

Technology Management

The newsletter of the Centre for Technology Management (CTM)

November 2013

First-year STIMulus is springboard for programme

The first year of the Strategic Technology & Innovation Management (STIM) programme is drawing to a close. We are now starting to plan for 2014, in consultation with interested companies, to define the research and networking agenda. Membership of the consortium has grown from 9 to 11 through 2013, with companies representing a diverse range of industrial sectors.

The annual programme consists of two parts:

1. A portfolio of seven projects, covering topics ranging from how companies organise the front end of innovation to the development of light-weighted workshop approaches that combine portfolio and roadmapping methods. Each project aims to deliver a combination of practical and academic outputs.
2. Networking, providing a forum for exchange of experience and best practice between members of the consortium. This is enabled by a regular series of network events, where projects are reviewed and topics of interest to members discussed. Contact details are shared, encouraging direct interaction where appropriate.

Combining practice and research is mutually beneficial, ensuring that practical outputs are theoretically sound, and that academic outputs have industrial relevance.

As the programme has developed, links between projects have been established, and internal company networks have strengthened, extending the benefits of membership for participating firms. Through direct involvement in research projects of particular interest, companies can influence the focus and direction of research.

CTM will host a meeting in Cambridge on Wednesday 20 November, at which the 2014 programme will be shaped. This meeting will be open to current and new companies interested in joining the consortium next year.

For more information about the STIM programme and 2013 research projects please see www.ifm.eng.cam.ac.uk/research/ctm/stim. Please contact Rob Phaal for more information: rp108@cam.ac.uk



Researching Chinese strategy

CTM is continuing its exchanges with the renowned Tsinghua University in Beijing, China. Two PhD students, Clemens Chaskel (third left) and Elliott More (fourth left), are spending six weeks and four months respectively in China conducting research on corporate strategy.

Clemens is examining the link between technology strategy and corporate planning in manufacturing firms. Elliott is examining how firms perceive and act on macro trends and drivers during their strategy development.

Both are using the opportunity to interview firms operating in China, to compare against their existing findings from European firms. The study provides an opportunity to examine the impact of a different social, political and economic environment on the strategy process.

To this end a range of firms have been interviewed, from traditional manufacturing sectors, such as defence and telecoms, to emerging sectors including OLED manufacturers and GPS software developers.

In addition to researching firm level strategy, Elliott is also involved in a national level industry roadmapping exercise using innovative workshop facilitation software.

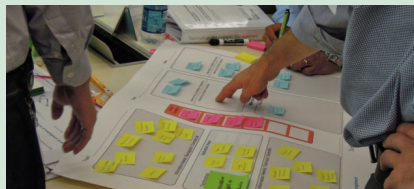
For more information please contact Clemens (cdc31@cam.ac.uk) and Elliott (egm27@cam.ac.uk).



Executive education

2014 sees the launch of a new course as part of CTM's Executive Education programme, 'Realising opportunities for innovation: Approaches for an effective fuzzy front end'. Led by **Dr Simon Ford**, the course will cover a number of tools and techniques for improving the identification, selection and development of promising opportunities and ideas, while also addressing issues of organisational culture and leadership. The event on February 27 will be of particular interest to those working in larger companies, which face the challenge of improving the quality of the concepts they introduce into the innovation pipeline.

In-company training courses continue to grow as an activity, building on the series of public courses CTM runs in Cambridge each year. The



combination of theory and practice is a key feature, with the opportunity to customise activities to company-specific topics and context.

Two programmes were recently delivered in the USA over a period of two weeks in October, each of which included novel aspects:

1. A three-day version of the general technology and innovation management course CTM hosts in Cambridge each year was run in Houston for a multinational business operating in the energy sector. The company has state-of-the-art distance learning facilities, which enabled remote delivery by

subject-matter experts from the UK, with local support on the ground by **Rob Phaal** and **Clive Kerr**. The course demonstrated the potential of technology to enable interactive trans-continental training.

2. Rob and Clive delivered a two-day bespoke course in Virginia for a pharmaceutical company, focusing on roadmapping and strategic technology management toolkits. Practical activities were a major element of the course, with a series of group-based activities to apply the concepts and methods to a set of innovation opportunities of interest to the firm. This included the construction of roadmaps, design of supporting toolkits and the application of visual design principles to develop communication roadmaps.

