ANNUAL PERFORMANCE PLAN
2014/2015

Making South Africa shine as bright as the stars

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

sansa
SOUTH AFRICAN NATIONAL SPACE AGENCY

Foreword

by the Chairperson

As the four-year term of office of the South African National Space Agency (SANSA) inaugural Board comes to an end on 31 May 2014, it is an opportune time to take stock of what has been accomplished since the establishment of South Africa's nascent space agency.

The establishment phase of the Agency (1 April 2010 - 31 March 2011) saw key milestones in the achievment of governance structures in terms of implementation, regulatory compliance and initial strategic and business planning processes development. The following foundational operational phase (1 April 2011 - 31 March 2012) saw the Agency operating productively and delivering on its strategic intent by remaining focused on the delivery of space-related products and services and human capacity development for the benefit of the citizens of South Africa. Operationally, SumbandilaSat functioned well and delivered highly useful satellite imagery for use by the earth observation (EO) and academic community, and to celebrate this success, a commemorative stamp was launched by the South African Post Office.

Following a protracted period of uncertainty, Sunspace's core capabilities and intellectual property were successfully absorbed by the government for use in the national satellite development programme.

Maurice Magugumela

Chairperson of the SANSA Board Accounting Authorit

In partnership with other stakeholders, SANSA will provide strong leadership in the development and broadening of a competitive and sustainable satellite manufacturing industry in South Africa. This is in accordance with the Agency's strategic goal of ensuring South Africa's global competiveness.

This is an exciting time for the local space industry as the development and construction of a home-grown, user-defined EO satellite, EO-Sat1, is underway.

This initiative promises to revitalise and stimulate innovation in our fledgling national space industry. This outgoing Board is pleased that, under its stewardship, the overarching aims of the National Space Strategy are being realised, namely to foster innovation and industrial competitiveness through the development of small to medium sized space systems. Through its authority, the Board firmly believes that the Agency is on a firm and stable course toward the achievement of its legislative and strategic mandates. A fully operating SANSA is also well positioned to play a key role in addressing some of the central challenges identified in the National Development Plan, including the creation of high-technology jobs and the improvement of geospatial patterns to foster the development of marginalised communities.

Finally, I take this opportunity to offer my deepest appreciation to my fellow Board members for their unwavering support and commitment in steering the Agency towards its mission of being In service of humanity. Greater appreciation is expressed towards the Department of Science and Technology, SANSA management and staff, stakeholders and partners who continue to bring exceptional contribution and clear commitment to the achievement of the strategic goals and mandate of the organisation.

Official sign-off

It is hereby certified that this Annual Performance Plan:

- was developed by the management and Board of SANSA in consultation with the Department of Science and Technology;
- was prepared in line with the current strategic plan of SANSA, and
- accurately reflects the performance targets that SANSA will endeavour to achieve given the resources made available in the budget for 2014/15.

Bulelwa Pono
Chief Financial Officer

Signature: _____

Dr Sandile Malinga
Head Official Responsible for Planning

Signature: _____

Maurice Magugumela
Accounting Authority

Signature: _____

Approved by:

Derek Hanekom
Minister of Science and Technology
Executive Authority

Signature: _____

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Part A

Strategic Overview

To use space science and technology to:

- deliver space-related services and products to the citizens of South Africa and the region;
- support, guide and conduct research and development in space science and engineering and the practical application of the innovations they generate;
- stimulate interest in science and develop human capacity in space science and technologies in South Africa;
- create an environment that promotes industrial development, and
- nurture space-related partnerships to enhance South Africa's standing in the community of nations.

To be the leader in ensuring that space science and technology benefits society, the environment, the economy and the global community through products and services, research and development, and human capital development.

SANSA has six values, namely:

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

Our mission is succinctly captured in our motto:

In service of humanity.

Strategic Goals

Value Proposition

To realise its mission, SANSA has defined a five-point value proposition to create:

1. Societal capital;
2. Intellectual capital;
3. Human capital;
4. Economic capital, and
5. Global capital.

Global Capital

- Food Security
- Resource Management
- Disaster Management
- Environmental Management
- Health,Safety & Security
- Planning & Land Management

- Basic Research
- Applied Research

- Satellite Technology
- Space Operations Services
- Research & Technology Platform Provision
- Knowledge Creation & Dissemination

- Space Applications
- Technology Interchange Platform
- Know-how Interchange Platform
- Network Facilitation
- Public-Private Partnerships
- Backbone of Space Service & Infrastructure

- Local Market Facilitation
- Global Market Facilitation

- Internship
- Post-graduate Training
- Post-doc Training

- In-service Training
- Professional Training
- Science Advancement
- School/Learner Programmes
- Educator Programmes

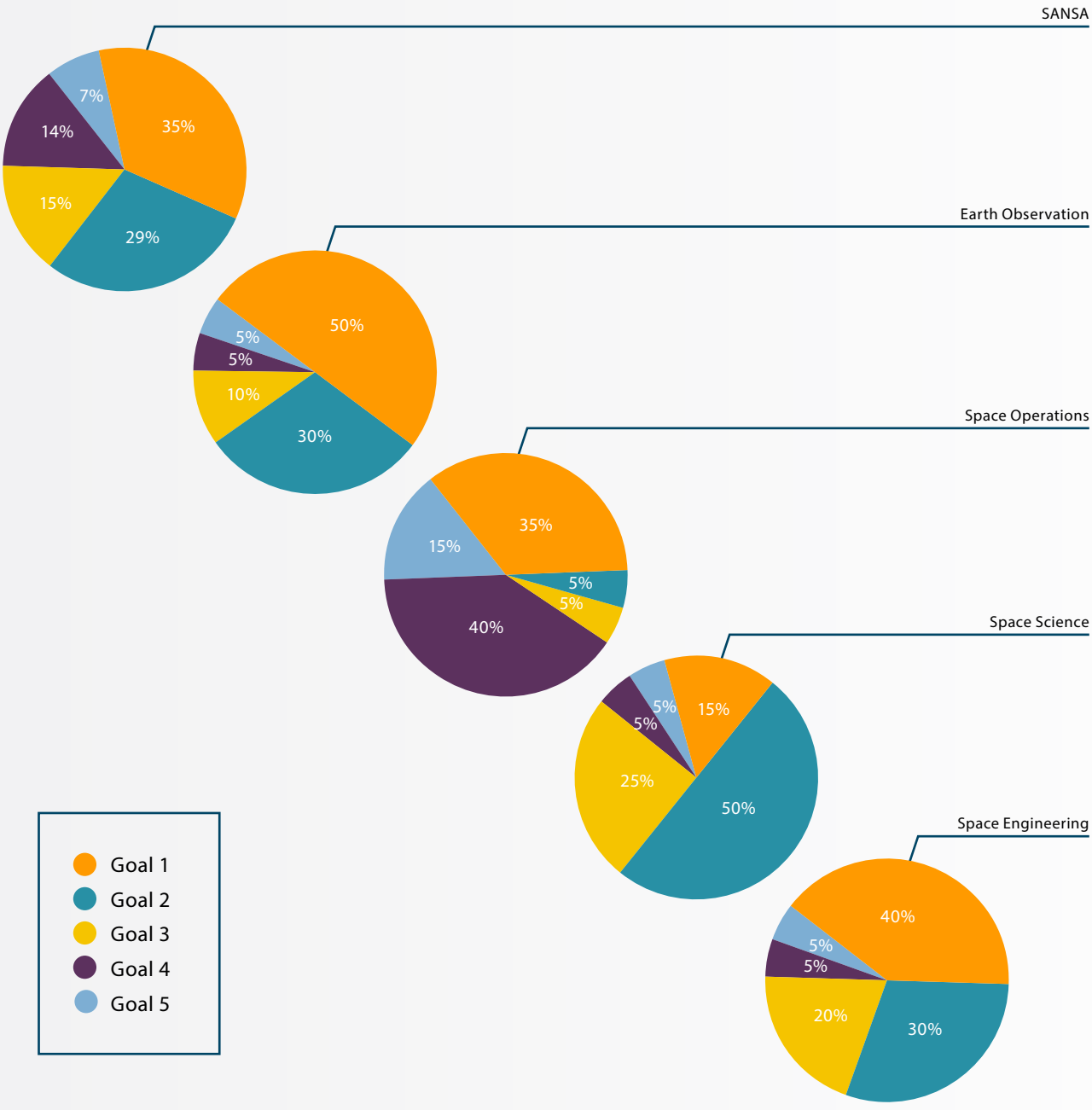
Strategic Goals

The 2014/15 SANSA Annual Performance Plan (APP) indicates how the business units of SANSA intend to contribute towards achieving the following strategic goals:

1. World-class and efficient services and societal benefits (societal capital);
2. Cutting-edge research, development, innovation, technology and applications (intellectual capital):
3. Effective development of human capital, transformation, science advancement and engagement of the citizenry (human capital);
4. Globally competitive national space industry (economic capital), and
5. Making South Africa a recognised global space citizen (global capital).

The figure below further indicates the extent to which each strategic programme contributes to the Agency's strategic goals.

SANSA Goals Focus Matrix



1. Situational Analysis

1.1 Performance delivery environment

Global space environment

The global space economy grew to a record high of $304,31 billion in 2012, up 7% from the $285,33 billion recorded in 2011 . The vast majority of this growth was in the commercial sector, which now constitutes almost 75% of the space economy, with government spending making up the remainder. Commercial space products and services such as broadcasting, communications and EO made up the largest portion of the space economy, and these grew by 6,5% in 2012. Brazil, Russia and India increased their space budgets respectively by 27%, 30% and 51%.

