香港城市大學
City University of Hong Kong

Annual Report on

Knowledge Transfer for 2013-2014

to

University Grants Committee

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1. Technology Licensing

In response to the Initial Statement 2012-15, the Knowledge Transfer Office (KTO) devised a new licensing strategic plan for this triennium called "IDEA", an acronym for **I**ntellectual Property and New Technology Scouting, **D**eepening Licensing Network, **E**mpowerment of Technology Transfer and **A**dvancement for Novelties. Based on this IDEA strategy, we are pleased to report that there are currently 44 active licensing agreements and eight of them are newly signed during the reporting year. The total licensing income inclusive of receivables for the reporting year amounted to HK$3.47m. One licensing proposal valued over HK$3.5m failed to materialize during the final negotiation stage, causing a shortfall from the target.

The table below shows the details of the eight newly executed licensing deals.

	Technologies Licensed	**Nature of Business of Licensee**	**Where the Licensee is Based**
1	water treatment	property	Hong Kong
2	water treatment	building services	Hong Kong
3	power electronics	electronics	Hong Kong
4	gemstone characterization	jewellery	Hong Kong
5	translation	translation	Hong Kong
6	ZigBee wireless network	utility metering	China
7	nanotechnology	environmental	China
8	pollution monitoring	environmental	China

2. Capacity Building in IP Management and Technology Transfer

2.1 IP Training for Technology Transfer Staff

Technology transfer staff of the university is encouraged to join various technology licensing and IP related training courses and events to keep abreast of the latest market development, IP and licensing management skills. The below workshops and conferences were attended during the year under review:

1. AUTM Annual Meeting organized by the Association of University Technology Manager
2. Business of IP Asia Forum co-organized by the Hong Kong Government, Hong Kong Trade Development Council and the Hong Kong Design Centre with City University of Hong Kong as one of the supporting organizations
3. Second International IP Commercialisation Conference hosted by the International Intellectual Property Commercialisation Council
4. Sixth China IP Counsel Congress hosted by Mainland IP Group
5. Global Intellectual Property Strategy and Investment Forum hosted by IP firm and supported by CityU Business and Industrial Club
6. Seminar on IP Issues in OEM Production hosted by SME Global Alliance
7. Seminar on "How to Protect Your R&D by Patent" hosted by Hong Kong Science and Technology Park Corporation and supported by CityU Business and Industrial Club

2.2 IP and Entrepreneurship Related Workshops Organized for Staff and Students

Intellectual property is a product of innovation and research. To increase awareness of staff and students in IP protection and prepare them for venture establishment, IP and entrepreneurship workshop series are organized on a regular basis. The workshops below were organized during the year under review:

1. Fundamentals of Patents, and More: Learn How to Protect Your Creative Ideas (27 November 2013)
   Fundamental concepts of patents and patent application procedures were covered in the workshop.

2. From Idea to Commercialization (23 January 2014)
   The talk focused on issues relating to idea generation and IP protection.

3. Fundamentals of Intellectual Property Rights: How to Protect Your Discoveries, Inventions and Creative Projects (6 February 2014)
   The one-day workshop introduced participants to the fundamental concepts of different types of IPs with a focus on patents. Patent prosecution, patent claims, use of patents, and patenting business methods and computer programs were covered. Participants rated 85 out of 100 on the quality of this workshop.

4. Experience Sharing – From Innovations to Commercialization (1 March 2014)
   To prepare students going on overseas exchange programmes, a half-day workshop was organized to share with them entrepreneurial experiences and discoveries, innovations and cultural shocks during overseas travelling. Participants rated 85 out of 100 on the quality of this workshop.

5. Fundamentals of Copyright and Trademark (11 April 2014)
   Instead of patents, this talk focused on two other types of IP, i.e. copyright and trademark. Topics covered the scope of copyright and trademark protection; fair use of copyright; elements for copyright and trademark infringement; and trademark dilution and fair use. Participants were impressed by the interesting court cases and real-life examples presented and thus rated 92 out of 100 on the quality of the workshop.

6. Understanding Innovation and Entrepreneurship: Providing Graduates with Field Independent Life Skills (13 May 2014)
   One of the challenges facing the development of students as entrepreneurs is to understand what the necessary skills are, which was the focus of this seminar. Apart from addressing the above, the role of learning by doing was also discussed.

7. How to Protect your IP and Patent Application Grant (28 May 2014)
   Topics covered included fundamental concepts on intellectual property, patent application procedures and tips, and government financial support for patent applications.

2.3 Exchange with Overseas Institutions

To enhance our knowledge on the worldwide trends of IP licensing and knowledge transfer, KTO executives had received delegations from Naresuan University of Thailand and Feng Chia University of Taiwan during the year under review. Through exchanges with their senior administrators, we learnt more about the design and implementation of good practices on technology transfer and commercialization.

2.4 Enhancements in Infrastructure and IP Management

a. IP Management System

Following the revamped KTO website rolled out in the last reporting year, we are now sourcing a comprehensive IP info management system to help manage the rapidly growing IP inventories and licensing information. A prospective system has been identified and it is envisaged that system installation and data migration will be completed by the first quarter of 2015. With the implementation of the IP management system, it is envisaged that staff productivity can be improved and the pressure on headcount increase can be slightly alleviated.

b. Legal Documents Review

From the experience gained in the last few years, we realized that some of our licensing related legal document templates required updating. Therefore we carried out a thorough review and made appropriate revisions on them. The documents included the Income Sharing Agreement, the Joint Ownership Agreement, and the Technology Licensing Agreement.

3. Prospecting of Patentable IP

3.1 Invention Disclosure and IP Excavation

The University encourages its faculty and other inventors to report their inventions through the invention disclosure process. To strengthen this practice, KTO proactively approaches academic and research staff members on a regular basis to learn their latest research topics and deliverables. This way, we can discover more inventions at the earliest time. During the year under review, a formal presentation on IP protection and commercialization was given to the Department of Mechanical and Biomedical Engineering as well as the Department of Computer Science. Similar visits and presentations will be given to different departments to raise awareness in the area.

3.2 Patent Prosecution

After a stringent vetting process, inventions of high commercialization value will pursue patent filing. In the year under review, 112 new patent applications were filed in the US, China and Hong Kong, etc. in various fields of technologies. By June 2014, 211 patents are granted with a further 305 patents pending.

3.3 Applied Research and Innovation

a. Applied Research Grant (ARG)

The University places strong emphasis on application-oriented research that brings tangible benefits to the community. Thus the Applied Research Grant (ARG) was launched in 2005/06 to promote applied research initiatives. ARG fosters university-industry links by supporting projects with potential for application or commercialization of resulting outputs. It also supports projects which would lead to ITF applications. In the year of 2013/14, the University provided funding support for 19 ARG projects with a total amount of HK$3.72m.

b. Innovation to Realization Funding (I2RF) Scheme

Twenty-four projects have been supported since the launch of I2RF Scheme in 2010. Of the 24 projects funded, 21 projects were successfully completed, one project is in progress and two projects were terminated due to departure of the principal investigators. A total of 12 invention disclosures were received resulting in patent filing. Five project deliverables were successfully licensed to nine local/international companies with further two prospective licensing deals under negotiation.

c. Knowledge Transfer ("KT") Funding Scheme for Non-technology Disciplines

To broaden KT beyond science and engineering disciplines, funding has been provided since 2011 to support worthwhile KT initiatives proposed by non-science and engineering colleges, including the College of Liberal Arts and Social Sciences, College of Business and School of Law. Every year, each college holds an internal competition to prioritize the applications before submission to Knowledge Transfer Office. Three projects were approved in this reporting year to receive up to HK$200,000 each. They are:

