

Technology Management

Quarterly newsletter of the Centre for Technology Management (CTM)

May 2011

A collaborative approach to researching open innovation



The CTM-lead Open Innovation Research Forum (OIRF) held its inaugural meeting in the form of a two-day workshop designed to develop research proposals in this area.

The OIRF workshop brought together 40 representatives of multinationals, open innovation intermediaries and academics from around the world to discuss the links between geographic location and the successful implementation of open innovation. The workshop took an open, 'fast-track' approach to identifying the challenges and developing collaborative research proposals for addressing these challenges.

The first day was devoted to capturing the issues that companies feel are most important when trying to implement open innovation in different locations. The workshop began with four presentations to stimulate discussion. Attendees were given a summary of a recent UK-IRC survey that captured the current open innovation practices of 1,200 UK firms. The contrasting experiences of Kodak and Philips were presented, highlighting the role of location in their open innovation strategies. Finally, the role of open innovation in attracting investment to the UK was described, with particular emphasis being given to the 'Tech City' development in London (www.eastlondontechcity.com).

Attendees then worked in groups to filter the wide range of issues raised by

these discussions and select five key questions that, if addressed, would be of direct benefit to companies implementing open innovation and those that support them.

The second day was structured around identifying ways in which these key questions could be addressed. Academics presented a short, PowerPoint-free summary of their work and preferred research methods, matching these with the questions identified by the companies. Groups then spent the afternoon working on developing outline proposals for projects to address these questions.

By the end of day, six outline proposals, each involving a minimum of two academic institutions, had been developed:

- Comparing open innovation best practices in developed countries versus emerging markets
- Identifying factors influencing successful open innovation

implementation

- Open innovation for corporate growth and renewal
- Effective intra- and inter-organisation collaborations
- Developing leadership capabilities for open innovation
- The role of open innovation in stimulating cluster development

Each of these proposals will be taken forward and resources sought to run them as collaborative projects. In addition, an edited book summarising current knowledge in the area of location and open innovation is being explored and planning for the next OIRF meeting is already underway.

The workshop was sponsored by the UK Innovation Research Centre and Japan's Institute for Technology, Enterprise and Competitiveness. For further information please email: tim.minshall@eng.cam.ac.uk, or go to www.oirf.net.

CTM Symposium: 15 & 16 September 2011

The 2011 Symposium will address critical issues for managers, policy makers and researchers, focusing on four key themes:

- Navigating industrial emergence
- Open innovation and collaboration
- Early-stage technology acquisition
- Developing and deploying technology management toolkits

Organisations represented will include GSK, TWI and Crown.

www.ifm.eng.cam.ac.uk/ctm/symposium17

Optimising the path of research into application



Optimising research into application has been identified as a new research theme by Cambridge's Engineering Department. The Department organised a conference in March designed to raise awareness of the new theme and to highlight some of the activities by which it will be delivered. The event was attended by 79 delegates from 37 organisations, and included presentations about several CTM projects.

Department researchers presented three case studies of planning, management and dissemination of research that illustrated good and emerging practice. The examples indicated how the department might engage with industry, either with single organisations or with consortia or supply chains.

One of the case studies highlighted CTM's long-standing experience with Technology Roadmapping (TRM). Although well established, TRM is showing new promise as a means of identifying the major transitions to be made as research moves into implementation and as the products and services it enables mature into large and profitable markets.

CTM's Dr Rob Phaal introduced TRM and showed how it can be used to align a diversity of stakeholders and to identify the big 'demonstrators' that mark the route to product success from research origins. Dr Andrew Flewitt described how TRM has influenced the strategy and planning of his research in the area of plastic electronics. He also described how Cambridge modelling tools, when applied to the research project plans of consortia, can be used to manage research risks and to shorten the programme elapsed time.

