

ANNUAL STRATEGIC PLAN 2015/2020



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



FOREWORD BY THE CHAIRPERSON



The Agency is eager to move South Africa forward towards being an international hub for space solutions for the world of the future.

Joy-Marie Lawrence
Chairperson of the SANSA Board Accounting Authority

SANSA reviewed its strategic priorities to firmly align these to the emerging long-term national policy priorities set out by the National Development Plan (NDP) and to meet its legislative mandate of coordinating space activities for the country and unlocking the space value proposition for sustainable growth and development.

The acquisition and development of space capabilities remains a highly attractive national strategic goal. The number of countries seeking independent access to space, investing in space systems and developing space applications continues to grow. The primary underlying driver is to ensure that the public sector has access to Earth observation and geospatial information,

as well as applications that support and enable the socio-economic development goals of the country.

This new and revised Strategic Plan for the 2015 - 2020 period, approved by the SANSA Board and aligned with the Department of Science and Technology's strategic priorities, is a result of strengthening and re-positioning the Agency to represent and combine the interests of the broader space community and society in South Africa for the benefit of the country.

SANSA's objectives remains robust: to promote the use of space as an enabler of development, promote R&D in space technologies, ensure human capital in space science and technology

and foster partnerships, globally and within the continent to enable African countries to develop their own space assets.

These are driven through various initiatives, including continental initiatives such as AfriGEOSS, to enhance the coordination of GEO activities in the global Earth observation system of systems with existing capabilities and initiatives on the African continent.

The Agency also strives to enhance the competitiveness of the space industry through various industrial development initiatives, including the provision of contract project expenditure to local industry players. SANSA will enable engagement of the South African space

industry with local and international markets through strategic partnerships while collaborating with other local entities to leverage value-creating synergies in innovation and the commercialisation of space technologies.

These are exciting times in the global space industry and, as SANSA, we want to be the preferred space operations service provider in

local and international markets, while expanding and enhancing the competitiveness of Earth observation solutions to address societal challenges. The Agency is eager to move South Africa forward towards being an international hub for space solutions for the world of the future.

The Minister of Science and Technology and the SANSA Board invite all South Africans to walk this

journey with us as we lead and inspire the South African Community to create a better future using science, technology and innovation for socio-economic growth and transformation.

Official endorsement

It is hereby certified that the SANSA Strategy 2015-2020:

- was developed by the management and board of the South African Space Agency (SANSA) in consultation with the Department of Science & Technology
- takes into account all the relevant policies, legislation and other mandates for which SANSA is responsible
- accurately reflects the strategic outcome-orientated goals and objectives which SANSA will endeavour to achieve during the period 2015-2020.

Ms Bulelwa Pono

Chief Financial Officer

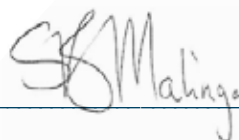
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Dr Sandile Malinga

Head Official Responsible for Planning

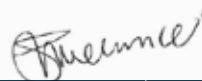
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Ms Joy-Marie Lawrence

Accounting Authority

Signature: _____



Approved by:

Mrs Naledi Pandor

Minister of Science and Technology
Executive Authority

Signature: _____





VISION

SOUTH AFRICA
as an international Hub for
Space Solutions for the world of
the future.

MISSION

LEAD AND INSPIRE
the South African Space
Community to create a
better future.

VALUES

SANSA'S SIX VALUES:

- Service
- Teamwork
- Excellence
- Integrity
- Respect
- Personal Growth



THE 2015/16 SANSA ANNUAL PERFORMANCE PLAN INDICATES HOW THE RESPECTIVE DIVISIONS WITHIN SANSA INTEND TO CONTRIBUTE TOWARDS ACHIEVING THE FOLLOWING STRATEGIC GOALS:

1. Address South Africa's challenges through space services and products
2. Lead high-impact collaborative R&D on a national scale
3. Develop national human capacity and ensure transformation
4. Enhance the competitiveness of the South African space industry
5. Develop active global partnerships
6. Ensure the growth and sustainability of SANSA
7. Transform SANSA into a high-performance Agency.

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“A total of the 81 launch attempts took place in 2013 compared to 78 during the previous year (2012).”

SITUATIONAL ANALYSIS

The Current Global Space Environment

The Growth of Commercial Space

The global space economy grew by 4% in 2013 to \$314.17 billion from the \$304.31 billion recorded growth in 2012. The bulk of the growth was driven by growth in the commercial space industry, which includes the supply of commercial products and services, infrastructure and support industries.

The commercial sector constitutes approximately 75% of the space economy, with government spending making up the remainder.

Government Space Market

The significant cuts in the US Government space budget were offset by the growth in the space budgets of other countries. The US Government Space budget is valued at \$41 Billion USD, while the combined total budget of all other countries is estimated at approximately 33 billion USD as at 2013.

Space Applications

Space products and services continue to become more readily available and integrated into the daily lives of billions of people globally. Most technologies rely on space assets to deliver their benefits, such as television satellite broadcasting, communications and navigation devices. Space products and services are increasingly providing an interface between space and other forms of technology.

In this regard, government and industry are increasingly sponsoring competitions to develop new and innovative applications. In harnessing the talent of developers, the space industry gains creative new techniques to further develop new products and services based on existing space systems.

Launch Activities

The majority of launches were undertaken by Russia, the United States, China and Europe. A total of the 81 launch attempts took place in 2013 compared to 78 during the previous year (2012).

