PUTTING SCIENCE AND ENGINEERING AT THE HEART OF GOVERNMENT POLICY

UKCRC Supplementary Evidence

UK COMPUTING RESEARCH COMMITTEE

Executive Summary

1. The UK Computing Research Committee (UKCRC), an Expert Panel of the British Computer Society, the Institution of Engineering and Technology and the Council of Professors and Heads of Computing, was formed in November 2000 as a policy committee for computing research in the UK. Its members are leading computing researchers from UK academia and industry. Our evidence reflects the experience of researchers who each have an established international reputation in computing.
2. Our evidence thus covers UK research in computing, which is internationally strong and vigorous, and a major national asset.
3. Leading members of the scientific community have already identified some long-term ambitious goals which will have substantial societal and economic impact. UKCRC has been an early contributor in this area with our work on the UK Grand Challenges in Computing (http://www.ukcrc.org.uk/grand_challenges/index.cfm).
4. An overt focus on funding research which brings short-term competitive advantage to the UK is likely to make the UK much less attractive as an international partner. Inability to collaborate internationally will make our research more expensive and time-consuming; failure to submit results to international scrutiny will reduce the quality and reliability of the research; and these issues could seriously impact or delay any hoped-for competitive advantage.
5. The problems of the world today (climate, finances, depletion of resources, terrorism) are of a kind that are addressed by our most basic branches of "big" science (biology, physics, computer science). In all these areas, pursuit of national competitive advantage is widely recognised to be the wrong approach.
6. A selective focus in research funding is bound to have unforeseen consequences and needs very careful consideration. The UKCRC is keen to engage in the discussion.

Introduction

7. The UK has always been exceptionally strong in computing research: the first modern computer was developed at Manchester University and ran its first program in June 1948; since that time, the UK has played a part in almost all the scientific and engineering advances in computing. Computer systems have transformed modern life but the world is still in the early stages of discovering, inventing and exploiting their full potential. UK computing research remains world-class , and is a national asset that enhances the UK's international prestige, attracts inwards investment, and supports innovation for wealth creation and improved quality of life.

What form of debate or consultation

8. Whilst recognising the imperative for consideration of such a policy, UKCRC fears that it will inevitably lead to a decline in the UK's standing in many areas of science and technology. The debate/consultation on this should be led by an independent body; one obvious candidate might be a combination of the Academies (Royal Society, Royal Academy of Engineering and Academy of Medical Sciences). Any decision to withdraw from an area of research should be made only after the Academies have given their best estimates of the long-term consequences.

Whether such a policy is desirable or necessary

9. Where the UK really falls behind its major competitors is in getting small start-ups to develop into major world players. The problem is therefore not at the level of the research councils but more to do with the enterprise environment in the UK. It is not clear that a policy that prioritises research in relation to the country's economic and industry needs would be desirable or necessary.
10. Failure to participate fully in international research will make it much less likely that our scientists

and industrialists will give early recognition to, and be capable of rapid exploitation of, new results obtained by the best scientists in the rest of the world. As a consequence, concentration on local advantage could actually reduce our overall innovation.

Potential implications of such a policy

11. The success of UK commerce and industry relies on the ability to exploit both UK research and results from elsewhere in the world. This requires a world-class research base in the UK that is capable of translating the results into the UK industrial context. A selective policy of research funding would inevitably lead to loss of capacity in some areas and would thus threaten our ability to exploit such work.

Winners and Losers

12. Computing research in the UK is a major contributor to the economy: there are many examples, but one of the most prominent is ARM with its dominance in the mobile telephony area.
13. Computer Science has become a vital component of all other sciences and has made possible new natural sciences (genomics, computational chemistry, climate modelling …).
14. Such considerations suggest that Computer Science, and the broader ICT community, are likely to be winners from a selective policy. However, we live in a complex research eco-system and such a policy could have unforeseen and undesirable consequences in the long-term. UKCRC is very keen to assist the Government in achieving its aspirations without harm to the science base.
15. Any decision to withdraw from one area of scientific research in which our industry is not now effectively competing will, of course, ensure that our failure to compete will be permanent. Since competitive advantage cycles among nations and among industries, within a short time there is the danger that the UK will become uncompetitive in all fields.

Evidence

16. UKCRC would be pleased to provide further detail of any of the issues raised above, either in writing or by way of oral evidence.

Supplementary evidence submitted by Chris Hankin on behalf of UKCRC, April 2009.