technologies. While the Big Bay Area is a renewed advocacy by the state and the local governments, PolyU's presence in the regional innovation system has been well recognized by Hong Kong industrialists operating in the region. While the University's contribution has mostly been demonstrated in contracted research and consultancy, the alignment with internal and regional stakeholders through collaborative initiatives will put PolyU in a better position to further its KT impact to selected industry verticals and region. A more liberal IP policy, coupled with new government supported programmes, would encourage more tech-driven start-up endeavours in the PolyU community.

With Hong Kong becoming more integrated into other thriving cities in the Pearl River Delta, PolyU shoulders the challenges of striving for excellence in both education and application. To pursue such goals the University will constantly review its strategies, actions and outcomes to remain agile and effective in advancing her KT agenda, reconciling scholarship, innovation, and application in a sustainable way.

Miranda Lou
Vice President (Administration & Business)

Appendix 1 – Impact Case History

Case 1: The Hong Kong Branch of Chinese National Engineering Research Centre for Steel Construction

Overview

Effective steel fabrication and construction is a crucial part of development for the steel construction industry. Its successful implementation will lead to an overall savings in construction cost together with quality and sustainable infrastructure.

According to the statistics provided by the World Steel Association, the annual steel production of China has been increasing steadily over the past decade, reaching 823 million metric tons in 2014 and contributing 50.3% of the global annual steel production. Hong Kong, having its long time acclaimed track record in complex civil structures, would be in a pivotal role to build an international technological platform for steel construction, showcasing Chinese technological advancement in steel construction to the world, thereby promoting a wider use of Chinese steel materials in the international market.

On 12th October 2015, the Hong Kong Branch of Chinese National Engineering Research Centre (CNERC) for Steel Construction (HKCNERC-SC) was established by the Hong Kong Polytechnic University (PolyU) with the approval of the State Ministry of Science and Technology (MOST), China.

The Hong Kong Branch is dedicated to advancing technological capabilities of Hong Kong construction industry and Chinese steel construction industry in design and construction of high-rise buildings and megastructures. Its activities include research, development and promotion of effective design and construction of modern building and civil engineering structures, as well as sustainable infrastructure development in Hong Kong. Since its establishment, HKCNERC-SC has been actively engaging in national and international academic and industrial exchanges in R&D of steel construction to enhance the competency and knowledge of the practitioners.

Focused Development and Underpinning Research

HKCNERC-SC has been working closely with its local research teams composed of academics from local universities, as well as international collaborative partners. Professor Kwok-Fai CHUNG, Professor and Associate Head (Academic Development) of the Department of Civil and Environmental Engineering at PolyU, was appointed by the MOST as the Director of the Hong Kong Branch.

The Hong Kong Branch receives strong support from the Development Bureau of the HKSAR Government and also from the Construction Industry Council, with a $5 million annual project funding support by the Innovation and Technology Commission (ITC). This funding support is further matched by PolyU on a 1:1 ratio.

Since its approval for establishment in 2015, the CNERC has been conducting 12 research projects under two major work themes: a) sustainable infrastructure development and b) structural engineering on modern steel construction. Highlights of two selected projects from the two work themes are presented as follows:

1. Atmospheric Corrosivity on Infrastructures in Hong Kong

According to expected degrees of atmospheric corrosion and importance of infrastructure, a comprehensive field test programme was devised to be conducted at different kinds of locations in Hong Kong, including rural, urban, industrial and coastal areas. Bare and galvanized steel plates with different galvanization chemistry and protection systems will be exposed outdoors for a specific period while inspection of these specimens will be done regularly. The proposed field tests will involve periodic measurements and regular monitoring of the environmental conditions, so that the presence of various atmospheric chemicals may be scientifically correlated to the corrosion rates of test samples.

A corrosion map for the entire Hong Kong based on the tests and analysis is being developed to establish annual corrosion rates for durability assessment of existing structures as well as for durability design of new structures. The field tests could act as pilot studies for China, particularly in other maritime cities and the Pearl River Delta Region.

In this connection, scientific guidelines in designing new building and civil engineering structures against atmospheric corrosion will be developed for enhanced design against atmospheric corrosion. The guideline will help to reduce substantial maintenance expenses on newly built residential buildings, commercial offices and public buildings as well as roads, highways, railways, tunnels, bridges and port facilities.

