

Technology Management

May 1998



UNIVERSITY OF
CAMBRIDGE

Institute for Manufacturing

Centre reviews a successful first year

The Centre held its first annual meeting on April 30, when the achievements of the first year were reviewed and various possibilities for new activities and projects considered.

Our continued growth (we welcome Hoogovens and Bard this month) enables us to plan a selection of new research projects of interest to members.

Following the discussion at the meeting, we are in the process of defining project proposals to address these interests. Full details will be sent to members soon so that they may assist us in a final choice.

Academic/industrial network

We are very pleased to report that our proposal to the EPSRC to set up and run an academic/industrial technology management network was successful and the first meeting will be on May 28 (See page 4).

The Network will bring together 15 academic institutions, including 4 overseas, and 17 companies including Centre members. It will be a major opportunity to exchange and develop technology management ideas between leading practitioners and researchers over the next two years.

We expect the Network to lead to new collaborative research projects, in addition to the exchange of current research outputs and industrial practice.

Collaborations

A number of other new projects have arisen from earlier collaborations with the DTI, the Office for Science and Technology, and the European Commission.

The DTI booklet "Getting Value from Technology" will be available soon, and we are working with a local company to produce an OST foresight guide for intermediary organisations, such as trade associations, to help them provide technology foresight guidance to their members.

Finally, we have been asked to submit a proposal to the EU which will investigate the role of technology and knowledge management in promoting sustainable production. This last will help define research areas under Framework V, the EU's multi-billion ecu research programme.

Institute for Manufacturing

The Centre for Technology Management was the first Centre within the newly established Institute for Manufacturing. The CTM has



served as the model for clustering other research activities within the Institute. These include international manufacturing, strategy and performance, manufacturing

materials, processes, and control. Members of the Centre for Technology Management are automatically members of the Institute for Manufacturing and will be kept informed of new research, activities and events over the whole area.

The inaugural meeting of the board of trustees for the new Institute met on May 13, setting the seal on this exciting new development.

The Institute represents a major recognition by the University of our broad and industrially oriented view of manufacturing. Based in the Manufacturing and Management Division of the Engineering Department, the Institute also includes a charitable foundation, the former Foundation for Manufacturing and Industry, to build bridges to economic and policy issues.

*David Probert
University of Cambridge*

Contents

<i>Speeding new products to market</i>	
Geoff Gardiner.....	2
<i>Conference Report</i>	
Clare Farrukh.....	3
<i>Day Forum, Management tools</i>	
Tony Venus.....	3
<i>Technology Management Network</i>	
Tony Venus	4

Speeding new products to market

The improvement of product development and introduction practices is a high priority for many organisations - however, planning what and how to improve can prove difficult. A common approach has been to adopt the currently-accepted 'best practice'. This has altered with the years from CAD and CASE tools through Systems Engineering and Concurrent Engineering to various 'World Class' practices. Many of these approaches are likely to provide some benefit, but which should be adopted first in a particular situation?

Unless a business is planning to start afresh with a new 'greenfield' development organisation, improvements should start with an assessment of existing strengths and weaknesses. Activities that are clearly dysfunctional can be addressed immediately. Current performance should then be matched against business needs so that change requirements can be identified and priorities allocated.

We have just completed an EPSRC-funded project to develop a process for investigating and assessing product development and introduction. The aims of the project were to enable companies to

- investigate their new product activities with a minimum of effort and disruption to the business
- generate a more comprehensive and accurate assessment of activities than individual managers could possess
- plan improvements based on business need.

Workbook

The most tangible output of the project has been a workbook that describes a process for investigation and assessment and provides the detailed tools used in the process. The workbook is targeted at small and medium-sized companies and business units although some of the tools and techniques it employs have also been

tested successfully in larger organisations.

The workbook is intended to provide all the information that an organisation needs for self-assessment. External facilitation and training can also be brought to bear, however, and the outputs of the assessment tools can be benchmarked against the results of other organisations.