In terms of launch activity, China, the United States and Europe conducted the majority of launch activity in 2012. A total of 78 launch attempts took place in 2012, a drop of 7,1% from the 84 launches that took in 2011. Russia led with 24 launches, China had 19 and the United States 13. North Korea attempted two launches in 2012, the second of which became the country's first launch to reach orbit.

In the astronomy community, newer and more powerful observatories are under construction to enable a better understanding of the universe. In 2012, the organisers of the Square Kilometre Array (SKA) decided to site the component facilities for the telescope in both South Africa and Australia, a process that is expected to stimulate the science and technology sectors in both countries. Comprising thousands of individual dishes, the SKA will be the largest and most sensitive radio telescope in the world when it is complete.

Governments are increasingly recognising 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. Much of the attention is focused on Africa, where demand for fixed satellite services is forecast to grow at 11% or more each year from 2013 to 2017. Initiatives are progressing well in the Group on Earth Observation (GEO) and the Committee on Earth Observation Satellites (CEOS).

In particular, the AfriGEOSS (African chapter of the Global Earth Observation System of Systems) plans will lead to better coordination of EO initiatives on the African continent. SANSA and other national partners have to contribute to this important initiative led by Department of Science and Technology (DST). This will promote South Africa's standing in the continent in facilitating the sharing of knowledge, resources and skills in Africa.

National Space Strategy

The National Space Strategy (NSS) is a national roadmap 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 below indicates the alignment of the SANSA strategic goals with the objectives of the NSS. Further clear examples of SANSA's contribution to and progress in implementing the NSS are listed in Annexure C.

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

National science environment

The Minister of Science and Technology hosted the first-ever Science and Technology Summit in July 2013 following a recommendation made by the Ministerial Review Committee of 2012. Among other things, the summit shared an understanding of the need for greater coherence and coordination to promote achievement of Vision 2030 of the National Development Plan (NDP), which recognises that despite progress made in developing our National System of Innovation (NSI), deep social and developmental challenges such as poverty, inequality and unemployment remain.

SANSA will contribute to specific matters under consideration, including a unitary science and technology vote, strategic state procurement of the products and services arising from local innovation, increased investment in research, development and innovation (RDI) infrastructure and equipment, and avoidable duplication inside the government and between the government and business.

SANSA has five key stakeholder groups, namely:

(i) Government departments with an interest in space-related activities, including the DST, to which the Agency reports;
(ii) Departments/entities that fulfil some agency function, e.g. funding agencies;
(iii) Government departments and state entities that SANSA supports in one form or the other;
(iv) Partner research and development (R&D) institutions, and
(v) Industry partners and clients.

SANSA reports to the DST and relates certain governance aspects to National Treasury (NT). In terms of its agency role, SANSA works alongside the National Research Foundation (NRF) on R&D and student funding initiatives. Through the South African Agency for Science and Technology Advancement (SAASTA), there is also a science advancement partnership between SANSA and the NRF. SANSA also works with TIA and the Department of Trade and Industry (dti) through a number of initiatives driven by the promotion and/or funding of technology, innovation and industrial development. To facilitate the coordination of national space activities, SANSA

SANSA's interface in the NSI landscape

works very closely with the National Earth Observation and Space Secretariat (NEOSS) to be in tune with national user needs. SANSA supports various government departments, municipalities, industry partners and other government agencies through the provision of space and geospace data and related services as well as in the development of space technologies and systems. It also supports and/or partners various R&D institutions and South African universities.

National Development Plan

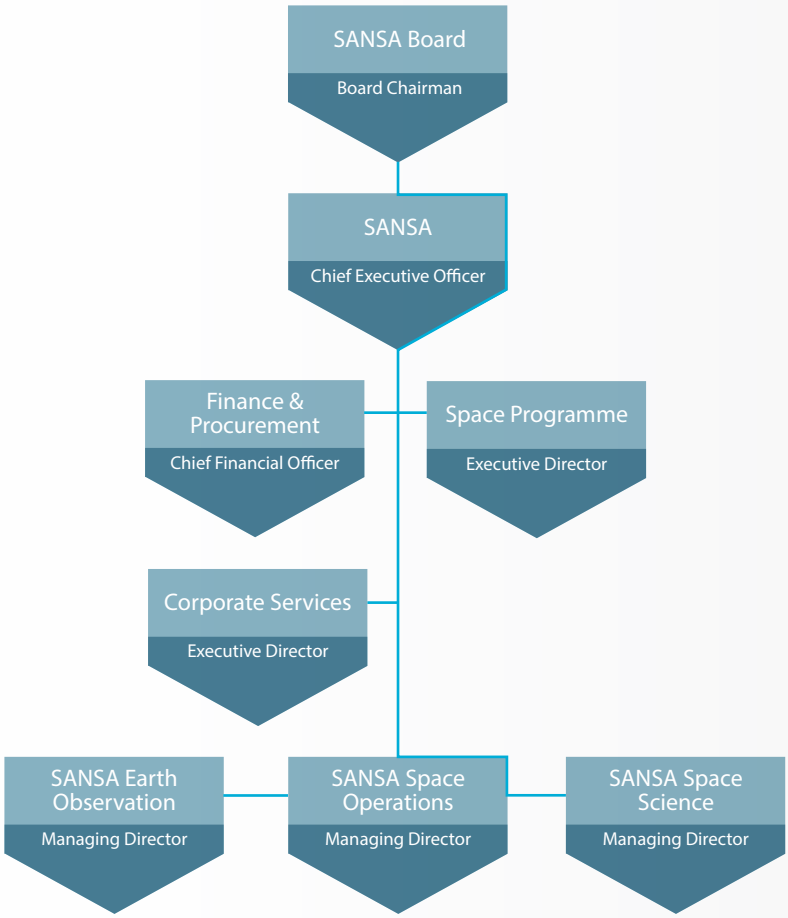
SANSA will play a key role in addressing some of the central challenges in the NDP, which is at foundational phase. Its contributions include the creation of high-technology jobs, the improvement of geospatial patterns to foster the development of marginalised communities, the planning and monitoring 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.

National Space Programme formulation

The NSS 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 with a view to formulating a coherent National Space Programme (NSP 2030).

This plan defines programmatic and technology roadmapping that will take the South African space programme to the year 2030. The NSP 2030 consists of the National Earth Observation Programme (NEOP), the National Space Science Programme (NSSP), the National Space Engineering Programme (NSEP) and the National Space Operations Programme (NSOP). The NSP sets project and resourcing priorities, clarifies institutional interfaces, and highlights high-level outputs and measures of success for the NSP. The draft NSP is being finalised with the DST.

Figure 1: Organisational Environment



The SANSA Board consists of the following members:

Maurice Magugumela – Chairperson
Leeandran Annamalai
Potlaki Maine
Louisa Mogudi
Dr Robert Scholes
Joy-Marie Lawrence
Vincent Gore
Capt Mpho Mamashela
Mthobisi Zondi
Dr Elizabeth Gavin
Adv Tsheko Ratsheko
Marius Rezelman
Professor ADM (Dave) Walker
Esther Khambule
Dr Daphney Mayindi
Dr Jonas Mphepya
Dr Sandile Malinga, SANSA CEO and ex officio Board member

The term of this inaugural board ends in May 2014.

Organisational structure

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

- SANSA Corporate Office:
- SANSA Earth Observation directorate;
- SANSA Space Operations directorate;
- SANSA Space Science directorate, and
- SANSA Space Engineering directorate.

Restructuring of the organisation

SANSA's Earth Observation, Space Science and Space Operations directorates are now all fully functional. SunSpace core capability has been absorbed into Denel for use in the national satellite development programme and a dedicated satellite manufacturing business unit called Spaceteq has been established at Denel. SANSA will expand its internal space engineering capacity through a dedicated space programme division, which will give the Agency a strong oversight role over the space system development process. In this structure, a space programme division will be established under an Executive Director: Space programme and will have the same status as the Finance and Procurement division under the Chief Financial Officer and the Corporate Services division under the Executive Director: Corporate Services.

2 Revisions to legislative and other mandates

There are no significant changes to the SANSA legislation and other mandates that directly relate to the Agency.

3. Overview of 2014/15 budget and Medium-Term Expenditure Framework (MTEF) estimates

3.1 Transfers and revenue estimates

Total transfers and revenue outlook for the MTEF period

The projected total annual funding for SANSA over the MTEF period is R332 million (2014/15), R353 million (2015/16) and R294 million (2016/17) with an MTEF total of R979 million.

Parliamentary grant

The parliamentary allocation constitutes 38% of total MTEF revenue. The year-on-year increase averages 3,8% over the 2014 MTEF period. Annual increases are 6% in 2014/15 from a baseline of R112 million, 5% in 2015/16 and 0,5% in 2016/17 .

Contract income: Public entities

Contract revenue from the public sector increases year on year at an average of 6%. It is mainly from value-added services provided to customers/clients for earth observation imagery products or services at R8 million (MTEF – R27 million), magnetic technology support services provided to aviation, defence and maritime sectors at R7,2 million (MTEF – R20 million) and hosting ground satellite infrastructure services to local public sector clients at R4 million (MTEF – R13,9 million). The R20 million (MTEF – R61 million) contract revenue is largely from local public enterprises and select government departments.

Table 1: South African National Space Agency: Source of Funds

Transfers and Revenue	Audited outcome	Audited outcome	Adjusted Estimates	Medium-Term Expenditure Estimate			Total MTEF	% of Total
R'000	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17		
Parliamentary Grant	103,670	105,919	111,708	118,297	124,356	124,979	367,632	38%
Ring Fenced Transfers	-	1,047	82,200	150,000	165,246	105,760	421,006	43%
Satellite Development	-	1,047	37,200	95,000	100,246	105,760	301,006	31%
Industry upgrade	-	-	45,000	55,000	65,000	-	120,000	12%
Contract Income	56,705	72,322	54,638	59,396	60,238	60,540	180,174	18%
Local Public	18,676	26,837	17,436	20,703	19,778	19,877	60,358	6%
Foreign	38,029	45,485	37,202	38,693	40,460	40,663	119,816	12%
Research Grants	24,989	23,068	4,328	4,306	3,025	3,040	10,371	1%
Other Income	4,654	5,894	154	180	170	171	521	0.1%
Total	190,018	208,249	253,028	332,179	353,035	294,490	979,704	100%

The estimates are based mainly on existing contracts, which are annual or multi-year agreements.