2. Effective High Strength Steel Construction for Sustainable Infrastructure Development in Hong Kong

In order to fully exploit potential structural advantage of high performance steel materials in construction, advanced design methods are being developed to enable engineering design by construction engineers. The following R&D projects have been carried out:

• Mechanical properties of high strength steels and high strength welded connections

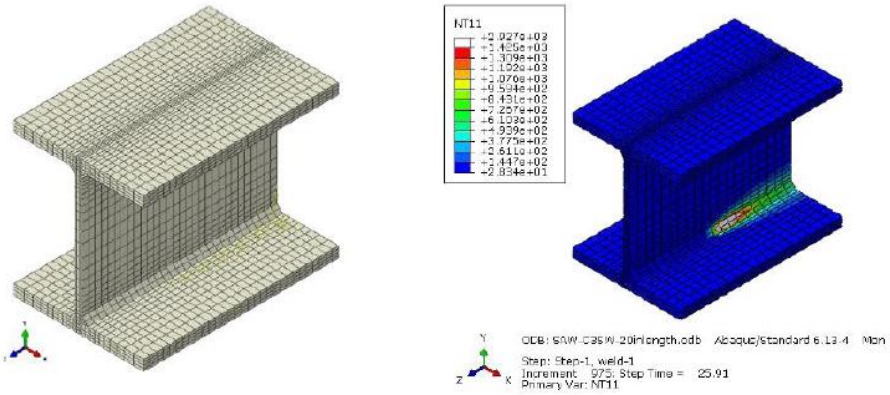
This project provides fundamental test data on full-range stress-strain relationship in welded sections of high strength Q690 and Q960 steel materials with advanced digital image correlation system employing high definition cameras. Through monotonic tensile tests, mechanical properties are

acquired and are compared quantitatively for developing a constitutive model for welded sections of high strength steel materials.

• Residual stresses in welded sections using high strength steel materials

Welding fabrication of steel structures gives rise to residual stresses due to temperature differences during welding, imposing negative effects on the strength and structural behavior. Experimental investigation into residual stress distributions of welded sections made of high strength Q690 steel material is a major research area.

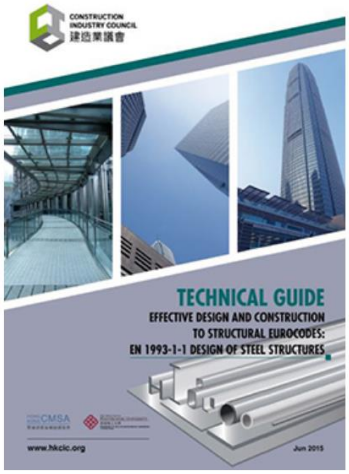
This project provides fundamental test data on residual stresses in welded sections of high strength Q690 steel materials, facilitating development of a residual stress pattern and finite element models for welded sections. Based on readings on heat energy input from the welding system, uneven temperature distribution in the vicinity of the welds is found to lead to the residual stress. Advanced thermal-mechanical analysis using numerical methods is conducted to simulate the energy input and model the resultant residual stress patterns.



Output

Professional Publications

a) Professional Guide entitled “Selection of Equivalent Steel Materials to European Steel Materials Specifications”
b) Technical Guide entitled “Effective Design and Construction to Structural Eurocodes: EN 1993-1-1 Design of Steel Structures”



Research Papers

1. K. F. Chung. Adopting Structural Eurocodes – Effective Design to EN 1993-1-1 using equivalent steel materials and structural steelwork. EASEC-14 (Vietnam – Jan 6-8, 2016)
2. T.Y. Ma, K. F. Chung, and G.Q. Li. Effective use of Q690-QT welded H-sections in building construction. EASEC-14 (Vietnam – Jan 6-8, 2016)
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Impacts and Benefits

a) Contribution to the Belt and Road Initiatives

To contribute to the Belt and Road Initiative as a "super-connector" between China and the world, the Hong Kong Branch will advance technological capabilities of Hong Kong construction industry to i) safeguard the durability of infrastructures in Hong Kong, and ii) promote its professional services to the international construction markets. The professionals and development related to steel construction in Hong Kong will support Chinese steel construction industry in meeting stringent requirements of the international practice on materials, architectural and engineering design, functionality and sustainability, project management and construction as well as quality control.

b) Improvement Measures for Steel Usage

Despite the fact that structural steels have long been used in the construction industry in Hong Kong, the extent of usage is far less than that of reinforced concrete for building design and construction, as compared to nearby countries like Singapore, Taiwan and Japan. The Hong Kong Branch is studying underlying causes of this phenomenon with a view to better utilize steel as a key construction material for building construction in Hong Kong.

