



**Annual Report on  
Knowledge Transfer for 2011-2012**

**to**

**University Grants Committee**

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## 1. Executive Summary

2011-12 marks the end of the first triennium that knowledge transfer (KT) was recognised for the first time as the third mission of a university. With the foundation built in the first two years, it is gratifying to see that our persistence and efforts in the drive for KT are bearing significant fruit. Licensing income reached a new record of HK\$18.95 million in this year, more than triple the income of HK\$5.43 million obtained last year. The number of granted patents jumped to a new record of 41 compared to 17 of last year, representing a significant increase of 140%. Contract research revenue also increased by 40% to HK\$19 million.

Apart from these winners, there are also other developments that we are particularly excited about. One is the development of KT in non-technology disciplines. Traditionally KT is biased towards technology transfer. Therefore, technology transfer is a well-understood and established activity in many universities. Performance is also easy to quantify and measure. But KT in the non-technology areas is not as clearly defined and performance indicators are not so easy to establish. These ambiguities can become a hindrance to the development of KT in non-technology areas. However, with the continuous support and promotion from the university's senior leadership, deans, and department heads, our faculty are recognizing that KT is part of their normal activities. The College of Liberal Arts and Social Sciences (CLASS) and the School of Creative Media (SCM) have done remarkably well in KT this year.

A second major exciting development is our rapid and significant expansion of KT in mainland China. At the CityU Shenzhen Research Institute (CityUSRI), KT-related advances include (1) expansion in research, (2) launching of CPD courses, (3) marketing of CityU technology and (4) intellectual property policy and management.

We continued to fare well in industrial and business engagement activities. The membership of the CityU Business and Industrial Club (CUBIC) grew by 14 % to 852 members in 2012. And on the average we organized one event per month. CUBIC functions well as a platform for knowledge exchange with the industrial and business communities.

Capacity building in IP management and technology transfer is an integral part of our KT strategic plan. Hence we organized training courses on intellectual property (IP) and entrepreneurship for University staff and students. We sent our technology transfer staff to training courses on patent drafting and licensing workshop. We visited four universities abroad to learn about their KT policies and good practices.

By examining the Initial Statement released in 2009 and looking at the performance indicators therein year by year, we have come to realize that we have made good progress in KT at CityU. Significant growth is achieved in licensing, patent granted and industrial liaison. The KT earmarked fund has served well as an effective catalyst in motivating the University to develop and promote KT to become its third pillar.

## **2. Licensing**

In the triennium that has just passed, the Knowledge Transfer Office (KTO) implemented a licensing strategy plan called “**FEEDS**”, an acronym for Firm institutional commitment, Education program for staff, Enhance IP licensing channels, Develop strategic collaboration and partnership, and Spread out to China. We are delighted to report good results in licensing achieved in the year 2011-2012.

### **2.1 Licensing Result**

Out of the 37 active licensing agreements, 10 were signed during the reporting year. One of the licenses involves 50 patent applications and granted patents. As a result the total licensing income for this year reached a new record of HK\$18.95 million, more than triple that of the income of 2010-2011 (HK\$5.43 million).

### **2.2 Capacity Building in IP Management and Technology Transfer**

#### **2.2.1 IP Training for University Staff and Students**

##### **(a) Workshops conducted by ISIS Innovation**

ISIS Innovation, a subsidiary of Oxford University, is renowned for its success in IP commercialization. Taking advantage of its presence in Hong Kong, we commissioned the local office of ISIS in Hong Kong to conduct two training courses for CityU staff and students. The first one was on intellectual properties and the other one on entrepreneurship. Both courses were over-subscribed by staff and students. They found the courses very informative and useful. To gauge the usefulness of the courses to the participants, we conducted a questionnaire survey at the end of each course. Generally speaking, the response from the participants was very favourable and the overall rating was between excellent and good. (Score 3.6 for the former workshop and 3.3 for the latter workshop out of a full score of 4).

##### **(b) Workshops on Patent Law Reforms**

We invited a seasoned IP lawyer from the U.S.A. to give two lectures on patent law reforms in the US and in China. Besides CityU staff and students, we also invited our business and industrial club members to attend the two workshops. The overall rating from the audience was 3.4 out of 4.

##### **(c) Training for KTO Staff**

To train up our technology transfer executives, the University sent them to various training courses in IP and technology licensing for professional development. The training courses and conferences that they attended this year included:

##### **(1) FICPI South East Asian Drafting (SEAD) Training Course on Patent**

The FICPI, short for Fédération Internationale des Conseils en Propriété Industrielle, is an association of IP professionals from over 80 countries. The programme was a 10-day intensive patent drafting course.

(2) Licensing Executives Society Workshop

The KTO licensing team attended a one-day workshop on intellectual asset management titled “Commercializing Technology through the Power of Licensing” organized by the Licensing Executives Society of China Hong Kong sub-chapter.

(3) Federation of Hong Kong Industries IP seminar

Two of our KTO staff attended this seminar on the development of IP financing and IP trading organized by the Federation of Hong Kong Industries.

(d) Meeting with KT Representatives and Visits to Academic Departments

With the appointment of a KT representative in each College and School, the communication between KTO and the Colleges/Schools has strengthened. A meeting was arranged by KTO for all KT representatives to share among themselves the problems that they faced and the good practices that they found useful. We found the discussion and exchanges very useful and would organize similar meetings from time to time. To build a good linkage between KTO and the faculties, we arranged visits to departments. In the reporting period, KTO visited the new School of Energy and Environment (SEE), the Department of Chinese, Translation and Linguistics, the Department of Electronic Engineering and the Department of Physics and Materials Science.

(e) Exchange with Overseas Institutions

We paid a few visits to overseas universities to learn about their strategies and experience, including two in the USA, one in Canada and one in the mainland. We also met with visitors from four universities from abroad this year. From the visits, we found out that their policies and practices on technology transfer are similar to ours at CityU. However there are some differences in IP ownership. Most universities allow the inventors to own the IP if the universities decide not to pursue the invention. We will review our policies on IP to see if any amendments need to be made. We also observed that KT in non-technology areas at other universities is still not fully developed.

### **2.2.2 IP Exchange Activities**

Throughout the year, our colleagues, students and KTO staff attended a number of conferences and forum on IP and knowledge transfer. They include:

- (a) The Knowledge Exchange Conference organized by eight UGC funded institutions led by the University of Hong Kong.

- (b) The Business of IP Asia Forum organized by the Trade Development Council.
- (c) The Mainland, Hong Kong SAR and Macao SAR Intellectual Property Symposium.
- (d) The International IP Commercialization Conference organized by S.T.A.R. Foundation.
- (e) At CityU, the College of Liberal Arts and Social Sciences organized an internal KT Symposium for its staff.

