



**The Hong Kong University of Science and Technology**

**Knowledge Transfer  
Annual Report 2010/11**

**to**

**University Grants Committee**

**29 July 2011**

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# 1. Summing up Year Two

## 1.1 Making it Happen

Building upon our fifteen-year strategic vision—The HKUST 2020 Strategic Plan: Building on Excellence—the University further developed the Five-Year Strategic Plan for 2011 to 2016 which reaffirms our vision and mission: to advance learning and knowledge through teaching and research, particularly at the postgraduate level, as well as to assist in the economic and social development of Hong Kong. HKUST has consistently been ranked among the top institutions in the world in our various disciplines, and has made notable academic and societal contributions in many areas. Among its many initiatives, the University has recently committed itself to:

- extending its intellectual strengths to assist government, industry and society, and strengthening its knowledge transfer efforts, in particular in the six new industries identified by the government, to further its impact regionally and globally;
- expanding its research base beyond Hong Kong by forming international and regional partnerships and alliances, and capitalizing on its presence and activities in the Mainland;
- broadening the research components in its undergraduate education and in particular, developing the Undergraduate Research Opportunities Program into a flagship program with increased student participation.

## 1.2 Year Two at a Glance

During the 2010/2011 reporting year, HKUST has made substantial progress in its knowledge transfer initiative along four key dimensions:

1. More new ideas: This is reflected in the number of proposals generated by our faculty members. During the reporting year, our faculty members submitted a record number of proposals to various agencies. The range of agencies to which our faculty members submitted funding proposals has also broadened considerably. Many new funding channels, not only in Hong Kong but also in mainland China and overseas, have been made available to our faculty members. The total amount of funding requested by our faculty members is also at a record high.

2. Higher quality innovations: Our success rates in major funding exercises speak for the quality of our innovations. For instance, HKUST enjoys the highest success rate among its peers in the annual General Research Fund (GRF) application exercise.

3. Greater international recognition: Another indicator of the quality of an innovation is whether or not the innovation leads to research awards, patents, copyrights or various other forms of intellectual property rights. These IP rights symbolize international recognition, delivering licensing opportunities. In this regard, HKUST's records in these areas have been consistently out-performing that of last year.

4. Broader commercial success: The number of startup companies, spinoffs, entrepreneurial companies, and products that originated from the University continues to grow at a steady pace. One of our startup companies, Perception Digital, in particular has made a successful initial public offering and its shares are now traded on the Hong Kong Stock Exchange.

New and improved knowledge discovery and harvesting mechanisms have been introduced to facilitate knowledge transfer at HKUST. The University also strengthened its innovation culture through various means.

- Improved knowledge discovery and harvesting mechanisms: To commemorate HKUST's 20<sup>th</sup> anniversary, the University kicked off the Special Research Fund Initiative (SRFI)—a special one-off injection of HK\$30 million—to identify new and emerging areas of excellence. Several new external funding opportunities have also been made available to faculty members. Advanced tools and IT systems are being developed to support innovation. In particular, the development of our knowledge harvesting system (PAS) and KT process management system (KTMS) is on schedule. Currently we are in the process of getting users involved in field tests which will begin in earnest in fall 2011.
- A stronger innovation culture: In order to adapt to external and internal changes and to accelerate stakeholder engagement, HKUST has made a conscious decision to expand the scope of its Entrepreneurship Center from one of purely faculty-based to include also undergraduate and postgraduate students, and eventually alumni and selected community members as well. Toward the same goal, our new open innovation collaboration platform (OICP) is currently being developed to match technology opportunities with our innovation capabilities. In addition, a Proof-of-Concept Fund (PCF) has also been established to steer mid-to-downstream research toward commercialization.

Overall, Year 2 has been an exciting year for HKUST in many ways. The support from UGC has been instrumental in its success. The University intends to continue in its uncompromising efforts to help drive Hong Kong towards a knowledge economy.

### 1.3 Environmental Scanning and Change

HKUST has undergone sweeping changes in its top management: Our current President arrived in fall 2009; the new Provost, the new Vice-President for Institutional Advancement (VPIA, a newly created post), and the new Vice-President for Research and Graduate Studies (VPRG, with Graduate Studies being a new function of the Office) reported to duty in fall 2010. Under the direction of the new VPRG, two new positions have been created—Associate Vice-President for Postgraduate Studies (AVP-PG), and Associate Vice-President for Research and Innovation (AVP-RI). The latter assists the VPRG in the strategic planning and realization of KT at HKUST.

## 2. Updates on KT Strategic Deployment

The four initiatives proposed in the KT Initial Statement—Knowledge Harvesting, Proof-of-Concept Fund, Open Innovation and KT Process Management, and Entrepreneurship Education—are being implemented according to schedule. The following sections detail the progress made during the 2010/11 period with reference to the rolling three-year action plan.

### 2.1 Knowledge Harvesting

To many, knowledge harvesting is a process that starts from the research publication stage. At HKUST, however, we believe that innovation and knowledge harvesting starts from discovering new and emerging areas of excellence, and finding new funding opportunities to support those areas.