Based on the findings from the study, recommendations will be made to the HKSAR Government and stakeholders to address various critical issues with proposed improvement measures, covering design training for engineers, innovative technologies for fabrication, methodology for welding and construction, and quality assurance of fabrication and construction to minimize wastage and abortive works.

c) Certification Scheme on Quality Structural Steelwork Fabrication

In the past, the steel fabrication quality of fabrication plants fluctuated due to variations in materials, production procedures and quality control, leading to significant remedial works required upon delivery and erection on sites. As a consequence, an industry-wide certification scheme was recommended to assure upstream quality standards of steel fabrication.

A certification scheme compliant with ISO17025 was drafted for periodic and independent auditing of fabrication plants on aspects including sampling of raw materials, process control, capability of management and supervisory personnel, adequacy of infrastructure of plants and equipment, qualification of welders, execution of random non-destructive tests during audit and disallowing sub-contracting to unauthorized suppliers.

The draft document of the proposed certification scheme has been put forward for consultation with representative stakeholders. Discussion with the Chinese Steel Construction Society and the Chinese Construction Metal Structures Association is underway with the aim of attracting leading steelwork fabricators in Chinese Mainland to join the proposed scheme to enhance their competiveness in overseas construction projects.

Media References of Impacts and Benefits

Date	**Headline**	**Media**
2017/03/02	如何看待中國 2016 年化解鋼鐵過剩產能	China Iron and Steel Association
2016/12/26	科技部部長萬鋼會見香港特別行政區行政長官梁振英	China Science and Technology Exchange Center
2016/12/15	【應用科研探索建造鋼材撐起基建】精選中國鋼材 旺產業益大眾	Wen Wei Po
2016/12/14	【京港學術交流】 2016 – 12 112 期 << 國家鋼結構工程技術研究中心香港分中心>>系列報導 - 香港理工大學篇	Mainland – Hong Kong Academic Exchange
2016/12	FCE e-Bulletin Issue 74 / December 2016 - Cover Story	FCE e-Bulletin
2016/08	FCE e-Bulletin Issue 70 / August 2016	FCE e-Bulletin
2016/02/18	岳清瑞談我國鋼結構發展瓶頸及“十三五”發展方向	Sheng Yi She
2015/11/05	理大建兩國家級工程中心	Wen Wei Po
2015/11/05	港理大設國家級科研中心	Hong Kong Commercial Daily
2015/11/05	國家兩工程中心理大設分支	Ta Kung Pao

Case 2: DISH Global Centre for Food Safety and The EU-China-Safe in Horizon 2020 Initiative

Innovation and advancement in food safety leveraging international synergy

Overview

Pioneered by PolyU's effort to promote global food safety with a scientific and evidence-based approach in the first Global Food Safety and Technology Forum as well as the establishment of the Food Safety Consortium, PolyU succeeded in leveraging the interest and commitment of international community to found the DISH Global Centre for Food Safety, joining forces with Chinese and European partners to initiate an impactful global-scale food safety project, "EU-China-Safe".

Underpinning Research

Confronted by numerous challenges on food supply chain control, Prof. Pei Li, Professor of the Department of Applied Biology and Chemical Technology (ABCT), led her team to come up with the Nano Anti-Erasing (ATE) System which curbs tampering the expiry date of food products on packaging and reselling of spoiled or lost inventory or contaminated products. The ATE system introduces a groundbreaking double-layer-double-colour (DLDC) marking technique using a continuous inkjet (CIJ) printer. The double-colour markings are concurrently printed on the plastic surface where the top layer is the same as normal marking, but the inner layer print is resistant to physical stress and most solvents. The DLDC marking technique could provide anti-counterfeiting features through the selection of various colours for inner layers. This emerging marking system offers a low-cost solution for tackling food security and traceability.

In regard to the research for enhancing food authentication, Dr Zhong-ping Yao, Associate Professor of the Department of Applied Biology and Chemical Technology (ABCT) has reported the use of matrix-assisted laser desorption/ionization mass spectrometry (MALDI-MS) for rapid authentication of edible oils. The analysis can be finished within several minutes. Characteristic spectral pattern was observed for each edible oil species and could be used as the fingerprint of the oil species for edible oil authentication. His team has further improved the developed method and established a comprehensive MALDI-MS mass spectral database recently. More than one thousand edible oil samples, including over thirty types of pure edible oils, different blended edible oils and recycled/gutter oil samples were collected and their spectra were stored in the database. Rapid authentication of edible oil samples could be done by simple spectral pattern comparison and statistical analysis, using the data in the database. The results indicated pure edible oils could be authenticated accurately and adulterated edible oils and recycled/gutter oils could be screened out, as they showed different patterns in their MALDI-MS spectra.

