What Has Knowledge Transfer To Do With You?

As a publicly-funded institution, CityU is charged with the mission to foster social and economic development through the generation and application of knowledge. A university that delivers quality education and research will need knowledge transfer, commonly referred to as “the third pillar of a university”, to complete its role as a socially engaged university. The establishment of the Knowledge Transfer Office in January 2009 underlines the University’s determination to implement knowledge transfer. But what exactly is knowledge transfer and why does it deserve our attention? This interview with Mr H Y Wong, Associate Vice-President of Knowledge Transfer, will answer your questions about knowledge transfer.

1. What is knowledge transfer and is it the same as technology transfer?
Knowledge transfer, as defined by the University Grants Committee (UGC), is “the systems and processes by which knowledge, including technology, know-how, expertise and skills are transferred between higher education institutions and society, leading to innovative, profitable, or economic or social improvements”.

The expression “knowledge transfer” enjoys popular usage in the UK, and its scope is broader than that of technology transfer. By technology transfer, we refer to the exchange of technologies, know-how, and manufacturing procedures etc. Knowledge transfer however has a wider extension, covering as well the exchange of information not related to science and technology. Studies on social problems and corporate governance, which lead to greater awareness and effective policies, are good examples of knowledge transfer.

I would also like to note that knowledge transfer is a two-way process: both the universities and the public can be the producers or beneficiaries of knowledge.

2. Why should universities engage in knowledge transfer?
Most well-established universities not only pride themselves on the generation of knowledge, but also the dissemination of knowledge that leads to better quality of life. Knowledge generated by CityU being put to good use is a recognition of the University’s achievements, and will help build up the goodwill of the University.

While most universities in Hong Kong have dedicated a considerable amount of resources to the

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creation and application of novel ideas, the UGC would like to see knowledge transfer activities being brought to a sharper focus. Local universities have incorporated knowledge transfer strategies into their plans, showing that knowledge transfer is regarded as an integral component of a university’s business, rather than a sideline.

For example, knowledge transfer constitutes a substantial part of the Academic Development Proposal submitted by CityU to the UGC in January 2008. More recently in June 2009, an Initial Statement was tendered to the UGC to request funding for the University’s knowledge transfer activities from 2009 to 2012.

3. What activities are considered knowledge transfer at CityU?
CityU strives to develop a key knowledge transfer centre that makes meaningful contributions to Hong Kong. Our knowledge transfer activities include the following: incubation of startup companies, consultancy and professional services, technology licensing, contract research, and work-based student training programmes. The University also conducts non-technology related knowledge transfer activities. Such activities include forums on social and economic issues, public policy research for policymakers, and training programmes for professionals such as teachers, accountants, and legal experts. A good example is the four-week training programme for Chinese judges organized by the School of Law from May to June 2009. Another example is the CEO Forum run by the College of Business, which aims to broaden students’ horizon and sharpen their business acumen.

4. What will CityU do to promote knowledge transfer among CityU staff and students?
The KTO plans to promote knowledge transfer through three channels: capacity building, research and commercialization, and marketing.

In terms of capacity building, we’ll increase knowledge transfer personnel by hiring professionals who have extensive experience in industry and commercialization. The KTO has recently recruited an Associate Director and a Senior Technology Transfer Officer. With more resources, we can step up the marketing of university technologies and exchanges of knowledge between academia and the community. To help staff make the most of CityU’s knowledge transfer initiatives, training and staff development programmes will be organized.

On the front of research and commercialization, more funding support will be made available for patent application and proof of concept. We also envisage consultancy and professional services that produce more value and impact. Good news is in store for entrepreneurial students: undergraduate and postgraduate students can start their own companies by joining the business incubation programme, which provides them with financial, logistic and marketing support.

CUBIC: Linking University and Industry

Perhaps the most famous cube in the world is the Rubik’s Cube; but as a CityU stakeholder, you may be interested to know that “the cube” is a byword of academia-industrial collaboration at CityU.

CUBIC, short for the CityU Business and Industrial Club, is managed by the Knowledge Transfer Office. Set up in 1993, the Club aims to forge ties between the University and the private sector, and to this end, seminars, forums and informal gatherings are regularly held.

