

# Technology Management

Quarterly newsletter of the Centre for Technology Management (CTM)

May 2005

## Looking at new ways to value technology

Ways to assess the value of new technologies were the focus of an industrial workshop in Cambridge in April. Researchers involved in the IfM's *Business Appraisal of Technology Potentials* project organised the workshop which was attended by Philips Applied Technologies, Océ, GSK, Intel Research, GKN, Crown Packaging Technologies and BAE SYSTEMS.

The project team, which is drawn from the IfM's Centre for Strategy and Performance as well as CTM, described various different approaches to the issue of assessing a new technology's potential value.

Particular interest was shown in two new concepts:

- value roadmapping – a visual way of representing the multiple potential value streams and options for a technology area
- value range diagrams – encouraging companies to consider the lowest and highest likely value of technology projects rather than using the mean value

Three industrial perspectives were provided by Philips, BAE SYSTEMS and Crown, highlighting the importance of the specific business context. The crucial importance



*Coffee time at the workshop on valuing technology*

(and difficulty) of communicating and visualising the issues was emphasised. The input from our industrial partners will be used to direct the project into the next phase, when we aim to develop a practical toolset that companies can use to improve the technology valuation process. A number of opportunities for industrial collaboration have been

identified for case study and tool development. We also plan to employ two students over the summer, partly funded by Cambridge-MIT Institute. Any companies interested in collaborating on this project, or in supporting students to work in an area of mutual interest, should contact CTM as soon as possible.  
[ctm-enquiries@eng.cam.ac.uk](mailto:ctm-enquiries@eng.cam.ac.uk)

## Playing with innovation...

Many companies have developed dedicated work spaces with the goal of enhancing or kick-starting innovation and a recent CTM project has been investigating the effectiveness of these spaces.

In the late 1990s, the Royal Mail created an 'Innovation Lab', as a multi-room facility, to encourage play, divergent thinking and innovation. This facility began life as a technology showcase and now provides a comprehensive capability for creative group work. The design of the rooms is playful, with bright colours, write on surfaces and computer-supported brainstorming. Other organisations such as the Driver & Vehicle Licensing Authority, The University of East

Anglia and the Department of Trade and Industry have developed similar innovation facilities.

So far CTM's project has focused on capturing the role, benefits and characteristics of these spaces. The next stage of the project will investigate more facilities, especially in product producing companies, to determine how they support the innovation process. In addition, a partnership is being formed with a number of European collaborators, to look more widely at the way in which the design of the workspace influences creativity and innovation. To find out more about this project contact James Moultrie.  
[jm329@eng.cam.ac.uk](mailto:jm329@eng.cam.ac.uk)

# Checklist for software sourcing decisions

The three-year CTM project on software sourcing decisions is now in its final months. The main aim of the project was to identify the factors that managers need to consider when deciding whether to develop software content for products internally or externally.

The project also developed tools to support the incorporation of these factors into managerial decision making. Last autumn we sent out a questionnaire to establish the preferred format for these tools. This revealed that apart from 'informed colleagues' the most useful source of guidance was thought to be a checklist.

As a result, we have worked on condensing the information derived from project case studies, interviews and literature into a checklist format. Both the paper and software variants are structured around four headings which assess the business interest, the task suitability, the supplier suitability and the collaboration arrangements. The software variant has several advantages:

- mouse-click access to additional information
- illustrative vignettes drawn from case studies
- ability to customise checklists

We held an evening workshop on software sourcing in March with 23 attendees. Kevin McKeogh, the director of engineering at nCipher, discussed how nCipher had approached this issue, the challenges they'd faced and how they'd dealt with them. Pete Fraser and Francis Hunt of CTM shared insights from the project and presented the

*Checklist tool for supporting software sourcing decisions*

checklist tools, which were then examined further in the discussion groups. We are holding an afternoon workshop on July 14, focusing particularly on off-shore software development.

Further work is underway to produce a guide to support the checklist, a digest of the cases and various academic publications. It remains to thank the steering group of industrial partners: AND Technology Research, Bichrom, Pi Research and Philips, who have actively supported the project.

The Research Associates who worked on the project are Noordin Shehabuddeen, Scott Wilson, Clare Farrukh, Pete Fraser, André Leme Fleury and Francis Hunt. If you would like to receive copies of the outputs, please contact Francis Hunt

[fhh10@cam.ac.uk](mailto:fhh10@cam.ac.uk)

## Gaining the business skills to get new ideas to market

CTM has just completed two weeks of business training for 100 researchers on the Chevening Technology Enterprise Scholarship (CTES) programme.

The CTES programme is a one-year post-doctoral programme for non-EU scientists and technologists, and is run by the Centre for Scientific Enterprise in London. The programme aims to develop the skills to enable participants to be effective at technology transfer and the commercialisation of innovation. It combines technology and business training with specific commercialisation projects.

The training delivered by the CTM team focused on technology management issues faced by established business. It complemented modules delivered earlier in the year at Imperial College and London Business School.

The Cambridge module was divided into a series of taught, interactive sessions leading into a series of practical group-based activities in the middle of the week, before linking the key learning points to the next steps of the CTES researchers' individual and group projects.



Initial feedback from the researchers (some of whom are pictured above) has been very positive and the CTM team are looking forward to working again on the CTES programme in future years. For more information on the CTES programme see: [www.ctesnet.com](http://www.ctesnet.com)

# Japan encourages collaboration between universities and industry on technology management issues

In recent years, CTM has enjoyed active links with various Japanese organisations working in the field of technology management.