Investigation tools

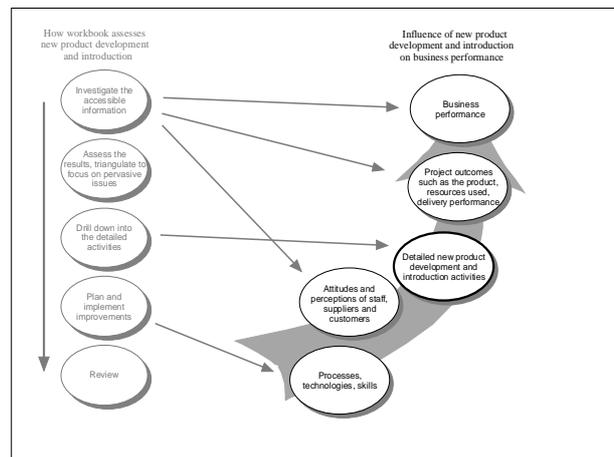
There are three main, investigative tools:

- a comprehensive questionnaire, which is intended for all staff involved in new product introduction. This gathers data from across the business and provides new insights into problem areas as well as information about the range of perceptions in different areas of the business and at different management levels. A new computerised version minimises the effort needed to administer this.
- a supply chain questionnaire, intended for suppliers, customers and the staff in the business that interface directly with them. It gathers information about the degree of partnership in the development supply chain and the alignment of views along that chain.
- a method of mapping the progress of recent projects against time and comparing that progress with the best that might be expected.

These tools can be used in isolation in businesses of any size. They can be used to profile individual projects, and are woven together to form a whole-business assessment of product development and introduction in an investigation process in the workbook.

Investigation process

The investigation process is organised around a simple business model, centred on the detailed activities that make up product development and introduction. These activities are based on processes, skills and technologies that are modified in practice by staff perceptions and understanding. The activities lead to outcomes such as new products, project costs and timeliness which, in turn, lead to a measure of business success.



An investigation of all the detailed activities would not repay the effort. The activities are not very visible and many, perhaps most, of them are likely to be carried out quite competently.

Instead, visible and accessible attributes are investigated, and the results from these are assessed to determine which specific parts of the detailed process might repay further investigation. One of the most important areas of focus is product time to market.

*Geoff Gardiner
University of Cambridge*

Conference Report

Management of technology, sustainable development and eco-efficiency

7th Conference of the International Association for Management of Technology
Orlando, 16-20 February 1998

The conference linked well to the themes of our Industrial Symposium. It was opened by two keynote speakers, the first being Graham Mitchell, Former US Assistant Secretary of Commerce for Technology Policy. The title of his address was Global Technology Policies for Economic Growth: the Challenge of Sustainable Development. He asserted that "advances in technology have come to be recognised as the most important single factor contributing to economic growth, and of overwhelming importance in producing more with less".

Critical trajectories

This was followed by Joseph Hennessey, Acting Assistant Director for Engineering, National Science Foundation, USA, who spoke on the subject of Research in the Leadership of Creative Transformations. He outlined "three critical trajectories impacting modern organisations and their processes: the scale and nature of co-operative approaches to research; the changing nature of the products and processes demanded by today's global market places; the impact of

advanced information technologies on society."

During the conference, the two Cambridge CTM papers were well received: Technology Management Process Assessment: Implementation Factors, by Clare Paterson, Rob Phaal, David Probert and Mike Gregory and Towards a framework for the management of organisational competencies, by Ken Purcell and Mike Gregory.