#### **Discovering New and Emerging Areas of Excellence**

The new Special Research Fund Initiative (SFRI) was introduced to faculty members in November 2010 as a vehicle for identifying and driving new and emerging areas of excellence. It is a one-off seed funding of \$30 million allocated from the University's reserves to further strengthen the support for research. Proposals were solicited from faculty members to tap into this funding. The criteria for selection are innovation and excellence in the relevant field(s) of research; broad impact to the development of Hong Kong and the region; potential to enhance the strategic position of HKUST; demonstration of synergy and significant collaboration of investigators from within and across disciplines; track record of the investigators; sustainability and potential to attract long term external funding.

A total of 40 proposals, involving about 200 faculty members, were received. After a rigorous selection process, including a review by a prestigious panel of independent reviewers (which included Nobel Laureates and eminent international scholars), four clusters of research projects in major thematic areas were awarded funding: Energy, Life and Health Sciences, Sustainable Development for Hong Kong, and Frontier Research. Awardees will share the progress of their collaborations and emerging synergies with the HKUST community in research forums in the coming year.

#### **New Funding Opportunities**

The Office of Contract and Grant Administration (OCGA), as the entry point of the knowledge transfer infrastructure of the University, actively seeks funding opportunities to support the research efforts of our faculty members.

With more KT resources to enhance the research infrastructure, OCGA has made 64 additional call announcements than was possible prior to receiving this KT funding. Out of these, 28 involved international programs and 36 involved Mainland programs. Our faculty members were encouraged to submit proposals to some 31 programs funded by a total of 20 international agencies, including the European Commission's Seventh Framework Program (FP7), the Bill and Melinda Gates Foundation, and the US Geological Survey (see Appendix A for details). Those who were interested in applying for Mainland funding should also have found ample opportunities in the form of some 42 programs funded by a total of 13 Mainland agencies, including Ministry of Science and Technology (MOST)'s 863 and 973 programs, the National Natural Science Foundation of China (NSFC), and the National Development Reform Commission (NDRC) (see Appendix B for details).

The number of proposals submitted in response to these additional call announcements totaled 46 in the past year, of which 27 and 19 were aimed respectively at international and Mainland

programs. International funding agencies such as the AXA Research Fund, Google Inc., and Hewlett-Packard Company were among some of the most popular with our faculty members.

Mainland programs also attracted a fair bit of attention in the past year—our faculty submitted grant applications to Mainland government bodies such as the NSFC, Guangdong Provincial Department of Science and Technology, the Shenzhen Science, Industry, Trade and Information Technology Commission and Foshan Municipal Science and Technology Bureau, among others. Each submission involved at least one lead applicant—a tertiary institution, a research institute or an enterprise—from the Mainland. Some submissions involved more than two collaborating organizations.

In particular, our faculty members have successfully obtained funding from overseas agencies such as the Australian Research Council, the National Research Foundation of Korea, the National Engineering and Scientific Commission of Pakistan, and from Mainland agencies such as MOST, NSFC and the Shenzhen Science, Industry, Trade and Information Technology Commission.

Opening up new funding channels locally, regionally and internationally has given our faculty members fresh opportunities to not only spawn the seeds of creativity and innovation, but also engage in multi-institution and multi-disciplinary collaboration.

### **Publication Analysis System (PAS)**

To systematically identify the areas of excellence in research, a Publication Analysis System (PAS) is being developed jointly with the University Library to pro-actively seek out emerging star faculty members as well as leading experts to engage them in KT activities.

The PAS is being implemented within a three-year timeframe. The second year of development saw the completion of the bibliographic data repository which provides a comprehensive coverage of the scholarly publications of our faculty members. Bibliographic data have been extracted from various sources including Web of Science, Scopus, Cambridge Scientific Abstracts Databases, HKUST's own research outputs database which is managed by OCGA, and publicly available curriculum vitae of our faculty members. To widen our sources of data further, HKUST has expanded its subscription to Web of Science to include:

- Science Citation Index and Social Science Citation Index backfiles
- Conference Proceedings Citation Index – Science, Social Science & Humanities

In addition, a web-based application has been developed and put into service in April 2011 for our faculty members to input data on their latest publications. The data collected from these various sources will be formatted, de-duplicated and injected into the bibliographic data repository regularly (with minimal human intervention) to keep the database up-to-date. As at the submission date of this report, over 35000 pieces of bibliographic data have been collected, with links to the corresponding full text articles and bibliometric information if available.

The focus of the third and final year of development will be on the construction of the author data repository. The names of faculty members as they appear in the “author” field of the bibliographic data are likely to vary since the data are harvested from different sources. The author data repository will resolve this name ambiguity problem so that a complete publication list of each faculty member can be obtained from a single search. This feature is crucial since it will enable the PAS to seek out experts for engagement in KT activities more accurately. Besides publications, the PAS will also provide information about faculty members' research interests, projects and patents by accessing databases built through other knowledge harvesting efforts at the University.

