Technology Management

Quarterly newsletter of the Centre for Technology Management

UNIVERSITY OF CAMBRIDGE

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Exploiting and protecting those innovative ideas

Managing the innovation process and protecting any resulting innovations are two issues of crucial importance to companies involved with revolutionary technologies.

A recent Technology Management Network Forum organised by CTM focused on these two critical areas. Fifty two industrial and academic delegates attended a highly successful, one-day event at Fitzwilliam College, Cambridge on 19 September under the title: *Strategies for creating and protecting intellectual property.*

The keynote presentation was by Professor Ove Granstrand, from Chalmers University of Technology in Gothenburg, who talked about "Linking intellectual property strategies to innovation management". The current pro-patent era, he suggested, is part of a fundamental shift towards a new economy termed "intellectual capitalism", in which strategic attention is paid to IPR's (intellectual property rights) and intellectual capital. He provided a particularly interesting insight into the intellectual capital held within the world's most valued companies. Other highlights included the strategic options available for bringing new innovations to market as well as general patent and secrecy strategies used by high technology firms.

Chris Bartlett of BAE SYSTEMS then described the practical issues involved with protecting intellectual property in the defence sector. In particular, he explained the firm's approach to "patent families" and the process by which they move from innovation to exploitation. A useful guide to defining individual elements of a patent strategy was also covered and prompted a spirited question and answer session at the end.

Jeff Butler from PREST at the University of Manchester followed with a talk on the theoretical development of innovation management and its increasingly important link to technology exploitation. A lively discussion followed around the notion that, with the advent of 5th generation R&D management, innovation can be viewed as a strategic learning experience.

The event's fourth and final presentation was a talk on *Industrial innovation strategies: the Generics model* given by Jeremy Klein of Scientific Generics, a local technology consulting firm. He described how his firm has developed a new ventures business

model that maximises the creation of value from technology by linking parallel, internal business models.

The rest of the day was taken up by the ever popular discussion group sessions in which delegates debated such topics as "the role of knowledge management within innovation processes" and "creating the right environment for radical product innovation".

Contents

Research produces range of practical tools for industry

A recently completed CTM research project has produced a range of practical outputs for both industrial and academic users. The project, *Strategic technology management - linking technology resources to company objectives*, ran fro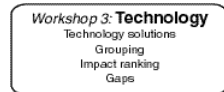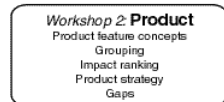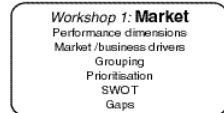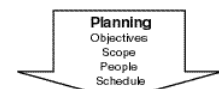m April 1998 to July 2001 with the aim of creating new approaches to the management of technology based upon an integrated view of technology management issues. Here we describe some of the tools and publications the project has produced.

T-Plan: fast-start technology roadmapping
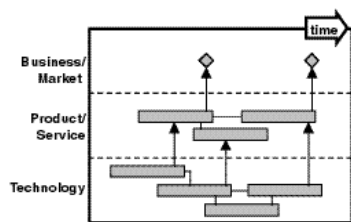
A practical guide for supporting technology, product and business planning will be published by the Institute for Manufacturing in November. The roadmapping process provides a natural integrating mechanism, drawing together a wide range of different management processes, tools and information sources. The fast-start methodology supports a company wishing to initiate technology roadmapping using limited resources. The process can then be customised further after obtaining an initial insight into the benefits. The standard process involves four workshops.

T-Cat: management tool catalogue

T-Cat is an on-line resource containing approximately 850 matrix-type tools, covering all areas of management, but with a focus on technology, innovation and knowledge management.
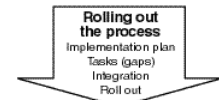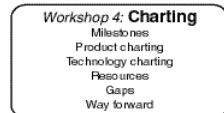
This catalogue of management tools constitutes a tool in itself, and is closely related to T-Plan, providing a resource for supporting its application. Each entry includes a brief description and reference for the tool concerned. The format of the catalogue is eleven volumes, each representing a management area: Technology management; Innovation management; Knowledge management; New product/service and process development; Business strategy; Management/ business; Marketing and customers; Behaviour, culture and HR; Organisation and collaboration; Change management, planning and project management; General problem solving.

The catalogue is available to CTM members' at the members' suite on the CTM web pages:

http://www-mmd.eng.cam.ac.uk/ctm/

Operationalised tools catalogue

This is an ongoing, on-line development activity, that so far contains around 50 tools. At present in the form of a simple list, it is displayed on the Technology Management Network pages and will be added to over the next year. Contributions and comments from Network members are welcomed. The web site is at: http://www-mmd.eng.cam.ac.uk/ctm/network/tools.htm

Framework

A high-level framework has been developed to support technology management and planning. A key feature of the framework is the five technology management processes, Identification, Selection, Acquisition, Exploitation and Protection (ISAEP) which operate on the technology base. A full description of the framework is available in a conference paper at the web address:

New faces at CTM

Welcome to three new research students who have joined us for the new academic year.

Victor Chang will be taking an MPhil on the topic of software technology management related to intranet development. He has lived in Taiwan, Singapore and Australia.

Toby Fleetwood has just completed an MSc in technology management at UMIST and is starting a PhD in the area of industrial sustainability.

Chester Wong has chosen to complete his Engineering studies at Cambridge with an MPhil exploring the issues of technology valuation.

We look forward to having them with us in the Centre and uncovering some exciting new ideas in these very relevant areas.