Tools and techniques

The paper sessions revealed the existence of several interesting tools and techniques - both emerging and developed. These included:

- Product and manufacturing technology monitoring enhancing the boundaries of strategic innovation management. A methodology called the 'Technology Calendar' is now being rolled out - it consists of searchable databases of information from expert institutes. End users are large companies making use of the Calendar's technology planner as a decision tool and small companies making use of the product development process planner as a learning tool. 20-25 company cases to date, building up specific Product Road Maps. Contact: Markus Mueller, Fraunhofer-Institute for Production

Technology, Germany. Web-site: <http://www.fhg.de/>

- EPOCH: effective people and organisational change. Computer based analysis tool to be used as part of process to manage change in small companies. Takes business processes as basis and collects data to direct change that improves responsiveness. For example develops maps of decision making networks within a company. Contact: Dr V Lovitskii, University of Plymouth, UK.
- MATI - Managing Accelerated Technology Insertion - a set of tools, processes, practices and business paradigms emerging from an NSF project which has the aim to "support the rapid identification of emergent technologies and innovations, and accelerating their adoption and conversion to product and customer solution". Contact: National Science Foundation, USA.

Conference Reference:

Management of Technology, Sustainable Development and Eco-Efficiency, Selected Papers from the Seventh International Conference on Management of Technology, Eds. Lefebvre, Mason and Khalil, Elsevier 1998, ISBN 0-08-043363-4.

Clare Farrukh
University of Cambridge

Day Forum - Designing practical technology management tools

This forum was held on April 30 at Fitzwilliam College, Cambridge. A good number of Centre members attended an interesting day of discussion.

Managers and engineers need practical tools for identifying and implementing improvements in technology management within the firm. This one day session built upon previous forums (Tools and Techniques: Role and Scope and

Industrial Cases). The meeting reviewed the drivers for change, identifying the main gaps and key criteria for the development of good technology management tools.

There were presentations from the Post Office Future Technologies Research Group and The Technology Partnership. Jim Ballantyne of the Post Office described the development of a software tool which was an interface between people and knowledge. Jody

Chatterjee gave examples of approaches to technology management used in tackling client problems.

Rob Phaal of the Centre outlined our new research project, during which we will produce a tool catalogue in addition to developing specific techniques for industrial use.

Tony Venus
University of Cambridge

Centre news

Technology Management Network launch

The launch meeting for the EPSRC Network will be on May 28 in Cambridge. The meeting will provide an opportunity for mutual introductions, shaping the direction of Network activities, learning about current research activities, and setting up focus groups on topics of specific interest to industry.

Support for industry

The Network provides a real opportunity to develop practical support for industry, and to network with other companies concerned with getting value out of technology in terms of business benefit.

In addition to the UK academic institutions we are pleased to include representation from Europe (University of Kiel), the US (MIT and

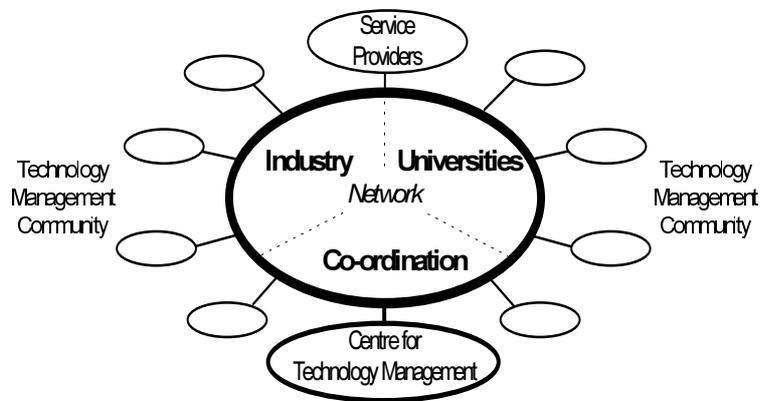
the University of Massachusetts) and Japan (Tokyo University).

European presentation

We are planning to include several presentations during the day. The first will be from our European partners

from the University of Kiel in Germany. Thorsten Teichert will present an overview of the work of their institute. We plan to follow this with inputs from industry.

Tony Venus
University of Cambridge



Quarterly Diary

June

16th 5pm	Evening Workshop	The learning based view - key ideas and concepts
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July

9th-10th 9am	Fourth Annual Industrial Symposium	Managing the technology of the future: foresight, sustainability and knowledge management
13th 5pm	Evening Workshop	Managing creativity to generate advantage

October

8th 10am	Day Forum	Technology Management Network
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