

# SOUTH AFRICAN NATIONAL SPACE AGENCY (SANSA)

*SPACE EDUCATION UNIT*

*NEW INITIATIVES FOR A TRANSFORMATIVE FUTURE PIONEERING*

*EARTH OBSERVATION STAKEHOLDER ENGAGEMENT WORKSHOP*

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science & innovation

Department:  
Science and Innovation  
REPUBLIC OF SOUTH AFRICA



**SANSA**  
SOUTH AFRICAN NATIONAL  
SPACE AGENCY

# THE BEST WAY TO PREDICT THE FUTURE IS TO CREATE IT.

The 2019 White Paper on Science, Technology and Innovation Emphasizes the core themes of **inclusivity, transformation, and partnerships**...The aim is to build on our successes and **adopt new approaches** where required, so as to foster an NSI in which **creativity, learning, and entrepreneurship** can flourish.

# Traditional Education Model

A child is born in ZA 2023

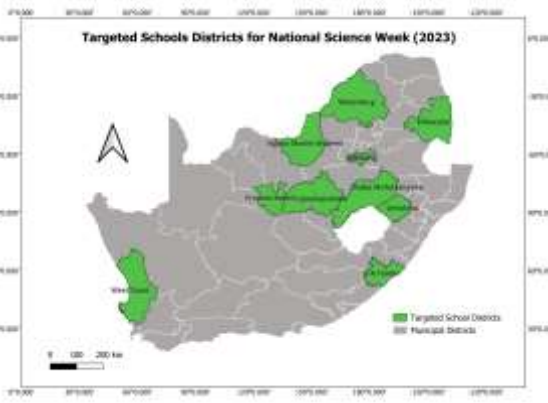
Graduates enter industry

Current Industry Reality

- 7 years primary school
- 5 years high school
- BSc 3 years @ tertiary
- **450 000 Science Graduates (NDP 2030)**
- Economically active @21 in 2044?



- How did we get here?
- **Old paradigms have brought us here.**
- **1994 – 2024**
- **Rich space heritage**
- **New Initiatives to the transformed space industry.**



### Starting a science club

Both primary schools and high schools are encouraged to start science clubs.

Learners from Grade 4 to 7 are encouraged to take the lead and start a club, with the assistance of a club champion (a keen teacher).

At high schools learners from Grade 8 to 11 are all encouraged to take the lead to establish a club. The club champion can be any educator namely a maths, science, life science, geography, language, or life orientation teacher.

A small group of learners with the support of at least one teacher can start a club. Decide where and when you meet, and go ahead to plan your first club activity.

**Read further for more ideas for club activities.**



### Vision and Mission

#### VISION

*An integrated National Space Capability that responds to socio-economic challenges in Africa by 2030*

#### MISSION

*To provide leadership in unlocking the potential of Space for the advancement and benefit of humanity*

**PROVINCIAL PARTNERS**

- Department of Education, Eastern Cape
- Department of Education, Free State
- Department of Education, KwaZulu-Natal
- Department of Education, Limpopo
- Department of Education, Mpumalanga
- Department of Education, Northern Cape
- Department of Education and Sport Development, North West
- Western Cape Government



