

# Technology Management

Quarterly newsletter of the Centre for Technology Management (CTM)

November 2006

## Create, design, innovate....

*Delegates enjoyed a stimulating two days at CTM's 12th Technology Management Symposium held at Downing College, Cambridge in September*

Fascinating insights into the multi-faceted world of product innovation and design were provided at CTM's Technology Management Symposium when speakers focused on ways to convert human creativity and ingenuity into attractive and sustainable products and services.



The context was set by Sir George Cox (above), Chairman of the Design Council, who drew on his recent report to the Chancellor on creativity in business. Describing design as the link between creativity and innovation, Sir George challenged UK companies to build more effectively on their design capability and promote economic growth. He identified diverse factors affecting this goal including the early arts/science divide in the education system, public sector buying policy and lack of ambition at an individual level.

The Symposium took place in Cambridge at the end of September. Keynote speakers from leading companies provided stimulating examples of design capability in action – in very diverse industrial contexts. Clive Grinyer, Director of Design at Orange, discussed the

strategic use of design. He reminded delegates of the need to try ideas early and to be sensitive to the real needs of the consumer. Joe Ferry, Head of Design at Virgin Atlantic, described the competition generated in the airline industry over 'flat-seats' for business class – illustrating the impact that innovative design can have on business results. Gert Hildebrand, Head of the Mini Design Team at BMW explained how inspiration coupled with systematic hard work lay behind the rebirth of the Mini, and gave a glimpse of some of the new variants planned for the brand. Finally, Andrew Till, Director of Strategy and Portfolio, Personal Devices Business, Motorola, told the story of the resurgence of Motorola's fortunes in mobile phones and the factors behind the success of the RAZR quad-band phone.

A key issue that emerged during the Symposium was the ability to deal with the unexpected. Professor John Bessant from Imperial College expanded on this theme in his presentation 'Dealing with discontinuity - managing innovation beyond the steady state', in which



he gave a stimulating insight into how to look for solutions outside known territory.

As usual the Symposium included a variety of workshop and case study sessions which allowed delegates to get into more detailed discussion and to explore ideas emerging from both research and company experience. This aspect of the proceedings is particularly valued by delegates.

In a stimulating after-dinner speech Professor Arnoud de Meyer, the new Head of the Judge Business School, discussed the globalisation of innovation, showing how creative new ideas could emerge from very different economic and market conditions in the developing world.

Altogether the Symposium generated a real feeling of excitement about the issues. In the closing sessions delegates discussed ways in which the ideas raised could be taken forward by the industrial, academic and policy-making communities. These points will be captured in the full proceedings to be published later this year. Next year's Symposium will be on 20-21 September – get the dates in your diary now!

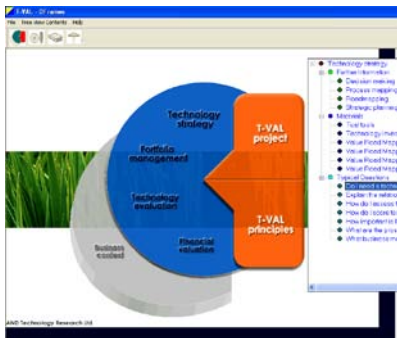


# Collaborators try out new valuation tools

Industrial collaborators involved in CTM's research into assessing the potential business value of new technologies were invited to a workshop to hear about the results of the project.

CTM's *Business Appraisal of Technology Potential* (BATP) project finished at the end of September having developed several new tools designed to help companies assess the value of new technologies.

Industrial collaborators with the two-year project included Philips, BAE Systems, GKN Aerospace and GSK. All were invited to a workshop in September to hear about the research findings and to try out the new tools and techniques developed. Delegates were encouraged to give their views on each of the tools so that improvements could be incorporated into the final versions.

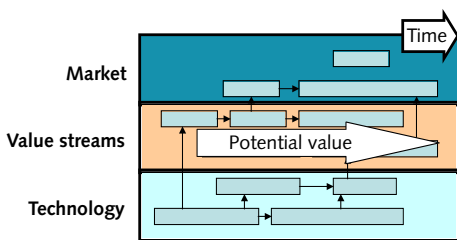


## T-VAL

There was strong interest in T-VAL, a CD resource to raise awareness of technology evaluation issues. Useful feedback on usability and content was received. A number of the collaborators plan to use it to support the implementation of internal company initiatives, either to bring others in the organisation up to speed on valuation issues or as a personal resource for themselves as facilitator.

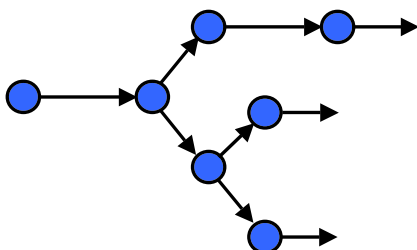
## Value-based roadmapping

The value-based roadmapping (VRM) approach was also widely welcomed, as a positive step towards valuing early-stage technologies. One company has already adopted part of the VRM architecture as a permanent feature of normal product-technology roadmaps.



## Quantitative methods

The review of financial approaches and the innovative steps taken towards supporting more informed use of quantitative methods were well received. In addition two new approaches were proposed. One of these is a new variant of decision trees designed to deal with



a lack of precise input data. Another involves assessing small portfolios of projects in terms of upper and lower likely values (ULV and LLV) rather than average expected values. Several companies wished to be involved in further development of these approaches.

