

## **Submission from the Australian Mathematical Sciences Institute**

The Australian Mathematical Sciences Institute (AMSI) was established with a grant from the Victorian Government's Sciences and Technology Innovation (STI) grants program in 2002. This provided infrastructure funds for three years.

The 1995 Review recommended two national centres, one with a research focus where it was suggested that there be a strong emphasis on postdoctoral positions and the other a Cooperative Research Centre (CRC) for industrial and applied mathematics. Neither came into being and by 2002 the kind of centre that would best suit Australian needs was one that provided infrastructure to address collaborative efforts to meet some of the many challenges already documented in other submissions to the Review.

The suggestion to apply for the STI grant originated from Professor Lynn Batten of Deakin University, a former Canadian who had been involved in the Canadian Fields Institute. Although the funding was from the Victorian Government, the national support from institutions in other states meant that it had broad national coverage from the outset.

AMSI is modelled on the Canadian Fields and PIMS institutes and from its inception it sought to have integrated programs across research, education and industry. Additional funding was obtained from the Australian Government for the first two summer schools for honours and postgraduate students. Subsequent summer schools have been supported by the International Centre of Excellence for Education in Mathematics (ICE-EM), which is funded by the Australian government through the Department of Education, Science and Training (DEST).

In 2006 AMSI has a strong education program because of ICE-EM. At this time AMSI's core programs in research and industry have no government support but rely on subscriptions from members. It is not able to participate equally in collaborative programs with mathematical sciences institutes of Britain, Europe, North America, Asia or even New Zealand. Neither is it able to devote sufficient time to the important tasks of engaging mathematical scientists on industrial problems. AMSI conducts Industry Forums and it brokers linkage projects and consulting jobs to assist industry. However, experience shows that devoted personnel are required to achieve long-term benefit.

More details regarding AMSI and ICE-EM are available on the web at [www.amsi.org.au](http://www.amsi.org.au).

The need is for core infrastructure funding from the Australian Government that gives AMSI a sense of permanency. This would also provide a stable base from which to engage State governments in support at a more local level.

There are members of the mathematical sciences community who would like to see a separate research-only institute established. Unfortunately, in the current climate, this is likely to provide a haven for a select few and contribute to further problems with university teaching. Further, AMSI's experience is that it is difficult in the current Australian climate to support extended thematic programs of the type common in other institutes. Academics cannot get away from their institutions for sufficient time to either manage a program or to participate.

We believe that the more broadly based Canadian institutes continue to be the best model for Australia at the present time. This requires some flexible government thinking as there is no funding mechanism that supports this kind of institute. The Collaboration and Structural Reform (CASR) program may be a source of support but this would have a limited life and is not designed to provide ongoing support.

The unique position of the mathematical sciences in the life of a nation means that they not only underpin science and technology, but also business and finance and research in the social sciences. Our communications with a range of industries, government agencies and educational authorities indicate a looming shortage of trained mathematical scientists. Therefore we believe that education in the mathematical sciences should be a national priority and undergraduate major programs should be protected by sanctions—both positive and negative—on universities' recurrent government funding.

AMSI is an established entity with membership covering most university mathematical scientists, as well as the CSIRO, Australian Bureau of Statistics and the Australian Mathematics Trust. Australia needs a well-funded and secure AMSI capable of providing support to all its members and to cognate disciplines, especially in postgraduate education, industry collaboration and research.

With secure funding it would be possible to better engage with both State governments and industry. In particular such funding would indicate that the Australian government valued this kind of collaboration and the mathematical sciences.

In 1972 the Australian Institute of Marine Sciences (AIMS) was established as a statutory authority and continues to thrive. It is a model that could be emulated, albeit with a more modest budget as the mathematical sciences do not need ships or expensive research laboratories. However, AMSI and the mathematical sciences do need the same sense of commitment and permanence that AIMS continues to enjoy.

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