Contract income: International entities

Private sector revenue during the MTEF period is generated from contract revenue on various launch and satellite support services; tracking, telemetry and command services; in-orbit test services, and hosting of satellite ground infrastructure mainly to international public (space agencies) and private (satellite operators) customers. The 2014/15 estimate is R38,6 million and R120 million over the MTEF period. The projections are very conservative and are based on current contracts that run over years as well as on estimated new contracts and anticipated launches.

Research grants

Research grants are projected to decline at an average of 9,9% over the MTEF period based on the current outcome of applications to research funding institutions. These funding institutions are currently the NRF and the European Union's Framework Programme (FP7). These grants are applied for depending on calls for applications that are made available, and only already guaranteed grants are included in the projections.

The 2014/15 estimate is conservative, at R4,3 million, and a projected decline over the two outer years to a total of R10 million over the MTEF period.

Ringfenced transfers

Ringfenced allocations are funds received and allocated for specific projects. The current source is the DST for space systems programmes and space industry capacity funding outlined below:

Space Systems programme

The total of R195 million has been secured for the 2014 MTEF for the Space Systems Programme (SSP). An additional R106 million is anticipated in the 2016/17 financial year for the SSP. This is funded through the parliamentary SSP-ringfenced allocation.

Space Industry Capacity

DST has allocated R140 million over the current MTEF period for space industry capacity (SIC), capability development and retention, and facilities upgrade for satellite development.

Table 2: South African National Space Agency: Expenditure estimates

Programme	Audited Outcome	Audited Outcome	Adjusted Estimates	Medium-Term Expenditure Estimate			Total MTEF	% of Total
R'000	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17		
Corporate Services	39,342	38,410	34,855	36,911	38,802	38,996	114,709	0.117
Earth Observation	47,026	57,197	62,506	66,221	69,677	70,026	205,924	0.210
Space Operation	28,820	57,724	39,919	42,676	44,863	45,088	132,627	0.135
Space Science	36,437	37,894	33,548	36,371	34,447	34,620	105,438	0.108
Space Engineering	14,947	17,858	82,200	150,000	165,246	105,760	421,006	0.430
Total	166,572	209,084	253,028	332,179	353,035	294,490	979,704	100%
Economic Classification								
Current payments	155,335	176,756	200,975	225,760	239,570	175,445	640,775	65%
Compensation of employees	56,044	62,729	82,085	92,380	97,367	97,855	287,602	29%
Goods and services	99,291	114,027	118,890	133,380	142,203	77,590	353,173	36%
Payments for Capital Assets	11,237	32,328	52,053	106,419	113,465	119,045	338,929	35%
Machinery and equipment	11,234	30,973	50,353	104,089	111,015	116,583	331,687	34%
Intangible assets	3	1,355	1,700	2,330	2,450	2,462	7,242	1%
Total expenses	166,572	209,084	253,028	332,179	353,035	294,490	979,704	100%

3.2 Expenditure Estimates

Total expenditure outlook over the MTEF period

The projected total expenditure for SANSA over the MTEF period is R979 million. Of this total, R559 million (57%) is allocated to SANSA core programmes and R421 million (43%) is allocated to the space systems and industry programmes.

The SANSA core programme budget over the MTEF period is based on an average annual increase of 6% from the 2013/14 budget. The space systems and industry programme budget is estimated to increase by 82% in 2014/15 and by 10% in 2015/16 and to drop by 36% in 2016/17 from a baseline of R82 million in 2013/14.

Funds will be spent on EO services and the development of South Africa's earth observation satellite (EO-Sat1).

EO programme expenditure increases by 6% from R62 million to R66 million, as the current Spot 5 satellite is being phased out and a new agreement for Spot 6 and 7 has been concluded to continue supplying geospatial information products from the Spot mission to service a number of national societal service delivery requirements.

The agreement for Spot6 and 7 will significantly increase expenditure from R16 million per annum paid until 2012/13 to R32.5 million per annum, from the 2014 MTEF period.

The SANSA Space Operations programme is largely dependent on commercial income and partly on transfers for remote sensing services for earth observation. Its growth is 7% from 2013/14 (R39 million) to R42 million in 2014/15, as major contracts were secured with international customers for in-orbit testing and infrastructure hosting services.
The SANSA Space Science programme increases by 8%, from R33,5 million in 2013/14 to R36 million in 2014/15. The spending focus will be on space and solar-terrestrial physics research, and the provision of magnetic technology and space weather services/products.

The Space Engineering programme has an allocation that will oversee the development of the EO satellite and an industry development programme to revive South Africa's small satellite building capability.

The industry development programme also includes an upgrade of facilities at SpaceTeq and HouwTeq, and capacity retention and development. This is a relatively recently funded programme estimated at R421 million over the MTEF period.

The Corporate Office budget increases by 6% from the 2013/14 year to R36 million, remaining within the inflationary adjustment to the budget.

Programme expenditure outlook over the MTEF period

Relating expenditure trends to strategic outcome-oriented goals

The budget allocation based on effort against strategic goals shows that 43% of the MTEF budget will be towards space systems development, mainly the EO satellite development. Some 21% will go against direct products and services for societal benefit, mainly the acquisition and distribution of satellite imagery and space weather data, and supporting the global space industry when launching satellites and providing telemetry support.

Effort will also go to providing platforms for research and development of space applications and technologies through maintaining data systems, providing access to archived imagery and active research into the development of applications in the use of imagery and data available. This is estimated at 8% of the budget.

Human capital development (HCD) is estimated to take up 4% of the budget, through training programmes for staff, support of students within SANSA's HCD programmes and training users of the imagery and data acquired.

Some 13% is estimated for industry growth initiatives, which are mainly space operations focusing on the global market. The development of global partnerships through collaborative multinational projects cuts across most of the projects undertaken in space-related activities.

Table 2: Expenditure: Strategic outcome-oriented goals

Goals and Objectives	Key Indicators	Targets	Sub - Programme	Adjusted Estimate	Medium-Term Expenditure Estimate			Total MTEF	% of Total
		2014/15		2013/14	2014/15	2015/16	2016/17		
Goal 1: World class and efficient services and societal benefits	Number of images distributed(EO1)	70000	Data, Products and Services (DPS)	30,657	32,343	33,554	33,721	99,618	10%
	Number of images distributed for research (EO4)	30000	Data Management Systems (DMS)	18,170	18,824	20,543	20,646	60,012	6%
	Amount (TB) of Science data acquired & archived (SS1)	2TB	Science Research and Applications (SRA)	14,762	16,366	15,501	15,579	47,446	5%
				63,589	67,533	69,598	69,946	207,076	21%
Goal 2: Cutting edge research, development, innovation and technology applications	Number of technical reports(EO6)	12	Research and Applications Development	11,416	12,659	13,146	13,212	39,017	4%
	Number of project reports (SO4)	4	Space Applications	4,740	4,973	5,344	5,371	15,688	2%
	Number ISI publications per researcher (SS4)	2	Research Support Unit (RSU)	7,715	7,274	6,889	6,923	21,086	2%
	Number of national satellite projects (3SE2)	1	Space systems development	82,200	150,000	165,246	105,760	421,006	43%
				106,071	174,906	190,625	131,266	496,797	51%
Goal 3: Effective development of human capital, transformation and science advancement	Number of students/ interns supported/trained during the financial year (EO7)	60	Human Capital Development & Science Advancement (EO,SO,SS)	10,574	12,061	12,058	12,118	36,237	4%
	Achieve proportion (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager) (EO12)	53%							
	Number of learners reached through direct and specific engagement (EO15)	8200							
				10,574	12,061	12,058	12,118	36,237	4%
Goal 4: Globaly competitive national space industry	Number of industrial/ commercial sector services/products (SS15)	7	Applied Science and Technology (AST)	6,710	7,274	6,889	6,924	21,087	2%
	Number of mission launches supported and in-orbit tests undertaken (SO2)	27	Space Operations	31,229	33,495	35,064	35,240	103,799	11%
				37,939	40,769	41,953	42,164	124,886	13%
Goal 1-5	Leadership, Management & Operational excellence index	7.5	Corporate Support Services	34,855	36,911	38,802	38,996	114,709	12%
			Total Expenditure	253,028	332,180	353,035	294,490	979,704	100%

Part B

Programme and Subprogramme Plans

Programme 1: Corporate Support

Programme purpose

SANSA Corporate Office ensures that SANSA is operationally efficient, managed cost effectively, complies with good corporate governance principles and enables seamless integration and collaboration among all SANSA directorates and external stakeholders.

Outcome

The primary outcome for the SANSA Corporate Support programme is institutional excellence and accountability. This requires that the Corporate Office provides the necessary and enabling support to ensure performance efficiency at the core functional level and delivery on the Agency's mandate, while ensuring public accountability through good corporate governance. Achieving institutional efficiency at the expense of good corporate governance or vice versa is tantamount to overall institutional failure. Therefore SANSA needs to achieve its institutional performance targets and a clean audit.

