

## AIMS and AMI-Net

In Africa too few people are involved in cutting-edge technologies. Too few are trained to utilize mathematical sciences for Africa's problems. Those who succeed in the mathematical sciences are usually very bright and they tend to be absorbed elsewhere, where resources are more plentiful.

It is the clearly stated goal of the African Institute for Mathematical Sciences (AIMS) to educate African scientists for Africa. AIMS takes in 40 to 50 excellent postgraduate students annually. These are taught by exceptional highly-committed lecturers from across the globe. They each present intensive courses of about three weeks and they cover among themselves a wide variety of relevant topics. (See the accompanying AIMS overview or [www.aims.ac.za](http://www.aims.ac.za) for more information.)

The intention is to retain the students in Africa after the completion of their studies. The only acceptable way of doing that is to create incentives for them to stay. The highest priority for most of the students is to be able to work in an environment in their home country which would enable them to succeed. The environment required needs to be similar to the one they encountered at AIMS.

Through our own students and through surveys undertaken by AIMS, it is apparent that the single most important requirement is a computer lab with a good Internet connection in which

- Accessibility to staff and students at all times is envisaged
- The lab is fully equipped at a reasonable level for the surroundings (printers, data projector, sufficient PC-to-user ratio)
- Free Software (such as GNU/Linux) is used and disseminated, accompanied with training, and integrated with academic courses
- Open Standards and Open Content are supported
- Constant dedicated technical support is available

Students come to AIMS from many different African states. They live together and work together closely during their nine months in Cape Town. Their

common enthusiasm for science and development in Africa is nourished. Facing similar problems and seeking local solutions, they form a natural network in research and education.

With this point of departure, in partnership with the African Mathematics Millennium Science Initiative (AMMSI), and other mathematical institutes across Africa, AIMS has proposed a network of mathematical sciences institutes: the African Mathematical Institutes Network (AMI-Net). AMI-Net would identify promising centres across Africa for upgrading into AMI-Net nodes, building at a rate of three new nodes per year for five years. Nodes would be selected on the basis of quality, potential and geographical distribution. (See the accompanying AMI-Net overview for more details.)

We envisage the following steps in building AMI-Net, with AIMS acting as the hub from which to co-ordinate:

- A small team will conduct site visits and cost feasibility studies for a number of identified candidate nodes spread across Africa, within a six month period. They will assess the academic, technological, and regulatory environment. Funding at a level of approximately \$100,000 will be required for this study.
- The team will report its findings to a governing body to be established. This body will set the terms for an annual grant round which will select new AMI-Net nodes on the basis of a transparent, competitive process.
- Administrative and software support will be established at the AIMS hub to coordinate the establishment of the network.
- Three new AMI-Net nodes will be established each year, for five years.
- Each new node will receive a grant to support the development of infrastructure (computers, Internet connection, library, administrative and other support), in accordance with the specific needs and opportunities at that site. Technical assistance will be provided, as needed, from the AIMS hub.
- All AMI-Net nodes will be linked via the Internet allowing email and web-interaction (and regular VOIP/videoconferencing where regulation, bandwidth, and technical expertise allows) on research topics of common interest. This will do much to overcome isolation and bring visibility to small

research groups, helping to build a critical mass of researchers in Africa, in diverse fields.

- Currently, AIMS is over-subscribed by offers from international lecturers wanting to come and teach courses. Many of the lecturers who teach at AIMS can be encouraged to visit AMI-Net nodes and teach courses there. In this way, AIMS will continue to act as a catalyst for the development of the network.

## Similar projects in other fields

AIMS has been approached by several academics in other fields who would like to initiate similar projects. Also, there have been approaches for the inclusion of new facets which are not strictly part of the mathematical sciences but which are closely related. Examples are interaction with the Shuttleworth Foundation and Go Open Source Campaign (see <http://www.go-opensource.org>) in South Africa, and a proposed MIT-style Fabrication Laboratory (FabLab, see <http://cba.mit.edu/projects/fablab>) at AIMS, where the Open Source concept is extended to hardware.

Developing a sound, cost-effective Internet across Africa is a very significant step forward. However, it is also essential that such facilities are used in an optimal manner. AIMS and AMI-Net are committed to contribute on that level.