- Establishing a China Innovation Index for Major Cities and Industries
- The Carbon Trade Game Project – Bringing Participatory Learning Experiences on Environment and Sustainability to Local Schools and Communities
- Resilience Intervention in New Immigrants: Community Participation and Evidence-based Evaluation

d. Contract and Collaborative Research

Part of the University's mission is to anticipate and respond to the needs of industry, commerce and the community by engaging in applied research to directly benefit Hong Kong and other communities. The University continues to maintain close ties with local and overseas industries through various forms of collaboration, including contract research. In the year under review, 57 contract and collaborative research projects totaling HK$41.1m were received from government, industry and other organizations. Examples of selected contract research projects are in a wide spectrum of disciplines, as set out below:

- Social Enterprise Certification System for Hong Kong
- Smart Energy Management System for Management and Control of Rechargeable Batteries
- 10-year Rehabilitation Programme Plan for Macau
- Community Energy Management System for a University Campus
- Artificial Wetland on 16th floor of a High Rise Commercial Building
- New Materials to Enhance Capacities of Lithium-ion Batteries

The University places a strong emphasis on application-oriented research that not only brings true benefits to the community but facilitates knowledge transfer that is conducive to the needs of industries and social bodies. To this end, faculty members are encouraged to engage in contract and collaborative research to contribute to the University's pursuit in knowledge transfer.

4. Marketing of IP

4.1 Direct Marketing

a. Personal Network

Relationship building forms an important part of the team's strategy to promote licensing. Therefore, we sent our technology transfer officers to numerous conferences and exhibitions to expand their social networks. Key members of our licensing team have an average of 28 years of industry experience, which is greatly leveraged to build our network.

b. Direct Sales

This year, we arranged meetings and visits for 265 corporations to assess how CityU technologies can meet their needs. Among them, 68 companies or 25% are from mainland. We find face-to-face meetings very effective and they often lead to some collaboration in the form of research sponsorship, donation, student placement/internship and licensing.

c. Exhibitions

To extend our licensing activities to China and the overseas markets, the team

participated in a number of exhibitions, including well-known national and international product shows. The list of participated exhibitions is shown below:

- China Hi-Tech Fair in Shenzhen
- Shenzhen International Biotech Innovation Forum and Exhibition
- electronica China in Shanghai
- The International ICT Expo
- Hong Kong International Medical Devices and Supplies Fair
- Hong Kong Electronics Fair (Autumn Edition)
- InnoCarnival organized by the Innovation and Technology Commission

d. Forums

We organized four technology forums this year to stimulate exchanges between our faculty and industries.

1. Technology Transfer Forum (TTF) entitled "From Innovation to Realization"
   This TTF was held on 21 March 2014 in Shenzhen as one of the University's 30th Anniversary celebratory events. Participants of the Forum were top level technology and management professionals coming from Shenzhen and Hong Kong. Co-organizers of the event included Shenzhen Science and Technology Services Association 深圳市科技服務業協會, Shenzhen Venture Capital Association 深圳市創業投資同業公會 (SZVCA), and Shenzhen Virtual University Park 深圳虛擬大學園.

2. Emerging Technologies Forum (ETF) entitled "Human Interface Technologies"
   In this ETF, human interface technologies were featured. The event was supported by Hong Kong Trade Development Council (HKTDC) and included as one of the events in the HKTDC BIP (Business of Intellectual Property) Asia Seminar Series.

3. ETF entitled "Rare Earth Elements and their Applications"
   In this ETF, rare earth elements were featured. It was supported by Nano and Advanced Materials Institute Limited (NAMI), and both the Electronics Division and Materials Division of The Hong Kong Institution of Engineers (HKIE).

4. ETF entitled "3D Printing"
   This ETF featured the trendy 3D printing technology. Supporting organizations of the event included Hong Kong Critical Components Manufacturers Association (HKCCMA), Hong Kong Mould and Product Technology Association (HKMPTA), HKIE's Information Technology Division and SZVCA.

4.2 Web Marketing

Several databases are set up at the KTO's website and our partners' websites to allow interested parties to search for University technologies available for licensing.

a. Technologies for Licensing Database

Members of the industrial and business sectors can easily access the *Technologies for Licensing* database at the KTO website to search for marketable

patents, technologies and know-how of the University that match their business needs. The database is frequently updated.

b. List of Patents

A *List of Patents*, written in laymen's terms, provides information about University patents and patent applications. The list is updated every quarter, and is also available at the KTO website.

c. IP Listing

The University's IP ready for licensing is listed or linked in local and international IP platforms including the website of Association of University Technology Managers (AUTM), IP Net developed by the University of Manchester Intellectual Property Limited, websites of global IP traders Tynax and Tech Transfer Online, Intellectual Property Portal of the HKTDC, and University IP Listing website of the HKSTP.

4.3 IP Agencies

a. Overseas Agent

Although priority is given to local companies, it was found that many of our research outputs could not be used in Hong Kong because there are no such industries in Hong Kong, or the local companies may not have the necessary R&D resources and expertise to apply the technology to develop advanced products. Hence, we have to explore markets abroad. We continue to employ the services of five well-known global IP management firms and technology trading exchange service providers as our agents. They have access to multinational companies and can broaden our IP licensing channels, helping us promote our technologies to the international markets.

b. Mainland Agent

To further extend our licensing channels in China, we have newly appointed two mainland institutions engaging in licensing and incubating businesses to provide licensing services for us. The two institutions are located in Suzhou and Yangzhou respectively. The total number of mainland licensing agencies doubled to four now.

5. Outreach and Partnership

5.1 CityU Business and Industrial Club

Through the CityU Business and Industrial Club (CUBIC), we have forged close ties with senior business executives and industrialists. CUBIC regularly organises events (e.g. Technology Transfer Forums, Emerging Technologies Forums, Special Interest Group gatherings, company visits) for its members, and aligns industrialists and

academics from CityU and other institutions to build platforms to advance technological development and promote cross-institution collaboration. Newsletters and flagship magazines of the University were also sent to the members regularly. This year, the membership of CUBIC has grown from 954 to 1,106, at an annual increase rate of 16%. The number of CUBIC members coming from mainland has also increased from 51 in 2012/13 to 73 in 2013/14. During the year, CUBIC has organized a visit to BYD Company Limited in September 2013, received visits from four local trade/professional bodies and two well-known international companies, and organized four technology forums. CUBIC also supported 19 external events as a supporting organization. CUBIC functions effectively as a platform for forging industrial liaison and networking.

5.2 Collaborating Partners

We continued to develop collaboration and partnership with government bodies, strategic technology transfer players and industry supporting organizations to build mutual benefits. During the year, we worked with twenty organizations in different forms of collaboration such as technology licensing, organization of training programme and events, consultancy, marketing of technology, committee, project assessment etc. They are:

- IP Intermediary (IPI) Singapore
- Yangzhou Municipal People's Government
- Shangdong Provincial Economic and Trade Office in Hong Kong 山東省政府駐香港經貿代表處
- Shenzhen Science and Technology Services Association 深圳市科技服務業協會
- Shenzhen Venture Capital Association 深圳市創業投資同業公會 (SZVCA)
- Shenzhen Virtual University Park 深圳虛擬大學園
- Hong Kong Science and Technology Parks (HKSTP)
- Hong Kong Applied Science and Technology Research Institute Company Limited (ASTRI)
- Hong Kong Productivity Council (HKPC)
- Hong Kong Trade Development Council (HKTDC)
- Nano and Advanced Materials Institute Limited (NAMI)
- Hong Kong Critical Components Manufacturers Association (HKCCMA)
- Hong Kong Mould and Product Technology Association (HKMPTA)
- Business and Professionals Federation of Hong Kong (BPF)
- Hong Kong Federation of Innovative Technologies and Manufacturing Industries (FITMI)
- Hong Kong Electronics & Technologies Association (HKETA)
- The Hong Kong Institution of Engineers (HKIE)
- Internet Society Hong Kong (ISOC HK)
- ZigBee Alliance
- Rotary Club of Hong Kong

6. Mainland Research Development

Mainland research development continues to undergo rapid expansion in the year under review. A record high of 81 new contract/collaborative research projects were obtained via the research platform in Shenzhen, the CityU Shenzhen Research

Institute (CityUSRI). Of the new projects contracted, 34 were funded under the National Natural Science Foundation, three under the "973" Programme, and 39 under the Science Technology and Innovation Committee of the Shenzhen Municipal Government. The CityUSRI, for the first time, obtained a grant of RMB2.8 million under the Major Program of the National Natural Science Foundation of China to carry out a research entitled "Theoretical Foundations of Contemporary Logistics Management for Harmonized Development of Economy, Society and Environment". Apart from the government funded research projects, the CityUSRI also provided research services for private enterprises.

