EPSRC

Engineering and Physical Sciences Research Council

Consultation on 2006 Strategic Plan

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Organisation	UK Computing Research Committee

The questions are to prompt thoughts on different aspects of our strategy and are not meant to be prescriptive. If you have other relevant comments to make, please add them in.

What single step would improve knowledge transfer from the science base? What could we do to bring this about?
Train a larger number of excellent UK researchers and Masters students in the methods and results of pure research. They will be more imaginative and adaptable than those who only engage in applied research. The following suggestions are added in: Encourage UK industry to recognise that most of their current needs for science can probably be satisfied by existing results. Encourage industry to employ world-leading UK scientists as consultants in the exploitation of the past research of others (including the work of overseas scientists, as there is much more research conducted overseas than in UK Fund the development, support and evolution of software tools to exploit past research results for the benefit of practicing scientists and (when the tools are mature) for industrial engineers as well.
What could we do to encourage a more effective partnership between us, universities, and businesses?
Get advice from industry on what are the most relevant research areas for results that may be exploited on a fifteen year time scale. Ask researchers in these areas to plan their work towards these extended timescales, collaborating with each other where this will increase their effectiveness, and agreeing to compete scientifically where appropriate. Build consortia of funding agencies to support authoritative studies, on the model of the US NAS/CSTB. Encourage research student placements in industry for 3 months to one year where the PhD clock stops ticking for that period. Part-fund the costs for placements in SMEs.

What actions can we, alongside others, take to empower and incentivise the research community to facilitate world-class science and better exploitation?
Support major projects to advance basic science, with no pressure to contribute to foreseeable UK commercial advantage. Allow researchers to declare if they wish their grant to be classified under one or more categories of current relevance. For example: Basic science Grand Challenge International collaboration Adventure in science Interdisciplinary research Innovative commercial exploitation of existing science. Foresight policy Judge proposals only according to criteria relevant for their chosen categories and let them also be evaluated according to the primary nature of their research such as: Pure or Applied - (purpose) and Revolutionary or Evolutionary - (progress) and Engineering or Science - (function) It will be the case that many proposals will cover a mix but there should be a principal characteristic. Encourage international collaborations by setting up multi-lateral arrangements with foreign funding agencies to jointly fund collaborative projects with academic and/or industrial partners, with procedures that avoid double jeopardy.
How can we best support those at the early stages of research careers in business and academia?
Set aside an earmarked fund to provide starter research project money for excellent PhDs who choose in their final year to continue research. An excellent beginning is the call for Postdoctoral Fellowships and in particular the ICT programme. However, it should not be restricted to just Theoretical Computing, and 2-3 year Fellowships may be more appropriate for new Post-Docs.
What processes are most effective at developing grand challenges based on a shared vision between researchers and potential users of world class research?

First, the scientists from the relevant research communities must be brought together to develop a shared vision of the advance of science and technology. Workshops, working conferences and working groups must be organised and funded on an international scale, over a period of several years. If consensus emerges, go on to the second step.

Secondly, world research leaders in the relevant research communities must be commissioned to formulate a strategy, in reasonable expectation that funding will be available to implement it. Objective criteria for final and intermediate success must be agreed. Plans can extend in outline for fifteen years or more. The research leaders must continue their responsibilities as the project evolves.

If the strategy is approved, research grant proposals must be judged solely on their promise to contribute to the strategy. Referees who question the goals must be ignored.

Research (even of a quite routine nature) that contributes to the advancement of basic knowledge must be supported favourably, without concern for non-scientific goals such as interdisciplinarity, adventure, industrial involvement, political fashions or a glamorous image with the general public.

What should we do to encourage a research environment where we further develop world-leading research teams collaborating with their global peers? How should we encourage a research environment that is attractive to global companies and inward investment?

An essential precondition is to reduce the emphasis on short-term competitive advantage to UK industry.

A workforce that is well-trained and experienced in the methods and results of pure research can be very attractive to companies engaged in applied research.

Any other comments

Your list of success features do not mesh well with your list of activities, or even with the drafting of the questions listed above. The seventh item (mentioning worldwide leadership) is the most important, and deserves more emphasis. Achievement of this feature will contribute to all the others. This item could even be merged with item two.

Item six and item five might be merged as the next most important feature. Perhaps the word ‘stakeholders’ should be amplified to mention specifically the scientific research communities themselves.

The remaining items should be rephrased in terms of ‘maintaining an appropriate balance of adventurous, interdisciplinary and industrially collaborative research’. The EPSRC should keep records of the classification selected by the submitters of research grant proposals, and the success ratio in each category. If politicians wish the figures to be different, EPSRC could measure their success in approaching political targets.

The success features should state objective criteria on how success can be judged. In the present form they could lead to rather unbalanced and even inappropriate judgements.

Please email this form to maggie.wilson@epsrc.ac.uk by **31 July 2006**.

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