### **2.2.3 Entrepreneurship Training for Staff and Students**

- (a) Students are encouraged to license technologies developed by CityU for commercialization through their own start ups. KTO will provide assistance to the student entrepreneurs on fundraising and business model. This year, KTO was working with two groups of students who wanted to form companies to commercialize the technologies developed by CityU.
- (b) To nurture students to become future entrepreneurs, KTO supported the “New Business Adventure 2012 Competition” organized by the University’s Student Development Services department. Over 180 students participated in the Competition and finally 22 students joined the study tour to Sydney. We invited an experienced legal counsel who is familiar with mergers and acquisitions to give the students a talk on “Doing Business in Hong Kong”.
- (c) Entrepreneurship Workshop

A full-day entrepreneurship workshop called “How can technologists transform into entrepreneurs” for staff and students was held on 17 May. The workshop covered the following topics: (1) the concepts of patents and other forms of intellectual property rights, (2) successful entrepreneurship stories and lessons learned, (3) understanding of market environment and customers, and (4) how to market technology projects. 87% of respondents agreed that the workshop improved their knowledge on the subject matter.

## **2.3 Prospecting of Patentable IP**

### **2.3.1 Invention Disclosure for IP Protection**

Although inventions are regularly derived from faculty research, the researchers themselves may not comprehend the desirability of filing a patent disclose on certain of their innovations. For this reason, the licensing team proactively approaches the academic and research staff to find out if their novel ideas, findings and inventions are ripe for filing patent applications. Before the University decides to file a patent application on the invention, we assemble an assessment panel represented by members from KTO and two other members from industry. The panel will examine the technical merits and the commercial viability of the invention. Finally, we post all supported inventions on our *Technologies for Licensing* database for public viewing.

### **2.3.2 Innovation-to-Realization (I2RF) Internal Grant Programme**

This year, five projects in the areas of ZigBee, LED, advanced coating, website phishing detection, and man machine interface were approved with a total funding of HK\$1.93M. In the past three financial years, a total of 19 proof-of-concept projects were approved, resulting in four inventions (two patent applications filed, with the other two under review) and the successful closing of four licensing deals.

## **2.4 Marketing of IP**

### **2.4.1 Direct Marketing**

Relationship building forms an important part of our strategy to create more opportunities for licensing. One of the channels to reach out to relevant businesses is making use of the networks of the KTO. This year, meetings and visits were arranged for over 130 corporations to explore ways to match their needs through technology transfer. Among them, 24 companies are from the mainland.

### **2.4.2 Web Marketing**

Web marketing is a cost-effective way to promote our IP, especially to companies abroad. CityU's IP ready for licensing are listed or hyper-linked in local and international IP platforms including our own website, Intellectual Property Portal of Hong Kong Trade Development Council (HKTDC), the website of Hong Kong Science and Technology Parks (HKSTP), Tynax, Tech Transfer Online, and IP Net developed by the University of Manchester Intellectual Property Limited. We are also discussing with the Trade and Industry Department on the possibility of establishing a link to our *Technologies for Licensing* database in their website.

### **2.4.3 IP Agency**

- a. Six local and international IP or licensing firms are currently appointed as our agencies to market our technologies abroad. The engagement of the services of IP marketing agencies is a cost-effective way to promote CityU technologies to the international markets. This year, the total cash-in licensing revenue from these agencies amounted to over HK\$16 million.
- b. To tap into the licensing market in China, we are discussing with several institutions/companies in the mainland on possible ways for collaboration, including Intellectual Ventures China in Beijing, Shanghai Jiaotong University Jiaying Science Park, Shanghai Lingang Marine Science Park, Shanghai License Business Consulting Co. Limited, and GuangYa Network Technology Co. Limited in Guangzhou, and Fujian Kesheng Technology Service Limited in Xiamen.

### **2.4.4 Publications**

- The *Technologies for Licensing* database at the KTO website is frequently

revised to provide up-to-date information on IPs available for licensing.

- A *List of Patents* brochure containing details of CityU's patents is available at the KTO website.
- We made use of the University publications, as well as printed and electronic media to promote our achievements, new inventions and commercialization projects. Projects showcased at the China Hi-tech Fair, ICT Expo and InnoCarnival gained plenty of publicity.
- The wideband patch antenna of our State Key Laboratory of Millimeter Waves (SKLMW) was featured in the government's TV commercial on the recent Hong Kong patent system review.
- Our innovations and technologies were promoted to overseas businesses in the publication *Hong Kong: Your Innovation and Technology Services Hub in Asia* published by InvestHK of the government.

## **2.5 Outreach and Partnership**

### **2.5.1 CityU Business and Industrial Club**

CityU Business and Industrial Club (CUBIC) is the KTO's effective platform for forging links with industry and business. CUBIC membership grew from 746 to 852, representing an annual increase rate of 14%. A new "Building and Construction" Special Interest Group was also formed under CUBIC this year, taking the total number of Special Interest Groups to five.

### **2.5.2 Technology Transfer and Relationship Building Events**

The flagship technology transfer and relationship building events run by CUBIC are:

- CityU Technology Transfer Forum (TTF): CityU's commercializable technologies are featured in these forums. Three separate forums on construction, nanocomposite coating and environmental technologies were held. The one on nanotechnology was held in Shenzhen, with support from the Shenzhen Virtual University Park. Numerous enquiries were received after the TTFs. The scores for the overall performance of the TTF on construction, nanocomposite coating and environmental technologies are 3.5, 3.15 and 3 respectively with 4 as the full score.
- Emerging Technologies Forum (ETF): Industrial and business executives are invited to update the audience on the latest market trends and technology development. We had one forum held in Hong Kong on fibre optic technologies. The event had a high attendance and the overall rating from the audience was 3.58 out of 4. Later, we were invited to give a similar seminar to Sanmina-SCI Optical Technology (Shenzhen) Limited, a professional manufacturer of fiber optical communications components and modules in Shenzhen.
- Visits to University laboratories were arranged for the Hong Kong Mould and Product Technology Association (HKMPTA), Hong Kong Medical and Healthcare Device Industries Association (HKMHDIA), Hong Kong Electronics and Technologies Association (HKETA) and the Hong Kong



Electronics Industry Council (HKEIC), The Hong Kong General Chamber of Commerce (HKGCC), and partner companies from the Hong Kong Science and Technology Parks (HKSTP).

- A talk on the updates of patent laws in the US and China was held.
- Three informal gatherings were arranged for three CUBIC's Special Interest Groups (IT & Telecom, Manufacturing, Building & Construction). The Manufacturing Group arranged a visit to Huawei Technologies Company Limited, a leading information and communications technology solution provider in China.

### 2.5.3 Exhibitions

To market our technologies to China and the overseas market, the licensing team participated in a number of exhibitions, including some renowned national and international product shows (please see the full list below). We were encouraged by the positive responses shown towards CityU inventions at these shows.

