

Technology Management

The newsletter of the Centre for Technology Management (CTM)

March 2012

CTM supports exploration of carbon capture in China

The future of carbon capture, utilisation and storage (CCuS) in China was explored in a workshop in Beijing, facilitated by IfM Education and Consultancy Services using tools developed at CTM.



The 'Organisation scan' and 'Emergence roadmap' tools, developed during the Emerging Industries Programme, were used at the workshop – a collaboration between BP and Tsinghua University. The workshop was hosted by Prof. Li Zheng of the Tsinghua-BP Clean Energy Center (CEC). It featured participants from GreenGen, PetroChina, the Ministry of Science and Technology and the National Institute of Clean and Low Carbon Energy, along with BP and Tsinghua University.

The event was organised by BP's Anna-Marie Greenaway, who is conducting a Master's dissertation at the Cambridge Programme for Sustainability Leadership under the supervision of CTM's Simon Ford. It was facilitated by Nicky Athanassapoulou of IfM Education and Consultancy Services.

In the first session of the workshop, the 'Organisation Scan' was used at a national level to identify the important developments that have shaped the emergence of CCuS in China. As a plenary activity, the key historical enablers and

barriers were identified and discussed.

In the second session the focus shifted towards the future of CCuS. The group divided into two smaller groups, one Chinese, one non-Chinese, to explore future industrial development using the 'Emergence Roadmap'. There were many "aha!" moments between the groups when they described their visions of the future to each other, with a number of basic assumptions about cost and scale challenged.

As a result of the roadmapping activity it became apparent that there is a very narrow window of opportunity for CCuS if it is to play a significant role in China's clean energy portfolio and that demonstration projects need to be conducted more widely and replicated more quickly.

The workshop also featured a visit from Jiang Zhaoli, the Director of Climate Change at the National Development and



Reform Commission, who described the importance of CCuS to China's energy development.

There was also a familiar face at the workshop: Joseph Zhou, who recently completed his PhD at CTM, and who is now an Assistant Professor at the School of Public Policy and Management at Tsinghua, working with Prof. Su Jun.

Open Innovation Research Forum 2012

The 2012 meeting of the Open Innovation Research Forum (OIRF) will focus on government policy to support open innovation – the collaborative development of new products and services.

OIRF brings together academics, company managers and policymakers to discuss emerging areas of interest relating to open innovation. The Forum also encourages collaborations

to address the practical challenges involved in making open innovation work.

Over the past 12 months, there has been growing interest in the role that the public sector can play in helping firms of all sizes to implement open innovation. Public sector support for regional open innovation science parks and business incubation resources has been highlighted as having the

potential to stimulate economic recovery and growth.

There has also been increased interest in universities acting as open innovation partners. These trends will provide the context for the 2012 OIRF meeting in early May. If you would be interested in attending this meeting, please email tim.minshall@eng.cam.ac.uk

CTM contributes to Dutch executive education programme

CTM was invited to collaborate in providing a module in Innovation and Operational Excellence for an executive education programme for the Dutch company Marel.



Marel is a major international player in the food processing sector, addressing the poultry, fish and meat industries. It has a consistent record of product, process and systems innovation. Management development is the key to maintaining this progress, and senior personnel attend the Marel Leadership Programme run by the TiasNimbas

Business School. This year CTM was invited to collaborate in the provision of the Innovation and Operational Excellence module of this course, together with the IfM's Centre for Strategy and Performance.

CTM developed a customised programme in technology and innovation management, drawing on the challenges facing Marel, and integrated with case studies and presentations from senior Marel executives. Delegates came from many countries, so team building and identification of shared objectives was an important part of the desired outcome. Enthusiastic feedback was received from the participants, who went back to their various business centres with key priorities for action.

Such courses are a growing area of work for CTM and the IfM in general, so enquiries are always welcome.

Ten years of groundbreaking research -

the IfM's Innovative Manufacturing Research Centre

CTM research has formed a significant part of the activities of the IfM's Innovative Manufacturing Research Centre (IMRC). This major EPSRC-funded programme has been running for 10 years but finally drew to a close at the end of January 2012.