Charting the road ahead at Bespak

Roadmapping - the strategy development tool that improves company communication

Bespak plc is a leading supplier of drug delivery technologies and services to the pharmaceutical and biotechnology industries, with bases in King's Lynn, Milton Keynes and North Carolina. Bespak is actively exploring the strategic opportunities that are arising from advances in technology and growth in its markets.

Powerful management tool

Technology roadmapping is seen as a powerful management tool for supporting the development and communication of strategic plans, and CTM has been collaborating with Bespak to facilitate this process.

A two-day workshop was held in September, following on from an initial exploratory application of roadmapping in October 2000. The workshop, held in Cambridge, brought together 28 Bespak staff, representing a wide cross-section of the company.

Starting with a clear vision and strategy, the workshop focused on charting the various market, product, technology activities and milestones that will need to be in place to achieve Bespak's business objectives. The first day focused on sharing and capturing a wide range of views, while the second day was devoted to refining the plans, and establishing key linkages between the layers of the roadmap.

Enhancing communication

Roadmapping is increasingly seen as a key technology management tool, enabling companies to link technology to product and business plans. One of the greatest benefits is the opportunity to enhance communication within the business, particularly between technology and commercial functions.

Roadmapping User Group

The Centre for Technology Management has a continuing

interest in the approach, and is hosting a series of Technology Roadmapping User Group meetings.

A project has just started to support the development of a Foresight Vehicle roadmap, which will steer the allocation of DTI research funding in this area.

Roadmapping guide

A guide for implementing roadmapping will be published shortly, and a training event is being planned for 23 January.

Workshops help make a success of alliances

When the pursuit of opportunity calls for resources not available within the firm, managers often resort to strategic alliances as an ideal solution. Whether the goal is to enter foreign markets, to tap into new customer segments or to develop innovative products, corporations often stand to benefit from partners with complementary know-how and physical assets.

However, failure rates of up to 60 per cent point to the sobering reality that strategic alliances are fraught with problems for the partnering firms. Not only do alliances pose managerial challenges which arise from the mode of inter-organisational collaboration but they also create heightened risks such as the leakage of sensitive information or the loss of corporate reputation in the event of failure.

To address this dilemma, CTM researchers Oliver Hugo and Johannes Schmitz have developed a half-day workshop designed to prepare industrial firms for the challenges of initiating and managing a strategic alliance. The four-hour workshop includes extensive

examples of case study material as well as practical advice. Drawing on the latest findings in the field, it views collaborative success as following from a strategic choice of alliance reason, partner, form and process.

The management of conflict is an important theme of the workshop. Alliance conflicts and operational problems don't have to be destructive but can be the source of new opportunity when handled correctly.

Even when conflicts cannot be resolved, a strategic approach to dissolving alliances can help to preserve corporate reputation and minimise hostile attitudes.

One of the companies that has participated in a strategic alliance workshop is Bewag AG, a major utility company based in Berlin. The company's Director of Strategic Planning commented: "The workshop has exceeded our expectations. It was particularly helpful to reflect upon our experiences with the aid of rigorous frameworks and research results." To find out more about the workshops contact Oliver Hugo at CTM (oah20@eng.cam.ac.uk)

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

Conference reports

PICMET

There was strong industrial and academic participation at the annual Portland International Conference on Management of Engineering and Technology (PICMET), 29 July to 2 August, in Portland Oregon. David Probert and Rob Phaal attended, to present three papers and to facilitate a workshop on the 'fast-start' roadmapping approach. This workshop will form the basis of an industrial training day that will be held in Cambridge in January 2002. Another positive outcome was that PICMET is keen to develop an international technology management network, and will be working closely with the Centre for Technology Management to develop the European axis.

R&D Management

The R&D Management Conference was held 6 and 7 September at the National Institute of Technology Management, University College Dublin. Many interesting papers were presented on topics as diverse as innovation strategy in pharmaceuticals and the valuation of emerging technology. CTM presented a paper written by David Probert and Francis Hunt on new research into embedded software.

Evolving client-supplier relationships

The 5th European Summer Workshop on technology management was held at the University of Twente, Enschede 17-21 September. The central theme of this year's workshop was 'Evolving client-supplier relationships – the impact of collaborative product development on suppliers'. These are unusual events in that they combine academic seminars with industrial input provided by a small group of participating companies. This workshop examined the case of a Dutch OEM, which is a major supplier of equipment to the global semiconductor industry, and two members of its local supply chain. Pete Fraser attended on behalf of CTM and is developing a teaching case based on the workshop.

The future of innovation studies

The second annual Conference on the Future of Innovation Studies was held in Eindhoven on 20-23 September. Rob Phaal presented a paper entitled "A framework for supporting the management of technological innovation", which summarises a key deliverable from the recently completed Strategic Technology Management project.

The conference was attended by academics from across Europe and included a wide range of topics from industrial dynamics and policy, to innovation and new product development. Copies of the papers can be downloaded from the ECIS website: http://www.tm.tue.nl/ecis/

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Diary

November		
8th	*Designing better business*	Seminar, London
15th	*Developing appropriate performance measures*	Evening Workshop Cambridge
December		
5th	*Solutions to the 'make or buy' dilemma*	Seminar Cambridge
13th	*Performance through measurement*	Evening Workshop Cambridge
January		
23rd	*Roadmapping workshop*	Cambridge

The Centre for Technology Management is part of the University of Cambridge's Institute for Manufacturing