- China Hi-Tech Fair in Shenzhen
- Electronica China and Productronica China in Shanghai
- Guangzhou International Lighting Exhibition
- Printed Electronics and Photovoltaics USA
- Eco Expo Asia
- The International ICT Expo
- Hong Kong International Medical Devices and Supplies Fair
- International Conference and Exhibition of the Modernization of Chinese Medicine & Health Products
- Hong Kong Electronics Fair (Spring Edition)
- InnoCarnival organized by the Innovation and Technology Commission
- Inno Design Tech Expo (as supporting organization)

## 3. Expansion into Mainland

Under the National 12th Five-Year Plan (2011–2015), research institutes set up by universities in Hong Kong are eligible to apply for government research grants. Through the CityU Shenzhen Research Institute (CityUSRI), CityU can lodge its applications for research grants in mainland China. With support and encouragement from KTO and the VPRT's offices, there was a big jump in proposals submitted and research grants obtained as follows:

	2011/12	2010/11	% change
Number of active research projects	41	24	+71%
Total grants of the active research projects	RMB28,919,500	RMB16,085,000	+80%

*Remarks: The above data is not included in the summary of KT performance indicators in Section 9 as the grants recipient is the University's commercial arm in the mainland.*

Of the 26 new contract research projects obtained, 14 were funded by the National Natural Science Foundation of China (NSFC), and one project was funded under the “973” Scheme of the Ministry of Science and Technology of the People’s Republic of China. These fruitful results were partly attributed by the National 12<sup>th</sup> Five-Year Plan that fosters Hong Kong-Mainland collaboration. More promising results will be anticipated next year as more than 80 NSFC applications were submitted in the current round of competition.

The University also approved the establishment of five new research centres in the CityU Shenzhen Research Institute (CityUSRI) Building, of which one is a joint research centre set up in collaboration with the University of Electronic Science and Technology of China (UESTC) for research on optical fibre sensing and communications.

To tap into the lucrative CPD training market in the mainland, the College of Business set up a Centre for Advanced Business Research and Executive Education (Shenzhen) in 2011. Occupying a gross area of 1500 m<sup>2</sup> with an executive auditorium with break-out rooms, three teaching studios equipped with multi-media facilities, and a lounge area, the Centre is well equipped to host cutting edge executive education.

On licensing, KTO realized that it is not effective for the licensing team in Hong Kong to liaise directly with mainland enterprises. To overcome this difficulty, KTO is looking for academic institutions and companies to act as its IP agency in China.

To provide a conducive environment to drive KT in the mainland, infrastructural support has been and will be provided in the following areas :

a. Intellectual property management

The Knowledge Transfer Committee at its April meeting resolved to approve an IP policy basically modeled on that of the University. As the University has already in place a well administered vetting and application mechanism, it was resolved that the same mechanism be applied to Shenzhen.

b. Reward system

A suitable reward system is indispensable to good performance. Hence, income will be shared with relevant faculties upon successful commercialization of IP and a cash reward will be offered upon granting of a patent regardless of whether the patent is commercialized or not.

c. Research grant administration

In the past, research grants and contracts in Hong Kong were administered by the Research Grants and Contracts Office while those in the mainland were administered by the KTO, which caused confusion to staff and a certain level of duplication of work. Starting from 2011, all research grants and contracts are centrally administered by the Research Grants and Contracts Office.

d. Homepage revamp

The opening of CityUSRI Building in 2011 provided a strategic platform for active engagement of faculties in research and development, incubation and innovation, professional education, training and outreach in mainland China. To cope with the rapid development of CityUSRI, we are revamping our existing homepage to enhance communication with KT stakeholders such as companies looking for promising technologies for licensing or research collaboration, or corporations/individuals looking for executive education for professional development, etc.

#### **4. High-Level Consultancy Services**

City University of Hong Kong is committed to supporting 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 society as well as the University.

Since the introduction of a new set of Policy and Regulations on Outside Practice and Outside Work effective from January 2011, the University has been focusing on the provision of advanced and high level consultancy services. In the year 2011-12, the University solicited 56 consultancy projects. Major projects include:

- a. Development of Traffic and Incident Management System (TIMS) to be used by the Transport Department of the HKSAR Government. The project was commissioned by AECOM Asia Company Limited. TIMS is a computerised system to perform automatic incident detection, generate suggested traffic and transport contingency plans, provide a common view of traffic information to all stakeholders, streamline the dissemination of traffic and transport information to stakeholders particularly the public, and coordinate existing and future Traffic Control and Surveillance Systems. It also includes a common data platform for interested parties to acquire the Transport Department's traffic speed and incident information for developing value-added services;
- b. Provision of electromagnetic compatibility consulting services to Mitsubishi Heavy Industries Limited for its Automated People Mover Systems in Macau and Dubai; and
- c. Provision of professional advice on large scale antenna array and treatment of interference in cellular systems design. The project was commissioned by Alcatel-Lucent Shanghai Bell Company Limited.

#### **5. Technology Transfer through Spin-off Companies**

Research incubation and commercialization of research outputs are important knowledge transfer activities at City University of Hong Kong. Established in 1991 as a wholly-owned subsidiary of the University, CityU Enterprises Limited (CityUE) has been playing 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 society. Currently there are seven group companies under the aegis of CityUE.

Owing to the growing popularity of technology licensing, the University has recently used licensing as the main vehicle for technology transfer rather than setting up limited companies under CityUE. CityU Research Limited (CityUR) was formed as a commercial arm to coordinate licensing activities.

Despite the above, the University will continue to nurture entrepreneurship among students to cope with the Discovery-enriched Curriculum which emphasizes innovation and creation by students. This also echoes the University's goal to nurture a culture of entrepreneurship as laid down in the 2010-15 Strategic Plan.

To support this area of development, the following entrepreneurship initiatives will continue:

- (a) A portfolio of training courses on IP and entrepreneurship
- (b) New Business Adventure business plan competition
- (c) General Education courses on innovation and entrepreneurship

Professional advice in the following areas can always be obtained from the KTO if students and graduates wish to form their own startup companies:

- Business model of the startup
- Referral to angel investors and venture capitalists
- Availability of various government funding and support schemes e.g. Small Entrepreneur Research Assistance Programme, Life Science Acceleration Programme, and the incubation programme of the Hong Kong Science and Technology Parks
- Equity structure and corporate governance
- Leads to prospective customers
- Technology licensing

## **6. Knowledge Transfer in Creative Arts and Non-technology Areas**

### **6.1 College of Business**

The College of Business (CB) and its member departments are involving in a wide range of KT activities. These activities have demonstrated impact locally and globally on various fronts as government policy development, business community engagement and professional accreditation establishment. Such objectives are achieved via collaborative research, joint education programmes, professional development programmes, executive education programmes, internship programmes, volunteer work abroad programme, and consultancy and community services. The College has managed to maintain a rather large scale student exchange and internship programmes in local and overseas universities and companies to strengthen our KT endeavors. A number of public lectures,

symposiums and speeches to the community audience and exhibitions of creative works were organized at College and Department levels. CB faculty members also engaged in high level KT activities, served as members in various government advisory bodies, academic journal's editorial boards and professional society's committees, and demonstrated influence on policy making and professional accreditation for the social and economic advancement in Hong Kong.

