

Technology Management

Quarterly newsletter of the Centre for Technology Management

May 1999



UNIVERSITY OF
CAMBRIDGE

New people, new projects, new events...

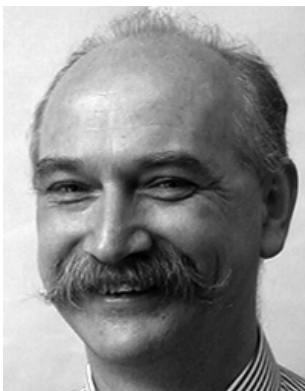
The spring season is bringing a surge of new activity at the Centre! We are delighted to welcome two new people to our team, Peter Fraser who will be taking forward one of our main areas of interest and Francis Hunt who will be opening up a new research area.

Peter comes with 25 years' experience in an R&D environment, responsible for software and product development,



networking activities in their businesses, and ways in which these can be harnessed to improve the value contribution of technology to the enterprise.

Organisations represented are ABB, BAe, Psion, MIT and the Post Office. The case studies and workshops this year will provide a great opportunity for Network members to present and discuss some of their projects and experience in this area.



mainly in the scientific instrument industry. He will be leading our research in the area of new product introduction, where we have a number of on-going projects (see inside for NPI activities). Peter is an accomplished jazz musician, so perhaps this may add a new dimension to future Centre meetings.

Software

Francis has a background in mathematics and software research and development. He took his PhD in neural networks at the Ecole des Mines in Paris, so we hope that future French members

of the Centre may benefit from his fluency in their language. Francis will be opening up our research into the management issues related to software technology. He will be in contact with members shortly about involvement in this new area which we believe has great potential to improve current practice.

We look forward to working with Peter and Francis in these areas and advancing knowledge and practice in collaboration with Centre members.

Symposium

I should like to remind members about the Technology Management Symposium on July 8 and 9. The theme this year is *Networking for the knowledge era: getting value from technology*, and it will feature some of the key projects going on within our EPSRC Technology Management Network.

Keynote speakers will address the issues of technology management

Discount

We have just sent out the brochure and booking form and an extra copy is enclosed with this newsletter. Full member companies are entitled to one free place and discounts on additional places; associate members companies are entitled to the discount. Don't forget to claim this when you send in the booking form. We look forward to seeing you in July for what should be an excellent networking event.

David Probert

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Growth of new product research activities

Our work in the area of New Product Introduction (NPI) is expanding with a range of new activities planned and three researchers joining us over the next 6 months. In addition we are running our first formal NPI training course as well as hosting an international product development conference in Cambridge. See below for further details.

NPI collaboration

Increasingly the development of new products involves collaboration between customers, suppliers and end users. This project will explore the processes for such collaboration, focusing on entry and exit to the particular collaborative project, essential commercial arrangements as well as the design and development phases.

Design of innovative world class products

This joint project with the University Engineering Design Centre and the Royal College of Art will involve working with a selected group of partner companies on 'live' projects. It will develop new approaches to industrial and engineering design, including state of the art business, marketing and production expertise.

NPI Club

The Club has been running for around 6 years covering a variety of topics, ranging from technical to organisational and managerial and sometimes including issues of active research. It has been a forum for discussing product development issues in an informal mode, with senior managers from non-competing companies able to share problems and potential solutions in some depth. We aim to link this activity to the Technology Management Network.

Speeding New Products to Market June 8 & 9, Cambridge

This two day course is based around our NPI audit methodology, the product of a recent research project. It has been published as a self-help workbook, targeted at small and medium sized business units.

EIASM Product Development Management Conference - July 5 & 6, Cambridge

The aim of the conference is to address new challenges concerning the management of product development. See our web site for details: <http://www-mmd.eng.cam.ac.uk/ctm/events/ipdm-conference-1999>.

Entering new markets early - the risks and benefits

What risks and what benefits can firms expect when making an early entrance into a new technology market?