# Jewels from the DSI White Paper on STI

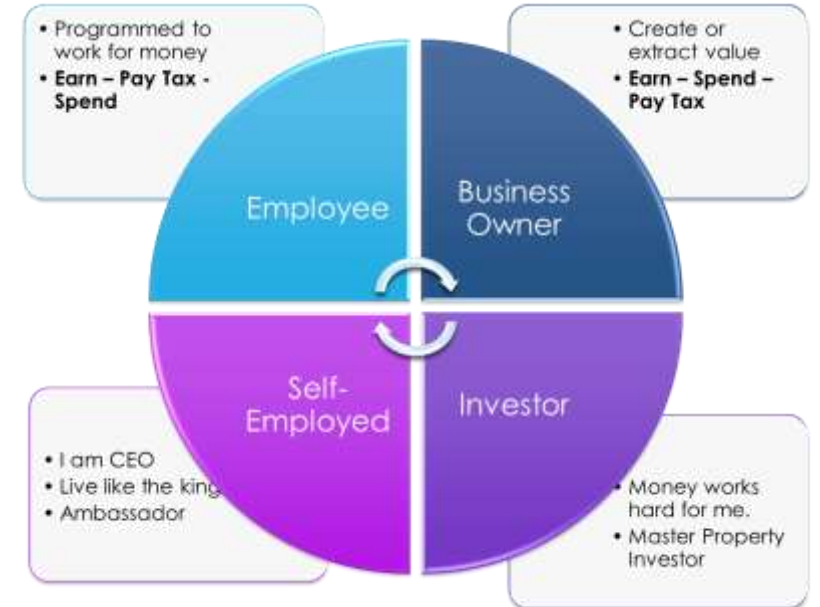
## Grassroots Innovation

- A culture of entrepreneurship and intrapreneurship
  - Learner – Student - Graduate
  - Paradigm Shift
  - **Horizontal Backward Integration Strategy in the Human Capital Development Pipeline.**

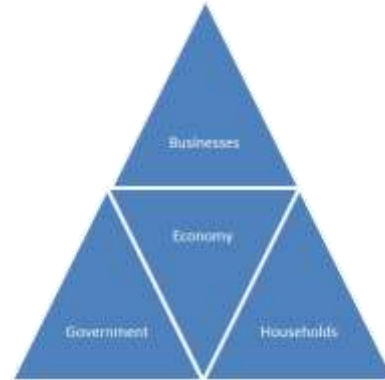
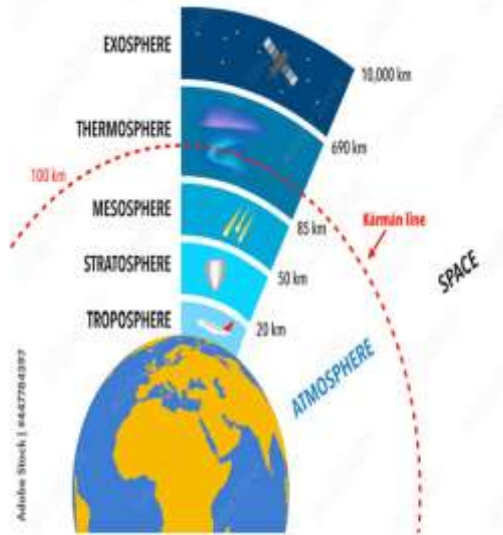
## Human capabilities

- Goes beyond the narrowly defined SET skills
- Village Earth Observation – New Space Thinking
- 4 application areas
- 1. Family 2. Social 3. Financial 4. Vocation
- **Social Entrepreneurship**
- **Social Innovation**

## The Result?



# Earth Observation Customers



What is outer sp

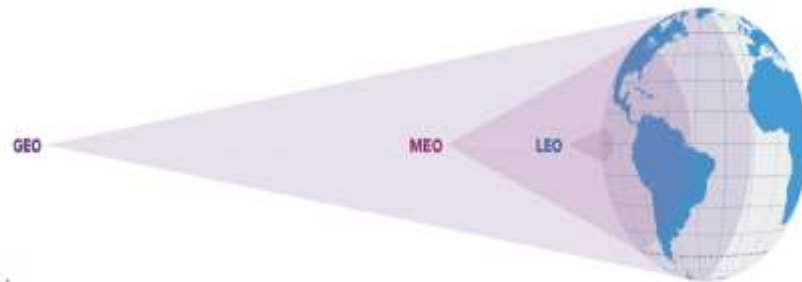


Figure 1: Schematic of orbital altitudes and coverage areas

# SCIENCE IS A BUSINESS

Business is  
about  
numbers

- Science graduates make great entrepreneurs.
  - What business are you in?
  - Who is your customer and what are their needs?

Entrepreneurs  
build  
businesses

- **Entrepreneurial education first (SDG-04)**
- A business is born when the solution to a problem is found.
- Space Science Education Business
- An educated person.

4 reasons  
people start  
businesses

- To live well (Lifestyle)
- To leave something for your kids (Legacy\*\*\*)
- To sell it (Mark Shuttleworth)
- **To change the world (Philosophy)**
- Source: Entrepreneur Vusi Thembekwayo

# The ISSA Opportunity 1998 – 2005

## From beneficiary to benefactor paradigm shift



### INSTITUTE FOR SATELLITE & SOFTWARE APPLICATIONS (ISSA)

ISSA is based at the Houwteq satellite integration facility in Grabouw. It offers post-graduate qualifications in Engineering and Information and Communication Technology. Research conducted at ISSA includes satellite engineering, and excellent facilities are available for designing and testing small satellites.