The College will continue to encourage our staffs to work closely with government offices and departments, local business organizations and professional associations to share their expertise on a wide range of relevant activities and services to meet the educational and professional needs of the community. With the existing infrastructure and currently wide range of KT activities available within the College, KT capabilities can be further built up, creating synergy through interactions with other Colleges/Schools.

Below are some highlights of KT Activities in CB:

- Participation in high-level committees and advisory bodies of the HK government.
- Participation in professional organizations, in areas such as accounting, banking, finance, economics, human resource management, marketing, statistics, transport logistics, operations management, e-commerce, information systems, etc.
- Organization of local and international academic conferences / workshops / symposiums / press release conferences / breakfast seminars / research consortiums.
- Organization of local and overseas internship programmes for students at College and Department levels.
- Executive education programmes: customized executive education being delivered to corporate clients in Hong Kong and mainland China.
- Business Analytics Unit (BAU): a platform to conduct large scale business analytic research via developing knowledge that facilitates the effective and efficient running of companies.
- Energy & Environmental Policy Research Unit (EEPRU): promotes rigorous and objective empirical research related to energy and environmental policy to support decision-making by government and industry.
- Statistical Consulting Unit (SCU): provides statistical consultation to support university research, administration, and serves many external organizations including various government departments.
- Hong Kong Consumer Satisfaction Index (CityU-HKCSI): produces a business performance indicator measuring the satisfaction level of Hong Kong consumers towards the quality of products sold in Hong Kong, with results well covered by local news media and cited by some major local companies.

- Consumer Confidence Index (CCI): measures consumers' confidence levels quarterly as an economic indicator; it attracts wide mass media coverage in the mainland, Hong Kong, Taiwan, and Macau.
- Transferring new marketing knowledge to the business communities through presentations and lectures, student consultancy projects and organization of professional conferences.

Details of the above KT activities are given in appendix 1.

## 6.2 College of Liberal Arts and Social Sciences

The College of Liberal Arts and Social Sciences (CLASS) and its departments have been actively engaging in a wide variety of knowledge transfer (KT) activities. During the reporting period, CLASS established a KT website through which CLASS staff members showcase their KT activities to staff members and students, and the community. CLASS rolled out the Excellence in Knowledge Transfer Awards to further encourage staff members to create new KT initiatives. A KT Symposium was held on 25 April 2012, which served as an excellent platform for staff members to share their KT experiences with University members and experts coming from other institutions or organizations.

KT has been and will continue to be a vital aspect of the College's and individual department's strategic plan. Apart from those traditional KT activities like contract research, licensing, consultancy and patent application, CLASS faculty members have engaged in media interview, writing articles on media such as the *South China Morning Post*, *Asia Times Online*, *ESD Life*, and *Inside Indonesia* (an on-line outreach publication), producing TV programmes for public education, conducting workshops for secondary school teachers, and promoting social entrepreneurship at CityU campus, etc.

Here are some of the outstanding KT activities carried out by individual departments:

1. The Saturday Teachers' Workshop
2. The first "Poetry Party!"
3. A research project "Study of Corruption Control and Integrity Management" funded by the Independent Commission Against Corruption (ICAC)
4. A series of video programmes entitled "The Sixth Dalai Lama Tshangyang Gyatsho – A Poet from the Himalayas", 50 programmes of "Scientific Frontiers" of 5-minute long each, and five episodes of documentary "The 1911 Republican Revolution".

Details of the above KT activities are given in appendix 2.

## 6.3 School of Creative Media

Transfer of knowledge (knowledge in a broad sense) is a strategic activity for the School of Creative Media (SCM). The strategic purpose is community

engagement, especially with our key stakeholders, around important societal issues. The medium for KT is the development and exhibition of artefacts that encourage discussion, as well as publication of research that frames the discourse theoretically and practically.

With the establishment of the Run Run Shaw Creative Media Centre (CMC), SCM has geared the development of KT to unprecedented levels by hosting and housing a rich array of world-class exhibitions, performances, symposiums and conferences. In this connection, the artistic and professional works of our faculty and teaching staff are not only shown in prestigious overseas venues, but have also been brought home to the accessible appreciation of local public. With CMC serving as a cultural hub, SCM has spared no effort in introducing creative and digital media art to the local audience, and bringing together artists and talents from different disciplines and cultures.

Below are some outstanding KT initiatives for 2011-12:

- 1) Pure Land: Inside the Mogao Grottoes at Dunhuang
- 2) Run Run Shaw Creative Media Centre Grand Opening Festival (CMC Festival)
- 3) Faculty Exhibition - The Burning Edge: Making Space, Activating Form
- 4) Gallery 360

Details of the above initiatives, strategic plan and related KT activities of SCM are given in appendix 3.

## **6.4 School of Law**

The School of Law introduced postgraduate courses for Chinese judges in 2009 as a result of the agreements signed between the National Judges College, Supreme People's Court of China and Columbia Law School of USA. By January 2013, there will be 117 graduates from its Master of Laws programme. Five rounds of Advanced Programme for Chinese Senior Judges were held from June 2009 to May 2012, and a total of 154 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 20 Chinese judges, among them 19 senior judges in the mainland China, were admitted in 2011.

## **7. Driving Knowledge Transfer in Non-technology Areas**

As a new mechanism for driving KT, the University used part of the UGC KT Earmarked Fund to support KT initiatives proposed by the faculties of CLASS. An internal competition was held, and with recommendation from the Dean of CLASS, funding support for six projects was approved. Included in the funded portfolio are

projects with a broad trans-disciplinary scope and applications reach. The projects are:

- Knowledge Transfer Website Development for CLASS
- Portable Knowledge: Portable Teaching: Creating a “Case Study Library” for Pedagogical Sharing in Liberal Arts and Social Sciences  
The project creates a case study library for students and practitioners of counselling and social work.
- Capacity Building for Hong Kong-Shenzhen Collaboration in Qianhai  
The project aims to promote public awareness of the issues raised by the Chinese Central Government’s proposal to develop a “Qianhai Pilot Zone for Shenzhen-Hong Kong Collaboration in Developing Modern Service Industries”. Qianhai, located in Shenzhen, is designated by the Chinese Government as a Hong Kong/Guangdong modern service industry innovation and co-operation exemplary zone.
- Climate Policies : A Guide for Local Governments  
The project will publish an informative and concise guidebook for city officials and concerned citizens regarding climate change mitigation and adaptation, and low carbon and sustainable city policy.
- Action Counselling  
Action counselling is a group counselling approach which emphasises culturally specific counselling strategies and techniques. The project will train 40 social work/counselling students who shall disseminate the new counselling method among frontline counselling practitioners.
- An Interactive Human-Machine Dialogue System for Public Health in Hong Kong  
The project aims to develop a system that allows users to use a telephone or the Internet to interact with a computer system using natural spoken language to deliver public health information.

