

**“Leveraging Earth Observation
Initiatives to Advance Capabilities
and Innovative Solutions**

**Earth Observations Stakeholder
Engagement Workshop
Dr Zolani Dyosi: NRF**



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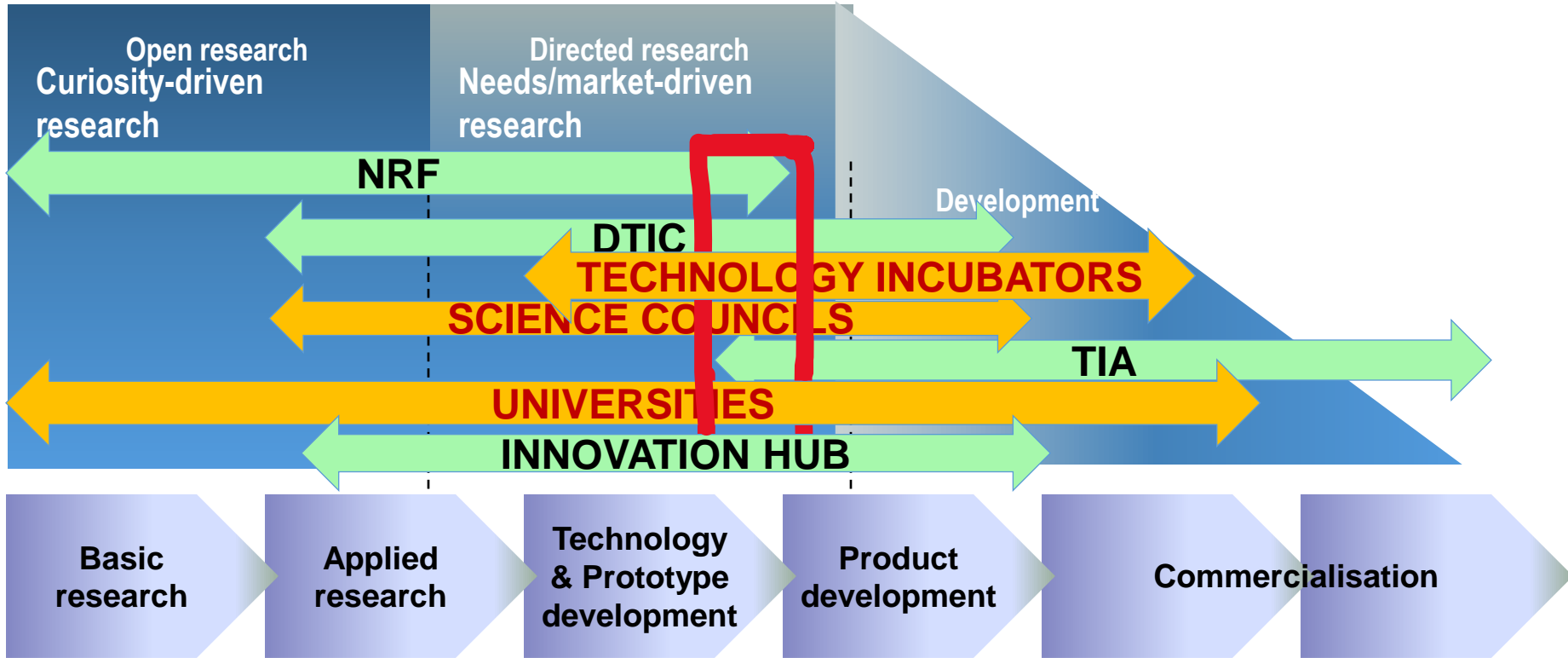
National Research Foundation Mandate

Contribute to National Development by:

- (a) Supporting, research and human capacity development, through funding and the provision of the necessary research infrastructure, in order to **facilitate the creation of knowledge, innovation** and development in all fields of science and technology, including humanities, social sciences and indigenous knowledge;
- (b) Supporting and maintaining **national research facilities**;
- (c) Supporting and promoting **public awareness of, and engagement with, science**; and
- (d) **Contribute to the development of the national science system.**

NRF Vision 2030: *RESEARCH FOR A BETTER SOCIETY*

SA Innovation Landscape



Leveraging NRF Investments

- Access **international networks**, global research funds and infrastructure for PhDs, postdoctoral fellows and early career researchers
- Accelerate career pathways of **exceptional early career** researchers



Knowledge Partnerships
Excess of 40 Partners



Strategic Interventions

NRF Industry/Government Partnership Strategy

- Develop **skilled human capacity** through collaborative training opportunities with industry
- *Establish technology development platforms for the competitiveness of the private sector*

Global Knowledge Partnership Programme

- Create platforms to increase international networking opportunities with *international business partners*