With the collective efforts made by various members, PolyU is making active contributions to address Food safety issues which pose immense threats to the economy and society at a global scale. With reference to *WHO estimates of the global burden of foodborne diseases* published in December 2015, "31 hazards caused 600 (95% uncertainty interval [UI] 420–960) million foodborne illnesses and 420,000 (95% UI 310,000–600,000) deaths in 2010". According to *Consumer Product Fraud, Deterrence and Detection published by the United States Grocery Manufacturers Association and A.T. Kearney (2010)*, "it is estimated that economic adulteration and counterfeiting of global food and consumer products may cost the industry US$10 to 15 billion per year". The increasingly complex global food supply network increases the risks of serious food-borne illnesses, collectively constituting a pressing need to leverage concerted efforts across the continents in an attempt to effectively cope with emerging threats to global food safety.

Reference to Research

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Impacts and benefits

Further to PolyU's research on enhancing food security, traceability and authentication, the University is taking leaps and bounds in augmenting the research impact to a global scale by leveraging the synergies tapped from collaborative research platforms joined by reputed international partners.

DISH Global Centre for Food Safety

Jointly founded by the National Food Institute - Technical University of Denmark (DTU), Alma Mater Studiorum –University of Bologna (Unibo), Lund University (LU), and The Hong Kong Polytechnic University (PolyU), signifying the alliance of four economies – *D*enmark, *I*taly, *S*weden, and *H*ong Kong, the DISH Global Centre for Food Safety is set out to address all challenges within food safety on global and collaborative form with "Powering Food Safety with Science and Technology" as the strapline and operates on the joint and synergic effort of the founding members, which contributes to the activities by sharing facilities, platforms, and infrastructures, in order to carry out joint research and innovation activities in the field of food safety. Dr Terence Lau of PolyU was elected Chairman of the Board of DISH. The official launching ceremony took place at the second Global Food Safety and Technology Forum, GoFood 2017, at Lund and Copenhagen, and was proud to anchor the endorsement and support from senior officials representing the Governments and industry, such as the Minister of Rural Affairs of the Swedish Government and a number of senior officials from EU and Hong Kong.

DISH acts as the one-stop collaborative platform which offers world-class expertise that could effectively address food safety challenges. DISH offers a one-of-its-kind technology development partnership between Europe and Asia integrating world-class food safety technologies which will address relevant problems with a synergic approach. Hence, when a particular food safety challenge arises, all four universities will be able to act in concerted efforts and offer innovative solutions in an effective manner.

The collaboration of DISH shall foresee 3 phases while possible joint activities to be carried out within the Centre may regard:

- Promotion of mobility and exchange of academic staff; students and Ph.D. students, also through joint participation to competitive calls.
- Research and Innovation: identification and development of research projects of mutual interest; Design of innovative and experimental projects in fields of mutual interest; Promotion of Joint application to local, national, international calls; Exploitation of research results through technology transfer initiatives.
- Teaching: joint projects development, joint programme development and development of vocational training courses for teachers and other categories.
- Organisation of seminars, symposia and conferences on themes of common interest.
- Networking, lobby and public engagement.

Food safety and quality areas to be addressed cover the following:

- Food microbiology (especially antimicrobial resistance);
- Food packaging and fast monitoring;
- Food logistics and retail; and
- Food fraud and food traceability/authenticity.

As for technologies to be developed, some of them are cited as follows:

- Biological testing: Genomics (DNA sequencing), Metabolomics, Foodomics, and other -omic approaches
- Chemical testing: LC-MS, GC-MS and NMR
- Physics testing: e.g. synchrotron and nano
- New methods development and standardization
- Open-source databases: can be the organization to centralize databases for food

Through this key representation of academic collaborative efforts in engaging the industry, government, NGOs and other stakeholders, DISH is designated to translate into a true global effort to advance food safety, building on each partner's networks, experiences and skills. The final goal of DISH on food safety is to create impact on society in the long period.

EU-China-Safe in Horizon 2020 Programme

PolyU joined forces with 33 partners, including 15 in the EU and 18 in China, in the food safety initiative across Europe and China with the Queen's University Belfast as "EU Coordinator" and China National Center for Food Safety Risk Assessment (CFSA) as "China Coordinator". The European Horizon 2020 programme and Chinese Ministry of Science and Technology (MOST) programme have awarded an aggregate of €10 million towards this EU-China partnership to improve food safety and tackle food fraud.

