FEATURES

Q&A: Bernie Fanaroff on South Africa's bid to host the Square Kilometre Array

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Bernie Fanaroff, director of South Africa's Square Kilometre Array project, tells *SciDev.Net* how hosting the world's most powerful radio telescope would benefit Africa.

Fanaroff: 'It is not only Africa that needs this project but the rest of the world as well'
SKA

Next February, an international panel of astronomers will decide which country will host the world's most powerful radio telescope, the Square Kilometre Array (SKA). The telescope, comprising more than 3,000 linked radio dishes, will be able to look back to the origins of the Universe in unprecedented detail.

Two regions remain in the running for the US$2.2 billion project: Australia and New Zealand, which have a tradition of building world-class astronomy facilities, and Southern Africa, which has been catching up fast and recently constructed the Southern Hemisphere's largest single optical telescope, the Southern African Large Telescope (SALT).

SciDev.Net talks to Bernie Fanaroff, director of the South African SKA project, about how winning the right to host SKA would benefit Africa scientifically and economically, changing the way the world sees the continent — and the way Africans see themselves.

You have called SKA an "iconic project" for Africa. What do you mean by this?

SKA will be the biggest research infrastructure in the world, that's why it will be iconic. Iconic projects do things that incremental projects can't do: they open up pockets of funding that might otherwise not be available. They drag development in their wake — think of the Olympic Games in China, or the World Cup in South Africa.

Significant investment is made in infrastructure, which has a lasting impact.

The value of SKA will not be so much the infrastructure itself, although this will involve significant job creation in South Africa. What's more important is that it will create a significant legacy of skills and be a continuing attraction for young people in Africa to enter careers in science and technology.

Another legacy will be the cluster of activities that it will be built around. Cape Town already has a high level of high-technology industry, as well as three very good universities and a number of high- quality research facilities. We also have the MeerKAT facility, which is acting as a prototype for SKA.

What makes you say that the "iconic" value of SKA would provide access to money not available otherwise?

SKA will be built using both South African and foreign money. The South African government has already earmarked £200 million (US$330 million) for the initial part of the programme, including a human capital programme.

If you were to go to government directly and just say that you wanted to increase the budget for science by that type of factor, you would face a struggle. However, if you say that this is an iconic project that is going to change the way we see ourselves, and the way that others see us, you are more likely to succeed.

How will locating SKA in South Africa change the way people see the continent?

Southern Africa Large Telescope – one of the w orld's largest
Flickr/Francois Malan

At present, people don't see Africa as a place where you do world-class science that produces world-class technology. They see it as a place where you do research into things such as food security and health.

All that is important and has to be done. But you have to go beyond that if you want to play a part in the world economy, where technology and knowledge-based products are going to play a greater and greater role. The question we need to face is whether we are going to become a significant component of that economy.

The expansion of industry in Africa requires efficient administration and good government. Both of these are required to run a country effectively.

Is that how you would justify focusing so much scientific talent and public resources on a project that is not likely to make a direct contribution to solving poverty and inequality in South Africa?

In the short term, building SKA will create jobs in construction and technical maintenance. In the longer term, it would help to produce the skills that we require to become part of the global knowledge economy.

Is the current lack of technical skills compared to Australia a disadvantage in bidding for the project?

It is one of the things we are aware of, which is why the South African government is already putting significant investment into training both technical staff and future researchers in the skills they will need.

For example, the lack of mathematics training among blacks in South Africa, a legacy of the apartheid era, remains a significant problem. We have not solved that in the years since the arrival of democracy at the beginning of the 1990s and haven't yet increased the number of mathematics graduates.

However, we are now creating a pipeline through which we help youngsters come into science to provide the technical and research skills that we are going to need.

Building SKA w ill create jobs in construction and technical maintenance, says Fanaroff
Flickr/Noisy Astronomer

How optimistic are you that the United States will eventually participate in funding SKA, given that at present it does not seem to be a major priority for the US astronomy community?

People tell me privately they are confident that the United States will not want to be left out of a project as significant as this. The United States will have observer status on the founding board, or whatever succeeds it, even though it is unlikely that any US money will become available over the next decade.

But for the SKA project as a whole, you would eventually want to have US money because the European Commission would feel isolated if there were no US funding.

How much work did you do to persuade other African countries to participate in the project?

We are all trying to build a continent that grows wealthy and improves the quality of life for our people. In previous decades after the end of colonialism, the main problem was to improve living conditions. Now we have to eradicate poverty and improve people's quality of life.

But we also have to invest in building our knowledge economies. If we don't do that we will fall further and further behind the rest of the world. We cannot depend on our commodity exports in the long term. We are not unique. Countries in the Middle East, for example, are doing the same thing to reduce their reliance on oil exports.

Some have implied that we are stressing the potential contribution of SKA to Africa's economic development because our scientific case is not as strong. I can assure you that this is not the case. The scientific bid is a strong one but there is an economic development argument as well.

It is not only Africa that needs this project but the rest of the world as well. High-tech companies say their growth is going to come from emerging markets and are looking to Africa to expand their activities in telecommunications and other related areas. For them, we are the next big market.

See below for a SKA animation about the project:

See below for a SKA animation about the key scientific questions the project will tackle:

Q&As are edited for length and clarity.

COMMENTS (1)

ironjustice (Canada)
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"Will be able to look back to the origins of the Universe in unprecedented detail"

This explanation is given everytime someone asks about the reason for the project. This explanation does NOT address the WHY. Why do we need to look back into how the "universe was created" ? It does NOTHING for us TODAY. It is just a project to employ scientists in a project which has NO discernable reason WHY. Imho.

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