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## PhD studentship within a funded research project Innovation Policy Simulation for the Smart Economy (IPSE)

**The studentship includes funding for 4 years commencing September 1<sup>st</sup>, 2011.  
The student stipend is €16,000 per annum with fees paid separately.**

The UCD Innovation Research Unit (IRU) at University College Dublin is lead partner of the PRTL15-funded research project "**Innovation Policy Simulation for the Smart Economy**" (IPSE).

The overall scientific objective of IPSE is to support the Irish economy by research on breeding an innovation ecosystem with optimally structured university-industry-government networks. The project combines empirical research on issues identified as important for Irish innovation performance with computational methods such as network analysis, agent-based modelling and social simulation to implement and test innovation policy scenarios. Specifically the research will use data provided by the case studies section of the project, to investigate Ireland's research, innovation and commercialisation ecosystem in the Smart Economy. Social network analysis and innovation policy research carried out in the IRU's Computational Policy Laboratory will be able to be manipulated by changing the rules. This analysis will suggest multiple scenarios that can be developed and simulated. Furthermore policies can be experimentally tested before implementation.

### Responsibilities:

The project is further broken down into sub-projects (SPs), which the selected IRU IPSE PhD candidate will work on with other partners in the project.

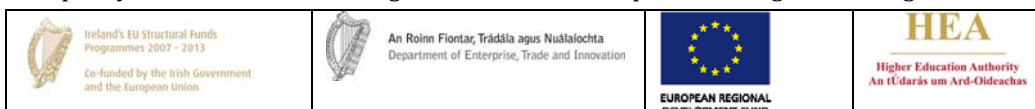
The candidate will help with SP 1 of the project, which is about establishing the **Computational Innovation Policy Lab** at IRU:

*SP 1.1 Provide a conceptual framework for computational policy research* Developing a conceptual framework for the combined application of knowledge mapping techniques, computational network analysis and agent-based modelling, we will present a novel methodology that allows for a fully integrated and more comprehensive understanding of the governance of complex innovation systems than has hitherto been achieved.

*SP 1.2 Translate empirical results into formal approaches* In IPSE, we start from qualitative and quantitative empirical observations on knowledge generation and diffusion in innovation networks, and on policy goals. These are translated into formal approaches for computational investigation.

*SP 1.3 Create a simulation platform for IPSE case studies* By creating a simulation platform, which reflects the dynamic evolution of innovation network structures and innovation performance, the IPSE project will allow the modelling of interactions between existing policies and business practices, future policy scenarios, and alternative business strategies.

*SP 1.4 Identify access points, strategies and rehearsal methods* We need to identify access points for policy advice and firm management to find the "optimal" design of strategies enabling policy



makers and corporate managers to rehearse their strategies before realisation. In IPSE's scenario modelling we have to identify areas, which need intervention, to specify the desired states launched by Irish innovation policies, to find the regulating mechanisms, to suggest policy formation and implementation strategies, and to control and evaluate the robustness of the policies proposed.

*SP 1.5 Translate findings into policy advice* The results of this work are re-translated into conceptual frameworks that are useful and comprehensible to potential users, above all policy makers. This task has to deliver a communicable but complexity-adapted way to support policy design and analysis in innovation networks. Developing and communicating scenarios for the future relationship between socio-economic, environmental, and social issues will reduce risks and allow the optimal allocation of resources for innovation policy makers on all levels.

However, the main research area of the successful candidate will be located in SP 2 of the project **"Sectoral and geographical aspects of innovation"**.

This SP investigates the empirical dynamics of innovation networks. It chooses a heterogeneous sample of sector-specific (green-tech, healthcare) and geography-related (regional, national, all-Ireland, international) case studies providing empirical input for SP1.

The PhD project of the successful candidate will be based on two case studies, which the candidate will carry out within the project to provide information on geographical aspects of innovation in Ireland:

(a) with a particular emphasis on the Dublin regional network investigating the mechanisms and optimising strategies to improve it (task 2.1), and;

(b) with a comparison of Irish and Northern-Irish local high-tech clusters (task 2.2).

The research will contribute to the academic understanding of how local and regional innovation systems nurture and promote high-tech businesses.

The IPSE-funded PhD candidate is required to apply successfully for admission to **UCD's Structured Thematic PhD Programme "Complex Systems and Computational Social Science" (CSCS; <http://geary.ucd.ie/cscs/>)**. The programme is an innovative collaboration of research groups at Geary Institute and CASL and the Schools of Business, Computer Science and Informatics, and Electrical, Electronic and Mechanical Engineering.

For an entry of 1<sup>st</sup> of September 2011, the CSCS deadline for applications is the **4<sup>th</sup> of June 2011**.

### The PhD Candidate

We are looking for an excellent candidate combining an interest in computational modelling in the social sciences with a background in Irish business and industry. We are looking for somebody familiar with Irish innovation policy issues such as the problems to support entrepreneurial behaviour, start-up issues around knowledge-intensive sectors, the emergence of new industries etc. who is keen to use agent-based modelling for supporting policies in these areas.

### Requirements:

- The formal academic background to fulfil the entry requirements of the CSCS
- A broad academic background containing both, technical and social science perspectives
- Programming skills on a mature level, and overall computer literacy
- The ambition to combine empirical research and modelling
- Solid knowledge of the Irish innovation system
- Experience with conditions for Irish businesses and industry in the knowledge-intensive sectors from a management/policy perspective
- Experience in building up IT infrastructures (IRU Computational Innovation Policy Lab)
- Fluent English; good presentation and communication skills

Please send your application (including a formal letter of application with contact details, outline of research interests, declaration of motivation, Curriculum Vitae, transcripts of your undergraduate (and postgraduate results, if applicable) and a complete application for the CSCS <http://geary.ucd.ie/cscs/> before **May 20<sup>th</sup>, 2011** to Prof. Dr. Petra Ahrweiler, Principal Investigator IPSE, UCD Innovation Research Unit (IRU), UCD CASL, University College Dublin, 8 Belfield Office Park, Clonskeagh, Dublin 4, Ireland or via email: [petra.ahrweiler@ucd.ie](mailto:petra.ahrweiler@ucd.ie)