	2012/13	2013/14	% change
Number of active research projects	90	161	+79%
Total grants of the active research projects	RMB48m	RMB75.77m	+58%

To support full-fledged development in research, two research centres/laboratories were established under the CityUSRI during the year under review, bringing the number of CityUSRI centres/laboratories to a total of 14.

1. Advanced Intelligent Information Systems Research Centre
2. Biotechnology and Health Centre
3. Centre for Advanced Structure Materials
4. Centre for Robotics and Automation
5. Centre for System Informatics Engineering
6. Centre of Super-Diamond and Advanced Films
7. CityU HK-UESTC Joint Research Center on Optical Fiber Sensing and Communications
8. Futian-CityU Mangrove Research and Development Centre
9. Information and Communication Technology Centre
10. Multimedia Software Engineering Research Centre
11. Research Centre for Oceans and Human Health
12. Architecture and Civil Engineering Research Centre
13. Laboratory on Enterprise Process Innovation and Computing
14. Research Information Management Laboratory

Apart from the above, there are four Shenzhen Key Laboratories under CityUSRI. They are:

1. Shenzhen Key Laboratory in Millimeter Wave & Wireless Broadband Communication
2. Shenzhen Key Laboratory of Biochip Technology for Drug Research
3. Shenzhen Key Laboratory on Hybrid Electric Vehicle Energy Management of Super-capacitor and Battery
4. Shenzhen Key Laboratory for Sustainable Use of Marine Biodiversity

The latter two laboratories were newly established in 2013/14 with financial support from the Shenzhen Municipal Government.

With increased momentum of research development in mainland, it is harvest time as the researches start to bear fruits. A Technology Transfer Centre was set up in Shenzhen to provide one-stop-shop service for IP protection and IP licensing. The Centre will also provide back-up support to the Hong Kong licensing team for outreaching to mainland market.

7. High-Level Consultancy Services

The University is committed to contributing its expertise to support industry, commerce and the community. To achieve this goal, the University promotes high level consultancy and professional services, and encourages its faculty members to engage in such activities for the benefit of the society as well as the University. In the year 2013/14, the University attracted a consultancy income of HK$7.35m.

8. Technology Transfer through Spin-off Companies

Research incubation and commercialization of research outputs are important knowledge transfer activities at the University. Established in 1991 as a wholly owned subsidiary of the University, CityU Enterprises Limited ("CityUE") has played an important role in these areas through establishment of subsidiary companies. Many successful companies were formed to commercialize the research outputs of faculty members and significant contributions have been made to the development of the society.

With the growing popularity of technology licensing, the University has used licensing as the main vehicle for technology transfer rather than setting up limited companies under CityUE. As a result, no new companies have been formed during the past few years. In the year 2013/14, four active group companies remain under the aegis of CityUE.

9. Continuing and Professional Development (CPD) Courses

The School of Continuing and Professional Education (SCOPE) provides part-time continuing and professional development courses to the community as well as corporate training for private and governmental organizations. In 2013/14, 1.2 million student contact hours of CPD training were delivered, attracting an income of HK$156 million.

SCOPE has strong affiliation with many professional associations. Some of our programs and courses have been recognized or accredited by professional bodies such as the Hong Kong Institute of Public Accountants. One of our School's future strategic directions is to expand in offering CPD courses in collaboration with professional bodies in their related fields.

SCOPE also continues to deliver courses in Hong Kong for mainland government officials and higher education institutions. In particular, we have a long history

of collaboration with Hong Kong Pei Hua Education Foundation since 1995 in offering two-week training workshops to mainland senior provincial government officials. The workshops cover different social, economic and political aspects of societal developments of Hong Kong.

10. Knowledge Transfer by Students

10.1 Student Entrepreneurship: One Exemplary Case

Two students from the School of Creative Media commercialized their final-year student project and turned their entrepreneurship dream into reality. The project related to development of physical device with movable touch points interacting with touch-sensitive devices. The students filed one Hong Kong short-term patent and one Hong Kong Divisional Short-term patent and subsequently formed a start-up company in 2013 during their graduating year. The technology materialized into an interactive toy and mobile game which is being sold in Taiwan and on the Internet. In addition to the patented touch-screen control device, the two graduates were awarded HK$100,000 in September 2013 from Cyberport Creative Micro Fund (CCMF) for prototyping an Augmented-reality (AR) mobile application.

10.2 Invest in CityU Students and Projects Scheme

Through the Discovery-enriched Curriculum (DEC), the University provides opportunities for early engagement of our students in research and development. The goal of the DEC is for all CityU students to have the chance to make a discovery/innovation/creative project during their studies at the University. A programme known as “Invest in CityU Students and Projects" (iCUSP) was rolled out in 2013 to attract donations from the public to support such cutting-edge projects and to help students and staff pursue the creation of new knowledge to benefit society.

Twelve iCUSP projects were presented through the iCUSP site (http://www6.cityu.edu.hk/betterworld/). They include:

1. Understanding environmental issues: Antarctica! Exploring Extreme Environments Creatively through Art and Science
2. Biofuels Production from Food Waste
3. Designing Musical Interfaces for All
4. Development of Eco-Friendly, Anti-Microbial Textiles Using Traditional Chinese Medicine (TCM) Herbal Waste
5. Environmental and Health Challenges Posed by Atmospheric Nanoparticles
6. Green Chemistry in Action: Valorization of CityU’s Waste Paper to Power CityU’s Passenger Cars
7. Understanding market trends through HKCCI: Hong Kong Consumer Confidence Index (HKCCI)
8. Archiving Hong Kong’s Lost Architectural Heritage
9. Measurement and Risk Assessment of Organic Ultraviolet Filters in the Hong Kong Environment
10. Project Flame: Social Innovation & Entrepreneurship@CityU

11. Transforming cultural heritage access: Pure Land - Inside the Mogao Grottoes at Dunhuang
12. Smart Homes with Zero Carbon Emissions

10.3 Idea Incubator Scheme

The Idea Incubator Scheme is another initiative built on the Discovery-enriched Curriculum to nurture new ideas and innovations from students and staff. Four rounds of applications have been called and a total of 25 projects received funding support of around HK$10 million, spanning a wide spectrum of areas such as social and environment, health, building safety, language learning, and career planning, etc.

10.4 Student consultancy projects

While the student consultancy project scheme allows students to put to use classroom knowledge, the participating organizations may also benefit from fresh ideas brought by the students. For this reason, the Department of Marketing has been running the Marketing Company Consultancy Project for over 19 years, and more than 30 mainland and Hong Kong companies benefitted from the programme. The Department of Accountancy runs a similar programme and partnering organizations included two NGOs serving special education needs and elderlies respectively.

10.5 Student Placement and Internship Schemes

The University places strong emphasis on student placement and internship, since such opportunities offer two-way knowledge transfer between the students and industry. Shown below is a table listing the major placement and internship schemes that the University is now running.

