Technology Management

August 1998

UNIVERSITY OF CAMBRIDGE
Centre for Technology Management

Managing the technology of the future - symposium report

Managing the technology of the future – foresight, sustainability and knowledge management was the title of the 4th Technology Management Symposium, held at the Møller Conference Centre, in Cambridge on July 9 - 10. A record number of delegates from all over the world attended.

Keynote speakers from Unilever, Shell and Jaguar described the impact of these issues on their business, and the strategies adopted to ensure a prosperous future.

David Smith outlined the application of knowledge management techniques within Unilever. Andrew Oliver explained how Shell was embedding sustainability issues into the heart of its business approach. Nick Scheele of Jaguar described how a study of consumer trends had been used to transform his company. Academic perspectives were provided by Professors Tom Allen from MIT and Mike Gregory from Cambridge. The future European research framework was described by Mr Perez Sainz from DG12.

The Symposium included case studies from a wide range of industry sectors. Delegates found the opportunity to discuss these individual company experiences to be one of the most valuable aspects of the Symposium. Finally, workshops run by Centre staff provided the opportunity for delegates to explore the results of recent research projects in technology management. A key point to emerge from the two days was the continuing need for tools and techniques to support industry.

The Symposium is now firmly established in the technology management calendar, and next year's event is booked for July 8 - 9. We intend to build it around the activities of the Technology Management Network (see page 3); however good ideas for key themes are always welcome!

David Probert
University of Cambridge

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Improving managerial decision making

Good judgment and competence in decision-making are becoming increasingly vital attributes for successful managers. As they take more responsibility for strategic activity, the wrong decision could incur considerable costs to their business as well as their career.

Nonetheless, most managers appear unaware of the need to improve these crucial skills. They assume that decision-making ability is innate and unlikely to change. In fact, decision-making is a skill that can be learned and improved, and making use of past experience is the most valuable way to learn. Auditing past decision-making practice can identify what needs to be improved and how to go about it.

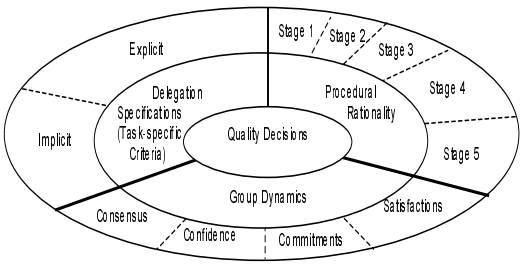
There are three categories of criteria that are important in the evaluation of decision performance: delegation specifications, procedural rationality and group dynamics. These three categories are shown in Figure 1.

Delegation specifications: Whilst most of the authority to make decisions in organisations is concentrated in top management, senior managers may delegate part or all of it to subordinates due to limited time or capability. The 'delegates' are expected to make decisions on behalf of these 'delegators'. Although trust is the most important factor in the delegators-delegates relationship, the uncertain nature of business environments and the diverse interest groups of modern organisations require delegates to justify the decisions that they make. One means of justification is to show that the decision serves the needs and interests of those delegators as identified in the delegation specifications.

Procedural rationality: It is widely believed that a rational decision-making process, characterised by methodological soundness and systematic information processing, contributes to the quality of decisions. Five decision stages in which to audit, analyse and improve the whole decision-making process, have been identified :

- Stage 1: Conceptualising the managerial situation
- Stage 2: Structuring the decision problem
- Stage 3: Gathering relevant information
- Stage 4: Coming to a conclusion
- Stage 5: Following-up the decision.

Group dynamics: One important aspect of organisational decision-making is that it occurs in a team environment. Good decision-makers realise that the *implementation* of a decision is as important as reaching one. Socio-emotional aspects such as participation, consensus and confidence are vital to successful implementation.

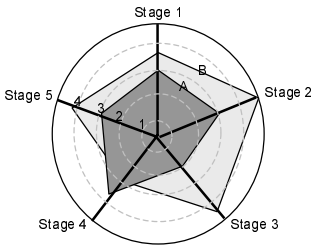


[Figure 1] Three dimensions of decision performance evaluation criteria

Document review, questionnaires and interviews are used to reconstruct decision making. Conducting interviews with top management is of particular importance because delegation specifications, the first category of evaluation criteria, are identified at this stage. Once the reconstruction of decisions is complete, their quality is assessed in terms of the three criteria identified above and possible improvements are explored. Often learning takes place instantly, whilst managers are being interviewed.

Case study: Managers at a scientific instruments manufacturer were asked to evaluate the procedural rationality of their decision making for each of the five stages of the decision making process. The chart in Figure 2 plots their scores on a scale of 1 to 5 with the maximum score on the edge of the circle.