Can decisions about **when** to enter a new market be helped by an understanding of how new markets evolve?

These are some of the questions that Cambridge researchers Elizabeth Garnsey and Tim Minshall have been seeking to answer in a study of the way technologies evolve over time and the impact this evolution can have on companies which enter new markets early.

By analysing the formation and evolution of three industry sectors (handheld computers, industrial inkjet printing and geographic information systems) they have tried to define key strategic issues for companies entering new industries with emerging technologies.

A summary of the final report of the project was given to members at the Centre's annual meeting on April 29.

The report draws on a review of the existing knowledge in the area to set out models of analysis relevant to the research.

Each of the target industries is described along with mini-cases of selected companies operating within these industries. Those studied were found to be very much influenced by generic changes that take place as new markets evolve. In all three industries there was an initial stage of experimentation followed by a period of convergence onto fewer designs after which dominant designs prevailed in a rapid succession of product generations.

At the same time market demand also evolved with sales to early enthusiasts giving way to customers from mainstream and conservative markets.

Finally the report provides guidelines on possible strategies to maximise advantages and minimise disadvantages when entering new technology industries at an early stage of their evolution.

A workshop is planned later in the year based upon the findings of this research project. Copies of the summary of the report are available to members - please contact Sarah Spong at the Centre if you would like to receive one. Enquiries about the project should be directed to Tim Minshall (thwm100@eng.cam.ac.uk) or Elizabeth Garnsey (ewg@eng.cam.ac.uk).

Centre activities

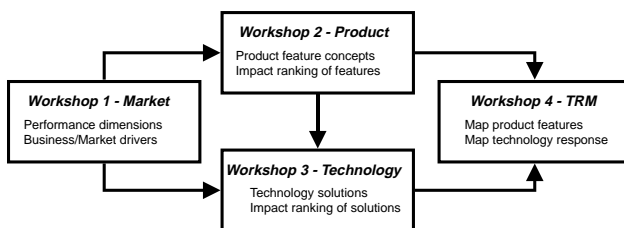
Linking technology to business strategy - the story of a successful collaboration...

The integration of technology considerations into business strategy and planning processes represents a continuing challenge for many firms. The Centre has enjoyed a successful collaboration in this area with Domino Printing Sciences plc as part of the company's efforts to develop a technology strategy and planning process. The joint work forms part of an ongoing research project: *Strategic technology management - linking technology resources to company objectives*.

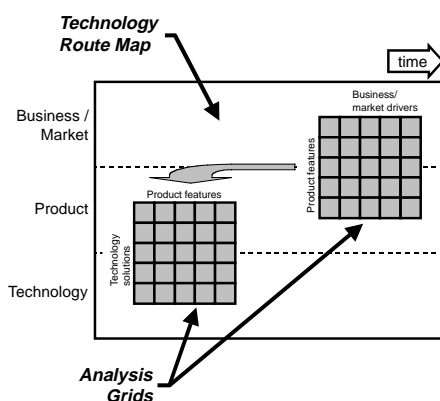
Technology route mapping

The possibility of collaboration arose during ongoing discussions at the Centre Forum series, where the technology route mapping (TRM) approach was identified as having potential to support Domino's technology strategy needs. Dr. Rick Mitchell, Group Technical and Quality Director, saw the opportunity for working together to develop these concepts further in the context of the company's requirements. After initial meetings and workshops designed to define the scope of the work, a series of four workshops was planned to develop the first route map within one of Domino's business units:

- **Workshop 1** focused on the identification of key product performance characteristics. Business and market drivers were then identified and prioritised in terms of perceived importance.



- **Workshop 2** generated ideas for future product features that could satisfy the business and market drivers identified in Workshop 1. This enabled us to define a simple grid which ranked the impact of each product feature against each driver.