Small Emerging Space Companies

The combined effect of declining launch costs and cost-saving advances in satellite technology has created opportunities for small and medium space companies to enter the space market with new niche services and solutions for a growing number of customers. These companies are well-positioned to serve the increasing demand for bandwidth and services across regions with the potential for large population growth, such as Asia, Africa and the Middle East.

Space Partnerships

Governments are increasingly recognising the utility of space as a tool for international trade and development. Advanced spacefaring countries reap political and economic benefits from their existing space capabilities through partnerships with emerging nations that are seeking societal and development benefits. These partnerships can involve any combination of financial assistance, infrastructure development and training programmes. Significant attention is focused on Africa, where the expected increase in the demand for satellite services is 11% or more each year from 2013 through 2017.

Initiatives in the Group on Earth Observation (GEO) and the Committee on Earth Observation Satellites (CEOS) are progressing well. In particular, the AfriGEOSS plans will lead to better coordination of Earth observation initiatives on the African continent. SANSa and other national partners have to contribute to this important initiative, led by the Department of Science and Technology (DST), to promote South Africa’s standing on the continent and facilitate the sharing of knowledge, resources and skills in Africa.

National Space Strategy

The National Space Strategy (NSS) is a national road map and implementation framework for a viable and sustainable national space programme. The NSS, as approved by Cabinet, sets national goals and objectives for space science and technology. The table on the next page indicates the alignment of the SANSa strategic goals with the objectives of the NSS.

National Space Strategy Objectives		SANSA's Goal Alignment
1	Developing the local private space science and technology industry sector	Goal 4
2	Developing services and products that can respond to user needs	Goal 1
3	Satellite or services offered from existing facilities	Goals 1 and 2
4	Organising some of the current space science and technology activities into strategic programmes	Goal 2
5	Optimising the organisation of future space activities to respond to opportunities with international industrial partners or international space agencies	Goal 5
6	Partnerships with established and developing spacefaring countries for industrial and capacity development purposes	Goals 2, 3 and 5
7	Strengthening training and technology transfer programmes, including the sharing of experience and expertise	Goals 3 and 4
8	Promoting space science and technology in academic institutions and science centres and the provision of opportunities for both short-term and long-term training and education	Goal 3
9	Responding to challenges and opportunities in Africa	Goal 5
10	Advocating the importance of space science and technology as a priority measure for meeting national development needs	Goals 1 and 3
11	Building local awareness of space science and technology	Goals 1, 2, 3 and 4, 6, 7

SANSA'S INTERFACE IN THE NSI LANDSCAPE



SANSA's five key stakeholder groups are:

1. Government departments with an interest in space-related activities, including but not limited to the DST, to which the Agency reports
2. Departments/Entities that fulfil some agency function, eg funding agencies
3. Government departments and state entities that SANSA supports in one form or the other
4. Partner research and development (R&D) institutions
5. Industry partners and clients.

National Development Plan

The National Development Plan (NDP) is now at the foundational phase of implementation. SANSA will play a key role in addressing some of the central challenges identified in the plan.

Areas of contribution include the creation of high-technology jobs; the improvement of geospatial patterns to foster the development of marginalised communities; the planning and monitoring of backbone national infrastructure through space systems; health surveillance and intelligence through satellites; space-based service delivery and performance monitoring to assist in the eradication of corruption; and the provision of geospatial decision-making tools for decision-makers.

The 2014-2019 Medium-Term Strategic Framework

The Government has adopted the 2014-2019 Medium-Term Strategic Framework (MTSF) as the first five-year building block towards realising the 2030 Vision in the NDP. The MTSF lists 14 key outcomes, as well as associated activities and targets to be achieved by 2019 that cover the focus areas identified in the NDP. There are eight outcomes that have a direct impact on and alignment with the SANSA mandates. These outcomes are:

Outcome 1: Quality basic education

The initiatives in this outcome include sustaining and accelerating improvements in school performance. Satellite technologies can assist the Department of Basic Education to design digital classrooms to assist remote and rural located learners with accessing learning material.

This quality lesson can assist to improve and increase school performance results.

Outcome 3: All people in South Africa are and feel safe

This outcome can be achieved only if South Africa's borders are effectively defended and secured, an area in which SANSA can contribute. Earth

observation satellites provide information on monitoring cross-border theft, drug trafficking and African peace-keeping, as well as crime prevention and national security monitoring.

Outcome 4: Decent employment through inclusive economic growth

Key targets in this outcome include growing the economy rate to above 5%, achieving much higher levels of employment creation and more rapidly reducing inequality. SANSA will make a meaningful contribution towards the achievement of this outcome through satellite manufacturing as a potential employment generator.

Outcome 5: A skilled and capable workforce to support an inclusive growth path

SANSA will contribute to building an inclusive society and a growing and competitive economy through basic and applied science and human capital development by creating new knowledge and highly skilled individuals.

The FUNDISA Disk resources, which is an example of a SANSA initiative, provide students and learners with an overview of and gateway to remote sensing and Earth observation technologies.

Outcome 6: Comprehensive rural development and land reform

SANSA will advocate the use of space technology to improve access to quality basic infrastructure and services, particularly education, in remote, rural and infrastructure-challenged regions of our country.

Partnerships and collaboration that promote cost-effective satellite enabled distance-learning programmes independent of ground-based infrastructure, will help ensure connectivity across physical boundaries to bridge the gap between the "haves" and "have-nots".

