

Technology Management

Quarterly newsletter of the Centre for Technology Management (CTM)

November 2009

Creating opportunities from uncertainty: Navigating industry emergence Cambridge Technology Management Symposium, September 2009

Uncertainty is a major characteristic of today's industrial environment. Financial instability, increasing resource constraints, new sources of competition and doubts about the future of the natural environment, are just some of the factors that make planning ahead more difficult than at any time in the last sixty years. However even in this uncertain context, opportunities are opening up and new industries are emerging – although many will go unrecognised until much later in their development.

This was the backdrop to the 15th annual Symposium, held in Downing College Cambridge, organised by the Centre for Technology Management and with contributions from many leading companies and research partners. The programme featured many of the projects being conducted under the IfM's Emerging Industries Programme (EIP), a cross-research centre research programme which takes a multi-perspective view of this important phenomenon.

Symposium keynote presentations explored the emergence of mobile telecoms, novel display technology, new energy sources, computer science and innovation in pharmaceuticals. These authoritative insights came from John Cunliffe at Ericsson, David Fyfe of Cambridge Display Technology, Andrew Haslett from the Energy Technologies Institute, Andrew Herbert at Microsoft and Jackie Hunter from GSK. Key lessons coming from this varied experience included the major commitment to R&D underpinning much of the emerging technology – even in times of severe financial constraint,

and the scope to reduce the risk of industrial activity based on emerging technology through partnerships and collaborations in supply networks and routes to market.

Workshops drawing on EIP research



projects got the Symposium off to a very interactive start, and as always, were popular with delegates. Topics explored this year included decision criteria for navigating emergence, funding the commercialisation of advanced technology and how start-up firms can develop their manufacturing strategy.

Case study sessions provided examples of industry emergence and illustrated many ways of managing uncertainty including such issues as investment and regulation.

Speaking at the Symposium dinner, the University's Pro Vice Chancellor

for Research, Professor Ian Leslie, discussed the importance of universities engaging in speculative long term research. If the current pressure to demonstrate short term impact had existed in the past many of today's successes might have been missed. It is not unusual for decades to pass between the first exploratory research and the viable industrial exploitation of resulting technology, he said.

All these examples provided an excellent context for David Bott from the Technology Strategy Board to outline the approach the TSB is taking to stimulate industrial emergence. The role of demonstrators has been identified as a key factor facilitating emergence, in particular by one of the EIP research projects. At the end of his presentation David announced the setting up of an Emerging Technologies Steering Committee, to advise on the areas of technological research and development that should be targeted. This new committee is to be chaired by Professor Andy Hopper, Head of the Cambridge University Computer Laboratory. This promises to bring new insight to the identification of technical and commercial opportunity, of strategic value to the UK.

Overall the Symposium provided a stimulating and enjoyable exchange of ideas, with many delegates commenting on the value of the discussions for their own business or enterprise. Next year's event takes place at the Moller Centre on 16 & 17 September, and will provide the opportunity to continue the discussion, perhaps in more stable times.

Report on Open Innovation proves an online success

A report entitled 'How to implement Open Innovation', the output of a recent CTM research project with industrial collaborators, has proved highly popular since it was made available on the Institute for Manufacturing website. Nearly 1,000 copies of the report have been downloaded from the site since it was put online at the end of September.

The report describes how leading multinational companies are adopting open

innovation practices and suggests ways in which other companies can follow in their footsteps. Guidance is provided on how to build an open innovation culture, how to develop the necessary skills within the business and how to motivate employees.

Free download

The report is available for download free of charge from the IfM website www.ifm.eng.cam.ac.uk/ctm/teg/openinnovation.html. Hard

copies are also available for purchase.

Dr Letizia Mortara of CTM, one of the authors of the report, will give a presentation on Open Innovation as part of the IfM's newly launched Manufacturing Thursday seminar series on 3 December at 5.30 pm. Further details at the website below:



www.ifm.eng.cam.ac.uk/thursdays

The BIG move to the new IFM building



Together with the rest of the Institute for Manufacturing, CTM moved from Mill Lane in the centre of Cambridge to our new home on the University's West Cambridge site, on the 13th July 2009.