Tel: (021) 859-7300, Fax: (021) 859-7324,

[www.issa.org.za](http://www.issa.org.za)



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# INTRAPRENEURSHIP & ENTREPRENEURSHIP

This SARS tax pocket guide provides a summary of the most important information relating to taxes, duties and levies for 2023/24.

## INCOME TAX: INDIVIDUALS AND TRUSTS

Tax rates from 1 March 2023 to 29 February 2024:

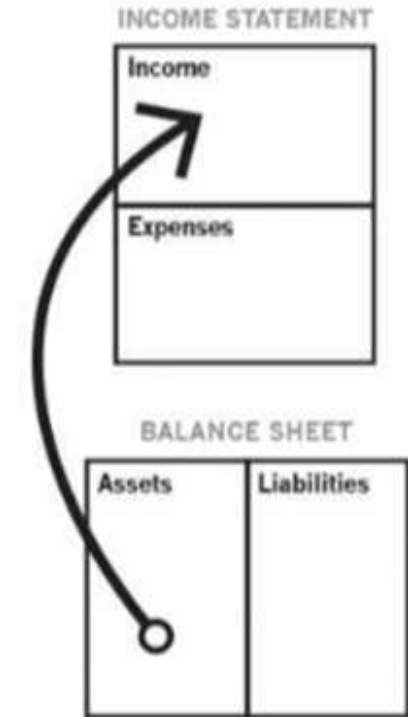
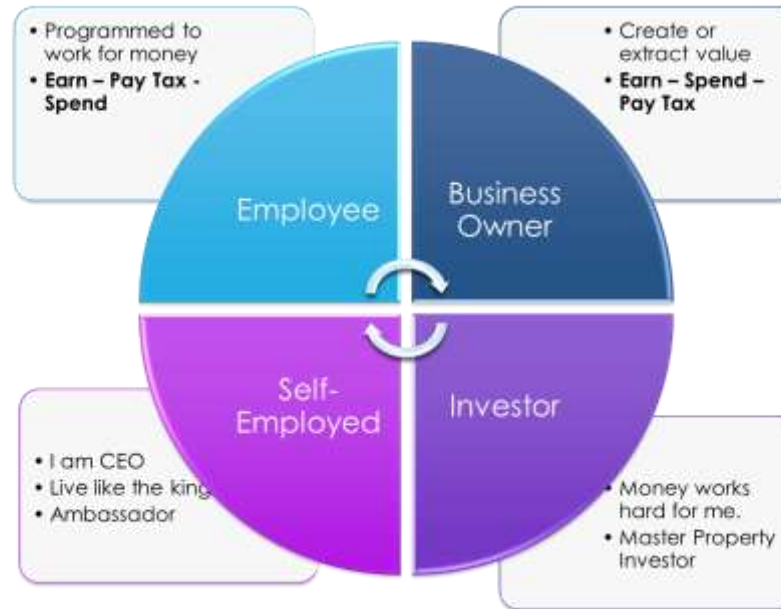
Individuals and special trusts

Taxable Income (R)	Rate of Tax
1 - 237 100	18% of taxable income
237 101 - 370 500	42 678 + 26% of taxable income above 237 100
370 501 - 512 800	77 362 + 31% of taxable income above 370 500
512 801 - 673 000	121 475 + 36% of taxable income above 512 800
673 001 - 857 900	179 147 + 39% of taxable income above 673 000
857 901 - 1 817 000	251 258 + 41% of taxable income above 857 900
1 817 001 and above	644 489 + 45% of taxable income above 1 817 000

Trusts other than special trusts: rate of tax 45%

### Rebates

Primary	R17 235
Secondary (Persons 65 and older)	R9 444
Tertiary (Persons 75 and older)	R3 145
Age	Tax Threshold
Below age 65	R95 750
Age 65 to below 75	R148 217
Age 75 and over	R165 689



**A JOB IS NOT AN ASSET. A JOB PUTS MONEY IN YOUR POCKET ONLY WHEN YOU WORK. YOU STOP WORKING, THE MONEY STOPS COMING. PERPETUAL DEPENDENCE.**



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# Space Entrepreneurship

## Pathways to space entrepreneurship

- Studies space science & technology in school
  - Graduates in space qualification
  - Starts own space business
  - Generates positive monthly cashflow to grow & sustain it.