Outcome 8: Sustainable human settlements and improved quality of household life

SANSA will provide government with satellite-derived products, such as the National Human Settlements Layer, to clearly map human settlements patterns, specifically the dynamics of informal settlements. This will improve the linkages between human settlements planning, economic and commercial development and spatial planning frameworks to guide investment decisions, increase integration and improve the location of human settlements.

Outcome 9: A responsive, accountable, effective and efficient local government system.

The expected central focus is sustainable and reliable access to basic services. SANSA will equip municipalities and local governments to extend basic services to millions of households by providing national geospatial support data products, as well as national land-use and land-cover products. GIS and RS technologies will assist government to make better decisions and monitor service delivery progress.

Outcome 10: Environmental assets and natural resources that are well-protected and continually enhanced.

Government must improve decision-making tools and harness research and information management capacity to identify, develop and maintain datasets to generate policy-relevant statistics, indicators and indices to achieve this outcome. Globally, space-based systems are critically important for risk prediction and mitigation. Space technologies are crucial to providing operational applications or solutions that address national challenges, as well as decision support tools for government. These include applications in natural resource management, climate change, environmental management and disaster management. SANSA will ensure that space-derived solutions are integrated into service delivery for the benefit of society.

National Space Programme (NSP) formulation

The National Space Strategy sets the national goals and objectives for space science and technology. The draft implementation plan from the DST “provides a framework for the formalisation of a national space programme and further provides guiding principles on how the operationalisation is to be realised”.

In line with this, a national consultative process was undertaken to formulate a coherent National Space Programme (NSP 2030). This plan defines programmatic and technology road-mapping that takes the South African space programme to the year 2030. The NSP 2030 consists of the National Earth Observation Programme (NEOP), National Space Science Programme (NSSP), National Space Engineering Programme (NSEP) and National Space

Operations Programme (NSOP). The NSP sets project and resourcing priorities, clarifies institutional interfaces, highlights high-level outputs and measures of success for the NSP.

ORGANISATIONAL ENVIRONMENT

Strategy review

Given the critical review of SANSA's operating and socio-economic environment, the Agency reviewed its strategic priorities to firmly align them with its legislative mandate to give better effect to the emerging, long-term national priorities in the NDP. SANSA will contribute to the national goals of accelerating economic growth and the reduction of poverty, unemployment and inequality through its strategic thrusts and priorities.

Key changes entail the revised organisational vision, mission and strategic goals for 2015 - 2020 as presented in this strategy document.

Strategic planning process

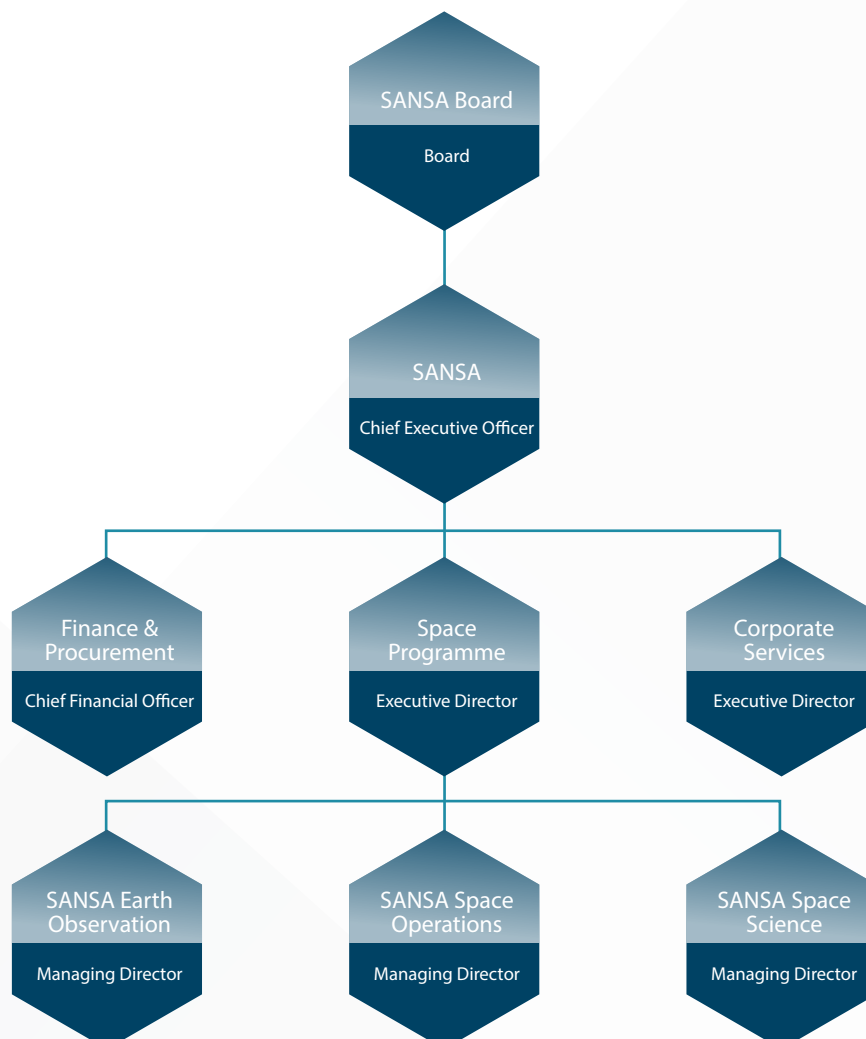
The development of this strategy involved consultation with all key stakeholders and several workshop sessions with the SANSA leadership and staff, as well as a board strategic workshop and several board planning meetings.

