

Farewell to Mike!

On 30 September, colleagues from the IfM and the Department of Engineering gathered with old friends and collaborators to wish Mike Gregory a very happy retirement.

IfM Review Issue 4



We are delighted to launch Issue 4 of the IfM Review. This issue includes articles on:

- 50 years of manufacturing at Cambridge – research, education and practice
- The IfM's distinctive approach to science, technology & innovation policy
- The manufacturing challenges of nanotechnology
- New thinking about next generation supply chains
- Executive and professional development: how experts at Atos are becoming 'trusted advisors'



Pick up a copy of Issue 4 from reception, or if you or your contacts would like a digital copy, sign up to receive one here.

<http://bit.ly/1kLaX7e>

New handbook to help with grant applications



Eoin O'Sullivan (CSTI) has developed a set of webpages providing grant writing tips for researchers. The 'Grant Writer's Handbook' website offers guidance on how to communicate the novelty, strengths and importance of your research ideas, as well as how to convey your ability to plan, manage and deliver on your proposed project. It also reveals key 'dos and don'ts' identified by experienced reviewers,



Research grant writing in progress.

capturing what appeals to them, what turns them off, and what is likely to encourage them to either recommend funding or decline a proposal. These webpages are still under development. If you have suggestions for useful links or recommendations

for new content, email any thoughts to Eoin O'Sullivan eo252@cam.ac.uk

<http://bit.ly/1kTgClp>

ECS creates technology roadmap for the UK marine industries

ECS has delivered a roadmapping project for the UK's marine industries on behalf of Innovate UK. The roadmap looks at those parts of the industry that are engaged in building vessels or supplying equipment or services for the commercial, leisure, naval and marine science sectors. It identifies key opportunities in which industry and government should invest to support export growth and it maps the main technical capabilities needed to capitalise on these opportunities. The roadmap will be published officially on 18 November and can be viewed here:

<http://bit.ly/1HbiiBS>



Research: design failures in low-resource medical settings



Clara Aranda-Jan (DMG) recently came back from fieldwork visiting hospitals in Uganda to investigate the context of use and perceptions of value of medical devices in rural hospitals, interviewing healthcare staff and observing the hospitals. Most devices produced by large international manufacturers were working poorly or not at all, with sometimes whole rooms full of broken equipment. Some devices have been redesigned and widely used in the hospitals, like infant incubators using light bulbs and a container of wet gauzes to control temperature and humidity (picture). Safety concerns arise from these designs. A lot of work needs to be done by the medical devices industry to be able to reduce healthcare inequities. With the findings of her research, Clara is hoping to inform a context-value framework to support designers to understand the needs in low-resource settings and, hopefully, design technologies that are more appropriate for the regions in the world with the greatest need for healthcare services.



Nicky presents Road4Fame roadmap in the Netherlands



Nicky Athanassopoulou (ECS) presented the Road4Fame roadmap at a joined event with the i-ramp3 project on 22–23 September in the premises of automated welding machines manufacturer AWL in Harderwijk, the Netherlands.

The final roadmap can be found here:

<http://bit.ly/1S9uPvU>

Nicky will also be presenting the data at the ‘Digital Technologies for Manufacturing Innovation: Embracing Industry 4.0’ event, organised by Innovate UK on 30 November–1 December in Nottingham.

Launch of Parliamentary inquiry report into Industrial Sustainability

The Manufacturing Commission launched its most recent inquiry report, ‘Industrial Evolution: Making British Manufacturing Sustainable’, in Parliament on 27 October. The Inquiry, co-chaired by Chi Onwurah MP and **Steve Evans** (CIS), was seeking to understand how UK manufacturing can achieve long-term economic, environmental and social sustainability and is looking at government’s role in this. For more information visit:

<http://bit.ly/1XyWt8P>

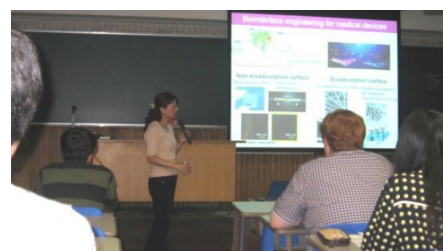
CSA Conference: summary and podcast

The CSA held its Industry Day Conference, titled ‘Creating Value Through Customer Services: in a world of data enabled ecosystems’, on 6 October.