Strategic objectives and measurement

To achieve institutional excellence and accountability, Corporate Office will ensure that SANSA has:

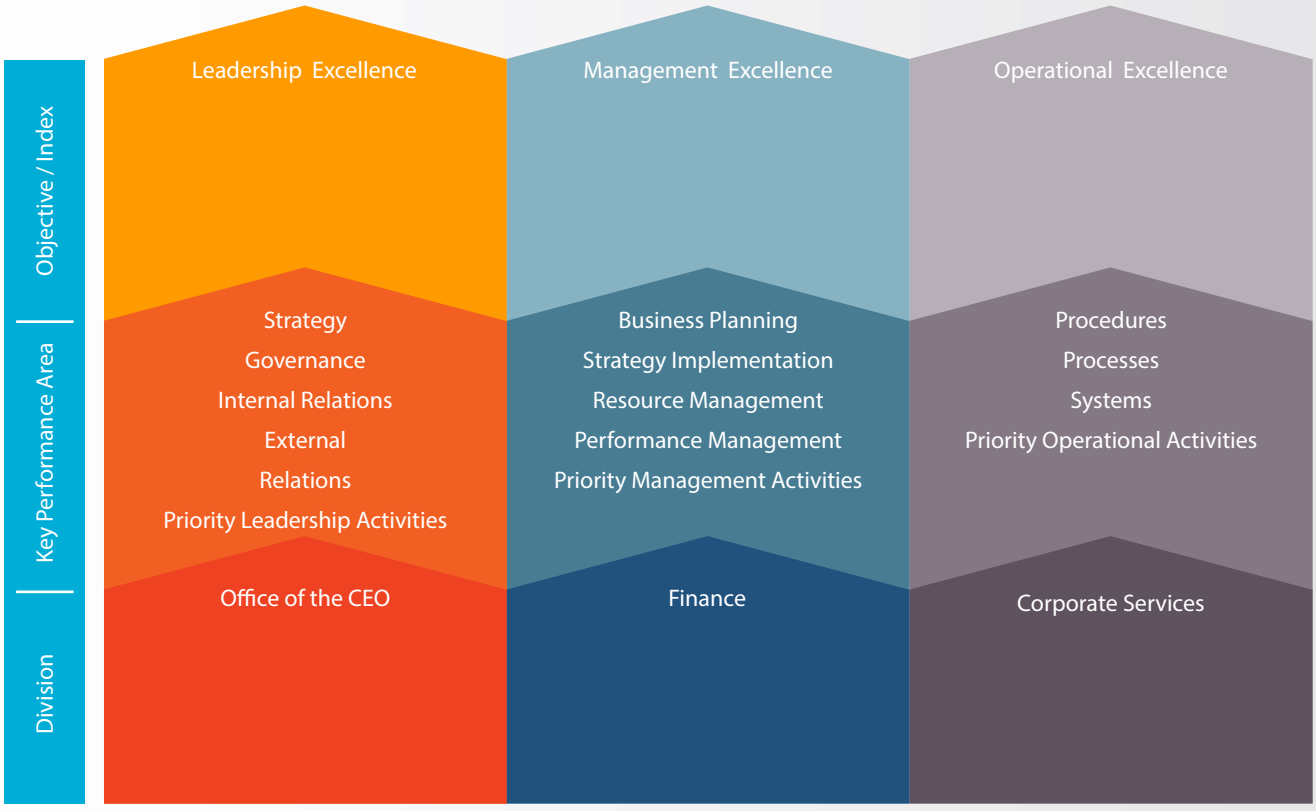
- Leadership excellence;
- Management excellence, and
- Operational excellence.

The measure of success for each on these three objectives is through a corresponding excellence index. Each index is a weighted composite of the performance in the key performance areas (KPAs) specified in Figure 2.

Links

Achievement of these strategic objectives will directly contribute to all SANSA strategic goals as well as the National Government Outcome 12: An efficient, effective and developmental orientated public service and an empowered, fair and inclusive citizenship.

Figure 2: Strategic objectives of the Corporate Support programme



Corporate Support programme overview

Subprogramme	Subprogramme purpose
CEO's Office	Ensure executive management and leadership of SANSA with overall management of day-to-day SANSA operations and good corporate governance. The CEO's Office coordinates the following functions: • Board secretariat • Audit and risk • Planning and performance management • Corporate communications • Stakeholder management • Space programme management
Finance and Procurement division	Ensure that all revenue, expenditure, assets and liabilities of SANSA are managed efficiently and effectively in line with the Public Finance Management Act (PFMA), and to maintain an appropriate procurement and provisioning system that is fair, equitable, transparent, competitive and cost effective. The Finance and Business division is structured into two specific roles: • Financial management • Supply chain management
Corporate Services division	Ensure the provision of effective and efficient support in the following functional areas: • Organisational development and human resources (HR) management • Information and communication technology (ICT) management • Legal services management • Safety, health, environment and quality (SHEQ)/facilities management
Space Programme division	Institution-wide provision of programme management, project management, technology and innovation management, contract management, system engineering, quality management, testing and acceptance. Broad functions include: • Programme/mission management • Space systems engineering • Quality, testing and assurance

Key priorities and projects for 2014/15

Subprogramme	Subprogramme purpose
CEO's Office	• Ensuring maximum efficiency and accountability of all SANSA units • Improving Board processes and corporate governance structures • Formalising a clear enterprise risk management framework • Ensuring efficient performance management systems and processes • Fully implementing effective and impactful communication systems and processes • Effectively handling stakeholder management and national space coordination
Finance and Procurement division	• Institutionalising defined business processes and procedures • Maintaining and improving internal control processes • Maintaining and improving financial and supply chain management processing systems • Implementing structured demand management processes and strategic sourcing
Corporate Services division	• Further developing the company's people through development and training opportunities • Continuing to develop the company's culture, aligned to its values (service, teamwork, respect, integrity, personal growth and excellence) • Developing our policies to the highest possible standards of good governance • Continuing to develop functional support systems and processes to ensure best practice
Space Programme division	• Capacitating the division • Setting up of functional units • Setting up of operational frameworks • Setting up of SANSA-wide frameworks for project management, acquisition management, contract management, systems engineering, quality management, industry development • Managing the EO-Sat1 development • Engaging and contracting with the industry • Developing the industry • Coordinating capacity development

Corporate Support programme quarterly targets for 2014/15

Table 4: Corporate Support programme quarterly targets 2014/15

Strategic objective	KPI	2014/15 quarterly targets			
		Q1	Q2	Q3	Q4
1 Leadership excellence	LEI score of 7,5 out of 10 (3CS1)	7,5	7,5	7,5	7,5
2 Management excellence	MEI score of 7,5 out of 10 (3CS2)	7,5	7,5	7,5	7,5
3 Operational excellence	OEI score of 7,5 out of 10 (3CS3)	7,5	7,5	7,5	7,5

Corporate Support programme annual targets for 2014/15

Table 3: Corporate Support programme - measurable objectives

Strategic objective	Outputs	Activities	Five-year targets (targets to be attained by 2017)	Key performance indicator (KPI)	Audited performance 2012/13	Audited performance 2012/13	Estimate 2013/14	Medium-term targets		
								2014/15	2015/16	2016/17
1 Leadership excellence	Effective and efficient leadership	• Strategic leadership • Corporate governance • Internal and external relations	Leadership excellence index (LEI) score of 8 out of 10 (CS1)	LEI	None. Indicator is new	68% management satisfaction 61% leadership satisfaction (1CS1)	LEI score of 7 out of 10 (2CS1)	LEI score of 7,5 out of 10 (3CS1)	LEI score of 8 out of 10 (4CS1	LEI score of 8 out of 10 (5CS1)
2 Management excellence	Effective and efficient management	• Business planning • Strategic implementation • Resource management • Performance management	Management excellence index (MEI) score of 8 out of 10 (CS2)	MEI	None. Indicator is new	68% management satisfaction 61% leadership satisfaction (1CS1)	MEI score of 7 out of 10 (2CS2)	MEI score of 7,5 out of 10 (3CS2)	MEI score of 8 out of 10 (4CS2)	MEI score of 8 out of 10 (5CS2)
3 Operational excellence	Operational efficiency and cost effectiveness	• Development of procedures • Process analysis and improvement • System implementation and management	Operational excellence index (OEI) score of 8 out of 10 (CS3)	OEI	None. Indicator is new		OEI score of 7 out of 10 (2CS3)	OEI score of 7,5 out of 10 (3CS3)	OEI score of 8 out of 10 (4CS3)	

SANSA key performance targets

The 2014/15 performance measures of the organisation for all programmes are consolidated in the table below.

Indicators	Estimate 2013/14	Annual Targets 2014/15
GOAL 1: World-class and efficient services and societal benefits (societal capital)		
1 Number of images acquired from regular sensors (EO1)	4000	20000
2 Number of images distributed (EO2)	44000	70 000
3 Reliability rate in the acquisition of satellite data for the EO directorate (SO1)	95%	95%
4 Number of mission launches supported and in-orbit tests undertaken (SO2)	24	27
5 Amount (TB) of science data acquired and archived (SS1)	1,5	2
6 Number of jobs directly supported by the satellite build programme (SE1)	30	40
GOAL 2 : Cutting-edge research, development, innovation, technology and applications (intellectual capital)		
7 Number of images distributed for research (EO4)	17000	30000
8 Number of national value-added products (EO6)	New KPI	4
9 Number of technical or project reports (SO4)	3	16
10 Number of Institute for Scientific Information (ISI) publications (SS4)(EO17)	New KPI	26
11 Number of national satellite projects (SE2)	1	2
12 EO-Sat1 project implementation (SE3)	18%	50%
13 Proportion (%) of budget expenditure spent on technology capacity development (SE4)	9%	26%
GOAL 3 : Effective development of human capital, transformation and science advancement (human capital)		
14 Number of students/interns supported/trained (EO7) (SO5) (SS6) (SE5)	60	75
15 Number of short courses conducted (EO9) (SS9)	12	20
16 Number of learners reached through direct and specific engagement (EO15) (SO10) (SS13)	7000	9200
17 Proportion (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager) (EO12) (SO9) (SS12)	50%	55%
GOAL 4 : Globally competitive national space industry (economic capital)		
18 Proportion (%) of R&D investment in EO industry (EO16)	New KPI	2%
19 Proportion (%) of the global commercial space launch market (including launches, space-craft, in-orbit tests (IOTs) and manoeuvres) (SO12)	20%	23%
20 Number of industrial/commercial sector services/products (SS15)	5	7
21 Proportion (%) of budget expenditure spent on industry development (SE8)	8%	80%
GOAL 5 : Make South Africa a recognised global space citizen (global capital)		
22 Number of multinational projects (EO14) (SS16) (SE7)	10	18
23 Client performance rating as measured by client (SO13)	95%	98%

Corporate Support budget and MTEF estimates

Programme 1 - Corporate Support - Source of Funds

Transfers and Revenue	Approved Budget	Medium-Term Expenditure Estimate			Total MTEF	% of Total
R'000	2013/14	2014/15	2015/16	2016/17		
Parliamentary Grant	34,855	36,911	38,802	38,996	114,709	100%
Total Transfers and Revenue	34,855	36,911	38,802	38,996	114,709	100%

Revenue estimates

The Corporate Support programme is funded fully from the parliamentary allocation.