Large technology-intensive Japanese companies such as Toshiba or Hitachi have shown great interest and leadership in the ideas of technology management, and have pioneered many of the applied techniques.

Leading universities such as Tokyo Institute of Technology and the University of Tokyo have on-going research programmes and collaborations with other universities around the world.

However, until now collaboration between industry and academics in Japan has been comparatively limited – restricted by the nature of the academic contract of employment.

## Industry university links

Recently the Japanese government has greatly increased the resources directed towards both encouraging industry/university links and the application of technology management ideas. Many technology transfer associates have been recruited into universities, usually after many years of experience working in industry, in order to promote the exploitation of intellectual property arising out of university research. In this context CTM has found many opportunities to work in new ways with Japanese organisations – and to bring some of our experience of university/industry collaboration to the country.

# Environmental roadmapping

CTM was recently commissioned to conduct a scoping study for the Environment Agency to explore the use of roadmaps to support environmental management.

A review of the activities of the Agency identified a range of operational challenges and linked these to the benefits that might result from a roadmapping initiative.

The output of the process was an outline strategy identifying how roadmapping could be employed to improve the environmental performance of businesses in England and Wales.

This represents an exciting application of the tool, as although environmental issues invariably feature prominently in business and sector-level roadmaps, very few roadmapping initiatives have focused exclusively on the environment.



David Probert, head of CTM, was recently invited by the Japan Association for the Advancement of Research Cooperation to address a Technology Transfer Seminar in Tokyo. This was a three-day training programme for technology transfer associates, and the content included the activities of the technology transfer office in the University of Cambridge, and the research and teaching activities of CTM. An area of particular interest was scenario planning and technology roadmapping.

## Roadmapping in Japan

The Japan Advanced Institute for Science and Technology (JAIST) has also been supporting the development of roadmapping in Japan. Professor Akio Kameoka invited Rob Phaal to deliver two 3-day training courses in February, as part of a Masters programme in technology management and for an executive education course.

Interest in roadmapping training is also growing in other countries. Following on from Tokyo, Rob delivered two courses in Hong-Kong. A series of customised courses has been delivered in the UK this year, for Britvic and the bio-science sector, in addition to the regular series of events held in Cambridge. [www.ifm.eng.cam.ac.uk/ctm/trm/](http://www.ifm.eng.cam.ac.uk/ctm/trm/)

# CTM researcher gives keynote speech in China

CTM doctoral researcher, Martin Michlmayr, gave the keynote speech at the Asia Open Source Software Symposium in Beijing in March.

Open source plays an increasingly important role in the software market and has been adopted by several countries and major companies. Martin has over ten years experience with open source and for two years acted as the leader of Debian, one of the largest volunteer open source projects.

His keynote speech emphasised the importance of working together with the open source community, which predominantly consists of volunteer developers, and of establishing local development expertise.

Martin made many useful contacts at the Symposium, meeting figures such as Dr Ma Songde, the Vice Minister of Science and Technology.

# Technology management research at Cambridge

- Good design practice
- New product introduction collaboration
- Strategic technology management
- R&D project selection
- Software sourcing in manufacturing
- Product planning
- Enhancing creativity in new product development
- Technology management: a process approach
- Technology selection
- Technology evolution in hi-tech firms
- Innovation management in hi-tech firms
- Technology management in software production
- Technology scanning and intelligence
- Strategic make-or-buy
- Industrial make-or-buy decisions
- Sustainability and knowledge management
- Technology valuation
- Technology foresight



## Welcome to...

Dr Clive Kerr has joined CTM as a Research Associate. He has a First Class Honours degree in Electrical and Mechanical Engineering. His PhD is from Cranfield University and was sponsored by Rolls-Royce. Clive also attended Cranfield's School of Management on the Executive MBA. He stayed on at Cranfield as a Research Officer in Engineering Design working on the integration of requirements management for extended enterprises with Nissan, Johnson Controls and EDS.

Meng-Meng Ma is a visiting student from the Chinese Academy of Sciences, Beijing. His Master's degree and Bachelor's degree are from the Ocean University of China. He is here for one year from January 2005. His research interests are evaluation of R&D projects and global R&D networks.

Sébastien Rontea is spending two months with CTM as part of his PhD studies with the École Centrale Paris. His thesis on institutional dynamics of innovation looks at the influences of cultural processes on innovation in companies.

## Learning the skills of research

CTM PhD research students organised a workshop for other junior researchers in Cambridge in early April.

The Research Methodology Workshop is an annual event that includes presentations from leading academics and discussion on methodological issues. This year it was organised by CTM's Charles Romito and Simon Ford and attracted 42 junior researchers from 10 UK universities.

An online community has subsequently been established. If you wish to participate or require further information, contact Simon Ford.  
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## Diary [www.ifm.eng.cam.ac.uk/ctm/events](http://www.ifm.eng.cam.ac.uk/ctm/events)

### May

19        *Make-or-Buy*

One-day workshop  
Cambridge

### June

15-16     *Strategic roadmapping*

Two-day course  
Cambridge

### July

14        *Software sourcing for products*

Afternoon workshop  
Cambridge

### Sep

28-29     *Gaining better value from technology*

11th annual CTM Symposium  
Cambridge