Funding will continue to be set aside in the academic year 2012-13 to support KT initiatives of non-technology disciplines. Encouraged by the success in building up KT capabilities in CLASS last year, we plan to extend this pilot programme to other non-technology colleges and schools such as the College of Business and School of Law in the coming round of project invitation.

## **8. Knowledge Transfer for Students**

### **8.1 Discovery-enriched Curriculum**

To help students better participate in KT, CityU introduced a Discovery-enriched Curriculum (DEC) that offers each student opportunities to create new knowledge. Integral to the DEC are CityU’s unique Gateway Education (GE) courses that provide critical core skills and perspectives while setting the stage for students to



participate in innovation. Of the various sets of GE courses, the most noteworthy one is perhaps the project-based Discover&Innovate GE courses. Students can take on a wide variety of projects, ranging from product design and marketing to evidence-based policy innovation projects that address social or environmental issues.

## 8.2 General Education Courses on Innovation and Entrepreneurship

These courses aim to promote entrepreneurial spirit and team collaboration skills in a multi-disciplinary learning environment. Students from engineering and sciences, social sciences, and management backgrounds will work together in their own mock companies to simulate the entrepreneurship process.

## 8.3 New Business Adventure

New Business Adventure (NBA) is an annual business plan competition that aims at nurturing entrepreneurship through helping students turn their creative ideas into feasible business plans. Participants have to attend a series of training workshops on business plan writing, team building, creativity and presentation skills. Over 180 students participated in the Competition and finally 22 students joined the study tour to Sydney.

## 8.4 Student Placement and Internship Schemes

CityU places strong emphasis on student placement and internship. Shown below is a table showing the various placement and internship schemes that CityU is running now.

	Organiser	Name of programme	Duration and brief description
1	Co-operative Education Centre, College of Science and Engineering	Industrial Attachment Scheme (IAS)	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	Eight to 12 months full-time internship.  Students take university courses on a day-release basis during internship. They are also guided by their industrial co-supervisors in their final-year projects.
3	Same as above	Overseas Internship Scheme	Summer holiday.  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	College of Business	Business Practice Internship	Six to 13 weeks plus a two-day skills training workshop.  Students work full-time at multi-national corporations during internship.
5	College of Liberal Arts and Social Sciences	Summer Professional Internship	Six to eight weeks during summer holiday.  Students participate in summer internship at selected organisations in China and Singapore.
6	Department of Computer Science	IT Professional Placement	10 months.  Students who have completed their second year of study spend one year working at an IT company.
7	Department of Electronic Engineering	Industrial Placement Scheme	The Scheme encompasses three parts namely group industrial projects, summer placement and Industrial Final Year Project.
8	School of Creative Media	Internship Programmes	Students work full-time in digital and traditional media, art, and cultural companies and organisations during summer term.
9	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.
10	School of Law	Internship for LLM students	Chinese judges in the LLM programme join a 10-day court internship to be supervised by Hong Kong judges.

The number of student placement and internship in 2011-12 was :

College/School	Number of student placement and internship
College of Business	385
College of Liberal Arts and Social Sciences	738
College of Science and Engineering	667
School of Creative Media	29
School of Law	93
Total	1912

## 9. Summary of Knowledge Transfer Performance Indicators

(Amounts are in Hong Kong dollars)

Performance Indicators	2010/11 (actual)		2011/12 (actual)		2011/12 (target)	2012/13 (target)
No. of patents filed in the year	52		<sup>1</sup> 53		46	46
No. of patents granted in the year	17		<sup>2</sup> 41		16	20
No. of active licenses during the reporting year (inclusive of newly granted ones) <i>(figures in brackets indicate the number of licenses of IP not protected by patents)</i>	Type	No.	Type	No.	36	45
	Exclusive	3/(5)	Exclusive	7/(6)		
	Non-exclusive	7/(13)	Non-exclusive	8/(16)		
	Total	10/(18)	Total	15/(22)		
Income generated from intellectual property rights	\$5.43m		\$18.95m		\$5m	\$5m
Expenditure involved in generating income from intellectual property rights	\$5.48m		\$5.5m		\$4.5m	\$4.5m
No. of economically active spin-off companies	<sup>3</sup> 10		<sup>4</sup> 11		11	11
Net income generated (or net loss arising) from spin-off companies <i>(financial data of some spin-off companies is not obtainable due to sensitivity of the information)</i>	-\$0.28m		-\$5.63m		\$2.55m	-\$1.29m
No. of collaborative research projects and income thereby generated	15 / \$19.52m		<sup>5</sup> 15 / \$17.01m		18 / \$22m	17/\$18m
No. of contract research projects (other than those included in “collaborative researches” above), and income thereby generated	69 / \$13.61m		<sup>6</sup> 85 / \$18.99m		70 / \$15m	90 / \$20m
No. of consultancies, and income thereby generated	128 / \$19.2m		56 / \$14.06m		100 / \$19m	55 / \$12m
No. of student contact hours in short courses or e-learning programmes specially tailored to meet business or CPD needs	1.62m		1.61m		1.45m	1.48m

<sup>1</sup> See breakdown by country and type in Appendix 4

<sup>2</sup> See breakdown by country and type in Appendix 5

<sup>3</sup> Adjustment has been made due to misinterpretation of definition.

