

Technology Management

The newsletter of the Centre for Technology Management (CTM)

March 2013

New approaches to visual communication

Visual techniques and strategies can help managers improve their decision-making and become more effective at communicating complex information. Led by **Dr Clive Kerr**, CTM has been developing its expertise in this area and we now offer consultancy, teaching and executive education courses based on recent research. Under the broad heading of 'visual strategy', the research focuses on two key areas: visual approaches for strategy and innovation management, and visual design guidance for roadmapping.

Visual design guidance for roadmapping

The focus here is on developing roadmaps for the purposes of communication – transforming the content generated by a roadmapping workshop into a form which can be widely disseminated and easily understood. The key challenges are making sure that the strategic narrative is clearly articulated and visible on the canvas of a roadmap, and that it is meaningful to all stakeholder groups. Clive has developed a design methodology which helps create the visual form of a roadmap including both its appropriate representation and associated presentational style. We have successfully piloted a workshop-based process for prototyping concept templates with a number of organisations and we now offer this as a facilitated consultancy service.

Visual approaches for strategy and innovation management

There has been a recent surge of interest from industry in this theme – especially for in-company training courses and follow-on design advice. One of the key challenges many organisations face is how to convey complex information to senior managers. The 'Visual Approaches' training course outlines the fundamental principles of graphic design for presenting management information, showcases examples of good, bad and even 'ugly' practices, and demonstrates how to structure visual templates to support strategic dialogue. Delegates learn how to choose the most appropriate format and employ the best design so that the viewer can quickly grasp the key messages and follow the flow of information through the graphic.

This is a growing area of work for CTM, so enquiries are always welcome. Please contact Clive Kerr for more information: civk2@cam.ac.uk



CTM involvement in future of UK manufacturing project

CTM PhD student, **Elliott More**, is on a placement contributing to the Future of Manufacturing project at BIS Foresight. The Foresight project is led by the Government Office for Science at the Business, Innovation and Skills department.

The aim of the project is to examine the nature of manufacturing and its role in the UK and global economies. Some argue a rebalancing back towards manufacturing is vital since the sector's contribution to the UK economy has steadily fallen over the last decades, from 22% in 1990 to now only 10%.

The project will deliver recommendations to the UK government in August 2013, providing a timely look at the long-term picture for the manufacturing sector out to 2050, investigating global trends and drivers of change. This work aligns closely with Elliott's research into the influence of macro sustainability trends and drivers on corporate strategy in the manufacturing sector.

Strategic Technology & Innovation Management (STIM) news

We announced the launch of the new Strategic Technology & Innovation Management consortium programme in our last newsletter. 20 companies attended a workshop in November, where the 2013 research programme was developed. The membership agreement is currently being finalised, with the first network meeting scheduled for 14 March in Cambridge.

The STIM programme is a practice-oriented research and networking collaboration between industrial member companies and CTM. Three Consortium network meetings are planned for 2013, providing an opportunity to review progress, influence the direction of research projects, and share best practice, supported by project level meetings and workshops. Seven research projects are underway, providing a range of options for industrial engagement:

1. Light weighting innovation strategy, developing more efficient processes for aligning technology investments with business objectives.
2. Organising the front-end of innovation, to better understand how different techniques can be configured and matched to different business contexts.
3. Articulating strategic content: a template-based approach, to support visual communication of strategy, within workshops and beyond.
4. Customisable multi-factor scoring system for project selection, to pilot a workshop-based process, customised to industry, company and innovation context.
5. De-risking projects early, to disseminate a 'risk-aware' roadmapping approach for the front-end of innovation.
6. Intelligence – how to evaluation information, exploring how insight can be generated from data, and how to communicate this to decision-makers.
7. Technology leadership and deployment – sharing best practice, from research and development into use.



For further information about the STIM programme and projects, see: www.ifm.eng.cam.ac.uk/research/ctm/stim
Or contact **Rob Phaal** at: rp108@cam.ac.uk

Critical communications system research - fieldwork in Egypt

Critical communications play a vital role in all our lives. They allow public safety organisations to respond to emergencies effectively and efficiently. As with any industry, critical communications faces a wide number of risks, ranging from technological advancements, regulatory uncertainties to operational threats.