## The Elon Musk & Jeff Bezos route

- Go to school, graduate, start own non-space business (Tesla, Amazon).
- Diversify into space sector (SpaceX, Blue Origins)
- **Innovate in your market segment (Reusable STS)**
- **Remove barriers to access space (space tourism)**

## Practice what you teach

- Graduate with space qualification.
- Teach space science & technology in academia
- **Employed in the space sector for years (Start Up for R0.00)**
- **Identify market gap & fill it**
- **Mind Your Own Business**



Collaborate

# ZA Space @ IAC 2023



**GEO WEEK 2023  
MINISTERIAL SUMMIT**  
6-10 November  
Cape Town, South Africa  
#TheEarthTalks

**SAASTEC**  
South African Association of Space Technology Engineers

Conference Theme:  
**FUTURISTIC SCIENCE ENGAGEMENT**

**SAASTEC CONFERENCE**  
20<sup>th</sup> - 23<sup>rd</sup> November 2023

**Science Forum  
SOUTH AFRICA**  
4 - 8 DECEMBER 2023, PRETORIA

OPEN CALLS FOR PROPOSALS

**SANSAs**  
SOUTH AFRICAN NATIONAL  
SPACE AGENCY

**NATIONAL SCIENCE WEEK 2023**  
Transforming lives through evidence-based science

March 06 - 12, 2023 at the University of Witwatersrand, Johannesburg  
National Science Week activities commencing from 11 July to 1 August

**NATIONAL SPACE CONFERENCE 2023**

SPACE FOR INCLUSIVE GROWTH

30 August to 01 September 2023  
CSI ICC, Tlokweng, Pretoria, South Africa

**7th AfriGEO Symposium**

Theme: Earth Observation for Africa's prosperity

Venue: COSDEP Arts and Crafts Centre  
Location: Swakopmund, Namibia  
Dates: 18<sup>th</sup> - 23<sup>rd</sup> September, 2023

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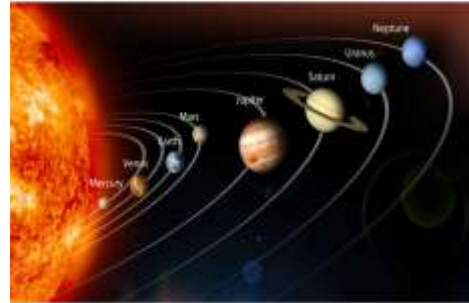
# The African Youth Demographic Dividend

AGENDA 2063 – THE AFRICA WE WANT



I live on the satellite...

...which had one satellite until...



## Earth Observation via Satellite



## 22 years spacefaring

**SUNSAT SATELLITE MISSION**

In February 2017 South Africa celebrated 10 years as an African spacefaring nation. This follows the launch into orbit of the first South African satellite by the Federal University of Technology - KwaZulu-Natal in 2007.

South Africa now has 22 years of satellite use and its first space faring began back in the very beginning of the space race. The satellite will orbit around the Sun for the next 22 years, its launch and operation in the history of being a South African spacefaring nation.

**TUESDAY 23 FEBRUARY 4PM**  
BULLOCKS AT WIND STREET 6001, ZA



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# Concluding remarks

- Every child is born with the gift of value to become the answer to questions that will be asked in their lifetime.
- The purpose of education is to **polish this gift** by training the mind to think. The missing link.
- Understand our historical and current programming (**the first step**)
- Understand the purpose of a job – the opportunity to practice **INTRAPRENEURSHIP**
- **The Maturity Continuum** (Dependence, Independence, Interdependence) provides guidance.
- Profits are far better than wages – **active vs. passive income**.
- Employment leads to **perpetual dependence**
  - Dependence on parents (primary, secondary, tertiary\*)
  - Substitute parents with employer (intermediary phase)
  - Substitute employer with pension fund at retirement and die.
  - No intergenerational wealth achieved. **You can't pass your job to your grandchildren.**
- The **EBSI model** provides a powerful alternative that needs transformational leaders to support.
- Futureproofing education means that we go back to the basics to develop “an educated person”
- A transformed South African Space Industry is dominated by **independent value creators**



# THANK YOU



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