

Technology Management

Quarterly newsletter of the Centre for Technology Management

November 1999



UNIVERSITY OF
CAMBRIDGE

Interest in technology management grows around the world

The July PICMET conference (see back page) and recent visitors to the Centre from abroad are evidence of a significant growth in technology management activity around the world. PICMET '99 was the biggest yet, with over 600 international delegates. Prof Katayama of Waseda University reported that Japan has instigated a national programme of technology management education and research. Our own EPSRC Network community provides further evidence of this important development in interest, and the Forum on October 7 was the biggest yet, with over 80 people attending.

Henley Forum

Knowledge management – strategy, implementation and metrics was the Forum's theme. It was organised jointly by Henley Management College and the Centre for Technology Management as part of the activities of the EPSRC Technology Management Network. The Network holds forums twice a year, open to industrialists and academics, to identify and discuss key



issues in technology management, promote the exchange of ideas and experience and provide the opportunity to discuss and disseminate emerging research outputs. Participants rated the day highly and this theme will continue to be a key interest group within the Network.

Speakers

Speakers at the event were Peter Haine, Head of Knowledge Management at SmithKline Beecham; Adrian del Maestro, Senior Knowledge Manager at Ernst & Young; Professor Emilio Herbolzheimer of Henley



Management College and Professor Hans Siggaard Jensen of Copenhagen Business School.

Discussion groups

The day was made as interactive as possible and included time for small group discussions. To aid networking and dissemination a web-site has been set up and this will include copies of the slides shown on the day and short



summaries of the discussion groups. (<http://www.henleymc.ac.uk/OctoberForum>)

Taking the Network meeting to a new location proved a stimulating experience for everyone involved. Continuing with this approach the next event will be at Manchester Business School on April 6, entitled *Technology Management – tools, techniques and education*.

David Probert

Contents

Research update

New product introduction:

two new projects 2-3

PICMET 99 report 4

Com Dev project 4

Quarterly diary 4

Keeping the new products flowing...

Successful new product introduction is the lifeblood of manufacturing businesses. Companies need to produce a steady stream of attractive new products to retain or increase their market share. But with markets becoming more competitive, managers must adopt efficient processes in order to deliver high-quality products on time.

Two new projects just started at the Centre for Technology Management are looking at different aspects of the NPI process – ‘Good design practice’ and ‘NPI collaboration’.

Good design in practice

The Good Design Practice (GDP) Program is a collaborative project between Cambridge University and the Royal College of Art. The project aims to encourage good design practice in UK industry, with a particular emphasis on the role of industrial design.

Design as a source of competitive advantage

Recent research has shown that firms investing in product and industrial design have been commercially more successful than those who do not. A good example of successful design is the Sony Walkman where, by combining industrial design with manufacturing flexibility, Sony has been able to generate a family of products with large market impact but little marginal cost.

Issues in design management

To produce a coherent design, there has to be an integration of the different design disciplines from the start. This can be difficult, as there is often perceived to be a cultural gap between design engineers and industrial designers. Additionally, small engineering teams may not even include an industrial designer. As most engineers receive little training in industrial design, their knowledge of this subject tends to be very restricted and they may not appreciate its value.

Project aims

The main objectives of the GDP Program are to:

- specify the elements of current good design practice
- create and validate a generic process for the creation of new products using good design practice

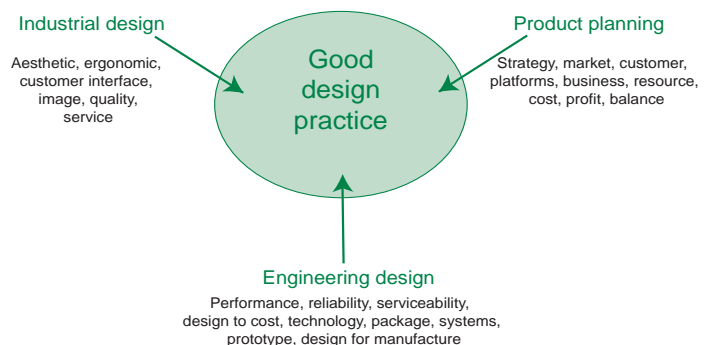
- identify barriers to adoption of good design practice by small and medium sized companies

The initial proposed model of good design practice uses a cross-functional design process with business, product planning, industrial design and product design inputs (see diagram).

Four live development projects are currently being studied to identify the processes actually employed and to compare these with the model.

The objective is to produce a generic process for the development of new products that can then be validated in the following phase of the project. One of the outputs of the project will be a workbook to provide practical guidance to managers engaged in new product development.