The EU-China-Safe project will involve key players in the food industry, research organisations and Governments across two of the world's largest trading areas. Prominent partners include Queen's University Belfast; Agriculture and Food Development Authority; Wageningen University; Joint Research Centre – European Commission; Nofima As; Euroquality Sarl; and Nestec SA from Europe while CFSA; Chinese Academy of Inspection & Quarantine; Beijing Center for Disease Prevention and Control; Danone Asia-Pacific Management Co Ltd; Inner Mongolia Yili Industrial Group Co. Ltd are among those from China.

In view of this, EU-China-Safe was set out to reduce food fraud and improve food safety through focusing on improving food legislation, food inspection and increasing access to information across both continents. 33 partners join efforts to work hand in hand as a coalition to share and demonstrate best practice of state-of-the-art technologies via the establishment of a virtual laboratory. Detection of adulteration of food products and traceability of global supply chains are to be improved with the use of innovative technologies.

The Hong Kong Polytechnic University (PolyU) is the only university in Hong Kong to participate in this significant food safety initiative. PolyU is glad to bring its cutting-edge food safety innovations and technologies to the international arena, by working together with 32 partners in EU and China, two of the world's largest economies. Through its pioneering research, its various technology development and collaborative research platforms established, as well as the University's long-term engagement with the industry, government, research institutes and non-profit-organizations, PolyU will continue to contribute towards the advancement of global food safety in collaboration with stakeholders.

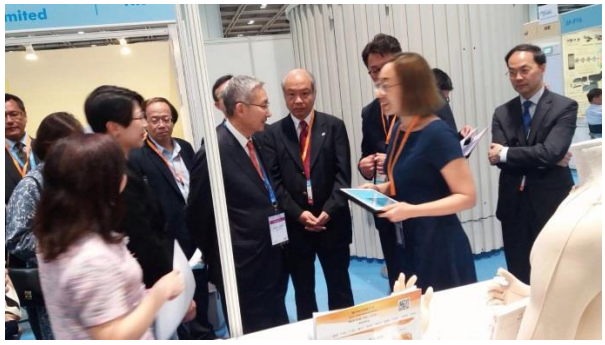
Advancing Ahead

With a series of platforms and projects launched in full-fledge, PolyU's advances in the strategic area of food safety has experienced growth in leaps and bounds through a holistic approach with a structured framework effectively engaging leading academic, industry and governmental institutions at a global scale, further paving the way to the fruition of paradigm-shifting technology translated into the application for ultimate socio-economic betterment.

Appendix 2 – Technology Marketing and Networking Activities

(a) Highlights of Special Events

Date	Event	Photo
Sep 2016	**TechInnovation 2016** To explore technology and business collaboration opportunities with international partners, PolyU showcased 6 projects at the exhibition and joined the pitching session at the concurrent conference.	 
Oct to Nov 2016	**InnoCarnival 2016** In the PolyU pavilion, the University's achievements in the fields of robotics and computer game development were exhibited and demonstrated, once again making it the most favourable booth by popular voting of the visitors.	  

Nov 2016	**China Hi-Tech Fair 2016** With the theme of "Star Tech", the PolyU pavilion featured the technologies that had won awards at prestigious invention events, as well as the services offered by PolyU Shenzhen Base in this exhibition.	 
Mar - Apr 2017	**The 45th International Exhibition of Inventions of Geneva** PolyU won 11 prizes with its 7 inventions at this annual international event. Our award-winning research experts were publicly acclaimed by the Consul-General of Switzerland, the Chief Executive and the Secretary for Innovation and Technology of HKSAR at a related celebration event held at the Government headquarters.	
May 2017	**Hong Kong International Medical Devices and Supplies Fair 2017** A selected collection of PolyU's outstanding healthcare and rehabilitation innovations and technologies were displayed in this fair, attracting the attention of VIPs, the media and industry players alike.	
May 2017	**China Innovation and Technology Fair (2017 中國創新創業成果交流會)** PolyU's innovative technologies and multidisciplinary applied research breakthroughs were showcased at this increasingly important event in China, enticing Chinese state officials and industrialists at the same time.	  