## Other Knowledge Harvesting Efforts

As part of its efforts to facilitate the process of knowledge harvesting at the University, OCGA has developed what is known as the “KT Database”, which contains information on faculty members’ research interests, their proposals, projects, and manuscripts in preparation. This information is searchable by research area, department, researcher name and keyword, allowing for a quick and easy way to find out what each faculty member is currently working on or who is an expert in which area. This database has been made accessible to all KT staff since May 2010 and is updated continually. Eventually, the KT Database will be linked to the PAS, the OICP and the KTMS (two other computer applications in our KT deliverables) to form an integrated system.

## 2.2 The Proof-of-Concept Fund (PCF)

The Proof-of-Concept Fund (PCF), a new initiative headed by the Technology Transfer Center (TTC) and made possible by the KT funding, aims to enable pre-commercialization development of promising, cutting-edge technologies emerging from the University’s research on a timely basis. PCF intends to accelerate the commercialization of innovations by providing seed funding to novel, early stage research that normally would not be funded by conventional resources. PCF assists researchers to demonstrate the industrial potential of their inventions through prototype development, laboratory-scale demonstration, specialist testing, application validation, and field studies.

PCF was implemented for the first time at HKUST in 2009/10, with funding awarded to 5 projects in the areas of leading-edge optically rewritable e-paper, innovative 3D ultrasound imaging, high efficiency Peer-to-Peer (P2P) live and interactive streaming, thermal-induced smart materials, and real-time Polymerase Chain Reaction (PCR) device for point-of-care application. With the assistance of the PCF, HKUST is collaborating with a local non-profit organization to showcase the high efficiency P2P technology through a live field trial using the



*Glass with smart materials new chemical composition responds quickly to external heat and changes from transparent to translucent*

P2P network. A local video distribution company and a Chinese investment company have expressed interest in this technology. While the projects are scheduled to complete in the second half of 2011, TTC has been monitoring the progress of these projects and is in discussion with commercial partners regarding the smart



*Optically rewritable e-paper enables writing, storing and rewriting information using light sources*

materials and e-paper technologies for possible licensing arrangements, based on the prototypes being developed from these PCF projects.

The PCF program has definitely spurred mounting interests among faculty members in 2010/11. Eight project applications were shortlisted and reviewed by the PCF Review Committee. In view of the high quality of the applications, seven projects have been approved. The projects include state-of-the-art wastewater treatment technologies for domestic and industrial wastewater, a novel energy-efficient display technology, early detection of human brain cancers, a high performance wireless mesh router technology, a high-performance hydrogen fuel cell membrane and a cement strength monitoring system with novel sensing technology.

PCF helps to facilitate and foster the exchange of ideas between innovators at the University and industry. It provides a means to accelerate the technology transfer of the research outputs from the university to private sectors. It can also create a culture in the university community for continuous exploration of knowledge transfer to benefit the local economy and beyond. As the PCF program gains momentum within the University, HKUST expects many more PCF project applications in the coming years. The University will look for external partners to increase the overall funding support for PCF, as well as engage industrial participants in the early stages of technology commercialization.

### 2.3 Open Innovation Initiative

Open innovation is a practice by which organizations can facilitate the inflow and outflow of knowledge to accelerate innovation and to sustain their knowledge enrichment and global competitiveness. This practice, gradually adopted among visionary industries and regional SME corporations, has resulted in a growing demand for open exchange and a free flow of knowledge among universities and private sectors.



With the KT funding and support from industrial partners, HKUST has been studying and practicing open innovation to better serve the social and economical needs and to evangelize a culture of open innovation in this region. In this connection, OICP has been created with the following features:

- It enables university, corporate, industrial, and all other subscribers to stay abreast of the latest insights, technology breakthroughs, research activities, facilities, news and events, with the aim of lowering the barrier of access to the University's knowledge base.
- It hosts and markets featured technologies, patents, software programs, materials, designs, copyrighted works created at HKUST, and makes them searchable and easily accessible. It will be extended to cover technologies and IPs from other universities and public and private organizations at a later stage.
- It acts as a marketplace for knowledge-exchange and allows industry's technology needs ("Challenge") to be matched with potential solutions ("Solution") through the domain-expert groups and the awarding programs available on this very platform.

Phase I of OICP development has been completed. The platform will be made publicly accessible through <http://oicp.ttc.ust.hk> following an ongoing legal and operational review. During the reporting period, 525 patents, 120 featured technologies, 48 pieces of active university software (with source code), 325 integrated circuit designs, 20 international open innovation programs, as well as the link to the University's publications, research facilities, news and events have been identified and built into OICP.

The platform will be rolled out in phases to the HKUST, local and regional industrial communities. With an aim to providing an open exchange platform that facilitates the formation of R&D ecosystems, we will start to offer subscription to university researchers, public and private organizations, continue collecting knowledge assets at HKUST, and solicit interest from selected partner institutions for additional knowledge assets in Phase 2 of OICP development.