Contact: Rob Phaal, rp108@cam.ac.uk

Making progress Bit by Bit – work gets started on 3D printing project

On October 1, work started on CTM's new project on 3D printing. As reported in the last CTM newsletter, the 'Bit by Bit' project will be exploring the potential impact of 3D printing (also known as Additive Manufacturing or Digital Fabrication) on a range of industries and sectors. The work will be carried out in three stages:

Emergence: How did digital fabrication emerge? Identification of trends, patterns, barriers and enablers in the emergence and diffusion of digital fabrication to date.

Business model disruptions: How is

value captured from digital fabrication technology? How has value capture changed? What traditional/disruptive business models have they enabled?

Scenarios: What future scenarios may result from the diffusion of digital fabrication technologies? What will be the possible associated business models, their barriers and enablers?

To help build momentum in the lead-up to the project start, a series of small scale projects have been conducted over the summer by research students and a visiting academic. These projects have provided case studies of the

adoption of 3D printing in different sectors (aerospace and medical), understanding of how 3D printing might impact the business models of new ventures, and analysis of how users will demand more from their CAD systems if they are to gain some of the benefits of 3D printing.

The research team is planning a series of events over the three-year duration of the project to bring together the diverse community that is driving the development and diffusion of 3D printing. To stay informed of developments, visit www.dfab.info

From MET to CEO in six months

For most students graduating from the MET course, it is several years before they are in a position to apply everything we taught them about technology and innovation management. Not so **David Clark**, who within six months of graduating, was appointed CEO of LDI, a private Estonian technology company, which produces a range of analysers and diagnostics devices for industry and academia.

David's seven-week final MET project was based in LDI during May/June 2012, supervised by David Probert, Rob Phaal and Rick Mitchell. Titled 'Innovation management in a small technology focused enterprise', it reviewed the technology and product portfolio of the company and progress towards commercialisation. Making use of most of the ideas taught during the Technology and Innovation Management module of the MET course, David did such

a good job that he was invited to join the company. In his role as CEO, he has launched a major transformation of the company to realise the full commercial potential of the IP, expertise and products developed over 20 years of operation.

On September 28, David visited the IfM and gave a presentation of his current work, reminding us all of the opportunities presented by student projects. If you are interested in hosting a project, please contact David Probert, drp@eng.cam.ac.uk

One of LDI's latest products is illustrated here.



Fond farewells ...



Dr Victor Ortiz passed his PhD research on technology acquisition in July. He has returned to Mexico City to join the Mexican Petroleum Institute. He is keen to keep in touch and strengthen CTM-Mexican institution links. He can be contacted at vgortiz@imp.mx.

Prof Shuichi Ichida has finished his sabbatical with us and has returned to Ritsumeikan University, Kyoto, Japan. His research interest focuses on the strategic implementation of organisational behaviour in terms of semi-open innovation.



Christian Sandstrom took part in the digital fabrication project and studied the potential disruptions 3D-printing may result in, especially the business models of incumbent firms. He has now returned to Chalmers University of Technology.



Nitish Gupta worked with us on the technology leadership module of STIM consortium from May to July 2013 under the supervision of David Probert and Rob



Phaal. He is back at Birla Institute of Technology & Science, India.

Frank Tietze worked with us on the development of product service system innovations and their ecological benefits from July-October 2013. He has now returned to Kiel University in Germany.



.. and warm welcomes

Mark Wilson trained as a chemical engineer at the University of Leeds and studied for an MBA at Columbia University and London Business School. He has worked in the pharmaceutical industry for a number of years in a variety of roles, and is starting a PhD under the supervision of Tim Minshall, investigating the changes taking place in the corporate venture capital environment.

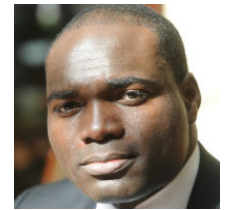


Dominik Deradjat studied mechanical engineering at RWTH Aachen University and industrial engineering at

Tsinghua University. He is starting his PhD under the supervision of Tim Minshall investigating additive manufacturing technologies and their scalability.

Adedayo Abinusawa (Dayo) begins

his PhD under the supervision of Tim Minshall, and his research is focused on how open innovation implemented through corporate venturing can support organisational ambidexterity. He received an MBA from the University of Glasgow, and a BA in Marketing degree from the University of East-London. Dayo has more than 10 years' experience in the field of business development.