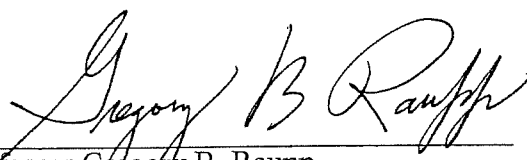
<sup>4</sup> See breakdown by type in Appendix 6

<sup>5</sup> Both on-going and new projects are counted

<sup>6</sup> Both on-going and new projects are counted

Performance Indicators	2010/11 (actual)	2011/12 (actual)	2011/12 (target)	2012/13 (target)
No. of equipment and facilities service agreements, and income thereby generated	428 / \$0.95m	<b>376 / \$0.79m</b>	400 / \$0.8m	390 / \$0.83m
Income received from Continuing Professional Development (CPD) courses	New indicator	<b>\$195m</b>	New indicator	\$192m
No. of public lectures/symposiums/exhibitions and speeches to a community audience	New indicator	<b>648</b>	New indicator	638
No. of performances and exhibitions of creative works by staff or students	New indicator	<b>225</b>	New indicator	215
No. of staff engaged as members of external advisory bodies including professional, industry, government, statutory or non-statutory bodies	New indicator	<b>169</b>	New indicator	183
No. of student placement/internship	New indicator	<b>1912</b>	New indicator	2031

Prepared by the Knowledge Transfer Office and approved by

  
 Professor Gregory B. Raupp  
 Vice-President (Research and Technology)

Date : 27 July 2012

**College of Business**

**Highlights of Knowledge Transfer activities:**

**1. Engagement as Members of External Advisory Bodies**

Professor Richard Ho, Chair Professor, serves as member of the Quality Assurance Council of University Grants Committee (UGC) since July 2008. Professor Ho provides advice to the UGC on quality assurance matters in the higher education sector in Hong Kong and to approve the process of audits and other reviews as requested by UGC. Professor Ho plays an important role in this Committee for the smooth operation of the higher education sector especially for the implementation of the 3+3+4 new structure in the academic year of 12/13.

Professor JB Kim served as a member of the Advisory Committee on Human Resources Development in the Financial Service Sector (known as the FinMan committee) for Financial Services and Treasury Bureau, and played a leading role in preparing/hosting the **Forum on Increasing Economic Integration between Hong Kong and Mainland China: Challenges for Hong Kong Finance Professionals** held at CityU on November 1, 2011. More than 200 participants joined the Forum, including Professor K.C. Chan, Treasury Secretary of the Hong Kong government, served as the keynote speaker. Other participants were high-ranking professionals from the Hong Kong professional communities in the areas of accounting, finance and investment banking, and graduate business students from five UGC funded universities in Hong Kong. There were useful presentations and discussions among participants, particularly between students and professionals.

**2. Nurturing Young Researchers in the Mainland**

Professor Zhou Nan, as Chang Jiang Scholar at Wuhan University, has strived to nurture young researchers the latest knowledge and development in the field of marketing in Mainland China. He delivered academic speeches to more than 10 top Chinese universities.

**3. Marketing Company Consultancy Projects**

Our marketing students worked as interns at various Chinese companies and overseas companies and applied what they learned in CityU to solving real business problems. One salient case is our BBA Marketing Company Consultancy Project which has been conducted for over 17 years in Hong Kong and mainland China. In these hands-on business investigations, our students used their knowledge innovation to work out practical business models and solve company strategic problems. During the past two years, we have offered business consulting services to over 30 business companies in Hong Kong and mainland China.

**4. Consumer Confidence Index: Four Places across Straits**

The Management Sciences department, in partnership with the Renmin University of

China, Capital University of Economics and Business, Central University of Finance and Economics, Fu Jen Catholic University, Taiwan, and the Macau University of Science and Technology, started to produce an index called Consumer Confidence Index: Four Places across Straits (CCI) in the 3<sup>rd</sup> quarter of 2008. This index compares consumers' confidence towards the economies of Hong Kong, mainland China, Taiwan, and Macau, measuring residents' confidence towards economic development, employment, income levels, daily consumption, property and stock investment. Findings of the project were released four times a year on the same dates in Beijing, Taiwan, Hong Kong and Macau. Its results are always covered by the news media in the four cities. In particular, the community is interested in comparing the economic development among the four places. Foreign organizations that conduct similar CCI in foreign countries often referred to our results for comparison purposes.

## **5. Breakfast Seminar Bridging Academic and Practitioners**

The breakfast seminar has been organized by the Management department for many years. This high profile event acts as a bridge between academics and practitioners in the fields of human resources management and international business. There are usually more than 100 participants from the industrial sector in each seminar. Each seminar focuses on a specific theme and below were some of the topics covered in the past:

- Long Hours  $\neq$  Productivity... How to Reduce Time Wastage at Your Workplace?
- Effective Implementation of the Balanced Scorecard Approach: Experience Sharing of Major Corporations in Hong Kong with special reference to HRM's Role
- Leading Change: Common Pitfalls, Insights, and Effective Practices
- Global Business Management: Managing Across Cultures
- Building and Retaining and Engaged Workforce: Effective Non-Financial Strategies
- Fostering Creativity and Innovation in Global Business
- Thriving in a Challenging Environment through Effective Employee Engagement
- Effective Strategies for Attracting and Engaging the Post-80's Talents
- Retaining and Motivating Employees with Effective Non-Monetary Rewards

## College of Liberal Arts and Social Sciences

### Highlights of Knowledge Transfer activities :

1. The Saturday Teachers' Workshop - This is an annual event for primary and/or secondary school teachers in Hong Kong. Normally, the workshop has a particular theme and the sessions in the workshop explore the set theme from diverse angles. This year's topic was "Literary and Cultural Studies: Hong Kong and Beyond." Directed specifically towards teachers of English at Secondary School level (Forms 4-7), the workshop consisted of eight sessions over a period of four weeks. The highly interactive seminar was limited to 19 participants from 12 different schools. The activity aims to help teachers handle new materials and suggest innovative pedagogical strategies for the teaching of literature and culture, as well as liberal studies more generally.
2. The first "Poetry Party!" - This event, held on March 17, 2012, consisted of a five-hour creative writing workshop with students and teachers from Hong Kong schools. Three sessions were organized for students from Forms 3-6 and comprised one session for teachers. We had 45 student participants and 21 teachers. Students and teachers were given the opportunity to learn strategies in poetry writing and presented their poems to the audience at the end of each session.
3. A research project "Study of Corruption Control and Integrity Management", funded by the Independent Commission Against Corruption (ICAC), was approved in 2009 and completed in 2011. Four reports have been produced for the ICAC's Centre of Anti-Corruption Studies.
4. Several lines of video programmes were produced for public education purposes including "The Sixth Dalai Lama Tshangyang Gyatsho – A Poet from the Himalayas", 50 programmes of "Scientific Frontiers" of 5-minute long each, and five episodes of documentary "The 1911 Republican Revolution".

## School of Creative Media

### Highlights of Knowledge Transfer activities :

In October 2011, SCM celebrated the birth of its spectacular campus Creative Media Centre (CMC) by hosting a 6-month opening festival, first of its kind among local universities. The festival, entailing half of SCM's KT activities in the reporting year, featured animation and video screening, performances, exhibitions, symposiums, meet-the-artist sessions, student workshops and seminars. Being the sole organizer for most of the events, SCM took a leading and active role in promoting different art practices, art forms, disciplines, minority cultures and traditional heritage amidst the activities. The events attracted a high attendance, for example, the nine exhibitions received up to 13,000 visitors over six months. "Pure Land – Inside the Mogao Grottoes at Dunhuang", opened to the public in March 2012 proved to be SCM's exemplary example of KT. The exhibition applied SCM's pioneering 3D technology to turn the painterly beauty of Dunhuang into a virtual experience. Marking a milestone in the digital preservation of heritage, the exhibition allowed the historical monuments to reach out to a wider audience.