Three guest speakers from industry, three senior CSA researchers and CSA Director, **Andy Neely** were asked to share some smart tips on how to ensure you take your customers and your staff on your service offering journey. You can now read a summary and access presentations and podcasts on the CSA website:

<http://bit.ly/1GhKQOZ>

Cambridge joins Deans’ Forum



The University of Cambridge has joined the Deans’ Forum for the first time, a forum to discuss engineering education amongst the world-leading engineering universities. Members include the University of Tokyo, Eidgenössische Technische Hochschule (ETH) Zürich, Imperial College London, Kungliga Tekniska högskolan (KTH) Royal Institute of Technology, Massachusetts Institute of Technology (MIT), and University of California (UC) Berkeley.

This year, the University of Tokyo held a five-day intensive lecture programme from 7–11 September on the topic of microfluidics and its biomedical applications. For the occasion, it invited students and leading scientists from the member universities to have academic communications. **Qingxin Zhang** (FIAM) attended the event.

Christmas: Latest Recommended Posting Dates

Tuesday 13 October is the latest recommended posting date for International Economy (Formerly Surface Mail) to the following destinations: Canada, Hong Kong, Singapore, South Africa and the USA.

International Standard (Formerly Airmail) services are available to these destinations up until early December. For information on all latest recommended posting dates for Christmas:

www.royalmail.com/greetings

AMSCI Consortium meeting held



A quarterly meeting of the Advanced Manufacturing Supply Chain Initiative (AMSCI) Consortium was held at Thorn Lighting, Spennymoor, Durham on 16 October. The meeting was jointly organised by Laing O'Rourke and University of Cambridge - DIAL and Engineering Design Centre (EDC), and was attended by more than 40 people from different companies.

Tariq Masood and Prof John Clarkson (EDC) reported on the Integrated Design for Manufacturing and Assembly work stream, D(FMA)2. The reports included updates on change modelling work, manufacturing automation and reconfigurability work, and engagement with design and manufacturing teams of Laing O'Rourke, Brydenwood and Comau. Tariq and Stephen Harley (Director Advanced Manufacturing at Laing O'Rourke) also conducted a Supply Chain Integration exercise (aka Beer Game) as part of the consortium meeting.

A tour of Thorn Lighting factory in Spennymoor was also organized as part of the consortium meeting.

For any further queries, please contact Tariq Masood:

tm487@cam.ac.uk

Congratulations to the new Doctors



Philipp Egger (CSP) passed his PhD viva on 15 October. His dissertation is concerned with the strategic management of process

innovations. It explores and describes in what way the technical process innovation capability is built and maintained by R&D and production departments at a world leading motor vehicle manufacturer.

Thomas Birtch passed his PhD viva on 2 October. His thesis entitled 'The competitive advantage of FDI: A dynamic OLI view of the FDI strategy process' is the result of a longitudinal study of 47 foreign direct investments (FDI) from Asian multinational corporations (MNC) and was supervised by Mike Gregory.



In addition to the above, Thomas recently received two Best Paper Awards for two separate manuscripts submitted to this year's Academy of Management (AOM) Meeting held in Vancouver in August – one award from the International Management (IM) Division and a second award from the Operations Management Division. Both manuscripts were published in the Best Paper Proceedings of the 2015 AOM Meeting.

The manuscript submitted to the Operations Management Division was further nominated for the Chan Hahn Best Paper prize. One of his recent publications in the Journal of Business Ethics has also

been incorporated into the training materials used for the certification of Chartered Financial Analysts (CFA) at the CFA Institute, an international and widely recognized certification for investment professionals.