Of all CUBIC activities, the best known ones are the Emerging Technologies Forum and the Technology Transfer Forum. These forums provide channels for university staff and industrial/business executives to share market trends, latest technological advances, and best practices in manufacturing. In the Emerging Technologies Forum, leaders from industry and business are invited to speak on cutting-edge technologies and manufacturing procedures practiced by industry. At the Technology Transfer Forum, CityU staff and researchers impart to industrial players their research results suitable for commercialization.

CUBIC is under the auspices of its patrons who are at the same time CityU’s long-standing supporters and veteran industrialists. They are Mr. George Chung, JP, Chairman of Standard Telecommunications Ltd, Mr Peter Ho, Managing Director of TechWorld Industries Ltd, and Mr Raymond Leung, Chairman and CEO of the TDK China Co Ltd. Mr Peter Ho and Mr Raymond Leung are both donors of CityU.

The Club has a three-tier structure that ensures effective governance (see Fig 1).

Dr Frank Wan (left), with Dr Cheng Shuk-han of BCH and Dr Eric Chan of KTO. Dr Cheng is also Executive Director of CUBIC.
At the helm of the six-member Executive Committee is Prof. Roderick Wong, Vice-President (Research and Technology). Dr. Cheng Shuk-han of the Biology and Chemistry Department holds the office of Executive Director. The other four members are Mr. H.Y. Wong, Associate Vice-President (Knowledge Transfer), Mr. Tony Ma, Mr. Bernard Zau, Managing Director of Micro Electronics Ltd., and Mr. K.T. Ng of the Electronic Engineering Department.

The centerpiece of CUBIC is the special interest groups that represent four industries, namely consumer electronics, IT and telecom, life science, and manufacturing. The Chairmen of the four groups are respectively Mr. Peter Ho (Managing Director, TechWorld Industries Ltd.), Mr. Henry Chan (President, ParaDM Co Ltd.), Dr. Frank Wan (Senior Partner, Messrs Pang, Wan & Choi Solicitors), and Mr. Francis Li (Executive Director, Group Sense Mobile Tech Ltd.). Please see the box on the right for the bios of the four Chairmen.

CUBIC members can meet fellow members and CityU staff in regular tea gatherings. The 300-strong membership is a diverse group of professionals from the electronics, manufacturing, IT and telecom, environmental and health services, and public bodies such as the Hong Kong Applied Science and Technology Research Institute and the Hong Kong Science and Technology Parks (see Fig 2). CUBIC members are entitled to university services at preferential rates and business matching services, as well as free access to CityU technology transfer news.

With the help of the CityU Shenzhen Research Institute, CUBIC plans to host more forums and seminars across the border, where a vibrant industrial and manufacturing base is thriving.

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**Bios of Special Interest Groups Chairmen**

**Mr. Henry Chan, Chairman of the IT and Telecom Group**

Mr. Chan is President of the ParaDM Co Ltd. and Director of the Global Technology Integrator Ltd. (GTI). Prior to working with ParaDM and GTI, Mr. Chan held senior positions at Asian Pacific Technology, Centurion Technologies, Cadence, PowerSoft, Stratus, Oracle, Prime/ComputerVision and Wang. Mr. Chan is appointed Adjunct Assistant Professor by the Department of Information Systems, Business Statistics and Operations Management, the Hong Kong University of Science and Technology. He is also an Independent Non-executive Director of the Armitage Technologies Holding Ltd. Regarding community services, Mr. Chan has served as Vice President of Hong Kong Information Technology Joint Council, Council Member of the Hong Kong and Mainland Software Industry Cooperation Association, Council Member of the Hong Kong Association for the Advancement of Science and Technology, and Member of the IC Designs Domain Advisory Committee of the Hong Kong Applied Science and Technology Research Institute.

![Mr. Henry Chan](image)

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**Mr. Peter Ho Ka-nam, Chairman of the Consumer Electronics Group**

Mr. Ho, currently Managing Director of the Techworld Industries Limited, is also an Honorary Fellow of the University, as well as Director of the CityU Research Ltd. and Patron of CUBIC. A lecture theatre in CityU is named “Peter Ho Lecture Theatre” to recognize his staunch support for the University. A successful entrepreneur and industrial leader, Mr. Ho has made considerable contributions towards the improvement of manufacturing processes and the advocacy of technological education. He made several generous donations to the University to support the Industrial Attachment Scheme, student scholarships and the development of the Chow Yei Ching School of Graduate Studies. He is also a CityU alumnus, graduated in 2007 with an MSc in Engineering Management.