The purpose of this fieldwork, conducted in Egypt, is to study the key stakeholders in the industry and to understand the current threats, challenges and opportunities they face. Semi-structured interviews were conducted with three different organisations to explore the industry from different perspectives, the public safety radio network operator, the equipment suppliers and the responders.

One of the common challenges that was apparent among the different stakeholders is their ability to select the appropriate technology. Therefore, this research will explore the decision-making process that allows the different stakeholders to choose the technology that best suit their operational and strategic requirements. For more information contact **Ahmed Mashhour**: aim35@cam.ac.uk

Platform research in Taiwan

CTM doctoral student, **Chung-Lin Tsai**, conducted several case studies during a visit to Taiwan. His principal

area of research is the process of designing and building platforms, as well as clarifying principles behind platform strategy implementation in a dynamic environment. Chung-Lin carried out semi-structured interviews in Taiwan with managers from Yahoo (an internet corporation), HTC (a smartphone manufacturer), TSMC (a dedicated semiconductor foundry) and Innolux (a supplier of TFT-LCD panels). The initial results of the interviews have not only deepened our understanding of the platform perspective, but also clarified relevant platform strategies in response to environmental changes. For more information, contact Chung-Lin at clt50@cam.ac.uk

STEPI fellowship awarded to CTM PhD student

In January 2013, **Joonmo Ahn** was awarded a STEPI* fellowship. This fellowship aims to encourage research on issues pertaining to science, technology and innovation (STI) policy. Joonmo is studying the relationship between firms' performance and their open innovation (OI) capacities by investigating how OI capacities are inter-related and how they differ from one group of firms to another. After a review process, his research results might well be published in the *STI Policy Review*, an international journal focusing on innovation issues in East Asian countries.

* Science and Technology Policy Institute: a research institute in South Korea focusing on public and industrial research and development (R&D) and innovation issues.

Executive education

Dissemination of CTM research work to industry is a core part of what we do and executive education is one of the main ways of sharing our research with the industrial community. This interaction is not one way. The resulting conversations help to shape and inform our research agenda.

The range of open executive education programmes based on CTM research has evolved over the lifetime of the Centre. Two broad strands of activity – consultancy and education – have made major inputs into course design.

Consultancy engagements have helped us understand and capture practitioner needs in applying tools and techniques in their organisations. An example is **Strategic Roadmapping** courses that are offered regularly as either one-day or two-day programmes. <http://www.ifm.eng.cam.ac.uk/events/roadmappingmarch/>

Other programmes have developed from education activities where a broader and more integrated knowledge set is required. CTM has been involved in delivering Technology and Innovation Management modules to postgraduate audiences for 10 years. This experience has shaped our three-day **Technology and Innovation Management Programme** which will be running for the seventh consecutive year in the beautiful setting of Jesus College. <http://www.ifm.eng.cam.ac.uk/events/tim2013/>

Finally, the newest open programme - **Visual Approaches for Strategic and Innovation Management** - emerged from research to support roadmapping. This research brought together many aspects of visual communication found to have wide applicability to those working in both industrial and academic environments. <http://www.ifm.eng.cam.ac.uk/events/visualstrategymay13/>

Our executive education activities also include bespoke programmes and delivery of programmes at your company. These can incorporate any aspects of IfM work and be anything from one day to several weeks long. If you would like to investigate any of these possibilities, please contact **Judith Shawcross**, Education Programme Manager: jks45@cam.ac.uk.

DRUID Academy Conference

Luzselene Rincon, CTM PhD student, presented her work titled, 'Effect of innovation management consultancy services on the R&D and marketing relationship' at the DRUID Academy Conference 2013, in Aalborg, Denmark on the 16th January. DRUID is a conference open to all PhD students working within the fields of economics and the management of innovation, entrepreneurship and organisations. Over three days, participants mainly from European universities presented more than 60 papers covering a range of topics such as entrepreneurship, innovation and intellectual property.

Inside IfM 2013

On 31 January, the IfM opened its doors to over 100 guests, including local industrialists and government representatives, who were able to meet researchers and learn about all areas of IfM activity. During the event there were a number of talks: **Professor Sir Mike Gregory** introduced IfM, **Dr Nicky Athanassopoulou** explained the PrISMS programme for helping small and medium-sized manufacturers grow sustainably, and **Dr Jag Srai** talked about the future of high value manufacturing in the UK.