Thomas has recently joined Nottingham University as an Associated Professor in Strategy and will be based at their campus in China, but will remain connected with the IfM through his various research activities.

IfM alumn wins international design award



**GOOD DESIGN
AWARD 2015**

David Wolffe, who graduated from MET in 1986, has been awarded the Japan Institute of Design Promotion's prestigious 2015 Good Design Award for his company's innovative backpack. The Wolffepack orbital backpack is "the world's only backpack that swings your stuff to the front but stays strapped to your back". The awards have been running since 1957 and previous winners include Dyson, Google, Sony and Honda.

www.wolffepack.com

Books Available to Borrow

The IfM has a number of books available for research students and staff to borrow. Here's a link to the titles that we currently hold:

<http://bit.ly/1Gxc9VW> (intranet)

All books are located in the Divisional Administrator's Office and must be signed out when being borrowed.

We have a small fund available for purchasing books and resources of this nature, so please let **Maggie Harriss** ifm-admin@eng.cam.ac.uk know if there are any books that you believe would be a good addition to this resource.

CIP student's paper wins first place



PhD student **Tianqi Dong** (CIP) has just been awarded first place for a student paper at International Congress of Applications of Lasers and Electro-Optics (ICAELO) in Atlanta. The paper title is 'Evaluating Femtosecond Laser Ablation of Graphene on SiO₂/Si Substrate'.

Kirsten Van Fossen wins rowing award

Congratulations to **Kirsten Van Fossen** (CIS), who has won World Rowing's 2015 Parmigiani Spirit Award.



The award is for university rowers who have 'demonstrated the core values of the sport of rowing - commitment, dedication, determination, endurance, fairness, focus, inclusiveness, life balance, respect for nature, self-discipline and teamwork - and through these values have been able to inspire exceptional success in their own as well as other people's lives'. Kirsten will receive a hand-crafted Parmigiani Fleurier watch and her rowing club, the Cambridge University Women's Boat Club, will be presented with a custom-made new Filippi racing eight boat. Kirsten currently rows for the club on the lightweight team.

2014-2015 CIS Annual Review published

The EPSRC Centre for Industrial Sustainability has published its fourth Annual Review of Centre activities and outcomes from September 2014 to September 2015. The report includes 10 new sustainable business tools developed by Centre researchers during the past year and updates on 10 additional tools included in previous reports as well as updates on research, policy, cohort, and outreach activities. The report can be downloaded from the Centre's website:



<http://bit.ly/1ii3s63>

Industrial Engineering and Management (ESTIEM)

From the 8-12 October European Students of Industrial Engineering and Management (ESTIEM) held their annual Education Initiative Coordination Event at the IfM. The event was organised by MET students **Robert Alner, Jørn Emborg, Will Harborne, Nirali Patel and Daniel Yanev** and consisted of development sessions to shape the educational aims of the Europe-wide organisation.

The Cambridge team also held a development session for an 'English for business and engineers' course, designed to be run at future ESTIEM events. The group was also treated to a tour of the sights (and bars) of Cambridge, as well as punting and a formal dinner at Queens' College.

ESTIEM is a network of more than 7,000 students across 29 countries in Europe, where local groups regularly host events and meetings in their country enabling members to meet new people, learn skills and embrace different cultures. For more

information visit: www.estiem.org or contact Robert Alner: rpsa2@cam.ac.uk

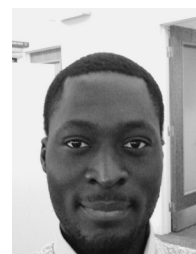
New people

Paulo Savaget joined CIS as a PhD student supervised by Steve Evans and is a Gates Cambridge scholar. His research covers complex systems of sustainability transitions, combining analysis of the co-evolving iterations between policies, industrial strategies, and contextual/environmental influences to assess how to foster science, technology and innovation capable of contributing to a more socially inclusive and environmentally resilient world. His Bachelor was in Economics and he holds two interdisciplinary Master's Degrees. Before joining the Centre, Paulo had professional experiences as a lecturer of postgraduate courses and as a consultant on topics related to innovation and sustainability.