Organisational Structure

To deliver on its mandate SANSA is structured into four business units:

- SANSA Corporate Office
- SANSA Earth Observation directorate
- SANSA Space Operations directorate
- SANSA Space Science directorate

SANSA ORGANISATIONAL STRUCTURE





the coordination and administration of scientific data ground segments, provision of space weather and other geo-space products and services on a commercial and private basis. The programme also provides leadership in postgraduate science student training, as well as primary science advancement and learner and educator space science support.

Space Operations Programme

The Space Operations Programme is responsible for the acquisition of satellite data for the Earth observation programme and the provision of ground segment support. Through this programme, SANSA conducts various space operations, including launch and early-orbit support, in-orbit testing, satellite life-cycle support and satellite mission control for national and international space industry clients and governments. The programme also supplies hosting capabilities and intends to extend this capability to Teleports.

Space Engineering Programme

SANSA's Space Engineering Programme leads systems engineering and project management expertise and drives a small satellite build programme in South Africa in partnership with primary contractors, R&D institutions and private sector partners. The programme conducts satellite and sub-systems analysis, leads the technical side of space programme project management, provides human capital development in space engineering and facilitates private space industry partnerships.

Each of the programmes contribute to achieving SANSA's strategic goals as indicated below:

Corporate Support Programme

The Corporate Support Programme provides management, administrative and technical support across all operating units. This facilitates operational efficiency and cost-effective management, aligned with sound governance principles and the seamless integration and collaboration between SANSA directorates.

distribution of Earth observation data and data products for societal benefit. SANSA maintains an Earth observation portfolio of sensors, provides an R&D platform in Earth observation technologies, conducts satellite image processing and correction and provides human capital development in Earth observation and science advancement.

Space Science Programme

The Space Science Programme leads multi-disciplinary space science. Key functions include basic and applied science research, the support of space facilitated science through science data acquisition,

Earth Observation Programme

The Earth Observations Programme is responsible for the collection, processing, archiving and

Strategic Goals	Programmes				
	Corporate Support	Earth Observation	Space Science	Space Operations	Space Engineering
Address South Africa's challenges through space services and products		•	•		
Lead high-impact collaborative R&D on a national scale		•	•		
Develop national human capacity and ensure transformation		•	•	•	•
Enhance the competitiveness of the South African space industry		•		•	•
Develop active global partnerships	•	•	•	•	•
Ensure the growth and sustainability of SANSA	•				
Transform SANSA into a high-performance Agency	•				

STRATEGIC GOALS

Goal 1: Address South Africa's challenges through space services and products

Space has a crucial role in providing operational applications/solutions that will address national challenges and provide decision support tools for government. These include applications in natural resource management, climate change and environmental management, disaster management, rural development and urban planning and national safety and security. SANSA may develop some of these applications within the Agency, but the primary approach should be to leverage domain expertise externally. SANSA's approach, therefore, should not be to do everything internally, but to focus on a few high-impact national operational applications rather than on small localised applications. These type of applications require significant state investment, are not commercially viable for private industry or are essentially public good services and therefore a state responsibility.

SANSA should not compete with industry in the more commercially viable operations, particularly where the work is for private sector companies, such as mining companies. SANSA should rather work with the private space industry in a fair and mutually beneficial manner. In addition, SANSA's approach should be to lead the collaborative development of national solutions which, once operational, could be operated and maintained within SANSA.

SANSA has the following strategic objectives:

S1.1. Lead and facilitate the creation of high-impact products and applications to address society's needs and challenges

To achieve this SANSA will:

- identify and work closely with government departments that have a high impact on societies
- continually assess user needs by engaging public service providers (incl government) and private sector users
- continually scan the global landscape for new applications that meet societal needs
- work with public service providers to translate their needs into technical requirements for developers who develop the necessary operational applications
- identify unique space-based products and services to enhance the South African non-space industry
- collaborate with science councils, Higher Education Institutions (HEIs) and industry to develop high-impact operational applications
- ensure that there is synergy between the R&D agenda and the applications
- fund the applications development projects
- set and monitor the delivery standards of space related applications continually monitor the impact of the applications.

S1.2. Provide government with policy or decision tools and support

To achieve this SANSA will:

- continually assess policy and strategy directions nationally and globally
- provide government with policy and decision intelligence, as well as thought leadership
- equip government with the support needed for the international engagement in space related matters
- continually monitor the impact of government decision tools and support.

The corresponding measures of success for these strategic objectives are:

- M1.1 The number of high-impact national products and applications
- M1.2 The number of effective government decision or policy support tools

The corresponding five-year targets are:

- T1.1 22 national high-impact operational space-related applications by end March 2020
- T1.2 10 effective decision or policy support tools by end March 2020

The implementation approach will entail the identification of required applications and national policy and strategy requirements. This will be done in collaboration with the user community and applications development community.

SANSA will serve as the lead entity to solicit and interpret user needs and translate them into technical requirements or specifications. Collaborative teams will be constituted to develop the applications based on the technical requirements. Where appropriate, calls for proposals for applications development will be made and awarded competitively.

SANSA's extensive data repository will be used to develop the applications. Once the applications have been fully developed, SANSA will be responsible for ensuring the operational offering is implemented on an operational platform and kept current.

As regards the policy and decision tools, SANSA will ensure that the advisory services and products are properly compiled and professionally reviewed and sound to give government the advice required to take crucial decisions about national and international issues.

