

Technology Management

Quarterly newsletter of the Centre for Technology Management (CTM)

August 2010

CTM celebrates bumper crop of PhD completions

Doctoral research in CTM covers a wide range of subject matter, including technology enterprise, firm strategy, sector and policy issues. Our graduate students carry out collaborative case work with organisations of all sizes in many parts of the world. Research projects may take between three to five years to complete, depending on whether the student is full or part time. However long it takes, everyone (particularly the student!) is delighted when the project is successfully concluded, the thesis written and the oral examination passed. The last few weeks have seen the following rush of completions:



Johann Napp's PhD examined the issue of capturing and measuring strategic value in corporate venturing. After returning from a well-earned break, he will start work with the business and strategy consultancy firm Bain & Co this autumn.



Joseph Zhou's thesis presented a detailed analysis of how spin-outs from Chinese universities develop their innovation capabilities. Joseph will be applying the outputs of this research when he takes up his new position as a professor at Tsinghua University in China.



David Bradshaw completed his PhD while working in the product planning function of the Ford Motor Company. His study investigated the role of demonstration (early examples of new product functionality) in winning support for innovative product development. While the main case studies were carried out at Ford, the findings were tested with a number of other companies in a variety of sectors.



Dharm Kapletia researched the developments in the way complex systems are supported in the defence environment, in order to provide the customer with more comprehensive and cost-effective solutions. His in-depth case studies involved working with the Ministry of Defence, BAE Systems and a range of programmes within the armed services. His work has been published in a recent edition of *Industrial Marketing Management*.



Caren Weinberg successfully defended her thesis entitled "Entrepreneurial firm acquisition: mapping seller expectations," which sought to highlight the important but under-researched issue of the seller perspective in corporate acquisitions. She will be returning to Israel to develop her teaching and research activities later this year.



Thomas Bohne completed his PhD on the formation of multi-sided platforms, and the challenges and opportunities these present for entrepreneurs. He is now in the process of moving to New Zealand where he takes up an academic post in the University of Auckland Department of Management and International Business.

Given the many challenges facing a PhD student, and the variety of distractions that can delay progress, the prize for focus and determination to finish on time must go to David, who not only held down a full time job in parallel, but also got married and managed to write his first draft just before a new baby arrived, or possibly this was a demonstration of excellent planning...?!

These, and other theses, are normally available from the Engineering Department Library, and can often be provided in e-copy if required. Email ctm-enquiries@eng.cam.ac.uk for more information.

The R&D management conference 2010 Information, imagination and intelligence in R&D management

Manchester Institute of Innovation Research, University of Manchester (30 June - 2 July 2010)

This year the R&D Management conference was hosted by the Manchester Institute of Innovation Research, University of Manchester. More than 130 people from academia and industry attended the three-day event.

The conference included a series of parallel sessions covering a range of topics such as foresight, roadmapping, innovation and R&D management, R&D management in large organisations, and challenges opportunities and strategies in R&D management.

Plenary sessions were delivered by Prof Sir Mark Ferguson, Renovo Co-Founder and CEO; by Paul Isherwood, from GlaxoSmithKline Nutritional Healthcare; and, by Adrian Woolard and Bob Anderson, representing the BBC R&D Laboratory North and Nottingham University Horizon project respectively. Professor Ferguson's talk pointed out industry challenges in the area of regenerative medicine, and Renovo's innovation approach. Paul Isherwood presented the different strategies and initiatives that GSK is carrying out to identify ideas for potential new products. Finally, the third plenary session addressed the theme

"Creative technologies and innovation opportunity", where the experiences of the BBC R&D laboratory and



the Nottingham University Horizon project were presented.

Attending from the CTM were David Probert, Letizia Mortara, Simon Ford, Victor Ortiz and Imoh Ilevbare. The following papers were presented:

Letizia Mortara: *The 'social' dimension of Technology Intelligence: approaches to intelligence through intermediary networks*

Simon Ford: *Technology protection in technology acquisitions*

Victor Ortiz: *Technology partner selection: challenges and key management issues*

Imoh Ilevbare: *Strategic planning for uncertain futures: a framework integrating scenario planning, roadmapping and options thinking*

In addition a number of CTM

overseas visitors and collaborators were present. Prof Akio Nagahira (Tohoku University, Japan) presented a paper entitled *A new approach to technology roadmapping of disruptive innovation*, as a result of his collaboration with David Probert. Our recent visitors from Korea, Sungjoo Lee (Ajou University), Byungun Yoon (Dongguk University) and So Young Sohn (Yonsei University) all presented papers that were interesting and relevant to CTM's project portfolio.

Together with its varied social programme and links to the R&D Management Journal, the conference provided an excellent opportunity to network with an international technology management community.

The R&D Management Conference 2011, June 28-30, is going to be hosted by the Linköping University in collaboration with the Royal Institute of Technology, Sweden. The central theme is "Sustainability and innovation: The need for new ideas, new initiatives and new alliances". Call for papers is open, the deadline for submission of abstracts and discussion topics is February 15, 2011. For further information visit www.iei.liu.se/rnd2011.

Protecting technologies during acquisition

How firms can acquire new technology while protecting their intellectual capital was the focus of a recent workshop organised by CTM. The event on 15 June was part of a two-year research project "Technology Acquisition and Protection: The Links to Exploitation."