Olamide Oguntoye

has joined CIS as a doctoral researcher. His research interest is in industrial sustainability as a strategy for addressing socio-economic challenges of sub-Saharan Africa. Olamide is an alumnus of Cranfield University. In the past year, he has worked on a notable number of consultancy projects across retail, construction, and luxury fashion, as well as for local charity groups. He has a background in Mechanical Engineering.



Laurien Van-Den-Broeck joined the NanoManufacturing group as a visiting PhD student. Here, she will learn how to make more refined



CNT structures in order to use them as mechanical reinforcement for bone tissue engineering constructs. She was previously doing research in the Functional Materials group of prof. dr. Jennifer Patterson at the university of Leuven in Belgium, where she will eventually also be completing her PhD.

Yong Bang Ming

is a graduate student who will be working with Tim Minshall at CTM. He obtained a B.Eng in Electronic Engineering from Universiti Sains Malaysia in 2013 and had briefly worked in manufacturing and construction industries prior to pursuing his graduate studies. He is currently very interested in researching the geographical impact on innovation.



Zhenyu Liu

(Lisa) is starting her PhD under the supervision of Dr Letizia Mortara. Her research interests focus on open innovation. Before coming to Cambridge, Lisa did her bachelor's degree in Accounting and Financial Management at Loughborough University. During her placement year, Lisa worked at Accenture in China and participated in an exchange student program at Curtin University in Perth, Australia. After that she did a Msc in Business Consulting at Warwick Business School, Warwick University.



Cassi Henderson

is a joint student of FIAM and the Analytical Biotechnology group in the Department of Chemical Engineering and Biotechnology, under the supervision of Lisa Hall



and Ronan Daly. Her doctoral research will look to investigate novel materials and printing techniques, which allow optimal structures and functions to be fulfilled, by combining abiotic and biotic materials to produce elements for biosensors. The project will focus on the integration of functional materials, assay development and manufacturing design to enable diagnostics to be produced for affordable, rapid, and point-of-care detection of diseases. Prior to starting her PhD, Cassi received her BSE in Bioengineering from the University of Pennsylvania and completed a Masters in Bioscience Enterprise at the University of Cambridge, focusing on the commercialisation of early stage medical technologies. Cassi is supported by a Gates Cambridge Trust scholarship.

Catherine Coates

is a visiting Researcher at CSTI. Catherine spent many years working for the UK Research Councils developing and supporting academic, business and government knowledge exchange. Past positions have included Director of Business Innovation for the UK Engineering and Physical Sciences Research Council, lead for UK Research Councils in strategic partnering with business and government departments, and Director of Strategic Planning and Communication at the Engineering and Physical Sciences Research Council. Catherine was directly involved in leading and shaping the pathways to impact agenda at the EPSRC. She also has extensive experience working with government on business growth and technology foresight resulting in in-depth knowledge of UK government research and innovation funding, innovation policy, and best practice in business/university partnering.



Catherine will be working with Tomas Ulrichsen and CSTI more widely on better understanding the different university-industry partnering models (including long term strategic partnerships and critical mass centres) for successfully undertaking larger scale innovation challenges and realising value from them.

Tadas Kartanas

has started a PhD under the supervision of Ronan Daly (FIAM), Professor Tuomas Knowles (Chemistry Department), and Dr Adrian Stevenson (Chemical Engineering). The PhD project represents a collaboration between the corresponding research groups and brings the expertise of microfluidics, high speed imaging, inkjet printing and acoustic resonators in order to develop an extremely sensitive label-free protein detection method which could be applied in the early diagnosis of protein misfolding and aggregation related diseases such as Alzheimer's. He joined the EPSRC CDT in Nanoscience and Nanotechnology (NanoDTC) at Cambridge in October.