Goal 1: Address South Africa's challenges through space services and products

Strategic Objective	Measure	Five-year Target	2015/16	2016/17	2017/18	2018/19	2019/20
S1.1. Lead and facilitate the creation of high-impact applications to address society's needs and challenges	M1.1 Number of national high-impact products and applications	T1.1 22 national high-impact operational space-related applications by end March 2020	4	4	4	5	5
S1.2. Provide government with effective policy or decision tools and support	M1.2 The number of government decision or policy support tools	T1.2 10 decision or policy support tools by end March 2020	2	2	2	2	2

Goal 2: Lead high-impact collaborative R&D on a national scale

SANSA firmly believes in the value basic and applied science to create new knowledge that leads to new technologies and innovation that directly impact on the economy and society. Science also increases our knowledge and understanding of ourselves, our universe and its sustainability. Therefore SANSA will foster and lead collaborative R&D in space-related areas on a national scale. This will require a coherent space R&D plan aligned with the National Space Programme (NSP).

This will set the national R&D agenda, its priorities, targets and outcomes. The implementation of the plan will require the indicated R&D funding and base infrastructure to conduct the research and development.

SANSA has the following strategic objectives:

S2.1. Increase the national space research output

To achieve this SANSA will:

- develop and implement a clear national space R&D plan aligned with the NSP
- provide national space R&D infrastructure (observational networks, data centres, facilities)
- conduct collaborative R&D with science councils, universities and industry

- ensure that there is synergy between research and applications
- support national R&D through funding
- foster international partnerships and facilitate national access to multinational projects
- provide national seed funding that will unlock matching international funding.

The corresponding measure of success for these strategic objectives is:

M2.1 The national research productivity score for space-supported R&D

(This productivity score is based on a function of research funding sourced + publications (journals, books, reports, proceedings) + students graduated + research rating status).

The corresponding five-year target is:

T2.1 Achieve a research productivity score of 2000 by end March 2020

The implementation approach requires SANSA to provide the necessary support for space related R&D. SANSA should use the NSP to set the priority for the national research agenda. The focus should be on prioritising projects that address 'big science questions' or integrated social challenges. While SANSA researchers are encouraged and expected to conduct research, increased output and impact can only be achieved by adopting and enforcing a more

national collaborative approach.

SANSA's primary focus should be on creating a research platform that facilitates national research and development. SANSA should, therefore, provide the necessary research infrastructure.

This will include developing and maintaining an extensive observational network, providing data resources and access to research facilities and acting as the centre for research.

SANSA should also endeavour to derive benefits from international partnerships and multinational projects for the country. Funding will be necessary to achieve the following: to drive research aligned with national priorities and leverage matching international funding.

SANSA needs to obtain information from researchers supported by the Agency to more accurately quantify the national research score.

Expectations and requirements will have to be defined upfront and simplified reports made mandatory to achieve this.

Goal 2: Lead high-impact collaborative R&D on a national scale

Strategic Objective	Measure	Five-year Target	2015/16	2016/17	2017/18	2018/19	2019/20
S2.1. Increase the national space research output	M2.1 The national research productivity score for space supported R&D	T2.1 Achieve a research productivity score of 2000 by end March 2020	750	1 000	1 500	2 000	2 000

Goal 3: Develop national human capacity and ensure transformation

A significant increase in the interest in STEM (science, technology, engineering, mathematics) fields, as well as the development of rare and transferable skills are required to meet national demand and for a viable National Space Programme (NSP) that can deliver against its targets. Capacity development in space-related areas will not only benefit space, but will have an impact in other areas that require scientists, engineers and technicians.

This capacity development should be conducted with a transformational agenda to redress inequality in race, gender and people with disabilities.

SANSA has the following strategic objectives:

S3.1. Increase youth awareness of science

To achieve this SANSA will:

- attract, develop and grow the national space science and technology skills base
- develop, maintain and market space science and technology infrastructure to remain relevant and sought after
- use SANSA facilities to expose young people to science
- have a focused science advancement programme at each directorate with dedicated personnel to drive the initiative
- partner with SAASTA (South African Agency for Science and Technology Advancement) and national science centres.

S3.2 Support student and intern training with a transformation agenda

To achieve this SANSA will:

- provide student research support (funding, data, research facilities) to students
- conduct short course training at schools
- ensure that its researchers co-supervise research students
- partner with national and international universities
- run internship programmes and workplace training initiatives
- ensure that the above are underpinned by a transformation agenda.

The corresponding measures of success for these strategies are:

M3.1 Number of youth directly engaged

This refers to the number of young people engaged directly through some specific activity (eg visit by learners to a SANSA facility, student workshop/lesson, SANSA visit to a school) and will exclude a count of young people who visit SANSA stands at exhibits.

M3.2 Number of students supported for formalised training.

This includes students who are supported through internships, degree programmes and post-doctoral programmes. The level of support could include funding, access to SANSA facilities and/or data and co-supervision by SANSA. In each case the level of training support should be extensive. For instance, once-off/limited visits to SANSA facilities or once-off/limited access to SANSA data to

supplement a student's research should not be included. Similarly, once-off attendance of short courses at SANSA or limited instruction by SANSA researchers are excluded.

The corresponding five-year targets are:

T3.1 Directly engage 58 500 young people by end March 2020

T3.2 Support 350 students and interns by end March 2020

The implementation approach will include using SANSA facilities to expose the young people to science. Each directorate should have a focused science advancement programme with dedicated personnel to drive the initiative.

