

Technology Management

Quarterly newsletter of the Centre for Technology Management



UNIVERSITY OF
CAMBRIDGE

Institute for Manufacturing

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Building the business case for industrial sustainability

The Technology Management Network Forum focused on the increasingly important issue of industrial sustainability at its meeting in Cambridge on 9 April.

The day provided an opportunity for academics and industrialists to exchange experience in this challenging area and to consider the contribution of technology management to the development of a sustainable future.

Attendees included regional and national organisations, such as Norwich and Peterborough Building Society, the East of England Development Agency, the Chemical Industries Association and the Department for Environment, Food and Rural Affairs. Companies present came from a range of sectors and included Bulmers and Unilever. There were also a number of consultants and networks such as Envirolink and the sustainable design network Tempo, as well as academics from a range of UK universities.

The scene was set by David Cook of the Natural Step, who outlined the environmental basis to sustainability. Insights into leading-edge sustainability practice were then provided by a number

of companies, including Joppe Cramwinkel of Shell who outlined a convincing business case for sustainability and Chris Sherwin, who described sustainable entrepreneurship at Philips. Phil Sheppard presented the Encluster/UKCEED approach which is steadily gaining momentum in the Peterborough area. Further insights into implementation issues were given by Mike Kennedy, Group Director of Sustainability at GKN. Mark Barthel of BSI gave an overview of the ground breaking SIGMA project, which is currently piloting its methodology and tools with partner companies.

Discussion groups are a much valued aspect of the Forum. Four different themes were explored.



Mike Kennedy of GKN speaking at the Forum

Building and implementing a business case for IS - drivers, barriers and the contribution of technology management

A wide range of drivers was discussed. These included cost savings, competition, brand, legislation, supply chain pressure, risk management and attraction and retention of staff. In terms of specific barriers, the attitude of customers and consumers, cultural attitudes on status symbols, the current relatively cheap price of energy and conflicting legislation and policy were considered significant. Technology management was thought to have a potentially huge role to play in providing new solutions to problems as well as supporting step changes in practice.

Tools for implementing IS - scope, impact and gaps

The discussion focused mainly on the functions of tools in implementing industrial sustainability. Companies need to be able to set a target and use tools to establish the direction of the company in terms of sustainability. There was interest in a 'maturity index' that would

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Industrial sustainability

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enable companies to monitor their own progress and identify areas for improvement. There appears to be a need for hard data to support the development of a business case, as well as communication tools for facilitators to increase uptake of sustainability.

Reducing environmental and social impact - moving from products to services

It was agreed that models for the successful implementation of services differed greatly, depending on a multitude of firm-specific and sector-specific factors. There was a great deal of potential for improving triple bottom line performance through services, as these typically allowed system-level optimisation. However these benefits could not be taken for granted – each project must be optimised on a case-by-case basis.

Stimulating entrepreneurial environmental ventures and innovation in the region

A significant level of interest and opportunity exists in the region's environmental industry. However, funding and information sources are not well integrated. It was agreed that networks need to be strengthened between firms, potential partners, financiers, customers and government. In addition, environmental technologies should not be treated separately. Instead, general perceptions of technology should be broadened to include them.

The outputs of the day will be placed on the Network website, where further details can be found:

www.ifm.eng.cam.ac.uk/ctm/Network.html

Modules and systems for high value service

CTM staff were involved in a recent Institute for Manufacturing programme of company visits to identify emerging trends and issues facing UK manufacturing firms. Some key findings from the visits to GKN, Smiths Aerospace, Renishaw and Urbis are outlined below.

Competitive position

All four companies were attempting to focus on delivering service so that their product was delivered as a module that could be integrated more simply into the customer's own product. For example, GKN is focusing on more complex part geometries, and is attempting to move towards the delivery of subassemblies rather than components for customers such as Toyota and Ford. Urbis has a considerable design service – covering both the design of street furniture and the requirements for lighting in given spaces – and is developing skill in the cosmetic customisation of standard components to give high added value with relatively little cost.

Technology

The delivery of well-bounded modular components leads to a need for high productivity and flexible equipment. This was well illustrated at Renishaw who have 60 sophisticated CNC machining tools with their own handling and design system, allowing them to produce extremely complex geometries through multiple operations within each machine cycle. This had led to an average of 1.3 operations per part for their 250,000 parts per month and an almost obsessive attention to detail and quality.

Systems

All the companies visited expressed enthusiasm for activities that could be described as 'systems engineering' – encompassing the skills required to design modular products and services, and the integration of modular processes and systems to deliver them.

Smiths Aerospace is making particular efforts to achieve this, and is trying to improve its ability to partition the design and production of its products between different teams, sites and companies. Smiths also demonstrated activities to improve responsiveness by removing barriers between design and production – to the extent that on their site the production and design operations shared an open-plan operation.

