Cambridge Centre for Technology Management

University of Cambridge

N e w s l e t t e r

First Issue — May 1997

Editorial

David Probert
University of Cambridge

Welcome to the first edition of our Management of Technology Newsletter: the start of what we hope will be a creative new opportunity for industry/academic dialogue in this exciting field.

The projects and activities of the Management of Technology Research Group at Cambridge have grown rapidly in recent years. However the last few weeks have seen an unusual number of 'firsts', including the launch of the Centre for Technology Management (reported inside) and the publication of this newsletter.

The purpose of these new ventures is to facilitate a wider industrial involvement in our work, and extend the possibilities for interested companies to exchange ideas and experience, and take part in research projects.

The quarterly newsletter in particular will be a forum for Centre members to raise issues, learn about current research projects, get early notice of future events, and get summaries of events which they may have missed. In addition we expect to provide a window on the international technology management scene, with contributions from others in the field and reports on conferences and seminars.

The newsletter is produced by the whole team in Management of Technology Research Group, and there will be regular contributions from the various projects. Please let us know if you have some issue you would like to raise, comments on the content or just a message for the TM world. We have a roving reporter who would be happy to help you with your story! We look forward to a lively exchange of views and ideas and seeing you at some of our forthcoming events.

Technology Management Process Assessment

Robert Phaal &
Clare Paterson
University of Cambridge

The effective management of technology as a source of competitive advantage is of vital importance for many organisations. It is necessary to understand, communicate and integrate technology strategy with marketing, financial, operations and human resource strategies. This is of particular importance when one considers the increasing cost, pace and complexity of technology developments, combined with shortening product life cycles.

The five-process model of Gregory (1995) provides a framework within which technology management activities can be understood: see Fig. 1.

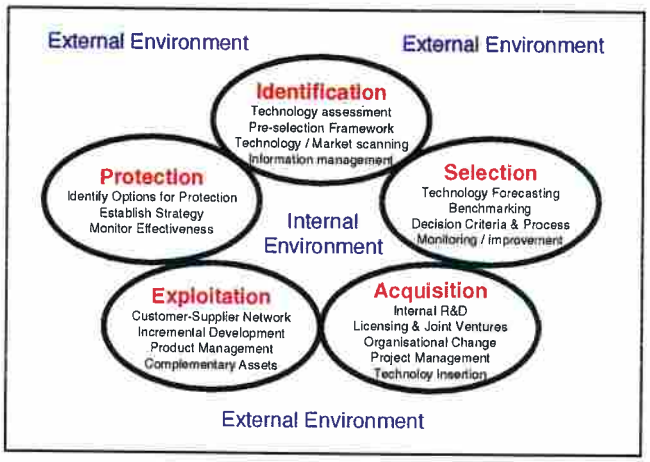

Fig 1 - Five-process technology management framework

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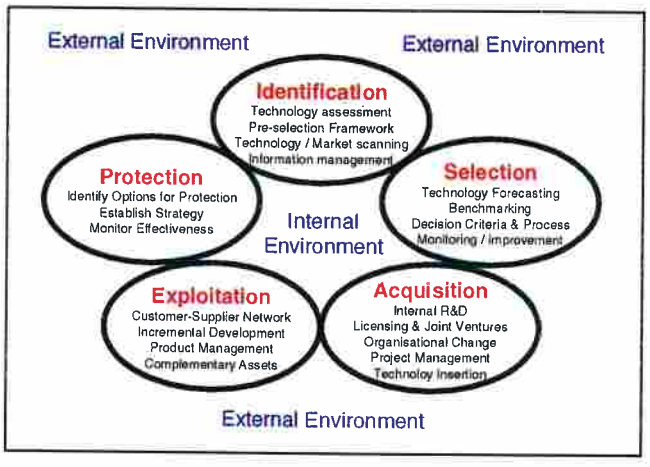

Fig 1 - Five-process technology management framework

A technology management assessment procedure has been developed which is based on this model. The method provides a structured procedure for a top-down investigation into technology management practices in a firm, with the following aims:

- To assess the way in which technology contributes to business goals
- To assess technology management activities in selected areas of the business to identify areas of strength and weakness
- To examine existing processes underpinning specific technology management activities and to identify improvements and opportunities for the dissemination of good practice
- To enhance awareness and communication of technology management issues

The assessment procedure is comprised of three workshop-based stages (see Fig. 2):

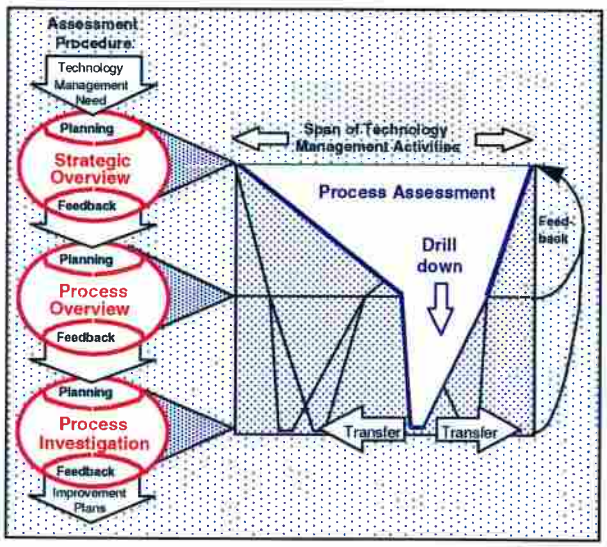

Fig. 2 - Technology management process assessment procedure, showing drill-down approach

i) *Strategic Overview*, where the business unit is segmented in terms of business and technology areas. The current and future impact of each technology area on each business area is assessed in terms of value, effort and risk

ii) *Process Overview*, where recent, current and future activities are charted for selected technology-business segments. These activities are characterised in terms of the Gregory five-process framework, and assessed in terms of the effectiveness of inputs, process and outputs

iii) *Process Mapping,* where specific process areas are mapped in order to identify blockages and barriers, and areas for possible improvement

Figure 2 shows how the Strategic and Process Overview stages can each result in several areas for possible assessment in more detail. Thus, many assessment routes are possible as specific technology management processes are examined. For this reason, careful planning is required at each stage to select appropriate areas for further assessment. Feedback sessions after each stage link operational and strategic views, and enable the transfer of appropriate results to other technology and business areas.

The technology management process assessment has been developed over a period of two years, funded by the EPSRC and collaborating partners (GEC-Marconi, BAe and T&N). The procedure is currently being tested in a variety of industries to ensure that the method is sufficiently robust for independent application.

Reference

Gregory MJ (1995), "Technology Management: a Process Approach", Proc. Instn. Mech. Engrs., 209, 347-356.

Resolving Uncertainty

Mal James
Consultant to GEC Marconi;
Former Group Production Director

"The human mind suppresses uncertainty. We're not only convinced that we know more about our politics, our businesses and our spouses than we really do but also that what we don't know must be unimportant*"*

Daniel Kahneman

What attracted me to the current project, 'Technology Management - A Process Approach', was the emphasis on investigating and tracking the salient processes within the life-cycle of technology. Most of us realise that risky decision making involves making choices under conditions of uncertainty, and this is the case in the management of technology. **It is a**

business discipline to mitigate such risks. Having been working with the project team from the very earliest days, I have developed a high level of confidence in our joint understanding of practical issues and tools, such that the Centre's aims **are designed to support and realise** the commercial and business objectives of the member companies. However, some of us, like Charlemagne's monks, probably hope for a form of wisdom, others technological thaumaturgy - and the rest of us - what?

One of the over-used phrases nowadays is that of Best Practice, however what I look to gain from work in technology management is:

- The ability to assess viable, cost-effective and usable Business Procedures which can be easily embodied into most businesses

- The ability to acquire *"product stretch"* , especially desirable in capital intensive industries, by use of technologies, processes and 'cots' (complete off the shelf)

- To ensure that maximum use is made from current technologies

To summarise, development and exploration of alternative processes, tools and materials which are important to **survival** and **growth** require *highly focused* and *skilled* manpower, *expert* support and broad systems *knowledge* . The Centre is well placed to carry out this work and so I look forward with enthusiasm to the coming months and a significant ROI.