The managers were asked firstly to rate their own performance as a whole



[Figure 2] Procedural quality assessment diagram

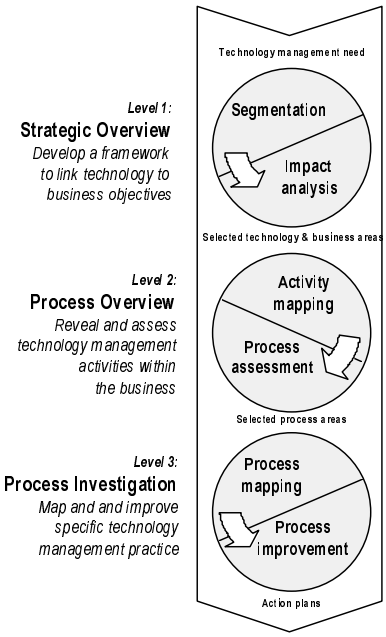
for each stage of the process (plotted as line B on the chart) and then to consider how well they had actually performed in relation to specific decisions they had had to make (plotted as line A). The gap between each line and the edge of the circle indicates how far short of the ideal they fell. The results revealed an interesting excess of confidence in their decision making performance when they considered their performance as a whole. They tended to rate themselves less highly when asked to consider detailed activities for each stage. The managers were able to see from this study where opportunities for improvement in their decision making might exist and also where their confidence in their own abilities might be misplaced.

We are currently looking for another case study to assess the validity of this methodology. We would be pleased to hear from any companies interested in a collaborative research project to review and improve their decision-making practice (preferably supplier selection decisions) or who have a decision to make which we could observe: Tel: 01223 338192, Fax: 01223 338076, E-main: jp229@cam.ac.uk

Jaeshin Park
University of Cambridge

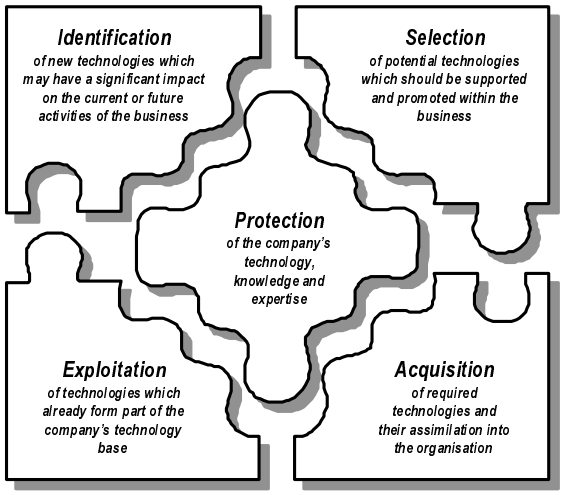
Management of technology - a process approach

This project, undertaken by Centre research staff, has broken new ground by developing a systematic and tested methodology for revealing and assessing technology management, in terms of processes, within an industrial organisation.



Through repeated application within a wide range of companies, valuable research data concerning companies' technology management practices has been obtained and a framework for the transfer of good practice provided.

The underlying five process model (see diagram, right) has proved to be robust, has stimulated understanding of technology management processes and has provided a unifying structure for other work in this field.



The five processes of technology management

A procedure has been developed for supporting the assessment of technology management process in the firm. The TMAP process guide provides a well founded research instrument in addition to being a practical tool for industry. It will be published as a workbook in the near future.

A new 3-year research project has started, building on this work: *Strategic management of technology - linking technology resources to business objectives.*

Clare Farrukh,
Robert Phaal
University of Cambridge

Technology Management Network launched

A successful launch meeting of our EPSRC-supported Technology Management Network was held on May 28, in the Møller Centre, Cambridge. The event was well supported by the Centre's industrial members and there were sixteen representatives drawn from six UK universities and two overseas universities (Dublin and Kiel).

The meeting provided an opportunity for members to get to know each other and to discuss the future direction of the Network's activities as well as hearing about current research activities.

Several focus groups were set up, formed around three themes which emerged from an active discussion session: knowledge management, a range of technology management issues and dissemination. These focus groups are now developing and will report back to a follow up meeting in Cambridge on October 8 when members will also have the chance to explore other interests.

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

DTI booklet

Our booklet 'Getting value from technology – a guide to technology management' which was commissioned by the DTI and printed by IEE is now being distributed.

The booklet illustrates our process based approach to technology management and presents a number of case studies from Centre members.

Over one hundred copies were distributed to industrial representatives at our Symposium in July and further copies will be sent to our extensive industrial network community.

Centre members should have received several copies of the booklet. If you would like more for distribution within your company, or to your suppliers and customers, please let us know.

Tony Venus
University of Cambridge

Conference report

5th International Product Development Management Conference

European Institute for Advanced Studies in Management (EIASM)
Como, Italy, May 25-26, 1998

This conference is emerging as one of the leading academic forums for the management of product development. It attracted leading figures including Prof. Fugimoto from Tokyo University, Profs. Utterback and Cusumano from MIT and Prof. Iansiti from Harvard as well as many leading European and Scandinavian contributors.

Key themes

The conference is closely refereed and only 70 papers were accepted from some 140 abstracts so quality was consistently high. Key themes to emerge included:

- the importance of product platforms as a means of capturing, exploiting and extending the life of core technologies
- collaborative development involving suppliers and customers as an integral part of the product development process
- the management of knowledge in its various forms through the product development cycle and between products

Copies of the proceedings can be obtained from Graziella Michelante at EIASM (Fax: +32.2.512 19 29; email:michelante@eiasm.be).

Cambridge

The good news for Centre members is that the conference is to be held in Cambridge on July 5-6 1999, under the auspices of the Centre, which should provide us with a unique insight into emerging trends in product management.

Mike Gregory
University of Cambridge

Quarterly Diary

September

17th	5pm	Evening Workshop	*Design for Manufacture*

October

8th	9am	Day Forum	*Technology Management Network - First review meeting*

November

5th	5pm	Evening Workshop	*Sustainable Manufacture*

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