Design Innovation Research Centre – Autumn Newsletter 2012

To achieve the Design Innovation Research Centre’s vision of a new mode of design in the digital economy, recent highlights include an online workshop on BIM research with international colleagues; and ongoing work through the summer on the use of data in the London 2012 Olympics. The workshop ‘Learning from Others’ was sponsored by the UK government BIM task group and explored how research may inform delivery of UK BIM strategy. This autumn, the use of the research findings of the Centre will feature in the education of the next generation of construction professionals, through hands-on activities in the School’s new BIM Lab and research-led teaching in November. Hands-on work with a laser scanner over the summer has been successful in building a relationship with the University Estates and Facilities Department, and begun to attract attention from students who would like to engage with these skills and build BIM capabilities. The team is exploring new research areas relating to business models and configuration management for through-life engineering.

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New research areas

Systematic review of business models in digital economy literature

Dr Sunila Lobo has won a prestigious award from the Engineering and Physical Sciences Research Council (EPSRC) as part of a multi-disciplinary initiative called New Economic Models in the Digital Economy (NEMODE). As a challenge area within the ‘Digital Economy’ programme, the NEMODE initiative is designed to create a network of researchers and practitioners. The £3k funding awarded to Dr Sunila Lobo will enable her to build on her PhD research to deliver a systematic review of business models in the digital economy literature to support this developing network. It is an opportunity for Dr Lobo to consolidate and update her previous research, exploring the intersection between business models, economic models and the digital economy. In October she will deliver a project report as well as a
web-site (augmented with a video) to encourage dissemination and discussion around the research results within the wider EPSRC research community.

**Configuration management through-life engineering**

The team is currently conducting a feasibility study on Configuration Management Through-Life Engineering. “Configuration management” is the process of maintaining system integrity, while handling change to both the dataset and the real-world engineering systems it describes over time. It is not a new concept, but its implementation is radically changing as data becomes integrated and used more systematically through-life; and as the quantity and formats of data raise new challenges and opportunities. The project will deliver preliminary findings from collaborators in complex engineering, infrastructure delivery and aerospace and in partnership with the EPSRC Through-Life Engineering Centre at Cranfield University as well as the industrial collaborators, an aim is to assess the feasibility of developing a full proposal for research in this area. For further information or to become involved please contact Dr Carmel Lindkvist c.m.lindkvist@reading.ac.uk or Prof Jennifer Whyte j.whyte@reading.ac.uk

**Completed research**

**Using laser scanning for data capture and BIM**

The aim of this summer project was to investigate techniques for using laser scanning technology to capture relevant data about the built environment, using the refurbishment of the library as a context for experimental work. Supervised by Dr Milan Radosavljevic and Prof Jennifer Whyte, the EPSRC Vacation Bursary student John Scorgie developed techniques for effectively producing point-cloud data scans of various locations in the University of Reading library building. Paul Thorpe from the Centre’s strategic collaborator Fulcro spent one day per week working with the Design Innovation Research Centre team to explore the use of the laser scanner, contributing to the modelling work. This work used the Faro Focus laser scanner, with scans modelled to form the basis of workable BIM components for facilities management. Deliverables were a laser scan, model, video and PowerPoint presentation.

![A well-structured and data-rich 3D model of the library built out of the scan.](image)

Scanning data showing the multiple scans aligned and stitched together.

**International and industry engagement**

**Hosting the Construction Mobile IT (COMIT) community day**

The Centre hosted the Construction Opportunities for Mobile Information Technology (COMIT) member’s day and AGM on 6 September 2012. COMIT is a prestigious, industry-owned organisation bringing together construction, technology and research organisations to form the COMIT community. Thirty five delegates attended the community day event in Reading and Prof Jennifer Whyte gave a presentation showcasing some of her team’s research. For more details about COMIT see [www.comitproject.org.uk](http://www.comitproject.org.uk/).
Digital practices theme workshop – Dr Calvin Kam on BIM in the USA

Dr Calvin Kam visited the Design Innovation Research Centre on the 29 August 2012 to speak about developments in Building Information Modelling (BIM) in the USA. He has been involved in the development of BIM Guides through the General Services Administration (GSA) www.gsa.gov/portal/content/105075 and has roles in the Center for Integrated Facilities Engineering at Stanford University and the American Institute of Architects. The conversation discussed how the USA compares in the development of BIM standards with the UK and points of shared research interest.

Visit to University of Helsinki

In July Prof Jennifer Whyte, Dr Alice Comi and Dr Sunila Lobo visited the University of Helsinki, Finland to discuss research on Building Information Modelling and were taken on a project site in Helsinki, visiting a hospital development. The photos below illustrate the team on site in Finland.

Visit from IIT Madras

Design Innovation Research Centre hosted a visit from Dr Ashwin Mahalingam, Assistant Professor from the Department of Civil Engineering and Shobha Ramalingam, Research Fellow at the Indian Institute of Technology (IIT Madras), Chennai, India in July 2012. The visit included a workshops with and visits to industry partners, and discussion of data that the IIT Madras team had collected with Indian offices of UK firms. A workshops was organized to discuss work-in-progress within the team and to help shape findings for academic journals. Those presenting papers were Dr Carmel Lindkvist, Dr Sunila Lobo, Dr Alice Comi and Shobha Ramalingam.

Workshop on transnational design practice

As part of the visit from IIT Madras, on the 17 July 2012, the centre hosted a Transnational Work Practices Workshop with industry attendees. The workshop explored how digital technologies change the way that global engineering firms deliver major projects, with designers working in global virtual teams. This workshop reviewed what is known about transnational design work, discussed practical challenges and explored potential areas for future research. It brought together leading UK engineering and design firms - WSP, Mott MacDonald, Cereno, Buro Happold and M&W, with research teams from the University of Reading, UK and IIT Madras, India. The workshop explored the changing engineering challenges as project teams span continents, with for example engineers in India, UK and the Middle East working together on a project using Building Information Modeling (BIM).
BIM WP 115 ‘Learning from others’

An international BIM research workshop, ‘Learning from Others’ was held in the Design Innovation Research Centre at the University of Reading on the 24 June 2012, co-led by Prof Jennifer Whyte and Arto Kinineimi, University of Salford. This was part of the work package for the UK BIM task-group, which is implementing the UK Government’s BIM strategy and was attended by colleagues from the Ministry of Justice and BIM task group, providing a forum for UK clients to discuss their research interests and needs, and listen to presentations by research leaders: Profs Chimay Anumba and John Messner, Penn State; Robin Drogemuller, Queensland University of Technology; Chuck Eastman, Georgia Tech; Calvin Kam, Stanford University; Jan Karlshøj, Danish Technical University; Ghang Lee, Yongse University and Rafael Sacks, Technion University. These scholars joined online to give an overview of their ongoing research and discuss the state of the art in BIM research and its use across the globe.

Recent and forthcoming publications and presentations

Working paper


Forthcoming journal publications


Journal publication


Autumn presentations


Please contact the Centre at designinnovation@reading.ac.uk or individual authors for further details or to request copies of these papers.