NRF Local Innovation Partners

Outcomes

- ❖ Products
 - ❖ Process/systems development
 - ❖ High-level skills
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- ❖ SASOL-NRF: Upscale industrially relevant research at universities which supports Sasol and **South Africa's energy transition**
 - ❖ RTF: Develop and transfer appropriate technologies to enable Small, Medium and Micro Enterprise (SMME) participation in the commercial food value chains in the **Agriculture sector**
 - ❖ SANSA: Stimulate the development of innovative **Earth observation solutions**
 - ❖ Telkom: Develop innovations across legacy networks and emerging technologies to meet the market needs of the **ICT sector**



Innovation and Entrepreneurship

South Africa's level of **entrepreneurship** is considered to be quite **low** when compared to other African countries.

The key limitations to transform ideas to innovation is identified as **shortage of skills**

- SMMEs in South Africa contribute approximately 60% of employment and 50% of GDP.
- In China, SMMEs contribute approximately 69% to GDP, 80% of jobs and approximately 82% to tax revenues.

- NRF: More than 20 years in innovation support
- Currently partnering with large companies to fund innovation programmes



SMME and Innovation Partnerships

NEW INITIATIVES

- ❖ **Promote innovation and technology advancement in the Earth Observation sector in partnership with SMMEs**
- ❖ Localization of technological innovation in relation to products and services (Digitalization) **Telkom + CSIR**
- ❖ Promote technology development in the government priority sectors through **Entrepreneurship....ESKOM**

INTERNATIONAL PARTNERSHIPS 

LOCAL INNOVATION FUNDERS, e.g TIA



INTRODUCTION TO NEOFRONTIERS

- ❑ The NEOFrontiers funding opportunity is a collaborative yet competitive partnership program which was established to **develop capabilities around new products, services and value-added components** for the Earth observation sector.
- ❑ **OBJECTIVES**
 - i. Advance the implementation of South African Earth Observation Strategy for addressing South Africa's socio-economic and environmental priorities;
 - ii. **Knowledge generation through research and collaborations within the EO sector;**
 - iii. **Development of human capacity;**
 - iv. **Stimulate co-opetition (coordination, collaboration, cooperation and competitiveness) in the South African Earth observation sector;**
 - v. **Stimulate the development of innovative Earth observation information services in industry;**
 - vi. **Develop national capability to further service an African and global market; and**
 - vii. **Effect tangible contributions to AfriGEO, GEO and CEOS and other international partnerships.**

INTRODUCTION TO NEOFRONTIERS

Innovation Support and Product Development

- ❑ Development of new high resolution water quality observation capabilities for coastal and estuarine systems (EO4WQ): UCT
- ❑ Hyperspectral signal processing for Terrestrial, Aquatic and Atmospheric Applications in South Africa: CSIR
- ❑ Earth Observation and Disruptive Economics: Developing Smart Tools for Value Enhancement for Small Scale Food Production: ARC
- ❑ Development of New Hyperspectral Capabilities across Aquatic, Atmospheric and Terrestrial Domains: SU

Sub-total: R13,6 million

- ❑ Regional Dynamic Fire Danger Index (ReD-FDI):SU
- ❑ Deep-Learning for Semantic Segmentation of Temporally Varying Road Surface Characteristics: UJ
- ❑ Road objects from Multi-sensor Earth Observation (ROME): SU

Sub-total R4 million

Total: R17,6 million

INTRODUCTION TO NEOFRONTIERSEISF

- ❑ NEOFrontiers' Enterprise Innovation Support Fund will support entrepreneurs, startups and SMMEs to transform space-based ideas to products and/or services in order to increase the competitiveness of the South African EO sector
- ❑ Outputs: The expected outputs from the supported projects will include technologies, prototypes, products and/or trained personnel.

NEOFRONTIERSEISF PARTNERS

- ❑ Technology Innovation Agency will provide the product process development.
- ❑ Small Enterprise Development Agency (seda) incubator will provide business skills training and project management support.
- ❑ Innovation Hub will provide project oversight role that includes assessment of proposals and evaluation of performance for individual projects.
- ❑ Academics: Universities & Science Councils
- ❑ Industry: Large companies & SMMEs

WAY FORWARD

Impact Orientated

- ❑ Drive the coordination and integration of research and innovation of initiatives in various sectors to respond to future social, economic and environmental challenges Flagships + NIRDI
- ❑ Lobby resources to support new opportunities 4IR
Future work fast changing
- ❑ Grow industry internships/work placement of Postgraduates

New Initiatives

- ❑ Support the training of diverse and transformed next generation graduates in government priority sectors including astronomers, space scientists. Support TVETs and HDIs



Enkosi, Thank you,
Re a leboga, Siyabonga, Dankie