	Organiser	**Name of programme**	**Duration and brief description**
1	Co-operative Education Centre, College of Science and Engineering	Industrial Attachment Scheme (IAS)	Summer placement in HK and mainland China. Minimum nine weeks during summer holiday. It is a training programme for students who have completed their second year of study. Students are supervised by mentors of the hosting companies and CityU teachers.
2	Same as above	Co-operative Education Scheme (CSE)	8 to 12 months internship in HK and mainland China. Students take university courses on a day-release basis during internship. They are also co-supervised by their CityU supervisors and industrial mentors.
3	Same as above	Overseas Internship	Overseas summer placement.

		Scheme (OIS)	Operates on a similar model as of IAS. However, students under OIS conduct their placement overseas. Apart from real work experience, OIS students also gain the valuable opportunity to appreciate life in a different culture and develop a global perspective.
4	Same as above	Overseas Research Internship Scheme (ORIS)	4 month's overseas placement. Operates on a similar model as of CES. However, students under ORIS conduct their research internships overseas. Apart from real work experience, ORIS students also gain the valuable opportunity to appreciate life in a different culture and develop a global perspective.
5	College of Business	Business Practice Internship	Not less than six weeks during the summer. Students work full-time at multi-national corporations to gain in-depth and practical understanding of business operations in the professional contexts, where they need to apply the theory and skills acquired in the BBA curriculum.
6	Department of Accountancy	Professional Internship and Professional Attachment	The internship/attachment provides accounting-related working experience in local/overseas organizations for at least one month during which students would apply their knowledge and skills to solve real-life problems in a professional setting.
7	College of Liberal Arts and Social Sciences	Professional Internship offered by various departments of the College	Around five to sixteen weeks usually during summer holiday. Students participate in internship at selected organisations in Hong Kong, China and overseas.

8	Department of Computer Science	Information Technology Professional Placement	The placement aims to allow students to work in an actual, IT-oriented working environment; to relate the concepts and principles learnt to actual business environment and to put into practice some of the methods, tools and techniques taught. After completing two years of full-time study, students will take the year-long placement in the final year of study.
9	Department of Electronic Engineering	Industrial Placement Scheme (IPS)	The Industrial Placement Scheme has been launched since 2010/11. In collaboration with industry, the Department aims to provide students with real work experience during their university years and thus better prepare them for work upon graduation through the Industrial Placement Scheme. Students embark on the Scheme by participating in group industrial projects, followed by undertaking summer placement and completing their Industrial Final Year Project.
10	School of Creative Media	Internship Programmes	Students work for at least one month or 150 hours to acquire experience and apply their abilities and knowledge in creative media or art-related positions in local or overseas organizations or companies in the summer.
11	School of Law	Legal Placement for LLB and JD students	Students work a minimum of 160 contact hours for full-time or part-time legal placement within two semesters of an academic year.
12	Same as above	Internship for LLM students	Chinese judges in the LLM programme join a 10-day court internship to be supervised by Hong Kong judges.
13	School of Energy and Environment	Internship programme	Eight weeks during summer break. The programme aims at fostering students with a clear understanding and appreciation of energy and energy-related environmental issues encountered by the government, business, industry and the community at large.

The number of student placements and internships in 2013/14 were:

College/School	Number of student placements and internships
College of Business	512
College of Liberal Arts and Social Sciences	705
College of Science and Engineering	602
School of Creative Media	38
School of Energy and Environment	30
School of Law	102
Total	**1989**

10.6 Innovation Commons

To further strengthen our Discovery-enriched Curriculum (DEC), a new one-stop service center for innovation and entrepreneurship, named "Innovation Commons," will open its door to welcome students in the new semester this September. Innovation Commons strives to serve the whole community as a central repository of all information related to innovation, creativity, patents, copyrightable materials, entrepreneurship, startup process, venture funding, incubation schemes, and all internal and external resources for entrepreneurial process. This is a brainchild of many entities on campus, broadly supported by the Office of Education Development and Gateway Education (EDGE) under the Provost, Knowledge Transfer Office (KTO) under Vice-President of Research and Technology, the University Library, the School of Law, among others. Innovation Commons will be housed within the library, easily accessible by all members of the community, and naturally will feature a special collection of books in related subjects. But the concept is much more than a static collection of books. It will also be staffed by an officer and rotating reference librarians who will serve as curators of all related information, both online and offline; they will guide community members to resources available on campus and beyond. Office hours by University and external expert volunteers who are seasoned professionals in law, venture capital investment, startup operations, etc. will be hosted at Innovation Commons to allow drop-in users to seek advice.

Student Innovation Project (SIP) Teams will be formed, each one consisting of students in law, technology, business, and other majors to work on one particular innovation submitted to KTO or through the EDGE Office. Each SIP Team will gain the experience of evaluating the innovation, researching prior art for patent protection purposes, assessing the technological and business competition, developing a business plan, all under the guidance of Innovation Commons Officer, faculty and professional expert volunteers. Through such hands-on process of working with others in a multi-disciplinary team, our students will gain real world experience of idea-to-realization process of innovation life cycle, and truly receive a "discovery-enriched" education.

11. Impact Cases

Highlighted below are examples of significant knowledge transfer endeavors of the University carried out during the year under review.

11.1 Integrated System for Engineering Works Management designed for MTR Corporation

Dr Andy Chun of the Department of Computer Science has been acting as the Artificial Intelligence (AI) consultant to MTR Corporation for many years, assisting them in the use of advanced AI scheduling and optimization technology for engineering works scheduling to ensure the railway lines in Hong Kong are running smoothly every day. With the use of innovative AI technologies and the joint effort of PCCW Solutions and City University of Hong Kong, an "Integrated System for Engineering Works Management" was developed to replace the legacy systems that have been used for many years. The system automates the entire engineering works management business process, from planning to electrical power arrangement, traffic notice publication and implementation of the engineering works in the railway system.

With the "Integrated System for Engineering Works Management", the efficiency of MTR Corporation is improved by increasing the productivity and maximising the usable time to do engineering works during non-traffic hours. The Artificial Intelligence Solution further ensures work safety and optimises resources utilisation. The system also improves the competitive edge of MTR Corporation for overseas business opportunities, thanks to its open architecture, multi-language, multi-platform and multi-database design.

Dr Chun's AI work contributes to the high quality of service provided by Hong Kong's railway lines. This benefits millions of Hong Kong citizens daily. The above project obtained the 2014 Hong Kong ICT Awards for the Best Business Solution Grand Award.

11.2 Surface Mechanical Attritions Treatment (SMAT) Technology

Surface Mechanical Attritions Treatment (SMAT) Technology offers an attractive approach to effectively producing nanostructured surface layers on materials, including precious metals. SMAT can enhance the mechanical properties of the treated material, such as tensile strength and hardness without altering its chemical composition.

SMAT employs a novel joining technology for the nanostructured sheets using pulsed laser welding and friction stir welding. It optimizes the welding conditions for conserving the nanostructures and the excellent mechanical properties of the nanostructured sheet materials.

The research team has received external funding of close to HK$37m from a major company, Hong Kong government (Innovation and Technology Fund and Research Grants Council), mainland government ("973" Funding Scheme) and Croucher

Foundation, etc. to conduct various projects applying SMAT technology on different metals including precious metal and steel, etc. One promising result is that applying SMAT technology on precious metal greatly enhances its hardness without relying on alloying or increasing the metal thickness. This may have revolutionary impact on the jewelry industry as flexibility in jewelry design is greatly enhanced.

Other applications of the SMAT technology include strengthening of lightweight steel for automobile and aeronautic industries, and biomedical devices and implants using high diffusion properties materials.