These observations of issues and trends in UK manufacturing will feed directly into the development of new research and teaching activities at the Institute for Manufacturing.

CTM members meeting to focus on value of technology research

The annual CTM members meeting is an opportunity for collaborating companies and CTM staff to bring each other up to date on developments of general interest, and to work together to shape the future research agenda. This year the meeting will be on the afternoon and evening of Thursday 8 May, in Churchill College, Cambridge.

In addition to reviewing the past, current and future research projects of the Centre, we shall be focusing in particular on the justification for long term technology research and development.

This is one of the more difficult areas that technology managers have to address, and is the subject of continuing research and practical experiment. Several member companies will present their approach to tackling this issue, and recent CTM work in this field will be reported. The meeting will conclude with a dinner and the chance to continue exchanging experience and ideas.

Centre chosen by BAE SYSTEMS to be its Academic Partner

BAE SYSTEMS, a Centre member for several years and collaborator on many of our research projects, has identified CTM as its 'Preferred Academic Capability Partner' in Technology Management. The company are setting up similar partnerships with a number of universities which have expertise linked to the company's Strategic Requirements Domains.

Technical Focus Group

The development will provide an opportunity to work more closely with BAE SYSTEMS on areas of research, education, training and recruitment linked to technology management. The work will be coordinated through a Technical Focus Group representing cross-company interests, chaired by John Wright. John has provided a thread of continuity during many past projects and we look forward to this new phase in our collaboration.

T-Plan goes east



CTM researcher Rob Phaal visited Singapore last month to give a two day course on T-Plan to the Singapore Institute of Manufacturing Technology (SIMTech).

SIMTech is using the 'fast-start' technology roadmapping approach to support small and medium sized companies in the region as part of a major drive to encourage technology transfer from the A*STAR National Research Institutes.

T-Plan has been applied a number of times by SIMTech, and has been adapted for local conditions, including the use of a diagnostic process at the start, together with involvement of technologists from the various institutes.

Busy conference season looming

Over the next three months CTM people will be presenting papers at three of the principal international technology management conferences: the International Association for the Management of Technology in Nancy, France in May; the R&D Management conference in Manchester in early July and PICMET in the USA in late July.

Papers presented will cover a wide range of topics including regeneration of innovative capability, technology valuation, managing technology across organisational boundaries, industrial sustainability, software technology management and new venture creation.

CTM researcher coxes for Cambridge boat crew

CTM researcher Jim Omartian took part in this year's Oxford and Cambridge boat race held on the Thames on 6 April. As cox, Jim guided the boat to a thrilling end. It was hailed as the closest finish in history, with Cambridge reaching the finish line just one foot behind Oxford. Jim can now devote most of his time to finishing his MPhil on software requirements.

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 management competences
- Strategic make-or-buy
- Industrial make-or-buy decisions
- Sustainability and knowledge management
- Engineering re-use
- Technology foresight

9th Annual Technology Management Symposium, October 2003

Accelerating innovation through technology and design

Our Technology Management Symposium this year will take as its theme: *Accelerating innovation through technology and design: Riding the wave of disruption.*

New technologies provide rich opportunities for the design and development of innovative products or the creation of whole new industries, with substantial rewards awaiting successful companies. At the same time, innovation is becoming an increasingly distributed process involving networks of technology providers, designers, system integrators and manufacturing service providers.

The challenge for today's companies is to adopt an appropriate innovation strategy

to make the most of emerging technologies and markets. For some large companies, this may require reorganisation in order to encourage innovation and foster the kind of creative climate which is such a feature of specialist product design consultancies.

Small companies can increase competitiveness armed with strongly protected intellectual property and access to the kind of specialised design and manufacturing services previously only available to large, vertically integrated companies.

The Symposium will feature key speakers from industry, government and academia to help identify ways in which these issues

can be managed. There will be the usual mix of plenary, case study and workshop sessions. This year we are collaborating with the Engineering Technology Board (ETB), their Network Members and the Inside UK Technology Programme. ETB Chairman, Sir Peter Williams, will address the evening reception on the first day.

The Symposium will take place on 1-2 October at Downing College, Cambridge. Centre member companies are entitled to a free place at the Symposium, so get the date in your diary now – we shall be sending out the full programme and booking details in June.

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Diary

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

May		
8th	<i>CTM annual members meeting</i>	Churchill College Cambridge
June		
5th	<i>Technology Roadmapping</i>	One-day workshop Madingley Hall Cambridge
September		
24th	<i>Make-or-buy strategy and decisions</i>	One-day workshop Cambridge
October		
1st-2nd	<i>Accelerating innovation through technology and design</i>	CTM Symposium Cambridge