Expenditure estimates

Table 5: Corporate Office budget and MTEF estimates

Sub Programme	Approved Budget	Medium-Term Expenditure Estimate			Total MTEF	% of Total
R'000	2013/14	2014/15	2015/16	2016/17		
Board	1,372	1,453	1,528	1,536	4,517	4%
CEO's office	9,139	9,678	10,174	10,225	30,077	26%
Corporate Services	13,020	13,789	14,495	14,568	42,852	37%
Finance	11,324	11,991	12,605	12,667	37,263	32%
Total Programme Allocation	34,855	36,911	38,802	38,996	114,709	100%
Economic Classification						
Current payments	33,029	34,977	36,769	36,953	108,699	95%
Compensation of employees	21,413	24,920	26,402	26,534	77,856	68%
Goods and services	11,616	10,057	10,367	10,419	30,843	27%
Payments for Capital Assets	1,826	1,934	2,033	2,043	6,010	5%
Machinery and equipment	1,826	1,404	1,476	1,483	4,363	4%
Software and intangible assets	-	530	557	560	1,647	1%
Total expenses	34,855	36,911	38,802	38,996	114,709	100%

The projected expenditure for the Corporate Support programme over the MTEF period is R37 million (2014/15), R39 million (2015/16) and R38 million (2016/17) with an MTEF total of R115 million.

Programme economic classification breakdown 2014/15

In terms of economic classification, over the MTEF period, the programme will spend R31 million (R12 million for 2014/15) on goods and services, R79 million (R25 million for 2014/15) on employee costs and R6 million (R2 million for 2014/15) on capital infrastructure, mainly machinery, equipment and software.

Programme 2: Earth Observation

Programme purpose

The global contribution to EO satellites continues to increase and manifests in the increasing number of satellites launched every year. There are almost 1 000 satellites in space focusing on EO, telecommunications, navigation/positioning, and scientific exploration. The Organisation for Economic Cooperation and Development (OECD) estimates that the global revenue generated from space-related products and services amounted to USD 150-165 billion in 2009. EO, which is largely a public good enterprise, accounted for USD 900 million to USD 1,2 billion.

In terms of return on investment (ROI), some European countries have reported a space-related ROI as high as 4.7. EO applications are important in numerous socioeconomic sectors, including global change, natural and environmental monitoring, food security, disaster management, cost efficiencies and productivity gains. For instance, the USA reported a positive cost-benefit of six from weather predictions.

Due to the global drive for improved livelihoods and sustained economic development, a number of global initiatives are aimed at maximising benefits from EO programmes. These efforts are led by various international bodies, including GEO, of which South Africa is co-chair.

GEO efforts are driven largely in the context of GEOSS and the CEOS where SANSA serves as the vice-chair of the Working Group on Capacity Development and Data Democracy (WGCapD).

The aim is to coordinate EO efforts globally with the primary objective of benefiting humanity in a sustained and earth-friendly manner as the world strives to attain the Millennium Development Goals (MDGs) by 2015. SANSA, as one of the contributing agencies of the South African Earth Observation Strategy (SAEOS), fulfils this strategic objective through the SANSA Earth Observation directorate.

Data access and data democracy are increasingly becoming key to the availability of integrated information systems that include cutting-edge space-based data that enables rapid decision-making for policymakers in governments and industry, and for other stakeholders. GEOSS is aimed at enhancing the availability of space-based data, imagery and applications to a wider audience of users. SANSA and other national partners have to contribute to this important DST-led initiative.

This will promote South Africa's standing on the continent and facilitate the sharing of knowledge, resources and skills in Africa through platforms such as AfriGEOSS.

In collaboration with external partners, the directorate drives its activities in six operational themes. As a cross-cutting theme, HCD is fundamental to the directorate's activities and a core function in all units, as shown in the figure below.

(i) Environmental management:

With an ever-increasing global population and the associated increase in demand for natural resources, satellite EO imagery provides information on the state of the environment.

This supports the formulation of current and future policy directives and plans to ensure better and sustainable livelihoods. With partners in the government, universities and research institutions, and with the public, SANSA provides access to satellite EO data, tools and applications that are relevant to environmental monitoring and assessment, global change monitoring, land use and land cover change, and pollution monitoring.

(ii) Resource management:

SANSA Earth Observation provides data that is used to monitor various resources, including water, agricultural produce and livestock, energy, fish stock and mineral resources.

These data provide information through which the conservation and efficient use of resources are factored into national plans and programmes.

(iii) Planning and development:

Satellite imagery supplied by SANSA EO to national government departments, research institutions, private industry and universities is used in planning and development.

In partnership with the EO community, data and applications will be developed in rural development, urban planning, agriculture and crop monitoring, and generating land cover and land use maps.

(iv) Health, safety and security:

Satellites provide a very broad view that is useful for cross-border health, safety and security monitoring. As an example, vegetation indices derived from satellites images are used to monitor mosquito-borne diseases like malaria,

Figure 3: Spot5 image of the Union Building, Pretoria

monitor fires or flooding as well as cross-border theft and drug trafficking, and for African peace-keeping missions. Satellites are also used for national security, and crime prevention and monitoring.

(v) Disaster management:

Satellite imagery can be used for disaster forecasting, monitoring, assessment and mitigation.

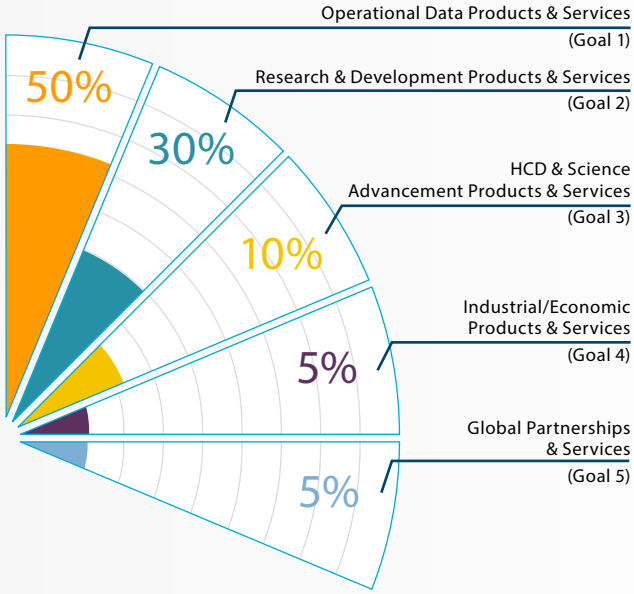
This can lead to huge cost savings and mitigate further severe human catastrophes, especially if these data are used in conjunction with environmental and socioeconomic in-situ measurements to produce disaster early warning systems.

(vi) Industrial services:

Different services are offered that benefit industry, e.g. geospatial data for industry usage; logistics; fleet tracking and navigation.

Alignment of programme to strategic goals

Figure 3: EO goal matrix



This graphic represents the focus of effort and, to some extent, resources for the strategic goals of SANSA.

EO programme overview

The programme delivers on its mandate through the following subprogrammes:

Subprogramme	Subprogramme purpose
Research and Applications Development	• Improving EO data quality and data handling methodologies • Increasing the stock of knowledge in remote sensing • Developing high-quality, value-added EO-based information products, applications and services
Data, Products and Services	• Archiving, extracting, processing and delivering data, national data products and relevant applications to all stakeholders
Data Systems Management	• Enabling business operations by providing IT infrastructure • Maintaining and periodically upgrading EO processing systems to help ensure that the geographic information value chain is optimised for the benefit of South Africa and the southern African community
HCD and Science Advancement	• Driving science advancement and public engagement initiatives • Delivering, in collaboration with other subprogrammes, the directorate's human capital development objectives