An economic impact assessment of the IMRC was commissioned from DTZ Consulting. CTM provided two of the four cases reported to the EPSRC:

- Corporate technology strategy development in GKN and Crown. These cases illustrate how CTM research has underpinned new approaches to improve the leverage of technological resources in complex multi-business unit organisations.
- Sectoral foresight studies. Conducted at national level in the UK and Australia, these transport sector studies have brought the key stakeholders together to prioritise areas for investment and development. Key challenges over timescales up to 30 years are identified, together with the technologies that could underpin solutions to these challenges.

A summary of the development and outputs of the technology and innovation management research themes over the 10 year period of the IMRC will be reported in the July newsletter.

New CTM website

The IfM has been going through a major website redesign project recently, and as part of this the Centre for Technology Management is pleased to announce it will shortly have a new look. Check it out in a few weeks! If you have any queries, please contact us at ctm-enquiries@eng.cam.ac.uk

Realising the potential of early stage technologies

The successful development and commercialisation of early stage technologies is a highly complex journey. The translation of basic science and exploratory ideas into products and services is far from straightforward. Organisations face the multiple challenges of stimulating the conception of promising technologies, identifying and supporting those with greatest commercial promise, selecting appropriate business models for their exploitation, while simultaneously identifying and managing risks, and preventing imitation of these intellectual assets.

To support individuals and organisations pursuing this challenge, CTM is launching a new 2-day training course "Realising the potential of early stage technologies". The course will be held 11-12 September 2012 at the Institute for Manufacturing in Cambridge.

The fundamental issues associated with the management of early stage technology and innovation will be covered in the course using a mix of presentations, small group exercises and plenary feedback discussions. By the end, participants will have a working knowledge of how to:

- accelerate the commercialisation of new technologies to market
- select appropriate approaches for stimulating and supporting the front end of innovation
- evaluate early stage technologies and justify investment
- integrate risk considerations into technology strategy
- capture the value from intellectual property, while ensuring it remains protected.

To register your interest in attending please contact Jo Griffiths: jg393@cam.ac.uk

The challenge of acquiring and protecting new technologies

CTM has just published a new report on the problems that can arise when firms acquire technologies from outside their organisation. It presents a logical process and a set of guiding tools to help companies when making decisions in this area.

The report emerges from recent research looking at the process of acquiring technologies externally. This is something of growing relevance as firms increasingly take a more collaborative approach to innovation. Technology acquisitions are inherently complex, however, with many potential pitfalls facing those involved.

The report is designed to support managers involved in technology acquisition decisions such as senior managers in

R&D and supply chains, (open) innovation managers, IP officers, product, business and finance managers. It should be particularly helpful for those who tackle these difficult decisions for the first time. It might also be useful to those who are selling their technology to help them prepare for negotiations.

Printed copies of the report are available for purchase or can be downloaded for free from the IfM website:

<http://www.ifm.eng.cam.ac.uk/free>

For further information about this project contact the project leader Dr Simon Ford or Dr Letizia Mortara.

<http://www.ifm.eng.cam.ac.uk/ctm/estap.html>

Collaborative project with Turkish company brings mutual benefits

The CTM is working with Arçelik, a leading household appliances and consumer goods manufacturer in Turkey to optimise their processes and increase competitiveness. Through a series of visits and a multi-day workshop, CTM staff are analysing Arçelik's technology and product strategy processes, as well as the link between technological planning and corporate strategy.

This project started in late 2011 and is scheduled to complete the data

collection and evaluation phase in April 2012. After this, CTM will liaise regularly with Arçelik in order to oversee changes triggered by the collaboration and to provide guidance and feedback.

This work is mutually beneficial: Arçelik is receiving an in-depth analysis, data and feedback to support an optimisation of their processes in order to increase their competitive performance. CTM is gaining valuable information in the form of a long-term case study for a PhD research project.

So far, the work has been very exciting, as Arçelik has a very capable and open-minded management team, a long standing history of technology management practices and a strong, proactive market performance.

If you are working on connecting technological with corporate aspects in your strategic planning and are interested in a similar collaboration opportunity, please get in touch with Clemens Chaskel (cdc31@cam.ac.uk).

