Management Response

to

the Review of the

French South African Institute of Technology (F’SATI) Postgraduate Programme in Satellite Engineering at the Cape Peninsula University of Technology (CPUT)
The National Research Foundation (NRF) acknowledges the recommendations made by the Review Panel in their F’SATI CPUT Review Report. The NRF is pleased at both the breadth and depth of the review which was carried out within a very short space of time. We are in principle in agreement with the direction provided through the recommendations. We are also of the view that adoption of these recommendations would ensure and enhance the role of CPUT and its positioning within the SA Higher Education and research landscape. However, such adoption should be through a partnership with CPUT management, DST and the South African National Space Agency (SANSA). This is in line with the objectives of the organisational renewal process taking place at the NRF where the objectives and modes of funding are being redefined to better respond to the differentiated higher education landscape.

The programme completed a Cubesat which is ready for launch with a science experiment payload that will provide data for space weather research. The capability is still to be tested, since the main value lies in developing the know-how which resides in the team.

Response to Review Recommendations

1. The F’SATI project on satellite engineering should be continued and for this, funding is needed.

A number of students have graduated from the programme and some of the graduates have been absorbed in industry. However, due to the lack of appropriate industries in space engineering in the country, some of this capacity has been held through CPUT’s “Professional Development Programme” (PDP). The NRF has made a contribution to CPUT’s PDP, through the DST-NRF Internship Programme. The progression from basic research to application of the skills acquired is of serious concern to the NRF. The expectation is that these personnel be utilised by SANSA and possibly through projects funded by TIA. We also acknowledge the need for continued funding of the programme, but are very concerned regarding the sustainability of the programme. The DST through the NRF made an initial investment over a period of three years, and this funding stimulus, should have at least allowed the FSATI researchers to build networks and attract additional funding and not rely on funding from government for its continued existence. The mode for further funding should therefore be decided upon by the DST, without placing the NRF in a position to fund without due peer review process. Alternatively, a mode of funding targeting the Universities of Technology (UoTs) in the country
and inclusion of institutions with appropriate capabilities should be explored. It is also noted that the programme has developed networks nationally.

The research outputs need to grow over time. In addition to research in the technical aspects of the satellite build programme, there is potential for the growth in research using the data that is gathered by the satellites. This includes space weather, applications in land surveying, in geo-information systems, etc.

2. The CPUT group should not be required to commercialise prematurely

We agree with this recommendation and suggest that a conversation with the Technology Innovation Agency (TIA) may be appropriate at the correct time.

3. The group needs to be encouraged to integrate further nationally and to be involved, at least peripherally, in the needs of larger satellites through the leadership of SANSA.

The NRF is in agreement with the recommendations made to the CPUT group which are outlined as follows:

- Continue to focus on strengthening student training and research base.
- Strengthen relationships with local industry.
- Formalise relationships with other Higher Education Institutions with complementary capabilities in well-selected fields in order to collaborate with them.
- Engage the Department of Higher Education for funding of emerging post-graduate courses such as the MSc coursework of the F’SATI project.
- Work more with the Technology Transfer Office to obtain a clear strategy for technology development.

The 2009 report on the space science audit in South Africa, indicate that the various institutions and industry organisations offer a wide range of capabilities that can be utilised towards a
common goal. Therefore, the need to develop a sustainable model for space science and technology activities cannot be overemphasised. In order to build a sustainable model, in 2010, the NRF in partnership with SANSA and the DST hosted a workshop to discuss a sustainable plan defining:

- Structure of such a model;
- Objectives of the model;
- The benefits for all interested parties;
- The modalities for participation in such a model; and
- Governance.

The workshop included representatives from academia, industry, government, national facilities and science councils. The following recommendations were made:

- There was a general agreement in the space engineering community that in-house training does and should form a separate and key element of any HCD intervention.
- The human capital thus developed can provide a further enrichment around specific phases in the space imaging data value-chain. This human capital does not only benefit industry but also add to the DST and SANSA goals.
- Rapid development of forums where the space engineering industry can provide significant input seems to be an urgent imperative for ensuring the success of SANSA space science and technology strategies.

There is an existing signed Memorandum of Understanding (MoU) between the IEEE and the NRF which was concluded in 2009. The objective of the MoU is human capital development with a particular focus on space science and earth observation. It seeks to develop infrastructure to address the DST identified grand challenges.

At the same time, SANSA announced its aims to deliver services in order to build capacity. SANSA’s thematic focus areas include Earth Observation, Space Science, Space Operations, Space Engineering, HCD, Science Advancement and Public Engagement. SANSA had submitted a human capital development proposal to DST. The proposal included a range of programmes from internship, Honours to PhD programmes.
In view of all the work that has been completed and the engagements that have taken place as explained above, the NRF is of the view that the CPUT Space Science programme should be expanded and supported through SANSA and NRF, following engagement with CPUT and collaborating partners.

In addition, international collaboration beyond France should be explored.

4. **In view of the unsatisfactory participation levels of South African black and female students which this group shares with similar postgraduate programmes, an overall national approach is needed to resolve the uneven participation levels in STEM education.**

This recommendation is addressed through the new Ministerial guidelines for the distribution of NRF bursaries which prescribes funding at the following levels:

- 4% SADC;
- 4% Africa; and
- 4% foreign.

This should assist in leveraging resources for these groups. In addition, CPUT should be encouraged to meet this demand without sacrificing the participation of South Africans in the programme.

5. **The funding of students from other African states, particularly those in recognised SADC and AU programmes, needs to be resolved at the appropriate higher level.**

See response above.
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