Julia's \$94m deal

Former CTM PhD student **Julia Fan Li** has played a key role in raising US\$94m from backers including the Bill and Melinda Gates Foundation for a new investment fund targeted at developing solutions to healthcare challenges in low-income countries. The Global Health Investment Fund (GHIF) will allow investors the chance to finance late-stage health technologies to tackle healthcare challenges such as malaria, tuberculosis, HIV/AIDS and maternal and infant mortality. Julia is director of the GHIF (www.ghif.com), and her involvement builds on the topic of her PhD research that examined how innovative, market-oriented approaches can tackle global healthcare challenges. For more on her research, see www.ifm.eng.cam.ac.uk/resources/conference/health/



Doctoral updates

Despite the wide range of inquiries in the marketing and innovation management communities to incorporate customer-desired functions into new product and service designs, recent reviews have identified the lack of a holistic approach to new product-service system (PSS) development. **Man Hang Yip** (Yip), a fourth-year PhD student under the supervision of David Probert, has been exploring how healthcare PSS may be characterised for the early stage of the PSS development process.

A PSS characterisation approach has emerged after completing 11 case studies.

Yip is currently looking for companies in the health and fitness industry to apply the PSS characterisation approach to a new product and/or service idea, or to retrospectively analyse an existing product and/or service. The trial will be in the format of a facilitated workshop. Please contact Yip at mhy29@cam.ac.uk for more information.

Chung-Lin Tsai is looking for ICT firms that have implemented the platform concept to encourage complementary innovation

developed by outside firms. His research places a strong focus on exploring the linkage between industry platform implementation and environmental dynamics.

For the purpose of collecting research data, his research makes use of case studies with semi-structured interviews to capture insights from multiple cases.

If you work for ICT firms and have experience in helping firms implement the platform concept, would you be interested in participating in an interview? For more information, please contact Chung-Lin at clt50@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

Best poster at conference

Joonmo Ahn won the Best Poster Award at The R&D Management Conference 2013, held at Manchester Business School in June. The title of his paper was 'The influences of CEO characteristics on open innovation in innovation-oriented SMEs'. It examines the relationships between internal R&D, the degree of openness, and CEO characteristics in innovative SMEs to identify the complex linkages between firm-level and individual-level characteristics. Details are at bit.ly/15JwlhA and download the full paper at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2328644.

Innovation flying high at Airbus

On September 19, Airbus held its annual Manufacturing Engineering Day in Toulouse, France. Innovation was the theme of this year's event and CTM's **Dr Simon Ford** was invited to participate at the event as a guest speaker. Drawing on his current research within the STIM Consortium, Simon discussed the challenges facing organisations at the front end of innovation.

The academic perspectives that Simon provided complemented the practical experiences shared by the second guest speaker, Patrick Lecharpy, VP of Innovation and Advanced Design at Renault.

New publications

Li, J. & Garnsey, E., (2013), 'Building joint value: Ecosystem support for global health innovations', In R. Adner, J. Oxley & B.S. Silverman (Eds), *Collaboration and Competition in Business Ecosystem (Advances in Strategic Management)*, Vol 30, pp 69-96, Emerald Group Publishing Limited.

Ahn, J. M., Mortara, L. & Minshall, T. (2013), 'The effects of open innovation on firm performance: a capacity approach', *Science, Technology and Innovation Policy Review*, Vol 4, pp 74-93.

Probert, D. R., Ford, S. J., Routley M.J., O'Sullivan, E. and Phaal, R. (2013), *Understanding and navigating industrial emergence*, Proceedings of the Institution of Mechanical Engineers, Part B, *Journal of Engineering Manufacture*, Vol 227 (6), pp 781-793.

Routley, M., Phaal, R., Athanassopoulou, N. and Probert, D., (2013), 'Mapping experience in organisations: a learning process for strategic technology planning', *Engineering Management Journal*, Vol 25, No 1, March 2013, pp 35-47.

Diary 2013/2014 www.ifm.eng.cam.ac.uk/events

November 2013

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

November 2013

21	<i>Valuing and selecting technology projects workshop</i>	One-day course IfM, Cambridge
----	---	----------------------------------

February 2014

27	<i>Realising opportunities for innovation: Approaches for an effective fuzzy front end</i>	One-day course IfM, Cambridge
----	--	----------------------------------

Contact us

Centre for Technology Management
Institute for Manufacturing
Department of Engineering
17 Charles Babbage Road
Cambridge, CB3 0FS UK

Tel: +44 (0)1223 766141
Fax: +44 (0)1223 464217
ctm-enquiries@eng.cam.ac.uk
www.ifm.eng.cam.ac.uk/ctm