

**BCS-FACS Evening Seminar**  
**Joint event with the London Mathematical Society**

**Wednesday 30 November 2011, 6:00pm**

De Morgan House, 57-58 Russell Square, London WC1B 4HS.  
Nearest tube: Russell Square.



Picture courtesy of Andrew Ireland

From l-r: Andrew Ireland, Maria Teresa Llano, Gudmund Grov and Alison Pease (on screen)

Professor Andrew Ireland (Heriot-Watt University)

***Reasoned Modelling: Towards Decision Support for System Designers***

Formal modelling and reasoning are closely related activities. In particular, modelling decisions are typically informed by the analysis of failed proofs. While such analysis is not intellectually challenging from the perspective of mathematical reasoning, it does represent a major barrier to the uptake of formal design methods by mainstream software engineers - whose intuitions lie in modelling and not proof. This problem is exacerbated by the huge number of proof obligations that arise during industrial scale developments.

Overcoming this barrier would increase the accessibility and productivity of formal design methods, and ultimately the dependability and security of software intensive systems. Andrew Ireland's talk will describe a programme of research called reasoned modelling which aims to reduce this barrier. In essence he and his collaborators are focused on the development of techniques that abstract away from the complexities of low-level proof obligations, in particular proof-failures, and provide designers with high-level modelling guidance. Their approach is based upon a classification of common modelling patterns. Combined with automatic proof-failure analysis, they use these patterns to automatically generate modelling guidance. Complementing this top-down process, they are experimenting with bottom-up AI theory formation techniques. Specifically, they are exploring how the HR automated theory formation system can be used to increase the flexibility of their modelling patterns. He will report on progress within the context of Event-B, a refinement based modelling formalism. Their longer-term vision for reasoned modelling will also be outlined. This talk is based upon joint work with Gudmund Grov, Maria Teresa Llano and Alison Pease.

*Refreshments will be available from 5.30pm.*

*The seminar is free of charge and open to everyone.*

*If you would like to attend, please email [computerscience@lms.ac.uk](mailto:computerscience@lms.ac.uk) by 25<sup>th</sup> November.*