Tadas studied Experimental and Theoretical Physics at Cambridge University and graduated with an MSci in June 2014. Throughout the undergraduate degree he developed a passion for understanding biological systems and tried to gain experience in research and building lab instrumentation at ETH Zurich and Carl Zeiss Microscopy Plc.

Mingjin Guo

has started her PhD study at CTM under the supervision of Frank Tietze. Her research interests include



IP strategies and Product Service Systems. She obtained a bachelor's degree in civil engineering in Tsinghua University and a bachelor's degree (double major degree) in economics in Peking University in 2014. Then she did an MPhil in Energy Technologies in University of Cambridge during 2014-2015.

New roles

Tariq Masood has been promoted to Senior Research Associate. In his new role, Tariq will be based 50/50 at DIAL and Engineering Design Centre (EDC),

working with Duncan McFarlane and Professor John Clarkson on an Advanced Manufacturing Supply Chain Initiative (AMSCI).

Mélanie Despeisse,

previously at CIS, has joined CTM. She will continue her research on industrial sustainability and efficiency issues in manufacturing. She is now working on the RCUK-funded 'Bit by Bit' project, investigating the role of additive manufacturing in shaping future industrial systems.



visual design for presenting management information.
www.ifm.eng.cam.ac.uk/events/visualstrategynov15/

- **Strategic Roadmapping in Houston, Texas** - A 'fast-start' roadmapping approach to align markets, products and technology for strategy and innovation.
www.ifm.eng.cam.ac.uk/events/houston-roadmapping/

Do get in touch if you are interested in any of the workshops.

Jo Griffiths, jg393@cam.ac.uk

Events

3rd Engineering Education Research (EER) Network Annual Symposium

Thursday 5 to Friday 6 November 2015

The Manufacturing Industry Education Research Group (MIERG) at IfM is delighted to host the 3rd Annual Engineering Education Research (EER) Network Symposium in Cambridge.

<http://bit.ly/1EH3oC3>

Innovate 2015

**Monday 9-Tuesday 10 November
Old Billingsgate, London**

If you are looking for funding, connections, support or international business opportunities, then attend Innovate 2015- the UK's leading innovation conference, exhibition and networking event dedicated to businesses like yours. Jointly hosted by Innovate UK and UK Trade & Investment, Innovate 2015 attracts more than 2,000 daily attendees. This must-attend event brings together deal-makers, thought-leaders, experts and international investors from over 20 markets across a wide range of sectors. Book your one to one meeting with experts or buyers/investors today.

Register here www.events.ukti.gov.uk/innovate-uk-2015 or email support@innovate2015event.com

www.events.ukti.gov.uk/innovate-uk-2015 or email support@innovate2015event.com

STIM consortium 2016 launch meeting

**Wednesday 18 November
IfM**

The Strategic Technology and Innovation Management (STIM) consortium is an annual rolling programme coordinated by CTM, now in its third year, which brings together managers from a range of sectors and CTM researchers to support industrially relevant research, networking and knowledge exchange.

The 2016 programme launch meeting will provide interested companies with an opportunity to shape the programme for next year.

For more information about the launch meeting:

<http://bit.ly/20aRTQh>

BioBeat15: Translating Genomics into Biobusiness

**Friday 20 November
Wellcome Genome Campus
Conference Centre, Hinxton,
Cambridgeshire**

Hosted by Cambridge-based BioBeat in conjunction with the Wellcome Sanger Institute and EMBL-EBI, BioBeat15 will focus on Translating Genomics into Biobusiness and will explore the burgeoning opportunities for individuals and developing companies to harness the potential of genomics in commercial enterprise. Women scientific leaders including keynote speaker Professor Dame Sally Davies, Chief Medical Officer for England, will present their perspectives on the challenges and successes in starting and growing biotech businesses. The conference is open to everyone and will be invaluable for those working in academia, industry and finance, providing an opportunity for networking with those at the heart of biobusiness.