11.3 Universal USB Power Supply with Intelligent Supply Voltage Regulations Application

While recharging mobile gadgets have already become our daily routine, and USB power supply is becoming an indispensable accessory for many gadgets, mobile gadgets are always bundled with dedicated power supply units, so users end up carrying several power supplies in their bags.

Dr Norman Tse, Senior Lecturer and Associate Head of the Division of Building Science and Technology, and Prof Henry Chung, Professor of the Department of Electronic Engineering, co-invented an intelligent USB power supply which is suitable for powering various mobile electronic gadgets including laptop computer, smartphones and tablets, mobile fans, portable lightings, etc.

The simple USB design does not require any user configurations. It is equipped with an intelligent algorithm to "read" the desired voltage for charging laptop computers automatically through identifying input current patterns. Once a laptop computer is connected to the USB port through a DC cable, the voltage detection and regulation function will be started automatically to provide seamless power to laptop computers. Other electronic devices such as smartphones can also be charged by the smart USB power supply, and it can work with various types of laptop computers through a single USB output. Furthermore, its automatic voltage regulation via intelligent firmware is programmable for future expansion and update, for further generations of devices.

Apart from mobile electronic gadgets in home, office and automobile, the universal power supply also offers extra-low voltage (ELV) distributions for safe and simple installation in public area for gadget charging in airport, hotel, education institutions (e.g. lecture theater), libraries and coffee shops. Therefore, the smart USB power supply would be a potential adaptation for traditional electrical wall outlets.

11.4 Student Antarctica Expedition – New Forms of Creativity Employing Media Arts Technology for Collecting, Interpreting and Presenting Environmental and Ecological Data of Antarctica for Arousing Public Awareness of Climate Change

To embrace the University's Discovery-enriched Curriculum (DEC), 23 undergraduates were selected from different schools and departments to trek to Antarctica on an art and science research expedition, to find new ways to understand climate change. Environmental and ecological data were then collected, interpreted

and presented in new forms of creativity using media art. The 21-day Antarctica venture, the first ever organized by a local university in Hong Kong, offered students a highly innovative opportunity to make original discoveries and become immersed in interdisciplinary learning. The discoveries of the trip as well as the fruits of relevant classroom study were manifested in the exhibition "Freeze Frame", held in the Run Run Shaw Creative Media Centre (CMC) from 24 May to 14 June 2014. The 13 installations, which spanned a broad academic spectrum, used emerging technologies such as immersive 3D, robotics and game applications to transfer their knowledge of the endangered continent into creative artworks.

The students' hybrid art and science projects were a novel mix of important environmental information and a novel use of new technologies. For example, global warming's effect on baby penguins was explained through a mobile application that borrowed its style from retro Hong Kong newspapers. Microorganisms in the Antarctic waters were displayed on an overhead dome and their DNA interpreted into music. Air pollution was told through a towering fabric and light installation.

The Antarctica project is not just emblematic of what the DEC is designed to accomplish but also proved to be an effective outreach tool for environmental awareness and the University's publicity. The students obtained 10,000+ social network followers and the media coverage has been extensive to show how tremendously the project has impacted the society. The team even arranged and sang a song about the experience and produced an MTV video. Lots of tour requests were received from secondary students and concerned organizations, reflecting the impact of this project's knowledge transfer to the society at large.

12. Summary of Knowledge Transfer Performance Indicators

(Amounts are in Hong Kong dollars)

Performance Indicators	2012/13 (actual)		2013/14 (actual)		2013/14 (target)	2014/15 (target)
No. of patents filed in the year	70		**[1]112**		50	50
No. of patents granted in the year	19		**[2]20**		20	20
No. of active licenses during the reporting year (inclusive of newly granted ones)	Type	[3]No.	Type	**[3]No.**	36	44
	Exclusive	13 (4)	Exclusive	**12 (2)**		
	Non-exclusive	26 (15)	Non-exclusive	**32 (21)**		
	Total	39 (19)	Total	**44 (23)**		
Income generated from intellectual property rights	$5.87m		**[4]$0.79m**		$5m	$5m
Expenditure involved in generating income from intellectual property rights	$3.72m		**$6.6m**		$5m	$6.2m
No. of economically active spin-off companies	10		**[5]7**		10	4
Net income generated (or net loss arising) from spin-off companies of the University	$0.04m		**[6]0.93m**		$0.5m	$0.08m
No. of collaborative research projects and income thereby generated (inclusive of ongoing and new projects)	20 / $19.77m		**22/$24.22m**		22/$21m	25/$25m
No. of contract research projects (other than those included in "collaborative researches" above), and income thereby generated (inclusive of ongoing and new projects)	90 / $22.89m		**128/$38.03m**		92/$24m	130/$40m

[1] *See breakdown by country and type in Appendix 1.*

[2] *See breakdown by country and type in Appendix 2.*

[3] *Figure in bracket indicates the number of licenses of IP not protected by patents.*

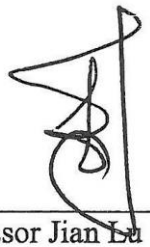
[4] *One licensing proposal valued over HK$3.5m failed to materialize during the final negotiation stage. Besides, three licensees deferred payment of licensing/royalty fee of HK$2.67m. These two major reasons caused a shortfall from the licensing target.*

[5] *See breakdown in Appendix* 3

[6] *Financial data of companies without university ownership is not included.*

No. of consultancies, and income thereby generated	58/$9.9m	**56/$7.35m**	62/$10m	65/$11m
No. of student contact hours in short courses or e-learning programmes specially tailored to meet business or CPD need	1.2m	**1.22m**	1.23m	1.23m
No. of equipment and facilities service agreements, and income thereby generated	224 / $0.58m	**222 / $0.42m**	223/$0.55m	220/$0.4m
Income received from Continuing Professional Development (CPD) courses	$159.31m	**$156m**	$168m	$160m
No. of public lectures/symposium/exhibitions and speeches to a community audience (seminars and workshops are included)	566	**641**	589	600
No. of performances and exhibitions of creative works by staff or students	95	**120**	124	100
No. of staff engaged as members of external advisory bodies including professional, industry, government, statutory or non-statutory bodies	211	**286**	230	280
No. of student placement/internship	1963	**1989**	2060	1980

Report prepared by the Knowledge Transfer Office and approved by



Professor Jian Lu
Vice-President (Research and Technology)

Date : 31 July 2014

Appendix 1

Number of Patents Filed in the Year 2013-2014 (with breakdown by country and type following the Common Data Collection Format (CDCF))

Country	Type	Number
Hong Kong	A01	2
	G03	1
	H01	3
	H03	2
International	D02	2
	F01	1
	G03	1
	G99	1
	H01	5
The Mainland of China	A61	1
	B01	2
	F01	2
	G01	2
	G03	1
	G06	1
	G07	1
	G99	1
	H01	13
	H03	4
	H05	2
USA	B01	7
	C21	2
	D01	2
	E04	2
	F01	2
	G01	1
	G02	5
	G03	5
	G04	5
	G06	4
	G07	2
	G08	2
	G09	2
	G11	1
	G99	4
	H01	15
	H03	2
	H05	1
	Total	**112**

Appendix 2

Number of Patents Granted in the Year 2013-2014 (with breakdown by country and type following the Common Data Collection Format (CDCF))

Country	Type	Number
The Mainland of China	A01	1
	C23	1
	G06	1
	H01	3
USA	C07	1
	C12	1
	E04	2
	G05	1
	G06	2
	H01	4
	H04	1
	H05	2
	Total	**20**