Additional presentations highlighted the role that design can play in identifying routes – and key steps – to market for the outputs of scientific research, and the way in which consortia can provide a powerful vehicle for addressing large-scale, long-term challenges. The afternoon was devoted to four

Tools to address industrial challenges

An example of the way in which IfM-developed tools are being applied can be seen in the Emerging Industries Programme 'Managing Creation and Transitions' project. CTM researchers have developed four new modular tools which can be used standalone, or combined in different configurations to address science and technology-based industrial challenges.



Industry scan: a roadmap-based mapping method to capture information from a range of sources that provides a visual representation of the history of an industry. It helps organisations understand the broad and detailed dynamics relevant to their specific context.

Expert scan: an interview-based mapping tool, which captures the perspective, insight and experience of an expert individual in visual format. The tool can also be used for collating different views into an overall perspective of an industry, or for facilitating the transfer of information from someone who may not be able to attend a workshop-based event.

Organisation scan: a workshop-based method providing a visual representation of historical cross-functional views within an organisation. Learning from key events is captured, and then fed into strategic plans for current or future challenges.

Emergence roadmap: this workshop-based tool investigates a science or technology-based commercial opportunity through development of a chain of demonstrators. The outputs articulate market opportunities, the steps which need to be taken, and the factors which may help or hinder progress.

These tools have been tested with over 25 organisations, and have been found to provide valuable strategic support in a variety of contexts due to their flexible, modular format. For further information, please visit the website:

<http://www.ifm.eng.cam.ac.uk/imrc/eip/transitions.html> or contact Michèle Routley (mjr88@cam.ac.uk).

parallel workshops addressing the topics of strategy for knowledge transfer, consortia, open innovation, and managing the transition to practice.

With an emerging consensus that delegates would welcome closer engagement with the Department, the plenary session explored avenues for development and next steps.

(www.eng.cam.ac.uk/research/themes)

Welcome

CTM was delighted to welcome Jonathan Linton, Professor of the Management of Technological Enterprises at the University of Ottawa to the IfM. Professor Linton, Chief Editor of the prestigious journal *Technovation*, visited the IfM to deliver a talk on his work on Research and Development.

The talk, entitled 'The application of financial options to R&D for decision support', was followed by an informal round table discussing the *Technovation* journal, its positioning and publishing policy.

Professor Linton also took time to record a podcast interview with David Probert. The interview can be accessed at: www.ifm.eng.cam.ac.uk/free/podcasts.html

News update

Roadmapping new strategies for transport

Two CTM projects that helped to develop strategies for transport industries in the UK and Australia have been showcased at a meeting in London. The IfM was invited Partnership Sourcing Limited (PSL) to deliver a presentation at the event Collaborative working in transport.

The IfM is a member of the PSL Executive Network for collaborative knowledge. Two cases studies were presented by Jonathan Hughes as part of the event at the London Transport Museum.

The first case described how road mapping helped to support the technology strategy for the transport sector and UK Rail. The second case showed the application of road mapping to develop an industrial strategy for the automotive industry sector in Australia. In both cases, the benefits of road mapping were evident and it was demonstrated that the collaboration between different organisations was an essential element to reach the final outcomes.

More than 80 people representing governmental agencies, industry and academy attended the event.

PSL is a non-profit organization aimed at raising the profile of partnering through facilitating knowledge sharing and developing structured methodologies to manage collaborative business relationships. PSL has set up a network of members which includes large and medium firms, educational organizations as well as international professional associations. www.pslcbi.com/

Research Methodology Workshop 2011



More than 50 delegates attended the annual Research Methodology workshop at the IfM. The two-day workshop is aimed at doctoral students in operations and technology management and seeks to equip participants with an appreciation of research design, methods and how to overcome potential challenges on their programmes.

Delegates, who were primarily from UK universities, met senior researchers with broad expertise in operations management research. Some of the topics covered in the presentations were systems thinking, case study research, reviewing papers, paper publishing, questionnaire design, time management, and action research. Delegates also participated in interactive sessions where they received feedback from peers and senior researchers about their research project and methodology.

The Research Methodology Workshop is organised each year by doctoral students at the IfM.