![Mr. Peter Ho](image)

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**Dr. Frank Wan, Chairman of the Life Science Group**

Dr. Wan is at present Senior Partner of the Pang, Wan & Choi Solicitors. Before launching his legal career, Dr. Wan had received intensive training in cancer research in the University of Toronto under the supervision of Professor Tak Mak and Professor Arthur Axellad. Leveraging on his expertise in the biomedical and legal fields, Dr. Wan has made significant contributions towards the transfer and application of medical and biotechnology research. He has served on the advisory panel of Life Science and Biotechnology of CityU’s Applied Research Grant scheme, and is a Director of the Board of the Versitech Ltd. of Hong Kong University. He has served as honorary legal advisor to a number of medical associations, and was a former Chairman of the Hong Kong Biotechnology Association Ltd.

![Dr. Frank Wan](image)

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**Mr. Francis Li, Chairman of the Manufacturing Group**

Mr. Francis Li is Executive Director (Marketing and Business Development) of the Group Sense PDA Ltd. and Group Sense MobileTech Ltd., both subsidiaries of the Group Sense (International) Ltd. Prior to working with Group Sense, Mr. Li founded a Hong Kong-based consultancy company that provided OEM manufacturing support, as well as three manufacturing plants in South China with a 12,000-strong workforce. Mr. Li also served on the boards of several companies listed on the Hong Kong Stock Exchange. With over 25 years of experience in the electronics industry, Mr. Li was team leader of over 100 new products. His extensive expertise in design and development, marketing, and manufacturing integration in consumer electronics has contributed to the application of novel technologies in Hong Kong and South China.

![Mr. Francis Li](image)
Figure 1 Organization of CUBIC

Figure 2 Membership of CUBIC

Solar Technology Under the Limelight

Industrial and academic leaders in photovoltaics shared views on cutting-edge photovoltaics research and applications in the Emerging Technologies Forum organized by the CityU Business and Industrial Club of the Knowledge Transfer Office on 16 July. Four guest speakers from industry and CityU spoke at the forum titled “Latest Advances in Solar Energy and Systems”. They were namely Mr Aman Yuen, Director-Quality of the DuPont Apollo Ltd, Mr Jonathan Lei and Mr Chiu Fu Wa, Business Development Managers of Sungen International, and Prof Henry Chung of the Electronic Engineering Department. The event drew an audience of about 130 from the electronics, automation, materials and engineering fields. Also present were faculties and researchers from CityU and other local academic institutions.
The high turnout rate echoed the growing attention the Hong Kong industry is paying to solar energy, a renewable energy source crucial for our planet’s sustained development. Currently, about 86 percent of the world’s power supply comes from fossil fuels whose depletion rates are alarmingly high. For instance, the world’s oil production is expected to peak at around 2012, a not too optimistic forecast indeed for a too optimistic world.

Although there is a growing awareness of the importance of renewable energy, the exploitation of solar energy, as well as other renewable sources of energy, is hampered by its high production costs, compared with those of fossil fuels.

There are a host of factors that hold sway on solar thermal costs. The efficiency by which photovoltaic modules convert solar energy into electricity, the size of solar plants, and the material used in producing the modules, are just some of them.

Researchers and manufacturers the world over are making all-out efforts to make solar thermal comparable with fossil power in money terms. The use of thin film photovoltaic modules made of amorphous silicon has played an important role in this global race of cost-cutting. While conventional solar cells are made of crystalline silicon, new generation thin film photovoltaic modules are made of amorphous silicon. Compared with crystalline silicon ones, amorphous silicon solar cells can convert more sunlight into usable energy, and their energy payback time is shorter because they are cheaper to produce.

Another attractive feature about thin film photovoltaic modules is their adaptability to high-rise buildings. Thanks to advances in thin film photovoltaic modules, light weight, semi-transparent, and flexible solar panels can now be mounted on curtain walls, rooftops, noise barriers, and skylights – urban features that govern the landscape of any heavily built-up city, including Hong Kong.

Solar cells alone are not sufficient for the smooth operation of a grid-connected photovoltaic system. A photovoltaic system must be installed with an inverter to convert the direct current (DC) electricity generated by solar cells into high-quality alternate current (AC) electricity to be consumed by electrical appliances. An inverter also serves as an interface between the photovoltaic modules, local power network and the utility grid.