The enthusiasm of the participants was clear and there appears to be a community of interest in this area which could support further work.

## Project background

'What is this technology worth?' is a perennial question faced by technology managers. Trying to answer it involves grappling with some fundamental challenges:

- Market and technology forecasts are inherently uncertain
- Technologies and the route to exploitation are complex
- Attributing future revenue to specific technologies is difficult
- Decisions often have to be made with limited knowledge
- Focusing on risk avoidance can discourage innovation

Valuing technologies involves considering many issues apart from the question of financial worth. These include the need to support decision making and communication; to build understanding of markets, technologies and applications; to incorporate the views of all stakeholders; and to develop an approach that is compatible with other valuation methods and that can evolve over time.

The BATP project proposed an integrated approach, combining both qualitative and quantitative techniques. Researchers worked closely with companies to understand the issues and to develop new techniques.

As well as developing a range of new valuation tools they plan to produce two management guides. One will cover qualitative valuation – going beyond Discounted Cash Flow – while the second will address ways to get better inputs for use in decision models.

## Welcome to new people...

Yuan Zhou



Yuan Zhou has joined the Centre as a first-year PhD student. His research interests are in the area of technology transfer and commercialisation. He is from Beijing where he was a manager of Cascadia Capital (China) in the technology commercialisation and transfer practice.

Andrew Muir Wood



Andrew joins CTM to start a PhD with James Moultrie investigating the way in which design trends are used by firms as part of the design process. Andrew gained a first in product design and manufacture from Loughborough University.

Daniel (Xiyang) He



Daniel took an MPhil in Industrial Systems, Manufacturing and Management at the IfM last year. He is now continuing as a PhD student in the Centre for Technology Management, supervised by David Probert.

Lotta Kallioinen



Lotta Kallioinen has replaced Jayne Riley as the CTM Research Coordinator while Geraldine Guceri is on maternity leave. Lotta has an MPhil in European Studies from Cambridge University and in her spare time is doing a PhD. Jayne Riley has now left CTM to work for the Cambridge Institute for Medical Research.



Val Thorn

Val Thorn has also started a PhD at CTM. Val was an industrial collaborator on the Centre's Software Sourcing Project and also worked on the BATP valuation project. Val set up AND Technology Research where she remains CEO.

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## National design scoreboard

James Moultrie of CTM has secured funding to develop a national 'design scoreboard' that will provide a way of measuring national design capability.

The concept is analogous to existing approaches to measuring national innovation capability such as the 'innovation scoreboard' or the 'R&D scoreboard'. This is an important topic, recognising the growth of design capability in the Far East and the importance of retaining a strong design base for future economic growth.

The project will be funded jointly by the Arts and Humanities Research Council (AHRC) and the Engineering and Physical Sciences Research Council (EPSRC). It will begin in January 2007 and last for 18 months. It is supported by the Design Council and includes partners from the Universities of Nottingham, Strathclyde, Cranfield, Loughborough and Dundee. If you would like to know more, please contact James Moultrie (jm329@cam.ac.uk)

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## Complexity and socio-economic change

Dr Elizabeth Garnsey of CTM has co-edited a book called "Complexity and Co-Evolution - Continuity and Change in Socio-Economic Systems" in which specialists in various fields explore complex dynamic processes that give rise to socio-economic change. Case examples illustrate the way knowledge-intensive businesses build new industries, the decline of mature regions and the operation of innovative networks. The book is published by Edward Elgar.



# 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
- Technology change
- Technology management: a process approach
- Technology selection
- Technology evolution in hi-tech firms
- Innovation management in hi-tech firms
- Technology management in software production
- Strategic make-or-buy decisions
- Industrial make-or-buy decisions
- Sustainability and knowledge management
- Technology valuation
- Technology foresight
- Technology intelligence

## Events

### European forum of academics and industrialists enables sharing of best practice and research

The European Institute for Technology and Innovation Management (EITIM) will hold its third Senior Management Forum in Nice in January. The event will focus in particular on the themes of 'Partnering in innovation' and 'The role of the Chief Technology Officer'.

EITIM is a collaboration between Cambridge and seven other European universities. Its annual Forum brings together leaders from industry and academia to share ideas from practice and research in the field of technology and innovation management.

#### Partnering in innovation

Powerful new world-players such as China and India are working hard

to become powerhouses in knowledge production. This phenomenon poses crucial challenges to large incumbent firms and to their relations with external partners. The Forum aims to provide CTOs and senior R&D managers of large European companies with fresh insights into ways to transform these challenges into new opportunities for growth.

#### Role of the Chief Technology Officer

The Forum will shed light on the purpose and profile of the CTO role including enablers and barriers that may be encountered. Preliminary results from international research will be presented and discussed at the event.

See [www.eitim.org](http://www.eitim.org) for more details of EITIM and the Forum or contact David Probert ([drp@eng.cam.ac.uk](mailto:drp@eng.cam.ac.uk))



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## Diary [www.ifm.eng.cam.ac.uk/ctm/events](http://www.ifm.eng.cam.ac.uk/ctm/events)

### Nov

23 *The make-or-buy question: Are you getting it right?* One-day workshop  
Cambridge

### Mar

8 *Strategic roadmapping* One-day course  
London

27-29 *Technology & innovation management* Three-day course  
Cambridge

### Jun

13-14 *Strategic roadmapping* Two-day course  
Cambridge