Jun 2017	**Stars Connected** The 80th anniversary celebratory event of the University provided a platform for PolyU academics, government officials, industrialists, entrepreneurs, investors and tech start-up intermediaries/operators to interconnect, reinforcing PolyU's role as a committed community partner for the industry and community.	    
Jun 2017	**Gerontech and Innovation Expo cum Summit 2017** At the event, related innovations, research projects and services from 7 PolyU departments were showcased to visitors who cared about healthy ageing.	

(b) Major Exhibitions and Tradeshows Participated

Exhibitions / Tradeshows Participated	Location	Disciplines / Items Promoted
1. Food Expo 2016	Hong Kong, PRC	Food safety technologies, food testing, etc.
2. International Conference & Exhibition of the Modernization of Chinese Medicine & Health Products (ICMCM) 2016	Hong Kong, PRC	Modern traditional Chinese medicine developments
3. TechInnovation 2016	Singapore	Textiles technologies, green energy, anti-cancer drug, multisensory apparatus, etc.
4. Hong Kong Electronics Fair 2016 (Autumn Edition)	Hong Kong, PRC	IoT systems, multisensory apparatus, etc.
5. InnoCarnival 2016	Hong Kong, PRC	Robotics, computer games, etc.
6. China Hi-Tech Fair 2016	Shenzhen, PRC	Functional textiles, energy devices, topographic mapping model, indoor cultivation platform and services of PolyU Shenzhen Base, etc.
7. IDT Expo 2016	Hong Kong, PRC	Functional textiles, actuator for automobile with energy recycling function, topographic mapping model, indoor cultivation platform, etc.
8. 45th International Exhibition of Inventions of Geneva	Geneva, Switzerland	Scar care pad, biofeedback system, biosensor for virus detection, nanofiber, UAV's communication relay system, green particleboard, cooling fiber, etc.
9. ICT Expo 2017	Hong Kong, PRC	Computing technologies
10. Hong Kong International Medical Devices and Supplies Fair	Hong Kong, PRC	Healthcare technologies, e.g. diaper with Chinese medicines, balance-enhancing geriatric footwear, biofeedback system, etc.
11. 2017 Youth Genius (HK) Convention and CIIExpo 2017	Hong Kong, PRC	Student inventions
12. Rail Solutions Asia 2017	Kuala Lumpur, Malaysia	Railway condition monitoring technologies
13. China Innovation and Technology Fair (2017 中國創新創業成果交流會)	Guangzhou, PRC	Formaldehyde detection technology, energy regeneration technologies, functional textile, etc.
14. Gerontech and Innovation Expo cum Summit 2017	Hong Kong, PRC	Innovations, research projects and services for the elderly

Appendix 3 - Additional Measures for Related KT Activities

Performance Indicators	2016-17 Target	2016-17 Actual	2017-18 Target
Marketing & Outreaching			
Outreach to industry [Note 1] - • No. of Exhibitions / Conference and Forum attended [Note 2] • No. of people [Note 3] reached ('000)	 40 1,100	 40 1,106	 40 1,100
No. of innovations / technologies being promoted / marketed	150	165	150
Innovation and Entrepreneurial Activities Enabling KT			
Accumulative no. of start-up ventures supported / created by students, graduates or staff [Note 4]	221	211	271
Survival / sustainable rate of supported start-up ventures [Note 5]	--	75% (1 year) 65% (2 year) 58% (3 year)	70% (1 year) 60% (2 year) 50% (3 year)
Accumulative no. of PolyU innovations / technologies / knowledge transferred through start-ups by students / alumni / staff	36	33	46
• No. of Entrepreneurship Fund applications [Note 6] • No. of students, alumni and staff involved [Note 7] • No. of new start-ups / entrepreneurial projects supported [Note 8]	160 400 20	218 511 40	220 500 45

Note:

1. The reported figures covers events organized / attended by the Institute for Entrepreneurship only.
2. The target reflects only major public exhibitions, symposia, and competitions in both Hong Kong, mainland and overseas, excluding seminars, workshops and featured media reporting for specific technologies, commercialization and start-ups endeavours.
3. Includes both people from industry and the general public.
4. The reported figure includes all award recipients of Micro Fund, China Entrepreneurship Fund (CEF) Schemes, TIF, TLF and Good Seed schemes.
5. Sustainability rate is defined as: number of start-ups (supported for more than 1 / 2 / 3 years) still actively operating as of 30 June 2017, divided by the total number of funded start-ups supported as of 30 June 2016 / 2015 / 2014 respectively.
6. The reported figure includes all applications under Micro Fund, China Entrepreneurship Fund (CEF) Schemes, TIF, TLF and Good Seed schemes.
7. It also includes non-PolyU participants from the Good Seed Programme
8. The actual number of funded start-ups in FY2016/17 was 51. With some pulled out cases and some existing start-ups seeking for further funding from PolyU's other funding schemes, the total number of NEW start-ups supported was 40.