CTM links with Mexico

CTM is expanding its links with government and private institutions in Mexico, including a collaboration between the IfM and Nakazawa Consulting Group (NCG) and several doctoral research projects.



NCG is promoting the use and development of technology roadmaps in Mexico. Several training courses and workshops have taken place over the past few months, the most recent in Mexico City in January 2012. This workshop was designed to strengthen the technology planning process of PEMEX, the Mexican oil Company and IMP, its R&D branch. NCG has also used CTM's roadmapping methodology to support Sonora State Science and Technology Council to develop a 2030 vision and strategy formulation to foster science, technology and innovation.

Meanwhile, CTM doctoral students are also involved in several Mexican-related projects:

- DUX Diligens (a Mexican Consulting Firm), NCG and CTM's Imoh Ilevbare are working on conceptualising ways in which technology roadmapping and TRIZ can be combined.
- Victor Ortiz is exploring the factors contributing to an effective technology acquisition – when companies work in collaboration to develop a new product. Four in-depth case studies from Mexican industry are being used to refine the framework currently under development.
- Luzselene Rincon is carrying out research to understand how consulting firms providing innovation management services impact their customers' internal relationships. Her case studies include evidence from Mexican industry.

For further information about CTM's work with Mexico, please contact Victor Ortiz: vgo20@cam.ac.uk

Technology management research at Cambridge

- Strategic technology management
- R&D project selection
- Software sourcing in manufacturing
- Enhancing creativity in new product development
- New product introduction collaboration
- Technology management: a process approach
- Technology selection
- Technology evolution in hi-tech firms
- Innovation management in hi-tech firms
- Emergence of technology based industry
- Technology scanning and intelligence
- Technology acquisition
- Technology protection
- Strategic make-or-buy
- Industrial make-or-buy decisions
- Sustainability and technology insertion
- Technology valuation
- Technology foresight

New CTM students



Bettina Sophie Blasini is a first year PhD student under the supervision of Dr. Tim Minshall. She is working on innovation communication. Her research interest focuses on the role of communication in the development of technology clusters.



Elliott More is a first year PhD student under the supervision of David Probert and Rob Phaal. His research interest focuses on the use of roadmapping and foresight tools by organisations to manage the long-term risks and opportunities relating to sustainability trends.

Recent publications

Kerr, C.; Phaal, R. & Probert, D., (2012), 'Cogitate, articulate, communicate: The psychosocial reality of technology roadmapping and roadmaps.' *R&D Management - The journal of research, technology and innovation management*, Volume 42, Number 1, pp. 1-13. ISSN: 0033-6807.

Oliveira, M.G., Phaal, R., Probert, D., Cunha, V.P. and Rozenfeld, H., (2011), 'A starting point for addressing product innovativeness in the fuzzy front-end,' *International Journal of Technology Intelligence and Planning*, 7(4), pp. 309-326.

Keltsch, J.-N., Probert, D.R. and Phaal, R., (2011), 'A process for configuring technology management tools,' *International Journal of Technology Intelligence and Planning*, 7(3), pp. 181-200.

Lee, J.H., Phaal, R. and Lee, C., (2011), 'An empirical analysis of the determinants of technology roadmap utilization,' *R&D Management*, 41(5), pp. 485-508.

New course on visualisation

CTM will be running a new course on 'Visual Approaches for Strategy and Innovation Management' in May.

There are numerous tools that have a strong visual component in the strategy and innovation domain, for example roadmaps, product portfolios and performance charts. However, there is a lack of good visual design practice.

The one-day seminar, on 22 May, will explore the design of visual material for management decision support by providing guidance on what visual features support/hinder effective communication. For further information visit www.ifm.eng.cam.ac.uk/service/events/info/visual_strategy.html

Diary 2012 www.ifm.eng.cam.ac.uk/events

May

17	<i>The make-or-buy question: are you getting it right?</i>	One-day workshop IfM, Cambridge
22	<i>Visual approaches for strategy and innovation management</i>	One-day workshop IfM, Cambridge

June

13-14	<i>Strategic roadmapping</i>	Two-day course IfM, Cambridge
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