Spaces are limited so register today

Booking open now for our upcoming workshops

The IfM organises a series of workshops each year targeted at industrialists and policymakers, please see a select few below:

- **Global Supply Chains** - Achieving competitive advantage through network transformation
www.ifm.eng.cam.ac.uk/events/global-supply-chains/
- **Visual Approaches for Strategy and Innovation Management Seminar** - Explore and apply the fundamental principles of

www.ebi.ac.uk/about/events/biobeat-2015

Selling for Researchers

Monday 30 November

Moller Centre, Cambridge.

For the fourth and final time, **Marcel Dissel** will lead this engaging and participative day showing people how to pitch their research, how to target their industrial partner and how to manage the series of meetings to negotiate collaborative research.

Thanks to this seminar, one alumnus won a £1m grant while a couple of others sold their start-up to Google for 'an undisclosed sum'. And all of them had fun and learned a lot.

Places are limited so please contact Holly Shaw at has50@cam.ac.uk as soon as possible.

EurOMA 2016 Conference

17-22 June 2016

Trondheim, Norway

The 23rd International European Operations Management Association (EurOMA) Conference will be hosted by the Norwegian University of Science and Technology (NTNU), in collaboration with SINTEF, the University of Agder, Molde University College, BI Norwegian Business School and the University of Stavanger.

The theme of EurOMA 2016 is Interactions. This theme emphasises the importance of conducting user-oriented, empirical research that aims at creating more value for industry and society. Although the theme provides a special focus for the conference, we welcome papers addressing a variety of operations management topics and in particular those that fit in the special sessions; see www.euroma2016.org for the full list. At this point we also invite proposals for special sessions.

Download the Call for abstracts at <http://bit.ly/1M27200>

The conference will be preceded by the EurOMA Doctoral Seminar, the

EurOMA Publishing Workshop, and the EurOMA Young Scholars' Workshop.

EurOMA offers free membership to PhD students.

Opportunities

Calling all entrepreneurial PhDs, researchers and inventors! ETECH Projects starting 18 January

ETECH Projects accelerates entrepreneurship and diffusion of innovations based on early stage and potentially disruptive technologies from the University of Cambridge. The projects are run within credit bearing courses offered at a number of University departments. Students work in teams to prepare a commercial feasibility report and present the findings to the inventors. Supervision and support is provided which covers topics such as opportunity evaluation, developing business concepts and making presentations.

ETECH projects also offers opportunities for inventors: if you are working on a novel technology that you believe has potential for commercialisation, it could help. By performing market research, commercial evaluation and identifying routes to market, ETECH projects help you establish the high level commercial potential and develop a commercialisation strategy.

Please submit a project proposal by 20 December.

For more information and to apply visit www.cfel.jbs.cam.ac.uk/programmes/etech/apply.html

The Downing Enterprise Competition

Are you one of the 33.5% of students hoping to start your own business within 5 years of graduating or a post-doc with an exciting start-up project that needs a boost to get it

going?

With a panel of high-profile investors, Downing Enterprise can help give you or your start-up a kick-start. If you have a business idea, enter the competition to win £1,000 for a one-page business plan and up to £25,000 investment!

A team can comprise 1-6 people with the requirement that at least one person in the team is a Downing alumnus or current member. The deadline to join the scheme is noon, 20 November and for submission of the one-page business plan is noon, 6th January 2016.

For more information:

www.downingenterprise.co.uk

Publications

Wenrong Lu, Duncan McFarlane, Vaggelis Giannikas, Quan Zhang, An algorithm for dynamic order-picking in warehouse operations, *European Journal of Operational Research*, 248(1), 107-122 (2016)

Masood, T, McFarlane, DC, Parlikad, AK, Dora, J, Ellis, A, and Schooling, J (2015) Towards the Futureproofing of UK Infrastructure, *ICE Journal of Infrastructure Asset Management*, accepted 27 Jul 2015.