HKUST has been in close collaboration with both local and multinational corporations to obtain their practical feedback on the OICP and other contributions in the form of resources, direction and actual participation from their teams. To name but a few examples, TTC explored with Siemens

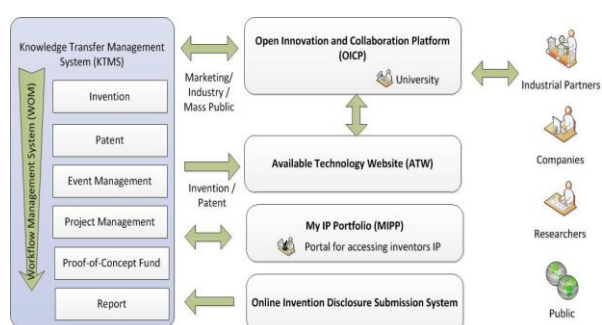


Technology-to-Business (TTB) Center on cultivating best practices for open innovation in Hong Kong with their sponsorship; with Freescale on cultivating innovation and talent in embedded systems; with Eli Lilly on the feasibility of leveraging their open drug discovery platform, known as PD2, for new drug screening; with Intellectual Ventures on managing creative knowledge in the university context; with Infineon on cultivating innovative designs in power and SSL electronics via talent programs and reference systems; with Coway on forming research collaborations; and with Dow Chemical on openly exploring new material development.

The ultimate goal is to pilot Hong Kong toward becoming a strategic hub for knowledge exchange activities, talents, and high quality research so as to achieve critical mass for knowledge ecosystem in the long run.

## 2.4 KT Process Management

The Knowledge Transfer Management System (KTMS) is a comprehensive in-house knowledge transfer activities management system designed to manage and automate the full range of major workflow and business processes throughout the entire life cycle of all university-owned IPs. It covers invention review, patent filing and prosecution, project management, records of commercial interests and companies (including market intelligence), task management and tracking, and the administration of the Proof-of-Concept Fund. It also enables auto-generation of documents, emails and reports.



The KTMS has been split into two phases for better prioritization of the deliverables. Phase 1 includes the Invention, Patent, Project Management, Proof-of-Concept Fund, Event Management and Report modules, while Phase 2 includes the Online Invention Disclosure Submission System, My IP Portfolio (MIPP) which allows inventors to report, monitor and keep track of the status of their IP portfolios, and the Available Technology Website (ATW) which retrieves up-to-date technology and marketing information automatically from the KTMS and disseminates this information among HKUST members, targeted stakeholders and the public via the OICP.

It will be possible for the operation and management of KT activities to be carried out in a significantly more efficient and controlled manner. In line with the KTMS development, the TTC website is also undergoing a revamp. Its design and layout is now synchronized with those of OICP. Its content and presentation have been refined and updated with MIPP and ATW added to its pages.

## 2.5 Entrepreneurship

The HKUST Entrepreneurship Center (EC) has been established to play an important and developing role in KT. To support aspiring entrepreneurs, EC regularly organizes educational events and networking activities. It also assists startups in growing through its business incubation program.

### Entrepreneurship Education

During this reporting period, EC continued to work with internal and external experts to promote the entrepreneurial culture and spirit within the University. It has been communicating closely with the

four Schools (Science, Engineering, Business and Management, Humanities and Social Science) regarding the development of entrepreneurship education and enhancement of existing courses.

EC is committed to assisting organizers/faculty members in the implementation of entrepreneurship courses. During this period, it coordinated with the Global Business Program to provide students with opportunities to work with HKUST Entrepreneurship Program startups for their final-year projects. It also arranged a company study for the course “The Entrepreneurial Mindset: Psychology of Innovation”.

#### New Seminar Series – BYOB

Modeled after the Oxford University’s “Building a Business” program, the “Be Your Own Boss – BYOB” seminar series was established. At BYOB, seasoned industrialists were invited to speak on the practical aspects of entrepreneurship, such as an ideal ‘green’ business plan and fund raising from investors. Each seminar attracted about 150 participants from among students of all four Schools, as well as alumni and staff. After presentation, the invited speakers stayed for dinner with interested participants for further exchange. Six seminars were held in 2010/11, and a list of the seminars can be found in Appendix C.

#### HKUST Entrepreneurship Day

The first HKUST Entrepreneurship Day was held on 30 October 2010, where nine successful entrepreneurs were invited to share their startup experience with about 300 participants, half of whom were HKUST alumni. In the organization of this event, EC also received support from the MBA Office, MBA Entrepreneurship Club, HKSTPC Incu-Tech/ Incu-Bio Programs, Hong Kong Business Angel Network (HKBAN) and Hong Kong Venture Capital and Private Equity Association (HKVCA). This significantly enhanced the entrepreneurial spirit at HKUST.

### **Entrepreneurship Network**

The Entrepreneurship Network provides a platform for HKUST students at all levels, alumni, faculty members, companies, and industry professionals to connect and exchange ideas. Over 300 members from the university community joined the Network during July 2010 - June 2011.

#### The HKUST 2011 Entrepreneurship Competition

The HKUST 2011 Entrepreneurship Competition was one of the highlights of this year’s entrepreneurship activities. It was open to students of all levels, post-docs, alumni, researchers, faculty members, and staff from all departments. The purpose of the Competition was to encourage the formation of business startups, with attractive awards totaling HK\$1M (cash and in-kind contributions).