The open plan offices, with researchers, students and lecturers located together, encourage more interaction and communication within the Institute.

The new building also provides:

- innovative teaching and research facilities
- An Industrial Design and Innovation Studio
- State of the art equipment for industrial laser systems, inkjet and RFID applications

CTM's new address is: 17 Charles Babbage Road, Cambridge CB3 0FS. For any further enquiries, please contact our CTM research co-ordinator, Geraldine Guceri: geraldine.guceri@eng.cam.ac.uk or on 01223 766401.

Links between CTM and Japan underpin new open innovation research

CTM is continuing to build its international research linkages through a new collaboration with Doshisha University in Kyoto. CTM's Tim Minshall has been appointed a Visiting Research Fellow at Doshisha to develop research and education activities related to the implementation of open innovation. As part of this collaboration a new taught module on open innovation was developed and delivered for Doshisha's Executive PhD programme over the summer, and talks on open innovation were delivered at events held in Kyoto for Japanese businesses and academics. Discussions held with Japanese firms highlighted the different approaches taken to implementing open innovation in Japan, and the particular challenges faced.

The collaboration with Doshisha University now forms an important component in the development of a new research project focused on the role of geographic location in the successful implementation of open innovation. Discussions are underway with universities in China and the USA to extend the scope of this project. This new research builds upon prior research on open innovation at CTM funded by Unilever R&D and the EPSRC Cambridge Integrated Knowledge Centre.

For further information on this new research project on the role of location and open innovation, please contact Tim Minshall: tim.minshall@eng.cam.ac.uk

Roadmapping goes global

During September CTM's David Probert and Rob Phaal visited China and Brazil to explore opportunities for collaboration with universities and other organisations in the areas of technology management, with a particular focus on roadmapping.



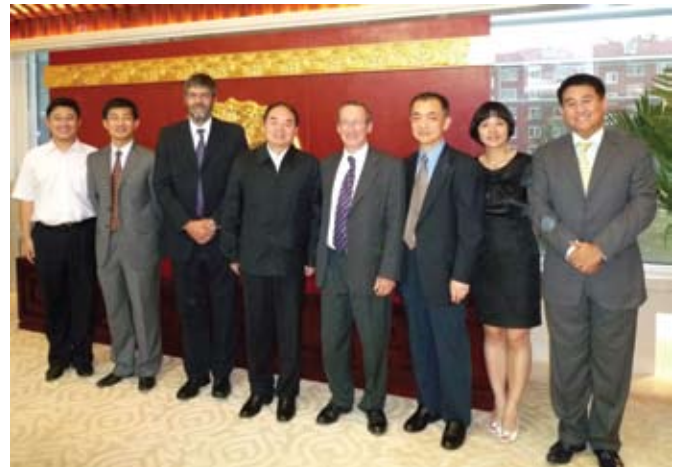
Chinese version of 'T-Plan'

The visit to China was facilitated by IfM PhD students Xiyang (Daniel) He and Yuan (Joseph) Zhou, focused around the launch of the Chinese version of the T-Plan roadmapping guide, which has been published by Tsinghua University Press. Collaboration opportunities with Tsinghua University's Center for Science,

Technology and Education Policy (CSTEP) were explored, led by Professor Su Jun.

The book was launched on September 14, at a research seminar hosted by CSTEP. This was followed by discussions with the Minister of Education and colleagues, and keynote presentations at the Ministry of Science and Technology. This visit provides a strong basis for future collaboration, starting with academic exchange. As part of this initiative, CTM is delighted to welcome Dr Cui (Monica) Huang to Cambridge for a year, starting this November, to explore the application of roadmapping at the policy level.