The next 'open' event will be the annual IfM Briefing Day, on Tuesday, 21 May.

Prize draw winner

All those who completed a feedback form were entered into a prize draw. Congratulations go to Simon McCaskie of Malvern Instruments, who received a bottle of champagne.

New book

Tim Minshall and **Letizia Mortara** are co-editing a new academic book on innovation communication in collaboration with Dr Nicole Pfeffermann from Bremen University. This will be the second edition of *Strategies and Communication for Innovation*, first published in 2011 by Springer-Verlag and co-edited by Dr Pfeffermann with Professor Hülsmann.

The new edition will provide an update on approaches, methodologies and best practices for communication in strategy and innovation in the era of open innovation. The ambitious target is for the book to be ready by the end of 2013.

Welcome



Mohd Nazri Mahmud is a first-year PhD student under the supervision of **Tom Ridgman**. Nazri's research explores the current issues and concerns in engineering education with the aim of improving the development of knowledge, skills and competences among engineering graduates. Nazri has a degree in Electronic Systems

Engineering (Telecommunications) from University of Essex and an MPhil in Technology Policy from Judge Business School. He has been on the teaching staff at University Sains Malaysia for six years following a decade of engineering and managerial experience with Telekom Malaysia.

Gozem Guceri-Ucar, a 3rd year doctoral student from Bogazici University, Department of Management visited us in January, to learn about the research carried out here and to receive feedback on her research topics, which revolve mainly around technology entrepreneurship and innovation management. The diversity of research carried out in CTM and its strong connections with industry have motivated Gozem to seek future collaborative research opportunities.

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 publications

Oughton, D., Mortara, L. and Minshall, T. (2013), 'Managing asymmetric relationships in open innovation: lessons from multinational companies and SMEs'. Open innovation in the food and beverage industry. M. G. Martinez. Cambridge, UK, Woodhead Publishing.

Shawcross, J. K. and Ridgman, T. W. (2013), 'Manufacturing excellent engineers: skill development in a Masters programme, Engineering Education', Volume 7, Issue 2. http://www.heacademy.ac.uk/resources/detail/subjects/engineering/Engineering_journal/Engineering_issue7-2_shawcross

Lee, J.H., Phaal, R. and Lee, S-H. (2013), 'An integrated service-device-technology roadmap for smart city development', Technology Forecasting & Social Change, 80, pp. 286-306.

Moehrle, M.G., Isenmann, R. and Phaal, R. (Ed) (2013), 'Technology roadmapping for strategy and innovation: charting the route to success', Springer, ISBN 978-3642339226.

Lee, J.H., Phaal, R. and Lee, S-H. (2013), 'An integrated service-device-technology roadmap for smart city development', Technology Forecasting & Social Change, 80, pp. 286-306.

Ilevbare, I., Probert, D. and Phaal, R. (2013), 'A review of TRIZ, and its benefits and challenges in practice', Technovation. (available online from 10 January 2013).

Lubik, S., Lim, S., Platts, K. and Minshall, T. (2013). 'Market-pull and Technology-push in Manufacturing Start-ups in Emerging Industries.' Journal of Manufacturing Technology Management 24(1): On line via EarlyCite at <http://bit.ly/RBXjlb> .

Rincón-Argüelles, L., Minshall, T. H. W. and Mortara, L. (2013). 'Effect of innovation management consultancy services on the R&D and marketing relationship'. DRUID Academy, 16-18 January.

Xia, T. and Minshall, T. (2013). 'Understanding Patterns and Promotion of Investments in New Firms in Emerging Science and Technology-Based Industries in the UK.' New Firms in the New Millennium, Volume X.

Oakey, R., Groen, A., van der Sijde, P., Cook, G., Zhou, Y., Xu, G., Minshall, T. H. W. and Su, J. (2013). 'A Policy Dimension Required for Technology Roadmapping: Learning from the Development of Emerging Wind Energy Industry in China.' International Journal of Environment and Sustainable Development 12(1): 3-21.

Diary 2013

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

March 2013

12	<i>Strategic roadmapping</i>	One-day course IfM, Cambridge
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April 2013

9 - 11	<i>Technology and innovation management</i>	Three-day course Jesus College, Cambridge
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May 2013

14	<i>Visual approaches for strategy and innovation management</i>	One-day course IfM, Cambridge
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