Appendix 4 – List of Patents Granted in FY2016-17

Official Title	Country
1. Railway Monitoring System	Canada
2. LED 顯示面板的驅動方法及系統	China
3. 一種 LED 陳列的排佈方法及排佈在 PCB 板上的 LED 陳列	China
4. 一種具有功能梯度的混凝土复合墙板结構、建築物	China
5. 一種具有動態吸附及轉移功能的多孔材料的設計原理及製作方法	China
6. 一種雙網絡水凝膠纖維的製備方法及其產品	China
7. 一種製備發光纖維和面料的方法	China
8. 在環錠紡紗之前對紗綫施加假捻的方法及裝置	China
9. 夾持裝置、胸罩填充體及夾持裝置的製備方法	China
10. 具有緊固系統的可穿戴機器人裝置	China
11. 具有雙向形狀記憶的聚合物材料及其製備方法	China
12. 具有微纳芯径的悬挂芯型在线光纤微单元及其制备方法	China
13. 基于 X 型结构的仿腿型隔振装置	China
14. 基于 X 型结构的多自由度非线性被动隔振装置	China
15. 基于仿腿型结构的非线性刚度阻尼装置	China
16. 应用六角筒型连接件连接的预制混凝土夹心板、建筑物	China
17. 製備於柔度可控基底上的連通性可調的鈀基氫氣傳感器及其製作方法	China
18. 谐振式法布里-珀罗光纤传感器及制造和气压检测方法	China
19. 微纳光纤微型实验结构及其制作方法和测量仪	China
20. 透鏡及發光裝置	China
21. 纖維基有機電化晶體管	China
22. 透鏡及發光裝置	China
23. 含炔烃的類黃酮、含叠氮化物的類黃酮和含三唑的類黃酮作為調節劑用於癌症的多葯耐葯 Alkyne-, Azide- and Triazle- containing Flavonoids as Modulators for Multidrug Resistance in Cancers	China USA
24. 作为抗癌试剂的喹啉衍生物 Quinoline Derivatives as Anti-cancer Agents	China USA
25. Dye-sensitized solar cell based on indirect charge transfer	USA
26. INTELLIGENT ADJUSTABLE MANNEQUIN	USA
27. Method of 3D Biometrics Identification	USA
28. MULTI-STRING LED DRIVER WITH CURRENT BALANCING	USA

Official Title	Country
29. NON-INVASIVE GLUCOSE SENSOR	USA
30. Optical lens and lighting device	USA
31. Polyphenol proteasome inhibitors, synthesis, and methods of use	USA
32. Posture Correction Girdle and the Method of Correcting Spinal Deformity	USA
33. Semi-Crystalline Shape Memory Polymer and Production Method Thereof	USA
34. Sensor for measuring flow speed of a fluid	USA
35. Smart thermal textile for acupuncture therapy	USA
36. Synthesis and use of amine containing flavonoids as potent anti-leishmanial agents	USA
37. The Use of Engineered Arginine-catabolizing Enzymes as Anti-Cancer and Anti-Viral Agents	USA
38. Ultra-stable oligonucleotide-gold and silver nanoparticle conjugates and method of their preparation	USA
39. Optical Lens for Slowing Myopia Progression	Singapore
	Taiwan
40. 減緩近視發展之方法與系統	Taiwan

Appendix 5 – Highlighted Cases of Funded Start-ups

Loom Loop / Creatique Studio Limited
(Micro Fund Awardee 2016)

Background:
Loom Loop aims to develop a new modern fashion collection by using Canton silk, an otherwise lost heritage fabric.

Gambiered Canton silk is one of the most famous traditional fabrics in Guangzhou, China, with nearly 400 years of history. Manufactured by dip-dyeing in a yam dye solution, and insulated under the burning sun, the production process is clean, reproducible and environmentally friendly. Canton silk was a major commodity in the 1930s, yet was abandoned during the Cultural Revolution owing to an anti-tradition movement. Loom Loop would like to revive the manufacture of this beautiful fabric and bring it back to the contemporary fashion industry.