Partnering with SAASTA (South African Agency for Science and Technology Advancement) and national science centres will be crucial. SANSA should provide research support (funding, data, research facilities) for training students. SANSA should also conduct short training and the Agency's researchers should co-supervise research students. As SANSA is not a registered academic institution, student training should always be done in partnership with national and international universities. Internship programmes and workplace training initiatives are also crucial components of skills development. Although these are not measured they should still be pursued.

Equity and transformation are an underlying requirement that has to be met in skills development and a 60% PDI count should be a minimum target for all programmes.

Goal 3: Develop national human capacity and ensure transformation

Strategic Objective	Measure	Five-year Target	2015/16	2016/17	2017/18	2018/19	2019/20
S3.1. Increase youth awareness of science	M3.1 Number of youth directly engaged	T3.1 Total of 58500 young people directly engaged by end March 2020	8000	10 000	12 000	13 500	15 000
S3.2 Support students and interns with a transformation agenda	M3.2 Number of students and interns supported for formalised training	T3.2 Total of 350 students supported by end March 2020	40	50	70	90	100

Goal 4: Ensure the competitiveness of the South African space industry

The global space industry is growing at a rapid rate and is currently estimated at \$314 billion USD. The space industry that drives new technologies and innovation and its applications go beyond space systems into sectors such as medicine, manufacturing, security and energy. One of the objectives of the National Space Strategy is for South Africa to capture a reasonable share of the global space market. In this regard, there are a number of industries that South Africa should focus on. These are the spacecraft ground support, space technology, geospatial information, space communication and space navigation industries.

SANSA has the following strategic objectives:

S4.1. Generate greater benefit for the space programme through space operations activities

To achieve this SANSA will:

- support EO data acquisition
- increase launch support activities
- increase the in-orbit-testing business.

S4.2 Grow the national space industry

To achieve this SANSA will:

- develop the the country's space industrial capability
- develop Competitive Space Technology
- provide leadership to implement a domestic space engineering programme with clear performance measures
- grow a share of South Africa's participation in the international space market
- support industry jobs by contracting for direct space-related work
- develop South African satellites and its space industry
- ensure that a significant component of SANSA work (in terms of monetary value) is outsourced to the space industry (both public and private).

The corresponding measures of success for the strategic objectives are:

- M4.1 Successful satellite pass monitoring rate for Earth Observation (This is the number of successfully monitored satellite passes for EO)
- M4.2 Total income generated from space operations activities
- M4.3 Total amount of space operations money invested in other SANSA programmes
- M4.4 The number of direct jobs supported externally through SANSA programme contracting
- M4.5 The progress status on the EO-Sat1 development project
- M4.6 The total contract expenditure to SMEs for core space projects
- M4.7 The total contract expenditure to the broad space related industry for core space projects

The corresponding five-year targets are:

- T4.1 A successful satellite pass monitoring rate of 99%
- T4.2 Total income of R326 million over five years generated from space operations activities
- T4.3 Total amount of R60 million over five years of space operations income invested in other SANSA programmes
- T4.4 A total of 100 direct jobs supported externally through SANSA programme contracting
- T4.5 Proportional progress culminating in EO-Sat1 launch
- T4.6 A total contract expenditure of R65 million over five years to SMEs for core space projects
- T4.7 The total contract expenditure of R306 million over five years to the broad space related industry for core space projects.

The implementation approach requires SANSA to be the anchor client for the space industry through a sustained national space programme. SANSA will also seek to create an environment that is conducive to and stimulates the national space industry.

In cooperation with the industry, SANSA will develop an industry development plan guided by the DST's Technology Localisation Plan and the dti's aerospace industry development initiatives and strategies. SANSA will also develop a technology and industry roadmap that systematically addresses the gaps identified by the technology audit conducted by the DST.

SANSA's partnerships will be used to strategically position the South African industry and open foreign markets, particularly those on the African continent and in emerging countries. SANSA will work closely with TIA where there are synergies between the two entities in terms of innovation and commercialisation.

The Innovation Hub's facilities and initiatives will also be crucial in the incubation of space SMMEs, as well as their professional development and exposure to venture capital. SANSA will engage other SMME funding entities such as the National Empowerment Fund (NEF) and the Small Enterprise Finance Agency and will work closely with State-owned Enterprises (SOEs) with large infrastructure procurement programmes to leverage some of their off-set initiatives.

In addition, SANSA will focus on the data value-adding industries and space engineering sectors. Attracting private investors for mature technologies and innovations will be critical for the sustainability of the programme. SANSA will also expand the space operation services and attract foreign direct investment.

Goal 4: Ensure the competitiveness of the South African space industry							
Strategic Objective	Measure	Five-year Target	2015/16	2016/17	2017/18	2018/19	2019/20
S4.1. Generate greater benefit for the space programme through space operations activities	M4.1 Successful satellite pass monitoring rate for Earth Observation	T4.1 Successful satellite pass monitoring rate of 99%	97%	98%	99%	99%	99%
	M4.2 Total income generated from space operations activities	T4.2 Total income of R326 million over five years generated from space operations activities	R58 million	R61 million	R65 million	R69 million	R73 million
	M4.3 Total amount of space operations income invested in other SANSA programmes	T4.3 Total amount of R60 million over five years of space operations money invested in other SANSA programmes	R10 million	R11 million	R12 million	R13 million	R14 million
S4.2 Grow the national space industry	M4.4 The number of direct jobs supported externally through SANSA programme contracting	T4.4 A total of 390 direct jobs supported externally through SANSA programme contracting	40	50	100	100	100
	M4.5 The progress status on the EO-Sat1 development project	T4.5 Proportional progress culminating in EO-Sat1 launch	25%	50%	75%	100%	Launch
	M4.6 The total contract expenditure to SMEs for core space projects	T4.6 A total contract expenditure of R65 million over five years to SMEs for core space projects	R10 million	R12 million	R13 million	R15 million	R15 million
	M4.7 The total contract expenditure to the broad space related industry for core space projects	T4.7 The total contract expenditure of R306 million over five years to the broad space related industry for core space projects	R50 million	R55 million	R61 million	R67 million	R73 million