Key priorities and projects 2014/15

Subprogramme	Subprogramme Priorities and Projects
Research and Applications Development	• Pursuing EO-Sat1 related projects and activities • Providing 10-day Normalised Difference Vegetation Index (NDVI) national maps, 30-day urbanisation maps and disaster vulnerable area maps • Improving in-house reference datasets to higher geometrical accuracies using improved digital surface and elevation models • Increasing university collaboration by supervising and cosupervising • Developing image processing algorithms and processing chains • Monitoring infrastructure
Data, Products and Services	• Fostering an even greater penetration of EO services into government services. • Continuously improving archiving, extracting, processing and distributing software and tools to ensure efficient services and satisfy the needs of different customers • Enlarging the EO database with the desired sensor portfolio • Optimising production turnaround times and quality assurance • Constantly upgrading the FUNDISA Disc, FUNDISA Disc for Schools and FUNDISA student portal • Improving stakeholder/client transactional services
Data Systems Management	• Continuously upgrading and automating systems to enable smooth and consistent running of all software and hardware related EO data systems • Ensuring that the EO data centre is well equipped, secured and that all data is updated and available on the EO online catalogue • Fully operationalising the data information management system (DIMS) system • Completing archives migration • Developing and maintaining easily accessible and efficient distribution systems and channels of the directorate through catalogue systems • Fully upgrading data infrastructure to contribute to the implementation of SAEOS
HCD and Science Advancement	• Providing short training courses to university students and government employees • Supervising and co-supervising postgraduate students, including implementing the EO postgraduate bursary scheme and studentship programme
Stakeholder management and coordination*	• Increasing the directorate's stakeholder networks through regular engagements with national, the South African Development Community (SADC) and international groups • Ensuring that adequate strategic marketing and stakeholder relationships are established and serviced in SANSA's EO directorate • Increasing the directorate's strategic contribution to GEO and CEOS and other relevant international organisations to improve SANSA's contribution to global capital
Stimulating the EO industry*	• Opening up new opportunities for industry and higher education and science councils to collaborate in developing EO-based information services and stimulating related research and development by issuing a yearly call for proposals in the following areas, among others: 10 day NDVI, urbanisation maps and disaster prone maps • Working within the allocated budget • Exploring other funding opportunities from dti and the Technology Innovation Agency (TIA) to support industry stimulation

* Not a sub-programme but a key project to be undertaken by the directorate

Table 6: Measurable objectives: EO

Earth Observation Programme											
SANSA Goal	Programme strategic objective	Outputs	Activities	Indicators	Five-year targets (targets to be attained by 2017)	Audited performance	Audited performance	Estimate	Medium-term targets		
						2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
GOAL 1: World-class and efficient services and societal benefits (societal capital)	Offer efficient EO services for national and international benefit and a sustained environment	1. EO data stock 2. Space based EO data products, value added data products and services 3. Decision making tools for policy- and decision makers	• Data collection • Data distribution • Value-added services	Number of images acquired from regular sensors (EO1)	28 000	4000	16840	4000	20 000 **	24 000	28 000
				Number of images distributed (EO2)	80 000	40 000	164 841	44 000	70 000 **	75 000	80 000
GOAL 2: Cutting-edge research, development, innovation, technology and applications (intellectual capital)	Conduct cutting-edge research, development and innovation to continually improve SANSA's EO offering	New and innovative data/ image/signal processing techniques	Provide data for R&D purposes • Collaborative projects with R&D and tertiary institutions • Continual R&D of internal processes	Number of images distributed for research (EO4)	32 000	15 000	41 126	17000	30 000	31 000	32 000
				Number of national value added products (EO6)	5	New	New	New	4	4	5
				Number of ISI research publications (EO17)	8	New	New	New	6	7	8
GOAL 3: Effective development of human capital, transformation and science advancement (human capital)	Development of human capital in EO related science and engineering and advance science among the youth and the public	Skilled students Skilled workers Science advancement programmes Public engagement programmes	• Provision of data for student training • Collaborative student training • Internship training	Number of students/ interns supported/ trained (EO7)	6	5	7	6	13	15	16
				Number of short courses conducted (EO9)	13	2	4	2	10	11	13
				Proportion (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager) (EO12)	65%	40%	75%	50%	50%	60%	65%

Earth Observation Programme											
SANSA Goal	Programme strategic objective	Outputs	Activities	Indicators	Five-year targets (targets to be attained by 2017)	Audited performance	Audited performance	Estimate	Medium-term targets		
						2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
				Number of learners reached through direct and specific engagement (EO15)	3000	New	New	2 000	2 200	2 500	3 000
GOAL 4: Globally competitive national space industry (economic capital	Provide services that stimulate industry growth and participation in EO	Value-added services	• Collaborative projects with industry	Proportion (%) of R&D investment in EO industry (EO16)	3%	New	New	New	2%	2%	3%
GOAL 5: Make South Africa a recognised global space citizen (global capital)	Establish and maintain effective and mutually beneficial international partnerships in line with national strategic alignment	• Membership of international organisations of strategic importance • Beneficial multinational agreements, partnerships and projects	• Develop and maintain active international partnerships	Number of multinational projects (EO14)	3	2	2	2	2	3	3

** The indicator has been changed for the 2014/15 financial year to account only for regular sensor and exclude ad-hoc (once-off) data acquisitions, which create acquisition spikes as in the 2012/13 financial year.

Quarterly targets for 2014/15

Table 7: Quarterly targets 2014/15: EO

Indicator	Audited performance	Estimate	Annual target	Quarterly targets			
	2012/13	2013/14	2014/15	1st	2nd	3rd	4th
Strategic Objective 1: Offer efficient EO services for national and international benefit and a sustained environment							
Number of images acquired from regular sensor (3EO1)	16 840	4 000	20 000	5 000	5 000	5 000	5 000
Number of images distributed (3EO2)	164 841	44 000	70 000	15 000	15000	15000	25 000
Strategic Objective 2: Conduct cutting-edge research, development and innovation to continually improve SANSA's EO offering							
Number of images distributed for research (3EO4)	41 126	17 000	30 000	5 000	5 000	5 000	15 000
Number of national value added products (3EO6)	New	New	4	1	0	0	3
Number of ISI research publications (3EO17)	New	New	6	0	3	3	0
Strategic Objective 3: Development of human capital in EO-related science and engineering and advance science among the youth and the public							
Number of students/interns supported/trained (3EO7)	7	6	13 (6 PhDs, 7 Msc)	0	6	0	7
Number of short courses conducted (3EO9)	4	2	10	2	2	3	3
Proportion (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager) (3EO12)	75%	50%	50%	50%	50%	50%	50%
Number of learners reached through direct and specific engagement (3EO15)	New	2 000	2 200	700	750	200	550
Strategic Objective 4: Provide services that stimulate industry growth and participation in EO							
Proportion (%) of R&D investment in EO industry (3EO16)	New	New	2%	0%	1%	0%	1%
Strategic Objective 5: Establish and maintain effective and mutually beneficial international partnerships in line with national strategic alignment							
Number of multi-national projects (3EO14)	2	2	2	0	1	0	1

EO budget and MTEF estimates

Revenue estimates

The main funding source for the EO programme is the parliamentary allocation, at 78% of the revenue source.

Contract income is mainly from public entities that require high resolution imagery that may not be covered under the Spot 6 and 7 contract for national imagery distribution.

This income is not guaranteed in the two outer years and some of the contracts are coming to an end.

Programme 2 - Earth Observation Source of Funds

Transfers and Revenue	Approved Budget	Adjusted Estimates	Medium-Term Expenditure Estimate			Total MTEF	% of Total
R'000	2013/14	2013/14	2014/15	2015/16	2016/17		
Parliamentary Grant	54,506	54,506	57,721	60,677	60,981	179,379	78%
Contract income: Public	15,586	8,000	8,500	9,000	9,045	26,545	22%
Total Transfers and Revenue	70,092	62,506	66,221	69,677	70,026	205,924	100%

Expenditure estimates

The projected expenditure over the MTEF period is R66 million (2014/15), R69 million (2015/16) and R73 million (2016/17), with an MTEF total of R209 million.

Programme economic classification breakdown 2014/15

The activities funded over the MTEF period are mainly access fees to satellite imagery at R100 million (R32 million for 2014/15), internal cost-recovery charges from the Space Operations programme for remote sensing imagery at R40 million (R13 million for 2014/15), maintenance and upgrade of processing systems at R8,6 million (R2,6 million for 2014/15) and capacity development initiatives at R7 million (R2,3 million for 2014/15).

Over the MTEF period, the programme will allocate R130 million (R41,7 million for 2014/15) to goods and services expenditure, R63 million (R20 million for 2013/14) to employee costs and R14 million (R4 million for 2014/15) to capital infrastructure.

Programme 2: Earth Observation Expenditure Estimates

Table 8: EO budget

Sub Programme	Approved Budget	Adjusted Estimates	Medium-Term Expenditure Estimate			Total MTEF	% of Total
R'000	2013/14	2013/14	2014/15	2015/16	2016/17		
Research & Applications Development	12,002	11,416	12,659	13,146	13,212	39,017	19%
Data, Products and Services	31,666	30,657	32,343	33,554	33,721	99,618	48%
Data Systems Management	20,661	18,170	18,824	20,543	20,646	60,012	29%
HCD and Science Advancement	5,763	2,263	2,396	2,435	2,447	7,278	4%
Total	70,092	62,506	66,221	69,677	70,026	205,924	100%
Economic Classification							
Current payments	66,018	58,432	61,907	65,141	65,468	192,516	93%
Compensation of employees	17,161	17,161	20,160	21,367	21,475	63,002	31%
Goods and services	48,857	41,271	41,747	43,774	43,993	129,514	63%
Payments for Capital Assets	4,074	4,074	4,314	4,535	4,558	13,408	7%
Machinery and equipment	2,374	2,374	2,514	2,643	2,656	7,813	4%
Software and intangible assets	1,700	1,700	1,800	1,892	1,902	5,595	3%
Total expenses	70,092	62,506	66,221	69,677	70,026	205,924	100%

Programme 3: Space Operations

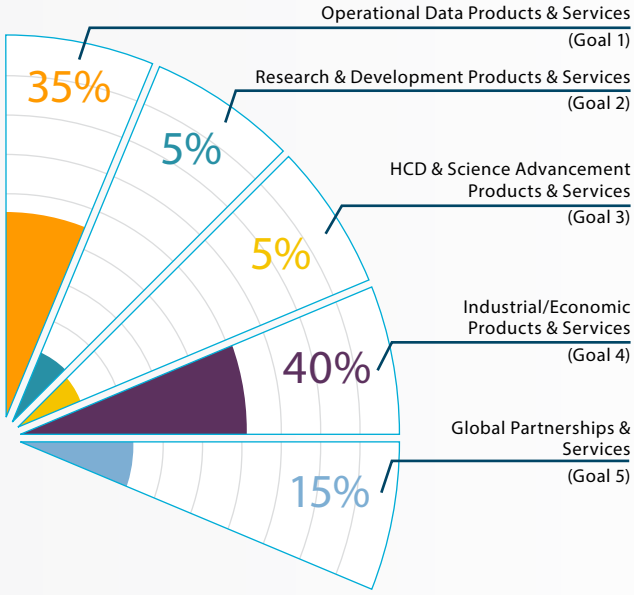
Programme purpose

SANSA operates a satellite ground station that conducts various space operations, including launch and early-orbit support, in-orbit testing, satellite lifecycle support and satellite mission control for both national and international space industry clients and governments. The SANSA Space Operations directorate has two focal themes: ground services and space applications. The primary value and focus of the directorate is to provide South Africa with access to national and international EO and scientific satellites. There are new growth opportunities in satellite mission control and for planned South African satellites.

