

# **Innovation and Technology Transfer: A Challenge or a Threat**

*Address by Prof Reggie Ngcobo, interim Vice-Chancellor and  
Principal of the Tshwane University of Technology, at the  
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Ladies and Gentlemen

In one stroke the Minister of Education has declared all technikons universities of technology. I want to argue that it is one thing to be called a university of technology and another to BE a university of technology.

The purpose of this paper is to explore the implications of this new “status” in the context of the role and mandate of a university of technology in innovation and technology transfer. The paper should be read together with the two other presentations focusing on teaching and learning, and on research and development respectively.

The International Intellectual Property Institute (IIPI) in Washington has recently released a report, *South African University Technology Transfer: A Comparative Analysis (2003)*. Funded by USAID, the report contains important findings on technology transfer systems in the US and other countries. Sadly it paints a sombre picture of progress made in South Africa in this regard, highlighting major deficiencies.

The report stresses the key role universities play in national innovation systems. This role has traditionally been confined to training the human capital involved in research and development. However, some universities are increasingly making direct and substantial contributions to innovation, and thereby to regional economic prosperity through the development of new technologies.

In this context innovation is understood to be the process of creating new ideas or transforming existing ideas and knowledge into new or improved products, processes and services or approaches. It includes all the necessary steps in taking an idea or invention all the way to its successful commercialisation.

Both developed and developing countries are seeking to increase the contribution university research and development makes to national economic growth. This has led governments to restructure the institutional environment, usually by establishing clear intellectual

property ownership rules in favour of universities and by providing support programmes for the commercialisation of technology.

In countries where this approach has been followed, universities take technology transfer seriously and have clear policies in place governing the rights to intellectual property of inventions developed by them. In this regard the term “technology transfer” is used to describe the formal transfer of new discoveries, innovations and technology, resulting from R&D activities, to the commercial and industrial sectors in the economy. Implicit in this term is the understanding that a tangible “intellectual asset” has been identified for transfer.

In contrast, some of the major deficiencies identified in the South African system of Innovation and Technology Transfer are:

- Higher education institutions in general are not taking the opportunities that technology transfer offers seriously.
- Most of South Africa’s higher education institutions have devoted little or no resources to technology transfer.
- The skill and experience level of current technology transfer personnel vary from those who have had moderate experience with most aspects of technology transfer, to others who have had only limited exposure to any part of technology transfer.

Against this background I pose the question: *Innovation and Technology Transfer – A Challenge or a Threat?* I will try and answer this question from a Tshwane University of Technology (TUT) perspective.

In developing the vision and mission for TUT we first identified a number of “pillars” as strategic building blocks for the new institution. One of these were that in doing research and development (R&D), the focus would be on –

- Responsiveness to the needs and priorities of South Africa
- Centres of excellence linked to R&D focus areas
- Innovation and the improvement of technology
- Technology transfer, including technology and business incubation and enterprise development

In our mission statement this was translated into:

“Extending the parameters of technological innovation by making knowledge useful through focused applied research and development.”

These statements clearly confirm our commitment to innovation and technology transfer. Some facets of this major institutional challenge are:

- The promotion and establishment of an innovation and technology transfer culture amongst staff and students
- The establishment of appropriate innovation and technology transfer strategies, systems and support structures
- The development of specific models and support for technology and business incubation as well as technology intensive SME development

Fortunately, the three institutions that merged to form TUT some time ago identified some of these challenges and started addressing them. Reasonable progress has been made of which I will highlight a few examples.

Let's now look at some of the dimensions of innovation and technology transfer as it relates to a university of technology. Crucial in this regard is institutional support. Recognising the importance of promoting and establishing a culture for innovation and technology transfer at the highest level, a Deputy Vice-Chancellor (Academic) has been specifically tasked with developing and managing the technological innovation strategy for TUT. This incorporates innovation and technology transfer.