Aimed primarily at technology managers and open innovation practitioners, the workshop featured representatives from 12 firms, including Dow Corning, GKN, Rotork, Unilever and Xaar. It featured a series of interactive group sessions designed to share experiences and best practice focused on such questions as:

- What protection issues arise when acquiring external technologies?
- What protection mechanisms are most effective?
- What issues arise in relation to the different types of technologies/in particular sectors/with specific partners?

Following the workshop we plan to study these issues in the context of R&D consortia, where there are numerous interactions between multiple partners and knowledge flows. We are interested in hearing from those with experience of R&D consortia or who have plans to enter into a consortium. To find out more please contact Simon Ford, sjf39@cam.ac.uk.

CTM trains world class manufacturing engineers in technology management

For one week in June every year, leading manufacturers send their engineers to Cambridge for a one-week course in technology management, as part of a two-year programme.

Operations Excellence is a world-leading programme developed by Cranfield University through a unique partnership with Rolls-Royce and the Institute for Manufacturing. The course – now open to other companies – has been designed to prepare manufacturing engineers for a role in the changing world of manufacturing operations which will lead to an improvement in manufacturing competitiveness within organisations. Dr Palie Smart, the course Director comments: "The programme addresses the need for highly trained professionals required to transform operations into a world-class business in all sectors of manufacturing industry."

In order to undertake the programme, participants need the support of their employer or sponsoring company. The course's key benefits and features include:

- Career enhancement while studying modules and undertaking project work
- Professional accreditation by IET, IMechE and RAeS
- A combination of theory and practice with 60% company-focused project work
- Industry practitioners teaching alongside academic specialists from Cranfield and Cambridge

The course is entering its 8th year. In the future it is expected to expand into the aerospace and supply chain sectors. In recent years it has also attracted interest from the food, pharmaceutical and sustainable technologies sectors.

The Cambridge-based module, held this year in Selwyn College, combines lectures, practical exercises and presentations from leading practitioners. One aspect of the course that participants find particularly valuable is the case study based on the development and introduction of a new manufacturing technology. Working in groups and using the analytical techniques just studied, the engineers reviewed the history and application of the inertia welding process. While being critical to the delivery of next generation gas turbines, the technology itself has a history going back over 40 years. The learning from this experience contains some fundamental technology management lessons that can be applied in the future. Feedback from participants (pictured above) was again excellent – in keeping with the title of the course!



Student projects

Projects of several weeks duration provide a useful way for students to collaborate with manufacturing and other organisations. Whilst these are primarily set up as educational experiences for the students, they usually also contribute some useful ideas or findings for the host company. In many cases, implementation actions are part of the project.

Recent MPhil and MEng dissertation projects supervised by CTM include:

- What is the role of location in the implementation of open innovation?
- How the construction sector innovates
- The role of innovation prizes in stimulating innovation
- Reviewing the emerging e-reader ecosystem
- Collaborations in high value manufacturing companies
- The GPRS tipping-bucket rain gauge: market and product analysis
- Head-up display for a diving mask: market scope, design and build prototype

We are always interested to learn of possible project ideas, so feel free to contact David Probert at drp@eng.cam.ac.uk

Recent list of publications

Kapletia, D. and Probert, D., (2010), 'Migrating from products to solutions: An exploration of system support in the UK defense industry', *Industrial Marketing Management*, Vol. 39, pp. 582-592.

Mortara, L., Thomson, R., Moore, C., Kerr, C., Armara, K., Phaal, R. and Probert, D.R., (2010), 'Developing a technology intelligence strategy at Kodak European Research: Scan and target', In *Research - Technology Management* 4 (July-August) 2010.

Zhou, Y. and Minshall, T. (2010), 'Entrepreneurial innovation problems associated with the dynamic growth of university spin-outs in China: a capabilities perspective', in *Int. J. Entrepreneurship and Innovation Management*, Vol. 12, Nos. 3/4, 2010

The following CTM paper was identified as a "Notable Paper" in *Research-Technology Management*: 'Evolving Corporate Entrepreneurship Strategy: Technology Incubation Strategy at Philips' by Ford, Garnsey and Probert, and was published earlier in the year in *R&D Management*.

Technology management research at Cambridge

- Strategic technology management
- R&D project selection
- Software sourcing in manufacturing
- Enhancing creativity in new product development
- New product introduction collaboration
- Technology management: a process approach
- Technology selection
- Technology evolution in hi-tech firms
- Innovation management in hi-tech firms
- Emergence of technology based industry
- Technology scanning and intelligence
- Technology acquisition
- Technology protection
- Strategic make-or-buy
- Industrial make-or-buy decisions
- Sustainability and technology insertion
- Technology valuation
- Technology foresight

2010 Technology Management Symposium

CTM's annual symposium will take place at the Moller Centre in Cambridge on 16 and 17 September. This year we explore technology management challenges in the area of renewable energy, healthcare and mobility. In addition to case studies and workshops, we have key speakers from leading organisations such as Philips, BP, RAND Europe, and Network Rail. As always, it promises to be a very stimulating event.

For further details and booking see:
www.ifm.eng.cam.ac.uk/ctm/symposium16



Diary www.ifm.eng.cam.ac.uk/events

September

Thursday 16 - Friday 17	<i>Technology management symposium</i>	Two-day conference, Moller Centre Cambridge
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October

Wednesday 13	<i>Strategic roadmapping</i>	One-day workshop, IfM Cambridge
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Thursday 14	<i>Technology intelligence</i>	One-day workshop, IfM Cambridge
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November

Tuesday 9	<i>Valuing and selecting technology projects</i>	One-day workshop, IfM Cambridge
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