SCM not only dedicated itself to engaging the public but also strengthened the KT capabilities of our students and staff. SCM students, alumni and faculty were encouraged to participate enthusiastically as speakers or exhibitors in events organized home and abroad. To enhance the exchange of ideas and novelty, renowned artists from overseas have been invited from time to time to interact with our faculty. The high number of international festivals and exhibitions our faculty attended testifies to their high international standing. The fact that their works have been repeatedly displayed in prestigious venues signifies their notable achievements in the global arena, alongside transmitting knowledge and strengthening the SCM brand.

SCM faculty participate in up to 34 posts in a variety of external advisory bodies. Their advisory responsibilities have been fulfilled in institutions, as well as industrial, professional and governmental bodies. Some of them have continued with their commitment for up to five years. SCM's influence in society is felt in education curriculum development, formulating best practices for industry, developing policies and affecting art development directions of various institutes and art organizations.

The internship programmes in SCM engage with various digital & traditional media, and artistic and cultural companies or organizations, including those in the fields of games, animation, visual effects, graphic design, 3D modeling, interactivity, TV & film production, script writing & editing, art administration, art & film research, art & media education, etc. The interns transfer their knowledge learned through their studies at SCM (for example, cutting-edge technologies in media and animation principle) to the industries. The industries, in return, can benefit from aligning their technologies with world-class standards. Besides, students can require practical skills through internships. This greatly improves career prospects for graduates who may be offered positions in their host companies or organizations after graduation.

In addition, faculty not only produced publications, conference proceedings and/or refereed



professional journal articles based on their research interests but also cultivated reference materials of high importance to artists and art professionals, educators and administrators. They have also engaged in a variety of means of knowledge exchange such as engaging in consultancies, research, artistic partnerships, initiating and developing international exchange and internship opportunities for students. Such KT activities are of key significance in shaping the foundation of the creative media industry and education.

### **Knowledge Transfer Strategies**

In the year 2011-12, SCM implemented the following strategies to achieve huge success in KT.

#### *1) Art and the Environment*

The Art and Environment KT strategy is a subset of a broader and far-reaching convergence of art and science teaching and research at SCM. This is signposted by SCM's new Bachelor of Arts and Science in New Media(BAS) and also in numerous art science initiatives such as the "Art and Science Symposium" held in October last year. The trans-disciplinary approach in this symposium has become a hallmark of research conducted today in both the scientific and artistic domains. Its outcomes are hybrid phenomena such as Nano-Art and Bio-Art, as well as far-reaching speculative inquiries that are changing our perception and understanding of being in the contemporary world. At this symposium, eminent practitioners and theoreticians from the arts in Europe and the USA discussed vanguard creative endeavours and pioneering institutional initiatives that had been shaping the future of the art/science imagery.

Merging art with science, SCM aims at creating more immersive educational experiences, and teaching fieldwork as a form of discovery. Our objective is to explore how emerging technologies can be used to learn and measure the environment and how that data and knowledge can be applied in new forms of creativity and visualization.

#### *2) Advances in Visualization*

This cross-disciplinary KT strategy leverages the exceptional resources at CityU in this domain: the Applied Laboratory for Interactive Visualization and Embodiment(ALiVE), Centre for Applied Computing and Interactive Media(ACIM), Gallery 360, SCM Future Cinema Studio and SCM Multimedia Theatre. A broad range of topics are addressed ranging from cultural heritage to scientific imaging. For example :

- a) The extension of kinesthetic, embodied and the enactive dimensions of multimedia experience to enable the interpretation of tangible and intangible cultural knowledge for galleries, libraries, archives and museums.
- b) Visual analytics, information aesthetics and HCI strategies that enable semantic navigation of massive heterogeneous multimedia databases for the digital humanities.
- c) Geographically distributed and mobile media situations to enable convergent

communication and ubiquitous high-definition platforms in cyberspace for diverse cultural, social and professional exchanges.

## **Outstanding Knowledge Transfer Initiatives for 2011-12**

### *1. Pure Land: Inside the Mogao Grottoes at Dunhuang*

Using pioneering virtual reality technology, artists and scientists at CityU have developed an extraordinary new animated 3D experience of the Mogao Grottoes at Dunhuang in northwest China in collaboration with the Dunhuang Academy. Visitors were immersed in a large 360-degree panoramic projection theater that gave a true-to-life experience of being inside a cave temple and seeing its magnificent Buddhist wall paintings at one-to-one scale. Figures and objects in these paintings were dramatized by means of spectacular interactive 3D animations and digital effects that revealed their painterly beauty and underlying narratives. The easily transportable display system, called Advanced Visualization and Interaction Environment (AVIE), is the best system for presenting “Pure Land” because it can cope with the large size of the exhibition and the seamless 3D projection process.

Under the guidance of art historians and experts on the murals, a group of animators used laser-scanned data sets and ultra-high resolution photographs of the north wall provided by the Dunhuang Academy to imitate the brush strokes and colours of the originals and to re-draw selected elements on transparent paper. The images created by this meticulous process were digitised and integrated into the animation scenography, including the 3D reconstruction of the illustrated musical instruments and the canopies above the Bhaisajyaguru (Medicine Buddha). The 30 experts even invited members of the Beijing Dance Academy to re-enact the dances in the murals. They contributed to this project over a six-month period, helping to develop an extraordinary animated 3D experience that allowed visitors to experience the paintings by immersion in a large 360-degree panoramic projection theatre. The virtual reality technology let people feel as if they were actually inside the cave viewing the paintings in real life.

Scheduled to open for three weeks, the Pure Land exhibition had all 78 public guided tours fully booked on the day following its news release. The Festival team then arranged 20 extra special tours on public holidays to meet the public’s demand. In addition to private and press tours, 161 tours were arranged during the three-week exhibition for 2,528 visitors.

### *2. Run Run Shaw Creative Media Centre Grand Opening Festival (CMC Festival)*

To celebrate the opening of the Run Run Shaw Creative Media Centre (CMC), SCM conceived and produced the six-month long Grand Opening Festival. This benchmark festival was immensely successful in achieving its goals of bringing together students, alumni, faculty, industry experts and the general public in a celebration of CityU’s spirit of discovery and innovation, and of establishing CityU as a new cultural nexus in Hong Kong.

The CMC Festival comprised a wide spectrum of events to attract the public and media to recognize the visions of CityU and to stimulate discussions among the

creative industry and communities. Programmes included: a series of new media art exhibitions (11 events), multimedia performances (seven slots), animation screenings (four slots), symposia and talks (11 events) on varied academic disciplines, a diversity of community projects collaborated with local communities, and also school tours and workshops tailor-made for secondary school students.