Variety of design inputs



How to make NPI partnerships work

How to enter into and manage NPI collaborations is the subject of the second new project entitled: *New Product Introduction: developing robust processes for supplier and customer interaction*. The project will explore the process of introducing new products when significant development work is provided by new supplier/customer combinations.

Deciding to collaborate

Few companies have all the skills needed to develop technologically complex products. As technology demands increase, companies have to choose the areas in which they will specialise. These are their so-called core technologies, where they expect to be able to generate competitive advantage. Firms are increasingly opting to form collaborations with suppliers or partners to gain access to other relevant technologies. Indeed, this route may even be taken for the purpose of renewing or expanding the core technology areas of the company.

What type of collaboration?

There are several options for collaboration including outsourcing, alliances, joint ventures and mergers. The approach chosen will depend on a number of issues, for example:

- scope, timescale and degree of organisational integration or independence required
- whether the technology area has the potential to become 'core'
- technology 'maturity' - whether the technology exists already or needs to be created

Firm size may also be an important factor, especially where a small dynamic firm with leading-edge technology collaborates with a larger firm whose complementary strengths lie in the areas of marketing and distribution.

Key success factors

Although effective collaboration is very demanding, a number of key success factors are beginning to emerge:

- choosing the right partner
- establishing the ground rules up front
- frequent communication and review

- good personal relationships
- equality of contribution and outcome
- flexibility
- developing a climate of trust

Project activities

Initially, the project will undertake a number of historical case studies to develop a model of the collaboration process. The model will then be validated by following a number of 'live' collaborative projects.

This knowledge will be used to produce self-help workbooks for both supplier and customer which will help them start, operate and withdraw from product development collaborations.

Further details

If you would like further details of current NPI projects or would like to take part in workshops or case studies associated with these projects, please contact Pete Fraser (email: pvf20@eng.cam.ac.uk)

New member of the NPI team



Claire Rose has joined the Centre to work with Pete Fraser on the New Product Introduction collaborations project. Claire's special interest is in strategic marketing and the encouragement of business effectiveness and growth. She has lectured in management and organisational development and also has a management track record.

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

Conference reports

Portland International Conference on Management of Engineering and Technology (PICMET)

Portland, Oregon, USA
July 1999

This conference, organised by Portland State University, brought together 600 academics and practitioners in technology management from around the world. The Centre presented three papers: *Technology foresight as a key element in make-or-buy strategy* discussed technology analysis requirements for make-or-buy strategy with the contribution of current and emerging technology foresight techniques. *Tools for technology management: dimensions and issues* categorised and described existing tools in the context of strategic management and discussed the insight derived into current industrial concerns in this area. *Technology sourcing: the link to make-*

or-buy discussed different options for technology sourcing resulting from undertaking a strategic make-or-buy analysis.

The academic and industrial presentations covered many key issues in technology management such as management of technological innovation, information knowledge management and international aspects. There were many interesting highlights including a presentation on the European Union's Fifth Framework Programme for Research and Technological Development and another on managing microprocessor development at INTEL. An important theme taken up by several keynote speakers was the link between R&D activity and national or company prosperity. Examples were given from the Korean economy and an international study of company performance that originated from PICMET '91.

Useful contacts were made to extend our Technology Management Network with active links formed with

researchers in Europe, the USA and Japan. A short study tour of some of these will be carried out during November and key research areas will be reported in the February newsletter.

David Probert and Laura Cáñez

Com Dev project

The Centre's Product cost optimisation project with Com Dev has recently entered its final stage. Key criteria for product design have been investigated with the aim of establishing design rules for future new product launches. An extensive Taguchi exercise was undertaken in order to facilitate this, which will be completed before Christmas when Com Dev production resources are available.

Centre visitor

Marinus Niemand has joined the Centre to study for a one-year, research degree. He previously worked for Sasol in South Africa. His research will focus on the management of technology in the process industry.

Quarterly Diary

| December | | | |
|----------|-------------|-------------------------------|---|
| 16th | 5 - 7.30pm | Evening Workshop Cambridge | <i>Managing change - the people issue</i> |
| January | | | |
| 10th | 5 - 7.30 pm | Evening Workshop Cambridge | <i>Challenge of technology change: technological innovation</i> |
| 27th | 10 am - 4pm | Day Forum Cambridge | <i>Valuing technology in the business</i> |
| February | | | |
| 10th | 5 - 7.30 pm | Evening Workshop Cambridge | <i>Challenge of technology change: disruptive technologies</i> |

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