The Entrepreneurship Competition was jointly organized by the School of Business and Management, School of Engineering, and EC of the Office of the Vice-President for Research and Graduate Studies. The Competition received 124 applications. On 17 May 2011, 11 finalist teams competed against each other in trade shows, elevator pitches, and rounds of presentations in front of an international panel of judges. The Competition was fierce, and the results are as follows:

#### Champion (Cash Prize of HKD300K)

*Wah Kin* Utilization of Advanced Hair Drug Testing to Mitigate the Increasing Trend of Drug Abuse

#### 1st Runner-up (Cash Prize of HKD150K)

*LEDoS* Commercialization of the Breakthrough Display Technology Based on Proprietary Integrated LED Micro-projection Devices

### 3. Performance Measurement – Key Performance Indicators

The progress and effectiveness of the three-year action plan is monitored through the Key Performance Indicators (KPIs) and targets set forth. This section provides a summary of the results achieved in this reporting year. The set of KPIs is presented in Appendix D.

#### 3.1 Collaborative Research

HKUST has received a total of HK\$92.8M worth of funding from 57 active collaborative research projects during the reporting year. These figures are significantly higher than those given in the Initial Statement and in the previous KT Annual Report. The number of projects conducted in collaboration with Chinese research institutions or public bodies with or without industry support has also seen an encouraging increase from 16 in the previous year to 23 this year, with the amount of funding arising from these collaborations surging to HK\$61.8M, up from HK\$40.0M in the previous year.

#### 3.2 IP Management

HKUST monitors on a continuous basis inventions, discoveries, copyrights, and technical information arising from faculty research, and provides IP protection for these discoveries and technologies through a carefully managed process of patent review and application. In addition to patents, other intellectual properties in the form of software and integrated circuit designs have been added to our IP portfolio. The key performance indicators include:

- **100** new invention disclosures received
- **150** new patent applications filed in selected countries
- **46** new patents granted
- **227** cumulative active granted patents
- **363** cumulative active pending patent applications

The number of invention disclosures received and patent applications filed exceeded the projected KPIs indicating an encouraging trend of HKUST inventors reporting new inventions and the effectiveness of internal efforts to engage more research groups in the KT activities. The number of US provisional filing surpassed the projected figures, indicating also an increasing trend of HKUST leveraging on US provisional patent applications as a cost- and time-effective strategy to secure the preferred filing date. The increased number of Chinese applications reflects the growing importance of the China market. Electronics, Computer Engineering and Information Technology, Biotechnology, Chemistry and Material Science accounted for 79% of the patent applications filed in 2010/11. These also happen to be the HKUST Strategic Research Areas and are recognized locally and internationally as high impact research areas.

### 3.3 Industrial Collaboration and Commercialization

HKUST continues its tradition to seek industrial collaborations and opportunities to transfer the research outputs to the market. The commitment to and effectiveness of knowledge transfer and the commercialization of the HKUST research results can be seen in the following activities:

- **38** Non-Disclosure Agreements (NDAs) signed
- **45** Material Transfer Agreements (MTAs) signed
- **HK\$47.8M** worth of funding received from **142** active contract research projects
- **HK\$20.1M** worth of funding received from **70** active consultancy projects (including projects awarded by the HKSAR Government)
- **HK\$5.6M** worth of funding received from **387** active equipment and facilities service projects
- **113** new contract research projects signed with a combined contract value of **HK\$70.7M**
- **39** active licensing agreements
- **HK\$2.4M** in income received from **11** licensing agreements
- **9** new licensing agreements signed with a total upfront licensing value of **HK\$5.1M**

This set of key performance indicators demonstrates the level of participation of the HKUST research community in KT activities; it also shows that the value of the University's brain power, expertise and research capability is recognized in the market. The funding coming from these projects contributes significantly to the pool of resources available to the HKUST research community.

### 3.4 Entrepreneurship Program

The Entrepreneurship Program exists to provide a platform for entrepreneurial practice. It supports the commercialization efforts of faculty members, students and alumni with an on-campus business incubation facility. During 2010/11, four startup companies successfully joined the Program. This leads to a total of 31 economically active companies in the Program, including 24 spin-off and 7 startup companies, as of June 2011.

### 3.5 KT Promotion and Technology Marketing

HKUST has maintained a strong culture of knowledge transfer, as part of its mission to assist local social and economic development. Various activities have been organized on or off campus to promote and practise knowledge transfer, to enhance knowledge transfer capabilities, as well as to extend the knowledge transfer network and partnerships. Examples include the following:

- **9** open-house activities organized on campus
- **3** major exhibitions in Hong Kong and the Mainland participated
- **10** sharing sessions with local or international institutions on KT
- **2** seminars on IP organized for the HKUST research community
- **59** delegations and visits, and **64** enquires about collaboration opportunities received by TTC
- **45** relevant conference, seminars and workshops attended by KT staff