Postgraduate research

Management consulting services and innovation

Luzselene Rincón: Effects of management consulting services on innovation, particularly on the relationship between R&D and Marketing areas. The purpose of this research is to understand how such services impact the innovation process and how they could improve the relationship and integration between marketing and R&D areas. If you are interested in taking part in this study please contact Luzselene. E: lr353@cam.ac.uk

Successful scale-up in chemical manufacturing

Manjusha Thorpe: Scale-up in the chemical manufacturing industry is problematic with projects often failing to progress successfully from laboratory experiment to commercial operation. Such difficulties can result in large cost and schedule overruns. The research aims to elucidate the enablers of predictable scale-up through the investigation of the human factors, team factors and technical factors affecting scale-up in the chemical manufacturing industries. E: mnt25@cam.ac.uk

Training for technology and innovation managers

Participants for this year's 3-day course on technology and innovation management came from as far afield as Australia, Brazil, Korea, the US and Canada.

This was the 6th year that CTM has run the course which was held at Jesus College in April.

The course draws on teaching and research material from across CTM, with a highlight being the City Car game run by Rick Mitchell. This simulates the challenges of running a complex new product development project in an afternoon. Teams compete to design, develop, build and sell a self-parking car using the Lego Mindstorms system.



The course is limited to 25 participants. The combination of taught material, discussion and group activities provides a rich learning environment, drawing on the diverse experience of participants.

Website updates

CTM's web page concerning strategic technology management has recently been updated:

www.ifm.eng.cam.ac.uk/ctm/strategic

A new page has also been created on innovation management:

www.ifm.eng.cam.ac.uk/ctm/im/

For further information on these areas of work email: ctm-enquiries@eng.cam.ac.uk

Technology management research at Cambridge

- Strategic technology management
- R&D project selection
- Software sourcing in manufacturing
- Open innovation
- 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

Farewell to...

Lan Tao who has completed his PhD on 'Developing a framework for managing the process of radical innovation in established firms' has now returned to China.

Sebastian Dworschak who was a visitor from Germany working on his master's degree on 'Make or buy decision in high tech start-ups'.

Taro Sugihara who was a visitor to CTM from the Japan Advanced Institute of Science and Technology doing research on 'The gap between field of caregiving and ICT'.

Ricardo Nakazawa who was visiting CTM to learn about roadmapping techniques developed at the IfM and to enable the transfer of roadmapping practice to Mexico.

Congratulations to...

Chris van der Hoven who has successfully passed his PhD viva. His thesis entitled *The Role and Contribution of the Chief Technology Officer* is a cross-sector investigation into technology and innovation management practice from the perspective of the most senior technology executive. Chris interviewed CTOs, Chief Scientists, VPs of R&D, Technology Directors, Innovation Directors and Engineering Directors, using an approach called 'Personal Role Mapping'. This approach is based on cognitive mapping and is a new technique devised for the thesis.

The core argument of the thesis is that the role and contribution of technology and innovation managers is highly idiosyncratic. However, a grounded and broadly representative framework of management priorities is derived to support technology and innovation management planning. This is particularly important leading up, or in reaction, to major organisational, strategic or technological changes. These might include combinations of change, for example: changes in ownership of the business, changes in strategic direction, change of CEO or specific board membership, mergers/acquisitions or disposals, disruptive attack or defence, changes in regulation, opening up of new markets or major product and service portfolio adjustments, and changes in the IP or technology portfolio or profile of specialist expertise.

Further information: cv243@cam.ac.uk

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

June

Wednesday 15 - *Strategic roadmapping* Two-day workshop,
Thursday 16 IfM, Cambridge

September

Thursday 15 - *CTM Symposium* Two-day symposium,
Friday 16 IfM, Cambridge

October

Wednesday 12 *Strategic roadmapping* One-day workshop,
IfM, Cambridge

Thursday 13 *Technology intelligence* One-day workshop,
IfM, Cambridge

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