**Goal 5:
Develop active global partnerships**

Space science and technology, by its nature, can be undertaken effectively only as part of a global partnership. South Africa, through SANSA, must position itself as a strategic partner for the African continent and BRICS countries, as well as other global players in space science and technology. The DST has prioritised partnerships with African countries and SANSA has to contribute to this effectively. SANSA will also contribute to Afrigeoss initiatives to foster closer collaboration with African countries.

In addition, the Agency has to focus on active participation in multi-national projects and forums such as ISES, GEO, CEOS, IAF, SCAR and COSPAR. SANSA will have to enter into strategic partnerships at an inter-agency level to provide broader access to other national partners. This will enable local scientists and engineers to participate in expensive missions and complex and high-impact projects at a fraction of the associated costs. SANSA will have to invest directly in these partnerships to leverage external partner funding.

SANSA has the following strategic objectives:

S5.1. Leverage a significant benefit for the space programme through global partnerships

To achieve this SANSA will:

- develop a clear partnership strategy
- enter into formal strategic partnerships aligned with the partnership strategy
- involve national partners in SANSA's strategic inter-agency partnerships
- involve national partners in multi-national proposals
- actively participate in multi-national forums
- enter into long-term funding agreements with partners
- develop and implement a cost-benefit framework for partnerships (this is to be used to quantify partnership value)
- monitoring and reporting of all partnership engagements.

The corresponding measure of success for this strategic objective is:

M5.1 The equivalent revenue generated through partnerships as a proportion of the SANSA revenue

This is the proportion leveraged by equivalent funding through partnerships and the equivalent in-kind benefit from the partnerships when compared to the national space programme revenue.

The corresponding five-year targets are:

T5.1 Global partnerships contributing an equivalent of 10% to the SANSA revenue

The implementation approach will require SANSA to be more strategic in entering into partnerships. These should be informed by mutual benefit and a clear strategic rationale for the partnership.

SANSA will use its partnerships to involve national partners in global projects. SANSA also aims to become the hub for space partnerships as the repository and conduit for international opportunities and to facilitate national and international engagements.

SANSA should facilitate partnerships through targeted investments in strategic partnerships. SANSA's participation in multi-national forums will be strategic and seek to derive and quantify the value gained as with any other partnership.

SANSA will quantify the equivalent revenue leveraged through its strategic partnerships that will not always involve direct financial transactions but will include non-transactional partner matching funds, equivalent/estimated expenditure if SANSA has to pay for the associated benefit and direct transactional project funding, among others. SANSA will continually evaluate the effectiveness and value earned from its partnerships.

Strategic Goal 5: Develop active global partnerships

Strategic Objective	Measure	Five-year Target	2015/16	2016/17	2017/18	2018/19	2019/20
S5.1. Leverage a significant benefit for the space programme through global partnerships	M5.1 The equivalent revenue generated through partnerships as a proportion of the SANSA revenue	T5.1 Global partnerships contributing an equivalent of 10% to the SANSA revenue	5%	5%	7%	8%	10%

Goal 6: Ensure the growth and sustainability of SANSA

SANSA has to adapt to the fast-changing global space market and meet the ever-changing socio-economic needs of the country to grow and remain sustainable. This requires a strong, new business development drive that engages key stakeholders effectively and communicates and promotes its activities and of those of the national space programme to publicise its public value promise.

SANSA has the following strategic objective:

S6.1. Ensure that SANSA has annual measurable growth and is sustainable

To achieve this SANSA will:

- create and implement a multi-faceted promotions programme
- identify and grow new revenue generating commercial and public sector opportunities
- refocus on value-adding products and services for the public service that attract funding/resources
- engage with high-level stakeholders (DST, government departments, Parliamentary Portfolio

Committees) to internalise the country's reliance on space

- align with key government departments
- monitor and evaluate SANSA's impact
- monitor and evaluate SANSA's public awareness and value.

S6.2. Ensure the effective implementation of the National Space Programme (NSP)

To achieve this SANSA will:

- seek resources for the NSP
- coordinate the NSP implementation
- monitor the NSP implementation status
- report on the NSP implementation status.

The corresponding measures of success for the strategic objectives are:

- M6.1 Total SANSA income
- M6.2 Estimated monetised annual impact
- M6.3 SANSA's public value awareness
- M6.4. High-level NSP implementation progress status (This will be qualitatively measured against the deliverables in the NSP using the green, orange and red dashboard).

The corresponding five-year targets are:

- T6.1 Total SANSA revenue income growth to R1,259 billion by end March 2020
- T6.2 Estimated monetised impact of R600 million by end March 2015
- T6.3 SANSA's national public value awareness of 90% by end March 2020
- T6.4 About 90% of the NSP projects are active by end March 2020

The implementation approach requires a robust strategic planning and performance monitoring and evaluation function that provides SANSA with the necessary business intelligence and strategic foresight. New business development has to be pursued in line with the identified strategic imperatives.