The trip to Brazil was hosted by Professors Afonso and Andre Fleury of the Department of Production Engineering at the University of Sao Paulo. It included a roadmapping symposium to



share academic experience and delivery of a one-day training course, together with discussions to identify areas of common interest, including research projects, academic visits and translation of the T-Plan guide into Portuguese. A key area of discussion was the development of a roadmap for internationalisation of Brazilian industry, linked to a large collaborative research programme.

A highlight of the visit was a visit to Embraer, the successful Brazilian aerospace

company, including a tour of the production facilities. The company manufactures and exports regional commercial and private jets and other aircraft, using roadmapping as a method for aligning research with product developments and market needs. Human resource development is a key focus, with a two-year graduate training programme culminating in a multi-functional concept and design activity, mentored by experienced Embraer staff.

Congratulations to recent graduates



Examiners have recommended that two CTM doctoral students, Rob Valli and Vincent Kuo, should be awarded a PhD. Rob Valli's research was on: "Building investment readiness for university spin-outs through partnerships and alliances", while Vincent Kuo's was on "Innovation capability reconfiguration of firms in advanced developing countries: The case of Taiwan". Both students were under the supervision of Dr Tim Minshall. Congratulations to both.



IfM helps Australian motor makers set sights on future

The IfM is playing a role in helping the Australian automotive industry define its long-term future. The Australian Government and Victorian State Government asked the IfM to help create a strategic plan for the country's car industry.

A team from the IfM including CTMs Rob Phaal carried out the strategic review. Working with the Australian Auto Co-operative Research Centre, The Australian National University, Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Victorian Government, it looked at current and future trends in the global car industry.

The results have just been published in a new report, Automotive Australia 2020 Vision. It aims to map the technology and manufacturing capabilities and development opportunities for the country's automotive industry from the present day to 2025 and beyond

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
- Enhancing creativity in new product development
- Technology management: a process approach
- Technology selection
- Technology evolution in hi-tech firms
- Innovation management in hi-tech firms
- Technology management in software production
- Technology scanning and intelligence
- Strategic make-or-buy
- Industrial make-or-buy decisions
- Sustainability and knowledge management
- Technology valuation
- Technology foresight

New CTM people



Victor Ortiz is a PhD student under the supervision of David Probert. He has a first degree in Chemical Engineering and a master degree in Systems Engineering (with focus on Innovation and Technology Management), both from the National University Autonomous of Mexico. His research will be based on the study of the technology acquisition process with Dr Rob

Phaal and Dr Rick Mitchell as his co-supervisors. He has previously worked in the Oil and Gas industry as a Technology Intelligence Analyst in Mexican Petroleum Institute, Mexico City.



Harald Overholm is a part-time PhD student in the Centre for Technology Management, focusing on the diffusion of clean technology innovations under the supervision of Dr Elizabeth Garnsey. He is also an investment director with Sustainable Technologies Fund, a Nordic VC fund investing in cleantech

companies. He has over five years experience in working with VC-backed companies in the ICT and cleantech sectors, both as an employee and as an investor.



Julia Fan Li is a first year PhD student within CTM working under the supervision of Dr Elizabeth Garnsey. Her research is on biopharma business models looking at the financing of drug development for base of pyramid markets (low and middle income countries). Julia completed her MPhil in Bioscience Enterprise and is passionate about biotechnology and oncology research.



Keith Cotterill is a new PhD student in CTM, under the supervision of Dr Tim Minshall. He brings 25 years of international experience to the IfM as a technology startup founder, executive and investor. Keith will be studying the impact of setback and failure in early stage ventures.



Imoh Ilevbare started as an MPhil student in the Centre for Technology Management, supervised by David Probert, in October 2009. His first degree is in Mechanical Engineering from the University of Ibadan in Nigeria.

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Diary

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

December

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|---|---------------------------------------------------------------------------|------------------------------------------|
| 3 | <i>Implementing Open Innovation: lessons from multinational companies</i> | Free evening presentation, IfM Cambridge |
| 3 | <i>Valuing and selecting technology projects</i> | Afternoon workshop, IfM Cambridge |