



## Who is eligible to apply?

Candidates should have a minimum of an Upper Second (2:1) class Honours degree (or equivalent) in a subject related to the proposed research project.

## To apply or to get more information

Please contact the PhD in Systems team at the Systems Centre:

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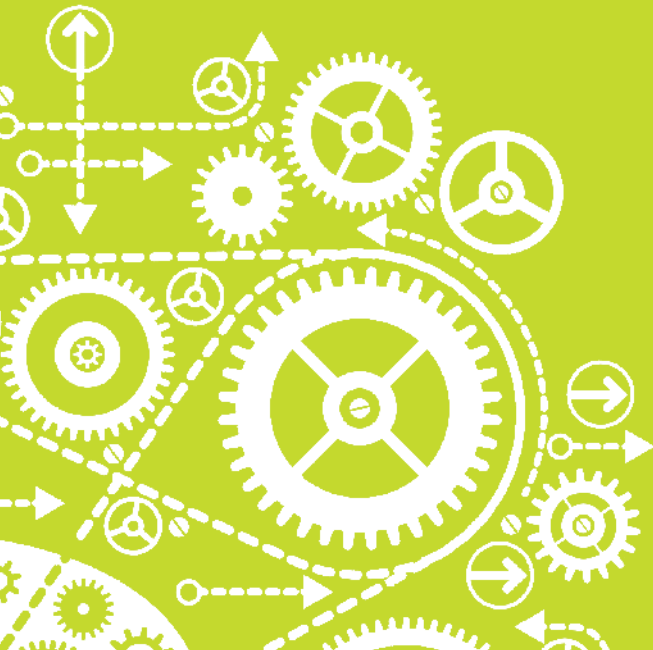


## Creating competitive advantage through Open Innovation

### Systems Generic Research Programme

#### PhD in Systems Scholarship Fund

Fundamental research to uncover the underpinning principles and overarching commonalities of interconnected real-world systems.



## Background and Purpose

The Systems Centre at the University of Bristol has been running an Industrial Doctorate Centre (IDC) in Systems since 2006, training Research Engineers (EngD students) to become future leaders in industry. To date, 83 Research Engineers have been supported by 45 companies.

Building on this success and in response to growing interest to support industrial research with a research programme on the underpinning fundamental principles and related overarching concepts in Systems, we have recently set up a new PhD in Systems scholarship fund.

Unlike *EngD* in Systems projects, *PhD in Systems* projects address fundamental and applied research questions at the precompetitive stage, which are highly relevant across a range of different industries, but with no specific application or market sector in mind.

## Benefits to a Company – sponsor

- **Influencing the direction of research** by being a member of the Programme's Advisory Committee
- **Reduced risk and enhanced 'gearing'** by having access to a wide Portfolio of Systems research for an annual fee
- **Creating competitive advantage** by keeping at the cutting edge of systems thinking and exploring promising emerging research areas
- **Accelerated innovation and reduced time to market** through exposure to new ideas and interaction with other industry sectors within a pre-competitive space
- **Opportunities for further collaboration** through the Systems Centre and IDC programme

## Benefits to a PhD student

- **Building links with industry**, with prospects of collaboration and future employment; having access to empirical real-world data
- **Being part of a diverse multidisciplinary Systems research community** and fostering links with industry and EngD students at the Systems Centre
- **Developing vital skills and experience** from working with Industry and presenting research to non-academic audiences

## PhD in Systems scholarship fund structure

An integral part of the PhD in Systems scholarship fund is an Industrial & Academic Advisory Committee, where the Industry members provide high level strategic direction and feedback, which is then translated by Academics into the formation of new topics for PhD projects, as well as specific feedback to individual PhD students. However, PhD students and their supervisors retain full academic freedom to develop their individual projects.

The PhD in Systems fund designed is follows:

- An annual contribution of £12,000 (2012/13) will give a Company (i) access to a growing pool of PhD research projects, and (ii) grant the Company a seat on the Industrial & Academic Advisory Committee, which sets the high-level objectives of the research
- The Systems Centre seeks to match Industry contributions with funding from other sources
- All IP belongs to the university, but with sponsoring companies having a free licence to use



## Current PhD in Systems portfolio - Case Studies

**Katharina Burger** – “Qualitative systemic modelling and simulations of preconditions and constraints of cross-sectoral cooperation in infrastructure systems”

Academic Supervisor: Dr Mike Yearworth

Katharina's research focuses on the mechanisms that influence cross-sectoral infrastructure management transitions and aims to improve the methodology of generating potentially viable infrasystems models using systemic, technology-supported methods for argumentation and simulation.

**Theo Spyridopoulos** – “Modelling and Simulations of Cyber Capabilities”

Academic Supervisor: Dr Theo Tryfonas

Theo's research focuses on systems modelling techniques of cyber security. The key objective of his research is to examine novel pathways for improving situational awareness in the context of critical information infrastructure, under the premise of Systems Thinking. The main contribution of Theo's work is the development of new security models that can be utilized as part of a generalized security framework in the field of cyber warfare.

**Lara Gosce** – “Modelling human mobility in the context of disease spreading”

Academic Supervisor: Dr Anders Johansson

The aim of Lara's research is to draw on recent insight into real-world mobility patterns and crowd behaviour to form a micro-foundation of disease spreading models, thus improving their accuracy. This has potential to transform both health policy and urban design.

**Thea Morgan** – “Design expertise: evolution of cognitive design strategies from novice to visionary”

Academic Supervisor: Prof Chris McMahon

Thea's research aims to describe and understand the cognitive design strategies observed at six defined levels of design expertise; novice, advanced beginner, competent, expert, master, and visionary, and to explain how these strategies evolve.

**Bharat Kunwar** – “Crowd modelling for a crisis”

Academic Supervisor: Dr Anders Johansson

Bharat's research looks at mass evacuation as a response to crises such as natural disasters, civil unrest, or war, with a focus on decentralised decision making and large-scale spatial modelling, drawing on GIS and Agent Based Modelling.