SANSA has to actively and proactively engage stakeholders to provide them with a better understanding of SANSA plans, strategic value and direction. Communicating, promoting and educating the public, partners and stakeholders about SANSA, as well as its value proposition and value promise, is essential to ensure that all the initiatives indicated above succeed.

Goal 6: Ensure the growth and sustainability of SANSA

Strategic Objective	Measure	Five-year Target	2015/16	2016/17	2017/18	2018/19	2019/20
S6.1. Ensure that SANSA has annual measurable growth and is sustainable	M6.1 Total SANSA income	T6.1 Total SANSA revenue income to R1,259 billion by end March 2020	R223 million	R237 million	R251 million	R266 million	R282 million
	M6.2 Estimated monetised impact per annual	T6.2 Estimated monetised impact of R600 million by end March 2020	R100 million	R110 million	R120 million	R130 million	R140 million
	M6.3 SANSA's public value awareness	T6.3 SANSA's national public value awareness of 90% by end March 2020	50%	60%	70%	80%	90%
Ensure the effective implementation of the NSP	M6.4. High-level NSP implementation progress status	About 70% of the NSP projects are active by end March 2020	30%	40%	50%	60%	70%

The monitoring of the implementation of the NSP will be done at a high-level and more qualitatively using a dashboard system that evaluates the status on the NSP projects as outlined in the table below. It is recognised that not all the projects will be switched-on at once and so the monitoring will be at the level of assessing if there is activity going on in each of the projects.

NSP Core Administration and Governance (NSP CAG) [SANSA Corporate Office]	National Earth Observation Programme (NEOP)	National Space Science Programme (NSSP)	National Space Engineering Programme (NSEP)	National Space Operations Programme (NSOP)
P1: Space Coordination and Industrial Development	P1: Earth Observation Data Centre (EODC) at SANSA	P1: Magnetic Anomaly Investigations	P1: Technology and Mission Development	P1: TT & C
P2: Space Programme Management	P2: Remote Sensing and Data Management Competence Development	P2: Status of the Space Environment	P2: Nano- and Pico-satellites	P2: Mission Control
P3: Facilities Management	P3: Applications Development and Deployment	P3: Space Science in Remote Areas	P3: Mini-Satellites	P3: Navigation
P4: Human Capacity Development	P4: EO for Earth System and Global Change Research	P4: Hazard Mitigation and Disaster Management	P4: Micro-Satellites	P4: Communications
P5: Science Advancement and Space Awareness	P5: Human Capacity Development (HCD)	P5: Applied Electromagnetic Technology	P5: Industrial Development and Commercial Opportunities	P5: Capex and Infrastructure
P6: International Partnerships	P6: Cyber Infrastructure	P6: Infrastructure and Facilities	P6: Facilities	
	P7: Science Advancement	P7: Human Capacity Development and Science Advancement / Outreach	P7: Human Capital Development and Science Advancement	
	P8: User Needs and Future Vision Initiatives			
	Environment Management Satellite Constellation (ARMC)			

**Goal 7:
Transform SANSA into a high performance Agency**

SANSA can achieve its objectives only if it is effective and efficient and is transformed into a high-performance organisation. This refers to leadership, management, human capital management, business design and operational and technological efficiency and effectiveness.

SANSA has the following strategic objective:

S7.1. Ensure that SANSA has been optimised for high performance

To achieve this SANSA will:

- ensure visionary transformational leadership and effective management of day-to-day operations
- align SANSA's people to deliver on its mission, vision, strategy and brand promise
- develop, grow and nurture an employment relationship that creates a high-performance culture
- develop, grow and nurture an employment relationship which creates a customer-centric culture

- develop and implement a compelling and competitive employee value proposition
- optimise the organisational design and structure for high performance
- ensure that all core support functions are performing to the highest standards and are effective and efficient
- optimise information and business systems to support the business, operations, innovation and managerial processes
- drive continuous improvement and innovation
- achieve equity in the workplace by promoting equal opportunity and fair treatment in employment.

The corresponding measures of success for the strategic objectives are:

- M7.1 Initiatives with clear actions and milestones that enhance organisational performance
- M7.2 Proportional (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager)

The corresponding five-year targets are:

- T7.1 Total of 20 identified initiatives fully implemented by end March 2020
- T7.2 65% proportional (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager) by end March 2020

The implementation approach requires excellence in all SANSA's endeavours through visionary leadership and effective management. Alignment with SANSA's strategic fundamentals is crucial and should be built into the SANSA organisational culture. SANSA should offer a compelling value proposition to its staff by creating a competitive employee value offering that includes competitive benefits, staff development and overall employee wellness.

Individual and organisational performance standards will be set high and SANSA will reward performance excellence and penalise non-performance.

The organisational design and structure will be continually optimised for high performance. SANSA will use effective information and business systems to improve operational efficiency and employee work experience.

Strategic Goal 7: Transform SANSA into a high performance Agency

Strategic Objective	Measure	Five-year Target	2015/16	2016/17	2017/18	2018/19	2019/20
S7.1. Ensure that SANSA has been optimised for high performance	M7.1 Implement identified initiatives that enhance organisational performance	T7.1 Total of 20 identified initiatives fully implemented by end March 2020	4	4	4	4	4
	M.72 Proportional (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager)	T.7.2 65% proportional (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager) by end March 2020	65%	65%	65%	65%	65%

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