Mal James has been a key core collaborator of the present EPSRC sponsored project in technology management since its start in 1994. Now a consultant to GEC-Marconi, Mal was the Group Production Director and director responsible for Quality until 1996, where he saw his key role as the cost effective transition of designs into production and long term manufacturing/competitive strategies.

GEC-Marconi is one of the world's largest capital electronics groups with a turnover of £ 3.5 bn, employing some 46,000 people world wide.

Centre Launched

David Probert
University of Cambridge

After a period of consulation with interested companies and university colleagues, the Centre for Technology Management was formally launched at an evening meeting in Churchill College on 24th April 1997. Nineteen people attended, and a lively discussion about the preferences for Centre activities ensued.

Already nine companies have joined the Centre and several others are on the verge. There seems to be good agreement that the mission and aims of the Centre are in line with company requirements:

Mission

The Centre for Technology Management will support industrial technology managers by providing a focus for practical research, a forum for industry-academic discussions, a professional interface with industry and a range of industrially related services.

Aims of the Centre

- To develop and implement practical tools and materials for use by management in industry

- To develop new understanding, frameworks and techniques for the effective management of technology

- To provide an interdisciplinary industry-academic community in technology management and related fields

- To prepare and deliver educational and training materials for use at undergraduate, postgraduate and post-experience levels

The meeting went on to discuss the programme of events for the year. There will be a range of meeting formats, building on our popular forum series. Some will take place in the evening, others will be half day or full day events. It is hoped that in this way everybody will be able to get to something of interest.

The Third Annual Industrial Symposium on 17th/18th of July promises to be our most varied and interesting programme to date, with many Centre members taking part.

Conclusions from the Launch Meeting

The meeting made a number of recommendations about the running of the Centre:

- There will be an Annual General Meeting to review plans and performance
- Several additional subjects were suggested as the basis for research and/or events; for example, organisational learning
- We shall establish an academic advisory group to make active links to the wider academic community
- A programme of research project deliverables will be published so that members can have a clearer view of emerging new ideas
- We shall extend our web page service to provide a closed user group for Centre members

With a lively discussion and the contribution of many useful new ideas, the Centre got off to an excellent start and looks set fair for a healthy future.

What is Organisational Learning?

Clare Paterson
University of Cambridge

Following the interest shown by the Centre members in the area of organisational learning, organisational memory and knowledge management, it has been decided to run a column on the subject in the next 3 or 4 editions of the newsletter. Each time we will aim to give a quick overview of some of the more prominent literature, followed by comments from a researcher in an area where organisational learning issues have surfaced.

What is Organisational Learning?

"OL is the acquisition of new knowledge by actors who are able and willing to apply that knowledge in making decisions or influencing others in the organization". D.Miller, 1996

Views to come in future newsletters:

Research View 1: Learning in Rapid Growth Companies
Elizabeth Garnsey - The Development of High Tech Firms

Research View 2: Organisational Learning in Alliances
Tim Minshall - International Manufacturing

Research View 3: Relating organisational learning modes with the evolutionary process of technology development and the dynamics of competitive advantage
Xiaobo Wu - Technology Management & International Manufacturing

References

Argyris, C. & D.Schon (1978), 'Organisation Learning', Reading, MA, Addison-Wesley.
Miller, D. (1996) 'A Preliminary Typology or Organisational Learning: Synthesizing the Literature', Journal of Management, Vol 22, No 3, 485-505.
Senge, P.M (1990) 'The fifth discipline: the art and practice of the learning organisation', New York, Doubleday.

Quarterly Diary

Date	Event	Title
4 June	Evening Seminar	Performance Measurement
17-18 July	Industrial Symposium	Third Annual Technology Management Symposium: "Tools and Techniques for Technology Management"
25 September	Day Forum	Technology Management Process Assessment: Cambridge Project Outputs

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