Current Stage:
The start-up is currently part of the Fashion Incubation Programme of Hong Kong Design Centre, The Cage Programme of Lane Crawford and Seed And Feature Grants of Design Trusts. It also operates a retail outlet at PMQ, with another to be opened soon in Tai Kwun – Hong Kong's Centre for Heritage and Art in Central.

Awards:
- Design for Asia Awards 2016 – Bronze Award
- A' Design Award 2016 – Silver Award (Fashion, Apparel and Garment Design)

Cognix Limited
(Tech Incubation Fund Awardee 2015)

Background:
Founded in November 2014, Cognix is a fast growing Start-up in the techno-healthcare industry. The company is formed by a group of high calibre talents working in the interdisciplinary field of information technology, biomedical science and health informatics. The team holds strong R&D capability in fusion cutting edge technology, and close collaboration with research institutes and social organizations. Their vision is dedicated to providing innovative cognitive assessment, monitoring and improvement solutions, and contributing to the community.

Current Stage:
The start-up has currently introduced "Prepaid Cards" catering for the needs of organisations which need limited scale of service. It also showcased in the recent Gerontech and Innovation Expo cum Summit 2017.

Awards:

- Hong Kong ICT 2016 – Silver Award in Best ICT Start-up category
- Hong Kong ICT 2016 – Bronze Award in Best Lifestyle (Green, Healthy & Creative Living) category
- Hong Kong ICT 2016 – Special Mention in Best Lifestyle (Silver Power) category
- HKQAA – Hong Kong Registration – Start Ups (Premium Start Up)
- Asia Social Innovation Award 2016

Hocfu Technology Limited
(Tech Launchpad Fund Awardee 2016 and 2017)

Background:

Hocfu is an intermediary platform for renovation services that aims to resolve asymmetric and unfair situations in home renovation. By offering a renovation service through pre-screened contractors, it provides better matching and communication channels, while empowering and supporting contractors in need. Hocfu improves not only renovation efficiency and user experience, but also the home renovation industry by providing more transparent price information and case sharing.

Current Stage:

The team has already achieved operational breakeven with market share approximately 0.67%. Mobile apps for both contractors (CFU) & CS officer and a responsive website to cater to customers using mobile devices are already rolled out. The team has also partnered with different parties like temporary storage company (SC Storage) and insurance company (AIG) to offer special rates for their customers.

好師傅 hocfu
優質裝修服務平台

Next WiFi Technologies Limited
(Micro Fund Awardee 2011 and Tech Launchpad Fund Awardee 2016)

Background:
NextWiFi offers business WiFi solutions to SMEs and free internet access to smartphone users by providing more WiFi hotspots at low cost. Through NextWiFi's business WiFi routers, merchants may engage customers proactively by sending pop-up messages, local information, entertainment (video, audio, games) and social networking services. By analysing traffic and customer preferences in stores or nearby, merchants may better strategize marketing campaigns to boost their sales and businesses.

Current Stage:
The team has collaborated with different companies in both Hong Kong and China to deploy WiFi hotspots in various places like Mongkok, Chu Kong Ferries, Guangdong-Hong Kong trains and even over 1,000 taxis in Chengdu. Income was generated from both hardware procurement and content management fee of WiFi advertising.

People Strong (深圳市人人壯科技有限公司)
(CEF Awardee 2015)

Background:
People Strong was established in 2013 to develop and promote a "smart drug box" mainly targeting the elderly with 4 major functions: alarming function, medical encyclopaedia, emergency calls and remote assistance. The product has already filed a patent application. A mobile app was also developed for the users' family members to monitor the medication situation.

Current Stage:
The team is now selling the products in over 10 cities on Chinese Mainland and is planning to expand to the United States. The team has raised another round of funding from CSC Group in 2016 at RMB4 million.

Awards:
- 深圳科創委留學生創業專案 (RMB300,000)
- 中西部民族地區創新創業大賽一等獎 (RMB180,000)
- 中國青創匯一全球華僑華人青年創夢工廠大賽三等獎 (RMB80,000)

Cloudbreakr
(Tech Incubation Fund Awardee 2015)

Background:
Cloudbreakr is Asia's 1st intelligent influencer platform that empowers marketers and content creators in different industries for social endorsement, selling and business purposes.

By providing various metrics on influencer analysis, their insights can help users to find the right influencer and drive better ROI in the marketing campaign.

Current Stage:
Cloudbreakr currently monitors more than 10,000 influencers in Hong Kong, Taiwan and Singapore, to give users the most complete view of social media trends and uprising influencers.