The directorate also provides satellite support to various clients commercially, generating a significant income stream for SANSA. In line with this, there is an anticipated increase in SANSA's satellite launch and general orbital support business. Another area of growth is satellite-based navigation augmentation services. The ground station has all the required frequency bands and equipment to service its contracted and selected stakeholders.

Alignment of programme to strategic goals

Figure 4: Space Operations goal matrix



This graph represents the level of focus in effort and, to some extent, resources for the strategic goals of SANSA.

Space Operations programme overview

The programme delivers on its mandate through the following subprogrammes:

Subprogramme	Subprogramme purpose
Space Operations	• Offering satellite ground services through telemetry, tracking and command (TT&C) and IOTs for the various launcher and satellite support services, and hosting satellite ground infrastructure for various international and local clients
Data Downloading Services	• Engaging in partnerships with other SANSA units to download EO and space science data at a central point - a cost-effective method with local expertise. Data downloads include EO data from Spot, Landsat and Modis, and other satellites prescribed by stakeholders, and scientific data for research
Space Applications	• Engaging, with the DoC and industry, in communications and data transmission • Engaging, with NGI, DoT and industry, in positioning, navigation and timing • Exploring new projects from time to time such as Radio Astron • Exploring contribution to the African Resource Management Constellation (ARMC)
HCD and Science Advancement	Driving science advancement, public engagement initiatives HCD initiatives

Programme key priorities and projects 2014/15

Subprogramme	Subprogramme Priorities and Projects
Space Operations	• Retaining current customer base and entering into new strategic contracts in a measured manner • Increasing in-orbit testing and carrier monitoring operations with expansion of necessary infrastructure • Consolidating mission control activities, competencies and capacity in view of the initiation of the EO-Sat1 project • Entering in a measured manner into new additional ground station facility hosting contracts for both EO and science missions • Developing space operations automation processes • Replacing and upgrading aging equipment
Data Downloading Services	• Repositioning SANSA for all EO and science satellite ground station activities to meet SANSA's needs • Ensuring that maximum benefit is derived from contracted EO satellites • Installing and operating equipment to download scientific payloads
Space Applications	• Laying a firm foundation for satellite-based navigation augmentation activities (dedicated infrastructure, personnel, national and regional partnerships and funding). • Establishing contact and partnerships with SADC countries for the rollout of the receiver integrity monitoring station (RIMS) to states to have the best possible augmentation coverage in the initial system • Working with SANSA on special and social projects where needed
HCD and Science Advancement	• Continuing current internship programme • Establishing a dedicated science advancement subprogramme • Initiating well-structured science advancement initiatives

Table 9: Measurable objectives: Space Operations

Space Operations Programme											
SANSA Goal	Programme strategic objective	Outputs	Activities	Indicators	Five-year targets (targets to be attained by 2017)	Audited performance	Audited performance	Estimate	Medium-term targets		
						2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
GOAL 1: World-class and efficient services and societal benefits (societal capital)	Offer efficient, cost effective and globally competitive space operations and applications for societal benefit and global market	1. Directly acquired data for EO 2. Launch support services 3. In-orbit tests	• Data collection • Launch support • IOTs	Reliability rate in the acquisition of satellite data for the EO directorate (SO1)	95%	New KPI	New KPI	95%	95%	95%	95%
				Number of mission launches supported and in-orbit tests undertaken (SO2)	33	23	32	24	27	31	33
GOAL 2: Cutting-edge research, development, innovation, technology and applications (intellectual capital)	Focused and needs driven applied research, development and innovation in key space operations and applications areas	New and innovative space operations processes and applications	R&D activities in space operations and applications	Number of technical or project reports (SO4)	4	2	3	3	4	4	4
GOAL 3: Effective development of human capital, transformation and science advancement (human capital)	Focused HCD in space operations and space applications and active science advancements	• Skilled youth • Skilled workers • Science advancement programmes	•Intern training	Number of students/ interns supported/ trained (SO5)	8	6	5	7	7	8	8
			•Staff training	Proportion (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager) (SO9)	65%	40%	43%	50%	55%	60%	65%

Space Operations Programme											
SANSA Goal	Programme strategic objective	Outputs	Activities	Indicators	Five-year targets (targets to be attained by 2017)	Audited performance	Audited performance	Estimate	Medium-term targets		
						2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
			•Science advancement activities	Number of learners reached through direct & specific engagement (SO10)	5400	1000	1847	1000	2000	3500	5400
GOAL 4: Globally competitive national space industry (economic capital)	Maintaining a strong commercial service for industry	Value-added services	Commercial support to industry	Proportion (%) of the global commercial space launch market (including launches, spacecraft, IOT and manoeuvres) (SO12)	25%	New KPI	New KPI	20%	23%	25%	25%
GOAL 5: Make South Africa a recognised global space citizen (global capital)	Establish and maintain effective and mutually beneficial international partnerships and customer relations in line with national strategic alignment	High-quality professional services	Global space industry servicing	Client performance rating as measured by our client (SO13)	98/100	85/100	95/100	98/100	98/100	98/100	98/100

Quarterly targets for 2014/15

Table 7: Quarterly target 2014/15: SO

Indicator	Audited performance	Estimate	Annual target	Quarterly targets			
	2012/13	2013/14	2014/15	1st	2nd	3rd	4th
Strategic Objective 1: Offer efficient, cost effective and globally competitive space operations and applications for societal benefit and global market							
Reliability rate in the acquisition of satellite data for the EO directorate (3SO1)	New	95%	95%	95%	95%	95%	95%
Number of mission launches supported and in-orbit tests undertaken (3SO2)	32	23	27	6	6	8	7
Strategic Objective 2: Focused and needs-driven applied research, development and innovation in key space operations and applications areas							
Number of technical or project reports (3SO4)	3	3	4	0	2	1	1
Strategic Objective 3: Focused HCD in space operations and space application and active science advancement							
Number of students/interns supported/trained (3SO5)	5	7 (BTechs and BScs)	7	7	0	0	0
Proportion (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager) (SO9)	43%	50%	55%	55%	55%	55%	55%
Number of learners reached through direct and specific engagement (3SO10)	1 847	1 000	1 000	250	250	0	500
Strategic Objective 4: Maintain a strong commercial service for industry							
Proportion (%) of the global commercial space launch market (including launches, spacecraft, IOT and manoeuvres) (3SO12)	New	20%	23%	23%	23%	23%	23%
Strategic Objective 5: Establish and maintain effective and mutually beneficial international partnerships and customer relations in line with national strategic alignment							
Client performance rating as measured by client (3SO13)	98%	98%	98%	98/100	98/100	98/100	98/100

Space Operations budget and MTEF estimates

Revenue estimates

Programme 3 - Space Operations Source of Funds

Transfers and Revenue	Approved Budget	Adjusted Estimates	Medium-Term Expenditure Estimate			Total MTEF	% of Total
R thousand	2013/14	2013/14	2014/15	2015/16	2016/17		
Contract income: Public	3,488	3,488	4,384	4,621	4,644	13,649	8%
Contract income: Private	36,431	38,212	38,292	40,242	40,444	118,978	68%
		482					
Total Revenue	39,919	42,182	42,676	44,863	45,088	132,627	76%
Remote sensing services - EO	12,750	12,750	13,200	14,520	14,593	42,313	24%
Total Transfers and Revenue	52,669	54,932	55,876	59,383	59,681	174,940	100%

The Space Operations programme is commercially funded and does not receive a direct parliamentary allocation. However, as it provides services to the EO programme, there is an internal cost recovery for remote sensing services provided through the EO programme. About 76% of the revenue source is from contracts with international clients, 24% from data downloading services for the EO unit and 8% from the local public sector.

Programme economic classification breakdown 2013/14

Over the MTEF period, the programme will spend R50 million (R11 million for 2014/15) on goods and services expenditure, R80 million (R25 million for 2014/15) on employee costs and R20 million (R6 million for 2014/15) on capital infrastructure.