To support staff and students, an Office for Innovation and Technology Transfer has been established in 2002. Some of the services this Office offers are:

- Assisting with the identification, disclosure and patent registration of Intellectual Property
- Assisting in the establishment of licensing and royalty agreements
- Advising on matters pertaining to the development of Intellectual Property
- Introducing staff and students to the technology transfer process
- Encouraging staff and students to participate in the commercialisation process.

Recently the Innovation Fund has also established an Innovation Fund Commercialisation Office to provide a one-stop service in the areas of Intellectual Property Rights, patent support and commercialisation. The Fund has in principle agreed to make resources available for capacity building at Offices on the campuses of higher education institutions. This clearly indicates the commitment of Government, in particular the DST and DTI, to reposition South Africa in this regard.

Regarding on-campus initiatives, one of the major challenges is to link actual hands-on activities in education and R&D programmes to the innovation and technology transfer processes. Staff and students need to be engaged in this as an integral part of their daily tasks and responsibilities.

The following are examples of on-campus initiatives at TUT contributing to a culture of innovation and technology transfer:

- F'SATIE, the French South African Institute for Electronics, situated in the Faculty of Engineering, is providing opportunities for staff and students to participate in R&D projects and innovation challenges through its technology incubator, INCENTIF.
- The Institute of Technology at the Soshanguve Campus and the Automotive Technology Centre at the Pretoria Campus is jointly servicing the automotive industry. The latter is receiving major funding from the Gauteng Province through Blue IQ's Auto Cluster Programme managed by the AIDC.
- Centres for Entrepreneurship have been established on three TUT campuses. Linking their activities with initiatives such as the TABELSA Technology Enterprise Centre, a SME Technology Centre and the established Chair in Technological Entrepreneurship, the centres are providing unique opportunities for innovation and technology transfer.
- CITPROD, the Centre for IT Product Development, in the Faculty of Information and Communication Technology, provides a pre-incubator environment for prototype development of ICT products.
- TUT is also engaged in a number of Approved Innovation Fund Projects, in partnership with other universities and private companies. These projects aim to develop innovative solutions

aligned to national priorities. Currently these projects are conducted by the Faculties of Engineering and of Health Sciences.

Importantly, on-campus initiatives cannot exist in isolation, but must be linked to regional and national initiatives for innovation and technology transfer. One such an example is the GODISA programme of the Department of Science and Technology. This programme aims at establishing technology incubators in various disciplines. TUT is one of the founding members of the Softstart Trust, an incubator for software entrepreneurs. This off-campus facility supports spin-out companies for a limited period, while they establish themselves as sustainable commercial enterprises.

Another regional initiative is the Innovation Hub, a major Blue IQ project of Gauteng Province, aimed at establishing a “smart corridor ” in Gauteng. It comprises of a science and technology park, excellent support services and incubator facilities, allowing young start-up groups to exploit technology transfer opportunities.

In general, all higher education innovation and technology transfer initiatives should ideally be aligned with the needs and priorities of Government, the business sector and the community. This would not only ensures its relevance to South African society, but also contribute to the viability of these ventures.

Finally, the ending of South Africa’s isolation has created a host of opportunities, allowing higher education institutions to tap into global



innovation and technology transfer networks. These should be utilised to maximum benefit. In this regard, TUT has multiple cooperation agreements with international institutions and organisations. These are especially of value in assisting SME's to realise their international aspirations.

Ladies and Gentlemen

From this very short overview the enormous potential of innovation and technology transfer for higher education institutions should be clear. We have only begun to scratch the surface in exploring the wealth of opportunities available both locally and internationally.

I personally, as well as the institution I represent, is of the opinion that innovation and technology transfer should be a cornerstone of any university of technology. The line should be drawn through from the training we present to our research and development efforts, as well as the community service we engage in. Regarding our training task, it is essential that we equip the next generation of scientific and technological leaders with an innovative mindset, the capability for out-of-the-box thinking, appropriate knowledge and skills and the commitment to contribute to the economic prosperity of our regions and the country as a whole.

I thank you