- **Workshop 3** generated a wide range of possible technology solutions for each product feature. This enabled us to construct a second grid which ranked the impact of each technology solution against each product feature.
- **Workshop 4** developed the first view of the technology route map, based on a charting technique for mapping out the evolution of future products and technologies.

Interlocking grids

The construction of the two, simple interlocking grids enabled a framework to be developed linking technological developments to product features and market / business drivers, supporting dialogue between the commercial and technology functions in the business. The grids also provided a mechanism for connecting the various levels of the route map. Key outputs from the process were the identification of gaps in current knowledge, the generation of support for the process from staff and sufficient familiarity with the capabilities of the process for a more extensive strategy and planning process to be designed and implemented within the company.

Quick results

A valuable feature of the process was how quickly useful results were obtained, with the four workshops taking place within a month. It provides an effective 'start-up' or learning process prior to initiating a technology route mapping activity which can also be tailored to the specific needs of a firm. The process has subsequently been applied within a second Domino business unit, Domino Lasers in California.

Rob Phaal

Members of the Workshop held at Domino Lasers, California in February



Technology management research projects at Cambridge

- New product introduction for SMEs
- NPI collaboration
- Strategic technology management
- R&D project selection
- World class software delivery
- Product planning
- Technology change
- TM: a process approach
- Decision support
- Technology evolution in hi-tech firms
- Innovation management in hi-tech firms
- TM in software production
- Strategic management competence
- Strategic make or buy
- Industrial make or buy decisions
- Sustainability and knowledge management
- Engineering re-use
- Technology foresight

Industrial Workshops Series

The Centre recently ran three workshops in the Institute's ongoing Industrial Workshop Series

Technology strategy in practice

Rob Phaal (CTM) and Rick Mitchell (Domino Printing Sciences), illustrated practical approaches to developing technology strategies drawing on literature and recent collaborative research work.

Successful planning using technology route maps

David Probert and Clare Farrukh (CTM) set the scene for Clive Weeks (Philips Semiconductors) to give a detailed insight into their route mapping process.

Make or buy - sourcing parts and technology

Ongoing research to develop a practical framework was presented by Laura Canez (CTM). Paul Andrew (Rolls Royce) highlighted key issues from a procurement angle.

We plan to run another series in January to March 2000, *The challenge of technology change*.

Centre members are entitled to two free places at each workshop in the Industrial Workshop Series (see diary below).

Surf your way to CTM's homepage

Have you visited the Centre for Technology Management homepage at <http://www-mmd.eng.cam.ac.uk/ctm/>? The pages contain information about the Centre, its activities, staff, industrial membership, research projects, publications and events. There are also interesting links to other technology management related sites around the world arranged into a number of categories along with a brief description for each site. The website for the EPSRC Technology Management Network, which is managed by the Centre, can be accessed through the Centre homepage. Members are encouraged to visit the Centre and Network sites regularly to keep up to date with new developments.

A members-only site is being developed to provide privileged access to Centre services. The site will contain the latest newsletter, outputs of meetings/forums/workshops, details of research projects and other items that may be useful to members. Past issues of the newsletter are currently available through the Centre homepage. The latest issue can be obtained as an email attachment. The attachment is in pdf format and can be viewed with an Adobe Acrobat Reader which can be downloaded free of charge from the Internet.

Quarterly Diary

May				
4th	5-7.30pm <i>market</i>	Industrial Workshop	<i>Meeting the requirements of the</i>	Cambridge
27th		Network Meeting Salford	Metrics Focus Group	
June				
8-9th		Two day course Cambridge	<i>Speeding new products to market</i>	
14th	5-7.30pm <i>competences and capabilities</i>	Industrial Workshop	<i>Building and leveraging your</i>	Cambridge
July				
6th	5-7.30pm <i>gets tough</i>	Industrial Workshop	<i>Implementation - when the going</i>	Cambridge
8-9th		5th Annual Industrial Symposium	<i>Networking for the knowledge era: getting value from technology</i>	Cambridge