

# BoF: New Directions in UK Software Engineering Research

Dave Bustard  
*School of Computing and  
Information Engineering  
University of Ulster, Coleraine  
BT52 1SA, UK  
dw.bustard@ulster.ac.uk*

Mike Holcombe  
*Dept of Computer Science  
University of Sheffield  
211 Portobello Street  
Sheffield, S1 4DP, UK  
m.holcombe@dcs.shef.ac.uk*

Ian Sommerville  
*Dept of Computing  
Lancaster University  
Bailrigg, Lancaster  
LA1 4YR, UK  
is@comp.lancs.ac.uk*

## 1. Motivation

A large number of UK researchers in software engineering are expected to attend ICSE 2004. The BoF session will use this opportunity to bring many of them together to consider ways of significantly improving the impact of UK software engineering research. The discussion will cover as many relevant issues as time permits, ranging from the choice of research pursued, through a consideration of its value to students and industry, to the infrastructure desirable to support it.

Although this session is targeting UK software engineers, most of the discussion points are likely to be relevant to any nation, so all are welcome.

The structure for the session is outlined in the next section, which includes some initial ideas on questions for discussion.

## 2. Content

The session will fall roughly into three parts. The first will attempt to map out the territory, identifying the factors contributing to UK software engineering research, and generally building a 'rich picture' of the situation. This will provide a basis for discussing where significant improvement is desirable and achievable.

The second part of the session will consider strategies for increasing the impact of software engineering research. Possible discussion points here include:

- Are step improvements to software methods and technologies achievable or have we taken research to a point where only minor enhancements are possible?
- What would be the benefits of broadening the focus of software engineering to the wider system in which the software is used? This would cover both systems engineering and the need to adapt computing systems to their operational environment, taking account of people and process needs.

- How can UK industry benefit significantly from improved software engineering teaching and research?
- How should software engineering research be reflected in the undergraduate curriculum? Should we be teaching software engineering to students without industrial experience?
- Are undergraduate degrees in software engineering desirable or should specialization occur at Masters and PhD level?
- What is the best way of introducing software engineers to wider commercial issues, such as time-to-market for products and the balance between engineering ideals and profitability?
- Should research be directed to particular perceived needs and characteristics, such as 'agile development' for SMEs? Is software engineering research best supported through specific initiatives that bring together different research groups or through a more individual, curiosity-driven approach?
- Is working with industry mostly 'technology transfer' or, in effect, does it address the only type of research problem that matters?
- Some countries have national centers for research and technology transfer, such as the SEI in Pittsburgh [1] and the SEA in Australia [2]. Would the UK benefit from the establishment of similar institutions?
- How can experimental research in software engineering be facilitated? Would a national testbed be a useful facility?
- What is the role of national visions, such as those defined by Foresight [3] and the Grand Challenges initiative [4], in setting a research agenda?
- Recent UK grand challenge activity [4] has identified dependable software as the main focus for software engineering. What specific targets can be derived from this that would help direct research?
- The International Review of UK Research in Computer Science [5] identified software engineering as a particular strength, especially in relation to

formal techniques and requirements engineering. How can we build on established strengths and also continue to innovate, as encouraged by many funding bodies?

The final part of the session will attempt to draw conclusions from the discussion, as a set of strategy recommendations.

### 3. References

[1] Software Engineering Institute, Carnegie Mellon University, Pittsburgh, <http://www.sei.cmu.edu/>

[2] Software Engineering Australia, Melbourne, <http://www.seanational.com.au>

[3] DTI, Foresight, <http://www.foresight.gov.uk/>

[4] UKCRC, Grand Challenges for Computing Research, [http://www.nesc.ac.uk/esi/events/Grand\\_Challenges/](http://www.nesc.ac.uk/esi/events/Grand_Challenges/)

[5] Schneider, FB and Rodd, M (eds.), International Review of UK Research in Computer Science, Nov 2001, <http://www.iee.org/Policy/CSreport/>