Appendix 3

Economically Active Spin-off Companies 2013-14

Type	Name	Business	Year of formation
Software / Solution Integration	MaCaPS International Ltd	Focus on development of smart-card systems	1996
Software / Solution Integration	Etin Group: Etin City Limited (BVI) & TeleEye Holdings Ltd (disposed on 9 January 2014)	Design and develop advanced signal processing technologies	2000
Mobile Technology	Shenzhen Goldradio Communication Co Ltd (dissolved on 31 December 2013)	Design and develop high-performance and low-cost micro-wave and RF products for wireless communication	2002
Mechanical Engineering/ Automation	DynaCity Technology (HK) Ltd (dissolved on 17 July 2013)	Specialise in the development of a range of advanced motion controller and driver products	2003
Innovation Technology Solutions	*ConvenientPower Ltd	ConvenientPower designs and develops innovative, environmentally protective wireless power technologies and applications offering new dimensions in freedom and convenience for users of mobile electronics.	2006
Bio -technology	*Vitargent (International) Biotechnology Limited	Specialise in biosensor technologies for providing testing services for food, pharmaceuticals, cosmetics and the aquatic environment	2010
Software / Solution Integration	*Hong Kong Bilingual Learning and Translation Studies Association Company Limited	Specialise in bilingual learning and translation	2013

Remark : *No institutional ownership but using licensed IP only

Appendix 4

Knowledge Transfer in College of Business

The College of Business (CB) and member departments have been developing in a wide range of KT activities, including (i) community engagement, such as delivering public lectures, media interviews, press conferences and workshops; (ii) involvement in external advisory bodies (professional, industrial and Government); and (iii) student placement and internship (for the annual reporting period, there are over 500 students taking part in student placement and internship programs).

Highlights of KT activities of member departments:

Department of Accountancy – Notable KT activities included: (1) Knowledge Transfer Social Enterprise Consultancy Projects, in which two teams of accounting students served 2 social enterprises (NGOs) in summer 2013 (June – August) provided consultancy work under the supervision of an NGO management consultant. (2) Launch of CityU Accountancy Research Newsletter, which is designed to disseminate research findings and policy implications of recent top-tier accounting publications to accounting professionals, professional accounting bodies and regulators, and the business community. It provides fresh perspectives on important accounting issues and links up research findings to policy implications on existing accounting practices and regulations.

Department of Information Systems – Notable KT activities included: (1) Professor Jian Ma has been working with National Science Foundation of China to improve its proposal management system by applying his Research Analytics technology. His ScholarMate system has been used by thousands of universities in China to submit proposals and project reports. (2) Professor Stephen Liao has been a consultant to a corporation in Chinese medicine by applying his knowledge in business intelligence and information technologies. (3) Professor Choon Ling Sia has also done knowledge transfer work in the area of e-commerce in Kunming, China with multiple Chinese companies. (4) Professor J. Leon Zhao has been working with an e-commerce company in Yangzhou, China to design and implement new social media techniques in customer relationship management.

Department of Management – KT activities included: (1) Organization of breakfast seminars for over a hundred industry practitioners to disseminate relevant research findings and professional knowledge in management practice, leadership studies, human resources, innovation in entrepreneurship, organizational staff engagement, etc. The audience receptivity to this popular annual event is very good. (2) Members of the academic staff co-hosted the "Hong Kong Researcher Consortium" as well as the "Cross University Organizational Behavior/Human Resource Consortium" for knowledge transfer and sharing our disciplines.

Department of Marketing – Notable KT activities included: (1) Organization of the China Marketing International Conference held at Xuzhou, China in July 2013. The conference was co-organized by China University of Mining and Technology, The Asian Business Association and City University. We successfully invited about 180 scholars from over 20 countries, and over 30 leaders from business and government. In addition, we attract significant media exposure including local newspaper, magazine and radio.

Department of Management Sciences - The Healthcare Management Workshop, hosted by Department of Management Sciences and Department of System Engineering and Engineering Management, was held on 5th January 2014. Five keynote presentations and one panel discussion were delivered by distinguished researchers and healthcare practitioners from the US, Canada, France and HK. The workshop attracted 170 academic and industrial participants from such world leading schools as MIT, Columbia University, NYU, UBC and from regional universities such as NUS, HKUST, HKU, CUHK, Peking University, and Tsinghua University. This Healthcare Management Workshop at City University of Hong Kong provided a global platform for researchers in related disciplines (e.g., management science, operations management, systems engineering, etc.) and practitioners to share ideas on how to design and operate a world-class healthcare delivery system.

For the 2014 China Energy Policy Workshop (22 May 2014), we have invited local and overseas professionals and experts from governments, academy, investment sector, green groups and the energy industry to exchange most up-to-date knowledge of China's energy policies. This served as a unique platform for experts and participants to share their views and discuss on topics such as China's need of development verses environment protection, the safety concern of nuclear energy, renewable energy sources like hydroelectric, solar and wind.

Appendix 5

Knowledge Transfer in College of Liberal Arts and Social Sciences

The College of Liberal Arts and Social Sciences (CLASS) and its six departments have been actively engaged in a wide variety of KT activities. CLASS was the first College to launch the Excellence in Knowledge Transfer Awards in 2011, which has become an annual event of CLASS since then. Six faculty members received the awards in 2013 and their projects were fine examples of knowledge transfer. Presentations by two awardees were delivered at the Prize Presentation Ceremony on 18 December 2013. The Ceremony provided a platform to showcase innovative KT projects/activities from which new and innovative ideas can be further generated. In addition, highlights of the Ceremony including welcoming remarks, photo album and closing remarks were posted at the CLASS website (http://www.cityu.edu.hk/class/kt_bestaward.aspx).

CLASS is strong at contract research and has seen an increase in the number of on-going contract research projects year by year. Apart from traditional KT activities, CLASS faculty members conducted around 450 KT events through delivering public lectures, exhibitions, media interviews, press conferences, newspaper articles, and radio shows, etc. Besides engaging in editorial responsibilities, around 55 faculty members served as members for approximately 250 local and overseas external advisory bodies, for example the International Confucian Association, Journalism Education Foundation Hong Kong Limited, Panel of Research Assessment Exercise of University Grants Committee, Funding Scheme of Central Policy Unit of HKSAR and Radio Television Hong Kong. They offered external advice and led as Chair or Director of various major organizations around the globe, including the Tsinghua-Renren Social Media Lab, Working Group on Advance Directives of the Hospital Authority and Curriculum Development Council – Gifted Education of the Education Development Bureau of HKSAR.

CLASS also organized internalization activities for students including the student exchange programme, English Immersion, overseas internships, and summer schools. More than 700 student placements/internships were offered by CLASS departments in 2013/14. Several students had the opportunity to report on one of the most influential and important meetings in China, the Opening Sessions of the National People's Congress and the Chinese People's Political Consultative Conference held in the Great Hall of the People.

CLASS is currently at the third call of nominations and applications for the Excellence in Knowledge Transfer Award 2014. It is expected that the call would bring along new exchanges of knowledge transfer ideas across the departments.

Outstanding KT activities carried out by individual departments within CLASS are highlighted below:

1. Collaborated with Hong Kong upper-secondary schools in curricular development and school debates, with the participation of South China Morning Post.
2. Views from faculty members were solicited on a number of issues in Hong Kong, such as press freedom, the issue of more free-TV licenses for local and international media. This enhanced the popularity and image of CLASS in the local community.
3. Organized the 2013 literary festival at the University, it fulfilled the criteria of

community engagement activities and the sharing of professional knowledge and opinions that have an impact on culture in society. The success of this knowledge transfer event builds the university's reputation as a major centre of international literary activity and a leader in the discipline of creative writing in Asia.