China Hi-Tech Fair (CHTF) 2010 in Shenzhen

## Appendix A – Summary of Call Announcements Issued by OCGA (International Programs)

No.	Funding Agency	Country	Program	Issue Date
1	Alexander von Humboldt Foundation	Germany	Sofja Kovalevskaja Award 2012	8-Apr-2011
2	American Association for Cancer Research	USA	- Landon Foundation-AACR INNOVATOR Award for International Collaboration - Landon Foundation-AACR INNOVATOR Award for Cancer Prevention Research - AACR Basic Cancer Research Fellowships - AACR Gertrude B. Elion Cancer Research Award	16-Nov-2010
3	Association for International Cancer Research	UK	- Project Grant (October 2010 Round) - Project Grant (April 2011 Round)	3-Sep-2010 10-Feb-2011
4	AXA Research Fund	France	- Post-Doctoral Fellowships - PhD Fellowships - Projects	16-Dec-2010 11-Jan-2011 31-Jan-2011
5	Bayer HealthCare Pharmaceuticals (formerly known as Bayer Schering Pharma AG)	USA	Grants 4 Targets (G4T)	6-Aug-2010 1-Jun-2011
6	Bill & Melinda Gates Foundation	USA	- Grand Challenges Explorations (GCE) Round 6 - Grand Challenges Explorations (GCE) Round 7 - Biomarkers for the Diagnosis of Tuberculosis	20-Aug-2010 17-Mar-2011 11-Feb-2011
7	Environmental Research and Education Foundation	USA	- Solid Waste Research (Solicited Proposals) - Unsolicited Proposals	23-Jul-2010 23-May-2011
8	European Commission	EU	FP7 (2011 Work Programmes)	30-Jul-2010
9	Google Inc.	USA	Faculty Research Awards	2-Mar-2011
10	Gordon and Betty Moore Foundation	USA	Marine Microbiology and Marine Microbial Ecology Research	6-Oct-2010
11	Hewlett Packard Company	USA	HP Labs Innovation Research Program (IRP) 2011	12-Jan-2011
12	Human Frontier Science Program	France	Research Grants: - Young Investigators' Grants - Program Grants	28-Dec-2010
13	Institute for New Economic Thinking	USA	Research Grant	9-Feb-2011
14	James S. McDonnell Foundation	USA	- Research Awards - Collaborative Activity Awards - Postdoctoral Fellowship	20-Jan-2011 12-May-2011
15	John Templeton Foundation	USA	Grant	13-Aug-2010
16	Society for Human Resource Management Foundation	USA	SHRM Foundation Research Grants	2-Jun-2011
17	Society in Science	Switzerland	The Branco Weiss Fellowship	1-Dec-2010
18	The Charles A. and Anne Morrow Lindbergh Foundation	USA	2012 Lindbergh Grant	15-Feb-2011
19	The Royal Society	UK	International Exchanges Scheme	31-May-2011
20	U.S. Geological Survey	USA	2012 Earthquake Hazards Reduction Program	30-Mar-2011

## Appendix B – Summary of Call Announcements Issued by OCGA (China Programs)

No.	Funding Agency	Program	Issue Date
1	Ministry of Industry and Information Technology (MIIT) & Ministry of Finance (MOF) 中華人民共和國 工業和信息化部、財政部	2011 年物聯網發展專項資金項目	26-May-2011
2	Ministry of Environmental Protection (MEP) & Ministry of Housing and Urban-Rural Development (MOHURD) 中華人民共和國 環境保護部、住房和城鄉建設部	國家水體污染控制與治理科技重大專項(四個項目)	8-Jun-2011
3	Ministry of Science and Technology (MOST) 中華人民共和國 科學技術部	<ul style="list-style-type: none"> <li>- 國家科技支撐計劃（包括 28 個重點項目）</li> <li>- 國家高技術研究發展計劃（863 計劃） （新材料、先進能源、現代交通、先進製造、信息、地球觀測與導航 6 個技術領域）</li> <li>- 國家高技術研究發展計劃（863 計劃） （信息技術領域「三網融合演進技術與系統研究」重大項目）</li> <li>- 國家高技術研究發展計劃（863 計劃） （資源環境技術領域“大宗工業固廢綜合處理與資源化關鍵技術”重大項目）</li> <li>- 國家高技術研究發展計劃（863 計劃） （資源環境技術領域的兩個重大項目）</li> <li>- 2011 年度國家級星火計劃</li> <li>- 2011 年度國家軟科學研究計劃</li> <li>- 國家重點基礎研究發展計劃（973 計劃）</li> <li>- 國家重大科學研究計劃 2011 年度項目</li> <li>- 科技重大專項「核心電子器件、高端通用芯片及基礎軟件產品」</li> <li>- 科技重大專項「高檔數控機床與基礎製造裝備」</li> <li>- 科技重大專項「新一代寬帶無線通信網」</li> </ul>	<p>29-Sep-2010 22-Oct-2010</p> <p>9-Nov-2010</p> <p>23-Nov-2010</p> <p>23-Nov-2010</p> <p>27-Jan-2011 2-Feb-2011 10-Feb-2011 8-Mar-2011 4-May-2011</p> <p>4-May-2011</p> <p>6-May-2011</p>
4	National Natural Science Foundation of China (NSFC) 國家自然科學基金委員會	<ul style="list-style-type: none"> <li>- 管理科學部主任基金 2010 年第 2 期應急研究項目《人民幣國際化道路研究》</li> <li>- 重大研究計劃「近空間飛行器的關鍵基礎科學問題」</li> <li>- 重大研究計劃「先進核裂變能的燃料增殖與嬗變」</li> <li>- 重大研究計劃「可控自組裝體系及其功能化」</li> <li>- 重大研究計劃「南海深海過程演變」</li> </ul>	<p>23-Jul-2010</p> <p>31-Aug-2010</p> <p>31-Aug-2010</p>