The aims were to promote CityU's new CMC as the symbol of leadership in Hong Kong's creative media education, a centre of art and technology in Asia, and an active member in the creative industry of Hong Kong. Programmes contained local contexts, and engaged renowned artists, important art and cultural institutes from Hong Kong, mainland China and the overseas, as well as local students in different levels.

Among the 18,000 visitors recorded for the CMC Festival, 300 local and overseas guests attended the opening ceremony, and an audience of 600 people enjoyed the dragon parade and opening night performances which involved CityU staff, students and the public in the neighbourhood. The guests were impressed by the architectural design of the building and the advanced equipment and facilities demonstrated.

To extend our reach to local schools, the CMC Festival joined the Business-School Partnership Programme (BSPP) of the Education Bureau to deliver 40 tours to secondary and tertiary schools from January to April this year. The Festival attracted 1,600 visitors in the first two weekends which were packed with performances, animation screenings and symposiums. The responses from opening night guests and event participants were hugely encouraging. The exhibitions and the venues were often commented as "creative", "innovative" and "inspiring". The CMC Festival was reported in over 163 pieces of news articles from the local, mainland and overseas media.

### 3. *Faculty Exhibition - The Burning Edge: Making Space, Activating Form*

The faculty exhibition in the CMC Gallery which showcased the works of SCM faculty was part of the Run Run Shaw CMC Grand Opening Festival. Besides serving as a teaching tool, the exhibition also functioned as a meeting point and platform for faculty to explore and interact with each other's expertise.

### 4. *Gallery 360*

Gallery 360 is the world's first public exhibition space to feature a 360-degree 3D visualization environment. It is a unique showcase of CityU's technological and creative leadership, a context in which we engage with students and the community to present ground-breaking experiments that explore the creative potential of new technologies.

Built on AVIE (Advanced Visualization and Interaction Environment), Gallery 360 brought the immersive 3D projection experience to the general public through four exhibitions in the year 2011-12.

#### a) There Is Still Time..Brother

The opening exhibition showcased the Asian premiere of *There Is Still Time..Brother*, a panoramic interactive “war” film made by the world-famous Wooster Group theatre company from New York. Taking an intriguing new approach to cinema, an audience member controlled the projection window to reveal only a portion of the Wooster Group’s densely constructed 360° panoramic film.

b) Pure Land: Inside the Mogao Grottoes at Dunhuang

Spectacular interactive 3D animations and digital effects produced in a large 360-degree panoramic projection theatre dramatised for visitors figures and objects in these paintings, revealing their painterly beauty and underlying narratives. These early Tang murals are renowned for the unique illustration of Amitabha’s Western Pure Land and Bhaisajyaguru (Medicine Buddha)’s Eastern Paradise.

The technology is of great interest because Cave 220 in Dunhuang is not open to visitors, and will remain closed like most of the caves in the vicinity to ensure their continuing preservation. (Visitors can enter only about 30 of the nearly 500 caves in the area). The high fidelity images in the “Pure Land” exhibition provided a powerful new tool for education and cultural enrichment, a benchmark in museum technology and interpretation. The exhibition built upon the world-class digital preservation and imaging efforts undertaken by the Dunhuang Academy, which had provided the laser scans and the high-resolution photos of Cave 220 for this project.

c) La Dispersion Du Fils

Conceived with and for the AVIE system that offered an active immersion of the audience in a 360 panoramic stereographic video environment, *La Dispersion du Fils* extended the experiences conducted by Jean Michel Bruyère and LFKs around the Tragedy of Actaeon, a figure from the Greed mythology, since 1999.

d) Microcosm

Miao Xiaochun’s recent work transformed paintings from the canon of Western art history into photographic and animated computer models. *Microcosm* was based on Hieronymus Bosch’s 15th century masterpiece *The Garden of Earthly Delights*. It was an imaginative reinvention of its sumptuous landscape of sin and salvation, where new digital means and computer technologies had allowed Miao Xiaochun to conjure a contemporary visual vocabulary.

## Appendix 4

### Number of Patents Filed in the Year 2011-2012 (with breakdown by country and type following the Common Data Collection Format (CDCF))

Country	Type	Number
Countries not yet decided	F21	1
	H02	2
The Mainland of China	B82	1
	G01	1
	G06	3
	H01	2
	H05	1
Taiwan	H05	1
USA	A61	1
	C02	1
	E04	2
	F28	1
	G01	2
	G02	1
	G03	2
	G06	4
	H01	7
	H02	1
	H04	1
	H05	4
France	A61	1
	G01	1
Germany	A61	1
	G01	1
UK	A61	1
	G01	1
Hong Kong	G01	1
Other Countries in EU	A61	4
	G01	3
<b>Total</b>		<b>53</b>

## Appendix 5

**Number of Patents Granted in the Year 2011-2012 (with breakdown by country and type following the Common Data Collection Format (CDCF))**

Country	Type	Number
The Mainland of China	B01	1
	G01	1
	G06	1
	H01	4
	H04	1
USA	A61	1
	B32	1
	C23	1
	C25	1
	G05	1
	G06	5
	H01	9
	H02	1
	H03	4
France	G01	1
Germany	G01	1
UK	G01	1
Other Countries in EU	A61	3
	G01	3
<b>Total</b>		<b>41</b>

**Note: 3 patents not included above are subject to formal notification.**

## Appendix 6

### Economically Active Spin-off Companies

Type	Name	Business	Year of formation
Software / Solution Integration	Etin Group: Etin City Limited (BVI) & TeleEye Holdings Ltd	Design and develop advanced signal processing technologies	2000
Software / Solution Integration	MaCaPS International Ltd	Focus on development of smart-card systems	1996
Software / Solution Integration	Active & Independent Education Ltd	Design and develop educational software	2006
Bio-technology	*Vitargent (International) Biotechnology Limited	Specialise in biosensor technologies for providing testing services for food, pharmaceuticals, cosmetics and the aquatic environment	2010
Bio-technology	*Nelumbo Diagnostics Limited	Specialise in biomedical applications	2012
Mechanical Engineering/ Automation	DynaCity Technology (HK) Ltd	Specialise in the development of a range of advanced motion controller and driver products	2003
Film Industry	DCDC Ltd (BVI)	Offer services in all aspects of digital content development	2000
Mobile Technology	Shenzhen Goldradio Communication Co Ltd	Design and develop high-performance and low-cost micro-wave and RF products for wireless communication	2002
Mobile Technology	*Weecall Technology Ltd	Specialise in 3G mobile surveillance technology	2009
Innovation Technology Solutions	e.Energy Group: e.Energy Technology Ltd , e.Energy Lighting Ltd & e.Energy Double Tree Ltd	Design and develop environmental friendly energy saving devices	2000
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

Remark : \*No institutional ownership but using licensed IP only