4. The Korean Philosophy in Comparative Perspectives Laboratory conducted the second annual workshop entitled "Korean and Comparative Philosophy and History of Philosophy" in Korea. The laboratory also supported seven talks by its members at various international conferences and distinguished universities on topics relating to the laboratory's ongoing research. Research supported by the laboratory has resulted in the publication of seven articles or book chapters, with several more under review or in preparation. This year also saw the publication of Professor Sungmoon Kim's book, Confucian Democracy in East Asia: Theory and Practice by Cambridge University Press.
5. Strength-based "Train the Trainer" Practice: Narrative Therapy in Action: Promoting positive aging in population with disabilities. The study was a first attempt to apply narrative therapy in group practice for stroke survivors and caregivers to discover their spiritual resources and reconstruct stroke survivors' meaning of life after the illness. It was expected that stroke survivors receiving narrative therapy intervention would have a better sense of self and positive coping skills, and more likely to find meaning in life as compared to those in control.

Appendix 6

Knowledge Transfer in College of Science and Engineering

In the year under review, the College of Science and Engineering (CSE) continues to actively participate in collaborative and contract research, patent prosecution, licensing activities, consultancy activities, etc. A substantial portion of the KT outcomes reported in section 12 was attributed to the concerted efforts of CSE faculty members. Below are KT summaries of individual member departments.

Department of Physics and Materials Science (AP) - AP colleagues were active in KT activities which contribute to different aspects in the society including government advisory bodies, professional institutions and tertiary education sector in addition to the traditional KT activities. Examples of these include Council member and Professional Assessment committee assessor of Hong Kong Institution of Engineers, Member of Radiation Board, Members in subject committees in Education Bureau, Task Force member for Hong Kong Accreditation Services, etc. These activities have direct influence in policies and regulations in the respective disciplines. There are also AP colleagues serving as Scientific Advisors for major scientific research programmes in EU and in Australia. Many AP colleagues serve as Editor or editorial board members for prestigious scientific journals. Some other AP colleagues serve as Board Member or Technical Advisor for some private companies in relevant technology fields. In the reporting year, the department accepted the invitation from a local TV channel and send colleagues to appear on popular science programmes broadcast locally.

Department of Biology and Chemistry (BCH) - The Department strives for excellence in professional education and quality research. Collaborative applied research projects have undergone with local, mainland and overseas universities as well as commercial and industrial organizations such as The University of Hong Kong, The Chinese University of Hong Kong, Department of Health, Xiamen University, Shenzhen University, Second Military Medical University in Shanghai, Shanghai Institute of Digestive Disease of Jiaotong University School of Medicine, the Institute of Urban Environment of Chinese Academy of Sciences, Mitsui Chemicals Inc in Japan, University of California, Davis and ExxonMobil in USA and Bayer MaterialScience, Germany.

The Department also plays a leading role in the State Key Laboratory in Marine Pollution (SKLMP) endorsed by the Ministry of Science and Technology of China in 2010.

Department of Architecture and Civil Engineering (ACE) - With its inter-disciplinary nature and the wide range of expertise, the Department of Architecture and Civil Engineering (ACE) is able to gather an energetic team of specialists, with over 35 experts and technical support staff specialized in 5 distinct disciplines, namely: architectural engineering, civil engineering, building services and environmental studies, construction and real estate project and high performance computing sustainability, all within one academic unit.

Establishing close links with industry and good connection with in-service professionals, the Department is keen on transferring our professional knowledge and its research results into practical technologies to benefit industry and society. Examples of significant

consultancy project include two wind tunnel projects and one fire loading study for MTR stations (total contract value at HK$1.19m). We have conducted wind test for aerodynamic test for the proposed 26-storey commercial office in Ulannbaatar, Mongolia, as well as a wind availability study for housing sites in Yuen Long South, Hong Kong. The research results generated from these projects will be of practical use to professionals and researchers involved in the design of high rise commercial buildings and urban planning. Another on-going consultancy project for the study of the correlation between fire load and movement on passenger flow in Sheung Shui and Lo Wu stations of the Mass Transit Railways is progressing well. The results are expected to be used for planning of the fire protection strategy at these stations and for improvement in station design. There are 16 consultancy projects and knowledge transfer activities ongoing at a total value of HK$2.9m.

Apart from the above, ACE also received 3 donations totaling HK$2.58 million from the industry. Furthermore, we received funding of HK$5 million for 6 contract research projects in Hong Kong, and funding of RMB14.31 million for 13 research projects in mainland.

In the area of community service, faculty members are also encouraged to take up public services appointments of high-level government committees and professional bodies.

Department of Electronic Engineering (EE)

Knowledge Access and Production

The department makes knowledge accessible to the community by publications, delivering talks or speeches and organizing technical seminars. During the reporting year, there were 311 papers published in top-notch journals such as IEEE Transactions, while 125 referred papers were published in conference proceedings. The department published 1 book, 8 book chapters and 8 edited books. Also, 18 active licenses were obtained, while 86 patents have been approved with 89 applications being filed. In addition, 136 invited talks and plenary talks, keynote speeches were delivered by our academic staff, and 71 seminars were organized by the department or co-organized with local or overseas institutions. To date, 52 seminars have been held in 2013/14.

Knowledge Relationship

The department has built up knowledge transfer relationship with the community through providing consultancy services and contract researches. There were a total of 16 on-going consultancy projects amounted to HK$2.9 million undertaken by EE staff. In addition, HK$9.7 million from 13 on-going and newly-approved contract research projects were recorded.

Knowledge Engagement - Internship

Apart from placing students to the market place for internship via Co-operative Education Centre, since 2010/11, the Department has launched the Industrial Placement Scheme which offers more placement opportunities to EE students. In 2013/14, there are 29 companies providing a total of 171 internship places to our students.

Knowledge Engagement - Alliance with Industry

The department also tried to have knowledge engagement with the industry through setting up various strategic alliances. The EE-administered Apps Lab of City University of Hong Kong and DBS Bank (Hong Kong) Limited have formed a strategic alliance in February 2014 to accelerate research and innovation in the banking sector among CityU students. The alliance will also provide students with a unique opportunity to engage in projects with professionals from DBS Bank across Asia.

In October 2013, EE has set up the Wireless Sustainability Centre through the support from IoT SIG-HK and ZigBee Alliance. It not only organizes research seminars for professional exchange among students, researchers and industrial experts, but also helps students and engineers transform and turn concept-proven ideas into realistic products and services.

Department of Mathematics (MA) - The Department of Mathematics (MA) worked with PuraPharm Group, a Chinese medicine manufacturing firm on establishing a suitable pricing model for the firm from January to August in 2013. In November 2013, MA started working with the Hong Kong Observatory in exploring collaborative work and creating opportunities for knowledge transfer by providing our expertise.

In order to nurture our research students, MA is actively organizing research activities to cultivate an environment for research students. Conferences, workshops, colloquia and seminars were held during the reporting period with the objective to endow the new generation of mathematicians with an advanced knowledge in the field.

Inter-departmental collaboration increases the exchange of ideas, thereby benefiting innovation processes and outcomes. Therefore, a number of inter-departmental research is ongoing including : (1) Novel graph signature extraction techniques on recognizing textual entailment and natural language processing; (2) Development and dissemination of new knowledge, systems, methods and technology to integrate cyber-infrastructure with engineering systems; (3) Coarse-graining protein molecules; (4) Student engagement and learning outcomes in effective general education through the discovery-enriched curriculum.

Department of Mechanical and Biomedical Engineering (MBE) - The Department of Mechanical and Biomedical Engineering (MBE) is active in conducting contract and collaborative research in both Hong Kong and mainland. There are 40 new/ongoing such research projects, of which 16 projects received funding of HK$1 million or above. Notable examples included a Collaborative Research Fund (CRF) project on "Development of Cell Manipulation Tools for Probing Functional Mechanism of Hematopoietic Cells: Robotics, Optical Tweezers, and Hematopoiesis" (HK$5.9m funding); three Innovation and Technology Fund projects entitled "Towards Intelligent Endoscopes for Automated Cancer Diagnostics", "Green Motion Sensors: Graphene-based Eco-friendly Micro Accelerometers" and "Robot-aided Automatic Fish Processing System for Highly Efficient Pollutant Detection and Drug Evaluation"; and a mainland research project funded by the Ministry of Science and Technology of the People's Republic of China (RMB3.8m funding).