Inverters can also help balance the power circulating within the local network or microgrid. Most buildings or areas installed with photovoltaic systems are connected with utility grids to forestall any power shortage caused by glitches of the photovoltaic system. More often than not, photovoltaic systems do not generate enough power to support the entire microgrid, and hence utility power is usually used in tandem with photovoltaic power. When the utility grid experiences disturbances, the inverter can cut off any connection between the microgrid and the utility grid, and reconnect automatically after the utility grid resumes operation. In brief, inverters maintain the highest levels of efficiency in a microgrid.

An expert on microgrid inverters, Prof Henry Chung talked in length about the factors affecting the performance of inverters and the challenges facing the R&D of inverters. One of the challenges is that researchers have to make meticulous effort to achieve a slight increase in efficiency. “From the energy point of view, increasing system efficiency by one percent seems to be insignificant. However, one percent energy loss may cause a significant temperature rise,” Prof Chung explained. The development of an intelligent system capable of detecting irregularities in the utility grid and reacting promptly also warrants intense research efforts.

And what does the future hold for the growth of photovoltaic research in Hong Kong? The commercialization of photovoltaic technologies is beginning to make inroads into the Hong Kong economy. In March 2009, the DuPont Apollo Global Thin Film Photovoltaic R&D Centre was set up in the Hong Kong Science Parks. The centre is a major project under the “Shenzhen Hong Kong Innovation Circle” scheme.

The Emerging Technologies Forums are regular events that facilitate academic and industrial exchanges.
Top Telecom Executives on IT Business in Shenzhen

The CityU Business and Industrial Club (CUBIC) of the Knowledge Transfer Office (KTO) invited two veteran telecom executives to share with CUBIC members their experiences and views on running telecommunication businesses in Shenzhen.

With leading figures from academia and industry as speakers, CUBIC tea gatherings and seminars provide a window on the advanced technologies and their applications in Hong Kong. The guest speakers of the last tea gathering held on July 10 were Mr Henry Chan, President of ParaDM, and Mr Stephen Lee, Director of Pcom Tech (China) Technology.

Mr Chan, who pioneered the use of IT on the Mainland in the early 1980s, recounted the fascinating story of Shenzhen’s growth from a sleepy town to a regional IT hub. To illustrate Shenzhen’s success in IT, Mr Stephen Lee expounded on how the mobile phone manufacturing industry across the border managed to strike a balance between international trends and local needs.

The tea gathering attracted about 50 participants, the majority of whom were from the information and telecommunication industry.

Granted Patent

Surface acoustic wave device (US patent 7,579,759)

Surface acoustic wave (SAW) devices that magnify signal transmission by generating high frequencies are essential components of wireless communication systems and devices. Developed by Prof Lee Shuit-tong and his team, the SAW device can be applied to the fabrication of filters for mobile communication devices and tuners for the reception of satellite broadcasts and signals from radars. To achieve high frequencies, a piezoelectric layer constituted of cubic born nitride (cBN) is deposited on a diamond hard layer by ion-assisted physical vapour deposition or plasma-enhanced chemical vapour deposition. The cBN thin film has an acoustic velocity close to that of diamond, and thus can operate at the ultra-high frequency ranges.

Coming Soon

Please browse the KTO website for more information

The 11th China High-Tech Fair（第十一届中國國際高新技術成果交易會）
16 – 21 November 2009
Shenzhen Convention and Exhibition Centre（深圳會展中心）
CityU Business and Industrial Club

Membership Application Form

Name of Applicant (*Dr / Mr / Ms / Miss) ________________________________

中文姓名 ________________________________

Position ________________________________

Company Name ________________________________

Business Address ________________________________

Business Nature ________________________________

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Please tick the appropriate box(es) below if you want to obtain the relevant application information for:

[ ] 1) CityU Library Borrower’s Ticket ($1,000/year)
[ ] 2) CityU Sports Complex User Card ($1,050/year)
[ ] 3) CityU Visa Card (free)

I ________________________________ (name of applicant) hereby apply for membership of the CityU Business & Industrial Club (CUBIC). I confirm that the Information furnished above is complete and accurate and it can be used by CUBIC for membership related purposes.

Signature: ________________________________

Date: ________________________________

Please return this form by post to Knowledge Transfer Office, City University of Hong Kong, Tat Chee Avenue, Kowloon or by fax to (852) 2265 8028.

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