No.	Funding Agency	Program	Issue Date
		<ul style="list-style-type: none"> <li>- 重大研究計劃「非可控性炎症惡性轉化的調控網絡及其分子機制」</li> <li>- 管理科學部主任基金 2010 年第 3 期應急研究項目《中國地方政府融資平台研究》</li> <li>- 2011 年度國家自然科學基金項目</li> <li>- 管理科學部主任基金 2011 年第 1 期應急研究項目《國內通貨膨脹走勢與應對策略研究》</li> <li>- 重大研究計劃「視聽覺信息的認知計算」</li> <li>- 重大研究計劃「可信軟件基礎研究」</li> <li>- 管理科學部主任基金 2011 年第 2 期應急研究項目《中國人口發展趨勢、經濟社會影響與應對策略研究》</li> </ul>	<p>31-Aug-2010 31-Aug-2010 31-Aug-2010</p> <p>7-Sep-2010</p> <p>6-Jan-2011 28-Jan-2011</p> <p>18-Mar-2011 31-May-2011 1-Jun-2011</p>
5	National Development and Reform Commission (NDRC) 國家發展和改革委員會	國家發展改革委地區經濟司 2011 年研究課題	1-Jun-2011
6	National Planning Office of Philosophy and Social Science (NPOPSS) 全國哲學社會科學規劃辦公室	2011 年度國家社會科學基金項目	22-Dec-2010
7	National Office for Education Sciences Planning (NOESP) 全國教育科學規劃領導小組辦公室	全國教育科學「十二五」規劃 2011 年度課題	23-Feb-2011
8	Jiangsu Science and Technology Department (JSTD) 江蘇省科學技術廳	2011 年度江蘇省國際科技合作計劃項目	7-Mar-2011
9	Guangdong Provincial Department of Science and Technology (GDST) 廣東省科學技術廳	<ul style="list-style-type: none"> <li>- 2010 年省部產學研合作專項資金第二批項目</li> <li>- 徵集 2011 年產學研結合重大科技項目建議</li> <li>- 廣東企業科技特派員計劃</li> <li>- 2011 年廣東省產學研合作專項</li> <li>- 2011 年度廣東省科技計劃</li> </ul>	<p>9-Sep-2010 10-Sep-2010 10-Sep-2010 21-Dec-2010 9-Feb-2011</p>
10	Guangdong Natural Science Foundation (GDNFSF) 廣東省自然科學基金委員會	廣東省自然科學基金項目	14-Mar-2011
11	Science and Information Technology Bureau of Guangzhou 廣州市科技和信息化局	2011 年廣州市第二批科技計劃項目	27-May-2011
12	Shenzhen Science, Industry, Trade and Information Technology Commission (SZSITIC) 深圳市科技工貿和信息化委員會	<ul style="list-style-type: none"> <li>- 2011 年度深圳市財政專項資金</li> <li>- 2011 年度深圳市財政專項資金（國際科技合作項目）</li> <li>- 2011 年度深圳市財政專項資金（產學研合作項目）</li> </ul>	<p>12-Apr-2011 17-May-2011 31-May-2011</p>
13	Zhuhai Science, Industry, Trade and Information Technology Commission 珠海市科技工貿和信息化局	2011 年珠海市科學技術研究與開發專項資金項目（年度項目）	16-Feb-2011

## Appendix C – List of BYOB Seminars

<b>Date</b>	<b>Topics</b>	<b>Speakers</b>
<b>8 Feb 2011</b>	The ideal "green" business plan: A venture capitalist's perspective	Prof. Po Chi Wu Former Silicon Valley Venture Capitalist
<b>15 Feb 2011</b>	Getting financing from investors	Prof. Wilton Chau Founding Managing Partner, QLeap Asia
<b>8 Mar 2011</b>	Setting up a company in China – An introduction to law and practice (in Chinese)	Mr. Hayley Zen Chief Operating Officer, Road King Infrastructure
<b>22 Mar 2011</b>	IP strategy for startups	Mr. Hans Lee Partner, ONC Lawyers
<b>29 Mar 2011</b>	Launching your own venture	Dr. Dominic Chan Founder and Partner, Dark Horse Investment
<b>26 Apr 2011</b>	Entrepreneurial marketing	Prof. Yuk-Lam Lo Senior Director, QuestMark Asia



## Appendix D – Key Performance Indicators at a Glance

Performance Indicators for Present Activities and Triennium Projections (extracted from Table 9.1 of KT Initial Statement)