As for consultancy services, MBE faculty members specialize in material failure analysis and a great number of testing services and failure investigations done for industry such as post-test investigation of traction motor bearing failure analysis done for MTR Corporation Ltd.

In the area of student placement, 17 students (including Total Quality Engineering (TQE) students) have confirmed their placements in various companies such as Siemens Ltd. and Gate Gourmet Hong Kong Limited, while 8 students (including TQE students) have joined the Industrial Attachment Scheme last summer in various companies.

In the area of business enterprising, MBE is the cradle to one of the technology start-ups of the University. DynaCity Technology (HK) Ltd. develops, manufactures and markets a range of advanced motion controller/driver products and Computer Numerical Control (CNC) system solutions, and also performs chip design and provides various consulting and supporting services.

Appendix 7

Knowledge Transfer in School of Creative Media

Transfer of knowledge is a strategic activity for the School of Creative Media (SCM). In this reporting year, SCM has achieved notable outcomes in knowledge transfer through reaching out extensively to the public, gearing research towards excellence in cultural heritage conservation and visualization as well as driving effective initiatives within the School. Since its opening in October 2011, Run Run Shaw Creative Media Centre (CMC), in which the School is permanently housed, has grown in reputation and recognition as an international hub for art events and exhibitions. Either being an organizer or a supporting organization, SCM has put together numerous world-class conferences and exhibitions. For example at Animamix Biennale 2013-14 and keynote conference of the Microwave International New Media Arts Festival 2013, the public was exposed to latest developments in the media art field. The Animamix Biennale 2013/14, which was well-received far and wide, exemplified the School's knowledge transfer by bringing together artists, curators, writers, theorists and art supporters from all around the world to meet, challenge their works and expand their experience about animation arts.

The SCM project Remake Confucian Rites introduced the ancient Confucian rituals to the public by visualizing them with pioneering technology, through which knowledge is transferred and tradition perpetuated. SCM's renowned project of heritage conservation, Pure Land: Augmented Reality Edition (Pure Land AR), has been embraced by China as a much sought-after research-based art piece after its special opening in Shanghai Biennale 2012.

By involving staff and students in home-grown exhibitions, performances, symposiums and conferences, SCM has continued to expand the knowledge transfer capacity of staff and students by keeping a vibrant ambience for idea exchange and collaboration. The School has spearheaded the University's initiatives for knowledge creation and transfer among students and faculty members under the Discovery-enriched Curriculum (DEC). The Antarctica Expedition and SCM course SM3703 Media Art and the Environment, designed and implemented by Mr Scott Hessels, is considered exemplary of what DEC is set to achieve. In the expedition, 23 CityU students went to explore the unique characteristics of Antarctica by applying the interdisciplinary approaches and perspectives they learned in the classroom. In the end, they transformed the scientific data collected into artworks to raise the public's awareness about the extinct environment.

SCM's other knowledge transfer achievement in the reporting year can be summarized as below:

No. of faculty engaged in knowledge transfer activities	23
No. of posts of faculty's participation in external advisory bodies	57
No. of students participating in internship programmes	38
No. of companies participating in internship programmes	23

Knowledge Transfer in School of Energy and Environment

The School of Energy and Environment (SEE) is the first and only one of its kind in Hong Kong. SEE was founded in July 2009 with the mission to perform cutting-edge research and provide professional education in energy- and environment-related issues. The faculty staff in SEE is proactive in participating in knowledge transfer activities, like contract research, school consultancy, community service, external advisor bodies, etc. which developed interactive exchanges with government, collaborators, related organizations, and society in general.

SEE worked with Metro Daily and South China Morning Post by contributing articles to promote SEE and the respective research areas of faculty staff, and also inspire the general public to care and recognize the importance of energy and environment issues, so as to promote CityU's excellence in research and professional education, and care for the community and environment. Prof. Johnny Chan, Dean of SEE, contributed monthly articles on different topics to the education column of Metro Daily while the faculty staff in SEE contributed periodic articles on a particular subject to the Young Post (South China Morning Post) as well.

Faculty staff in SEE has been interviewed by various media, such as RTHK Radio 3, Wenweipo, Mingpao, South China Morning Post, and other newspaper publishers on innovative research and technology. The interviews help transfer innovative knowledge to the general public.

<u>Outstanding knowledge transfer initiatives</u>
Energy-related issues such as alternative energy sources, energy security, and environmental sustainability are on the top agenda of every region and country. World renowned experts gathered together at CityU for "Energy Symposium in Hong Kong - Sustainable Energy for the Future - How to make the best choices?" hosted by SEE on 18 October 2013. Mr. K S Wong, Secretary for the Environment, Hong Kong SAR Government, delivered a welcome remark for the Symposium, and Dr. Christine Loh, Under Secretary for the Environment, joined the panel discussion that included very lively interaction with the participants. More than 600 people from the green groups, researchers, and policy makers joined the Symposium and enjoyed the individual talks by experts who shared recent development and insights on topics to solve the global energy problems.

With a view to broadening the knowledge of the younger generation in the fields of energy and environment, ever since 2010, SEE has delivered a number of talks on various topics to secondary school students in summer. Last year, the expert talks were conducted from 21 June 2013 to 5 July 2013, and around 782 participants attended the talks. SEE has scheduled the expert talks from 27 June 2014 to 7 July 2014 for the current year.

Knowledge Transfer in School of Law

In addition to the excellent achievements in teaching and research, the School of Law has engaged in various knowledge transfer activities, such as performing research contracting/consultancy; providing professional services by being members of professional bodies, government bodies, statutory bodies; organizing conferences and public lectures/seminars to facilitate academic exchange and to provide a platform for disseminating legal information and knowledge to interested parties; and offering legal placement to enhance students' hands-on experience apart from their theoretical learning.

Below are the impact cases of outstanding knowledge transfer endeavors during the reporting period:

(1) Prof. Lin Feng was contracted by the HKSAR Government's Central Policy Unit to conduct a comparative research project on electoral systems in different countries. This project will provide important references to the HKSAR Government on reforming Hong Kong's electoral system.

(2) The Roundtable on Issues Relating to the 2017 Chief Executive Election that was held by the Centre for Chinese and Comparative Law (RCCL) on 26 April facilitated the enhancement of communication and understanding among people/organizations with different views on the method to implement universal suffrage of the Chief Executive in 2017, hence contributed to the future constitutional reform of the HKSAR.

(3) The School of Law has been making remarkable achievements in various international mooting competitions throughout the year, and the year under review was no exception. In the HK Regional Round of Philip C. Jessup International Law Moot Court Competition 2014, the CityU team won the championship and the awards of the Best Respondent memorandum and Best Applicant Memorandum, and in the World Finals, our team ranked 28th out of a total number of 114 teams.

(4) As a result of the agreements between the National Judges College and the Supreme People's Court of China, the School of Law continued to provide postgraduate courses for Chinese judges since inception of the programme in 2009. By January 2015, there will be 168 graduates from the Master of Laws programme. Nine rounds of Advanced Programme for Chinese Senior Judges were held from June 2009 to May 2014, and a total of 272 senior judges joined the programme. Starting from September 2011, the School offers the Doctor of Juridical Science (Chinese Judges) programme in collaboration with the National Judges College and the Supreme People's Court of China. A total of 68 Chinese judges, out of which 65 are senior judges in mainland China, have been admitted.

(5) Legal placement enhances students' hands-on experiences apart from their theoretical learning in Hong Kong. During the reporting period, there are 90 students participated in the placement or internship schemes either in High Court, law firms and other companies in Hong Kong or at the People's Court in Shanghai.