Performance Indicator	2009/10 (achieved)	2010/11 (revised projection in previous Annual Report)	2010/11 (as at 30 June 2011)	2011/12 (in proposal)	2011/12 (revised projection)
<b>Number of patents filed in the year</b>	148 (171) <sup>Note 1</sup>	132	140 <sup>Note 2</sup>	140	130
<b>Number of patents granted in the year</b>	33 (30) <sup>Note 3</sup>	38	50 <sup>Note 4</sup>	40	40
<b>Expenditure involved in generating intellectual property rights</b> <sup>Note 5</sup>	\$3.7m	\$3.5m	\$4.1m	\$4.5m	\$3.5m
<b>Number of licenses granted</b>	34	35	34	40	40
1.Exclusive license	23	15	24	17	25
2.Non-exclusive license	10	13	7	15	10
3.Option	1	7	3	8	5
<b>Income (on cash basis) generated from intellectual property rights</b>	\$9.6m	\$5.5m	\$2.4m	\$5.5m	\$5.5m

Note 1 CDCF Table 65: The number of patents filed is 148 and the number of inventions involved is 80 in the 2009/10 period. The former had been revised to 171 and the latter to 82 after the KT report for the previous year was submitted.

Note 2 CDCF Table 65: The number of patents filed is 140 and the number of inventions involved is 99 in the 2010/11 period. The first number is different from the “Number of new patent applications filed by application type” (HKUST-proposed performance indicator under Item 3.2 on Page 9) of 150 which is counted based on the actual number of patents filed according to the official filing date of the application with the respective patent office.

Note 3 CDCF Table 66: The number of patents granted is 33 and the number of inventions involved is 26 in the 2009/10 period. The former had been revised to 30 and the latter to 23 after the KT Report for the previous year was submitted.

Note 4 CDCF Table 66: The number of patents granted is 50 and the number of inventions involved is 31 in the 2010/11 period. The first number is different from the “Number of new patent granted” (HKUST-proposed performance indicator under Item 3.2 on Page 9) of 46 which is counted based on the actual number of patents granted according to the official issue date of the patent with the respective patent office.

Note 5 The actual budget allocated for 2009/10 by the University is \$3m. The shortfall of \$0.7m in 2009/10 was offset by revenue generated through commercialization of IPs in the previous years. The actual budget allocated for 2010/11 and 2011/12 by the University is 3.5m. The shortfall of 0.6m in 2010/11 was offset by revenue generated through commercialization of IPs in the previous years.

Performance Indicator	2009/10 (achieved)		2010/11 (revised projection in previous Annual Report)		2010/11 (as at 30 June 2011)		2011/12 (in proposal)		2011/12 (revised projection)	
	<b>Number of collaborative researches, and income thereby generated</b>	50	\$94.3m	40	\$72m	57	\$92.8m	42	\$74m	As per original projection
<sup>Note 6</sup>	Local (Hong Kong)	33	\$62.5m		34	\$56.1m				
	China	16	\$40.0m		23	\$61.8m				
	International (excluding China)	20	\$36.3m		27	\$25.0m				
<b>Number of contract researches (other than those included in “collaborative researches” above), and income thereby generated</b>	172	\$60.5m	170	\$50m	125 <sup>Note 7</sup>	\$47.8m	170	\$50m	130	\$50m
	Local (Hong Kong)	116	\$22.6m		69	\$15.6m				
	China	28	\$18m		34	\$16.3m				
	International (excluding China)	28	\$19.9m		22	\$15.9m				
<b>Number of consultancies, and income thereby generated</b>	62	\$12.5m	45	\$9.5m	70	\$20.1m	55	\$11m	As per original projection	
<b>Number of pro bono research or consultancies</b>	NIL				NIL					
<b>Number of equipment and facilities service agreements, and income thereby generated</b>	377	\$5.8m	360	\$5.4m	387	\$5.6m	370	\$5.6m	As per original projection	
<b>Number of jobs created through</b>	11		11		11		11		11	

<sup>Note 6</sup> This KPI is further broken down into three sub-categories, namely, local, China and international. These figures do not add up as some projects may involve a combination of local, Mainland, and/or overseas CIs.

<sup>Note 7</sup> The number of contract researches is different from the “Number of contract research projects” (under Item 3.3 on Page 10) of 142 which represents the number of active contract research projects managed in this reporting year.

Performance Indicator	2009/10 (achieved)	2010/11 (revised projection in previous Annual Report)	2010/11 (as at 30 June 2011)	2011/12 (in proposal)	2011/12 (revised projection)
<b>the new knowledge transfer funding</b>					
<b>Number of student contact hours in short courses or e-learning programs specially tailored to meet business or CPD needs</b>	68,440 hrs	71,800 hrs	58,204 hrs	70,200 hrs	62,000 hrs
Customized courses <sup>Note 7</sup>	64,168		51130		
Open courses	4,272		7074		
<b>Number of economically active spin-off or startup companies</b>	28	31	31	No projections in proposal	
Companies with institutional ownership and using IP from HKUST	7	8	8	No projections in proposal	
Companies with institutional ownership but not using IP from HKUST	21	23	23		

Note 7 Courses customized for specific companies