Expenditure estimates

Table 12 : Programme 3: Space Operations

Sub Programme R'000	Approved Budget	Revised Estimates	Medium-Term Expenditure Estimate			Total MTEF	% of Total
	2013/14	2013/14	2014/15	2015/16	2016/17		
Space Operations	29,758	31,036	31,603	33,551	33,719	98,873	57%
Data Downloading Services	14,221	14,832	15,092	16,033	16,114	47,239	27%
Space Applications	4,740	4,944	4,973	5,344	5,371	15,688	9%
HCD and Science Advancement	3,950	4,120	4,208	4,455	4,477	13,140	8%
Total	52,669	54,932	55,876	59,383	59,681	174,940	100%
Economic Classification							
Current payments	46,569	47,977	51,876	54,883	55,158	161,917	93%
Compensation of employees	23,774	23,917	25,452	26,979	27,114	79,545	45%
Goods and services	22,795	24,060	26,424	27,904	28,044	82,372	47%
Payments for Capital Assets	6,100	6,955	4,000	4,500	4,523	13,023	7%
Machinery and equipment	6,100	6,955	4,000	4,500	4,523	13,023	7%
Total expenses	52,669	54,932	55,876	59,383	59,681	174,940	100%

Programme 4: Space Science

Programme purpose

Space Science is an important driver for scientific enquiry, knowledge creation, technology development and innovation. It is also an instrument for human capital development and has always been a vehicle for stimulating interest, awareness, understanding and appreciation of science among the youth and the general public.

The long-term sustainability of the South African space programme and the increase in the country's market share of global space-technology and competitiveness are strongly dependent on the continued creation of new knowledge as bedrock for space technology development, innovation and services.

Without home-grown basic space science research and knowledge capital, South Africa will continually be an importer of space knowhow and will not reach its optimum innovative and competitive capacity and self-reliance.
The SANSA Space Science directorate leads the Space Science programme by using the advantages of South Africa's geographic position in two arenas in particular.

Science research platform
Observational infrastructure
Data systems
Data processing and distribution
Research facilities
Student training facilities

Knowledge creation and utilisation
Research
Applied science and innovation
Collaborations
Publications

Human capital development
Postgraduate training
Short-course training
Internships
Science advancement and outreach

Figure 5: Space Science leverages research facilities in Antarctica to advance scientific knowledge

First, South Africa is the only African country with a scientific base in Antarctica. Secondly, South Africa is ideally located for the study of the South Atlantic Magnetic Anomaly – an area over the South Atlantic Ocean where aircraft, ships and satellites are exposed to increased radiation from space, which leads to the interruption of, and damage to, communication systems.

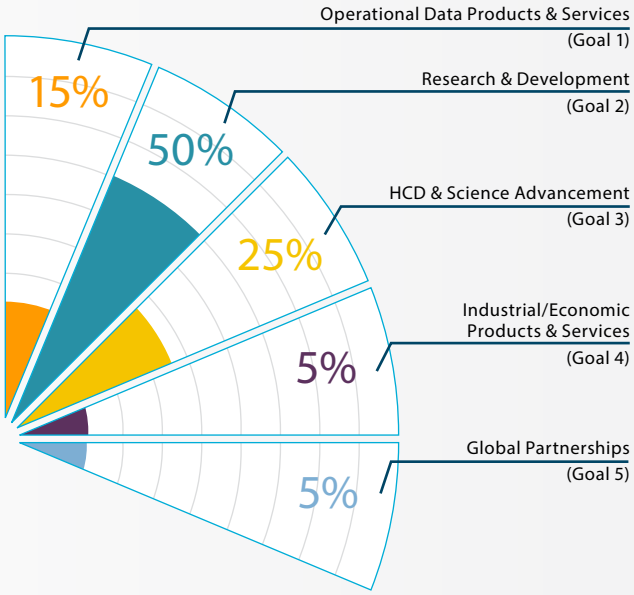
The directorate covers a wide spectrum of scientific areas in the space environment, from core to the sun, including geomagnetism, plasma physics, and the atmosphere, ionosphere and magnetosphere. SANSA Space Science is also part of the worldwide network of magnetic observatories. It is responsible for research, infrastructure and data required for monitoring the near-earth space environment.

The scope of activities includes fundamental and applied space physics research, postgraduate student training, science advancement, space weather monitoring, and the provision of magnetic technology services commercially and privately. SANSA Space Science is a key player in the South African National Antarctic Programme (SANAP) and has several ongoing space science and space weather projects in Antarctica, and on Marion and Gough Islands.

SANSA is particularly interested in polar research, since the inward-curving magnetic lines at the pole provide the perfect opportunity to conduct space particle research. SANSA research includes the monitoring and application of space weather to provide data and information on the effects of the space environment on communication satellites, navigation and aviation, to mention a few.

Alignment of programme to strategic goals

Figure 6: Space Science goal matrix



This graph represents the level of focus in effort and, to some extent, resources for the strategic goals of SANSA

Space Science programme overview

The programme delivers on its mandate through the following subprogrammes:

Subprogramme	Subprogramme purpose
Science Research and Applications	Generating fundamental knowledge of the space environment through the collection and distribution of data for research, knowledge creation and human capital development. The application of the research programmes in space weather and HCD and the provision of space weather operations also falls under this programme The areas covered by this programme include: • Space research • Solar-terrestrial physics research • Space weather
Applied Science and Technology	Providing R&D and technology support to aviation, defence and maritime sectors. The magnetic technology services provided by SANSA contribute significantly to the work of the navy, air force and army, and thus to the safety and security of all South Africans Areas covered by this programme include: • EM signature management • Magnetic systems support • Magnetic navigation support
Research Support Unit	Providing the infrastructure and data support to SANSA's geophysical laboratory, which has locations in South Africa, Namibia, Antarctica and the South Atlantic islands Areas covered by this programme include: • Systems support • Data management and support • Antarctic programme
Science Advancement Unit	Driving science advancement among the youth, public and policymakers as well as in space science and related technology. This programme uses space and the work of SANSA as a driver to create excitement in science and technology, and contribute towards a science pipeline for the future

Programme key priorities and projects 2014/15

Subprogramme	Subprogramme Priorities and Projects
Science Research and Applications	• Focusing space science research on the NSP space science programmes and science questions • Improving the space weather and geospace services product portfolio • Enhancing stakeholder relations through prioritising engagements that are strategic for R&D • Expanding HCD by increasing collaborative networks with R&D institutions and universities • Implementing a centralised SANSA grant administration system • Expanding the space weather service portfolio to attract more clients, introducing appropriate models to the Space Weather Centre (SWC) to enhance predictive ability, growing SANSA expertise in space weather forecasting and prediction, and using space weather as a tool in science advancement • To achieve NSP science research objectives, appointed a chief scientist and research manager from 1 Jan 2014, adding additional research capacity through post-doctorate development and PDP grants, implementing focused objectives concentrated on the NSP science programmes, enhancing optimisation of the science database developed, establishing international partnerships and multinational projects for global recognition, and developing a space science research impact factor that measures quality and productivity of science
Applied Science and Technology	• Improving the geospace services product portfolio, delivering innovative magnetic technology services and enhancing the product portfolio • Providing satellite characterisation and sensor services, a service to calibrate and evaluate space qualified magnetometers, development of a research programme in magnetic sensor services, assistance with the upgrade of offsite satellite characterisation resources, creating in-house capability through training and skills development, and identifying potential international clients
Research Support Unit	• Providing an earth-space research platform (observational infrastructure and data systems) to commission the new digital radar for Antarctica and implementing data systems and management in space science • For Antarctic and remote areas science, commissioning the new digital radar and increasing contribution to SuperDARN database, and strengthening African partnerships through assistance with access to African data sets. • Implementing, for the infrastructure and data management system, a SANSA data acquisition, archiving and distribution system; developing a SANSA data use policy, implementing a 'big brother' monitoring system for all data systems, improving the delivery of processed data to world data centres, and developing a national geophysical database for research • For radar engineering, using the RF lab to develop in-house capability, Recruiting an engineer with RF and radar skills, providing in-service training and radar-related projects to universities, and enhancing science output from the radars through national and international links
Science Advancement Unit	• In skills development and science advancement, working with NASSP to improve the space science offering and increase the number of students, continuing to support school curricula and introduce dynamic activities that attract interest, formalising collaborations with universities, identifying training opportunities in other international institutions, growing the space theme in the SANSA Science Centre, engaging with schools using the SANSA Mobile Space Lab, and participating in festivals, and developing holiday programmes, and activity weeks.

Table 9: Measurable objectives: Space Science

Space Science Programme										
SANSA Goal	Outputs	Activities	Indicators	Five-year targets (targets to be attained by 2017)	Audited performance	Audited performance	Estimate	Medium-term targets		
					2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
GOAL 1: World-class and efficient services and societal benefits (societal capital)	• Geospace and space weather products and services • Applied science and technology products and services	• Data collection • Data processing • Value-added services and products	Amount (TB) of science data acquired and archived (SS1)	2,5	1	2,9	1,5	2	2	2,5
GOAL 2: Cutting-edge research, development, innovation, technology and applications (intellectual capital)	• Knowledge outputs • Geospace and space weather products and services • Applied science and technology products and services	• Provide data for R&D • Continual R&D of internal processes • Provision of data for student training • Collaborative student supervision • Research publications	Number of ISI publications (SS4)	30	new	new	new	20	25	30
GOAL 3: Effective development of human capital, transformation, science advancement and engagement of the citizenry (human capital)	• Skilled students • Empowered workforce • Science advancement programmes • Public engagement programme	• Provision of data for student training • Collaborative student training and supervision • Staff training • Provision of training for clients and users of products/ services • Science advancement	Number of students/interns supported/trained (SS6)	40	15	36	35	40	40	40
			Number of short courses conducted (SS9)	10	3	15	10	10	10	10

Space Science Programme										
SANSA Goal	Outputs	Activities	Indicators	Five-year targets (targets to be attained by 2017)	Audited performance	Audited performance	Estimate	Medium-term targets		
					2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
			Proportion (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager) (SS12)	60%	New KPI	44%	55%	55%	58%	60%
			Number of learners reached through direct and specific engagement (SS13)	7 000	3 000	4 654	4 000	5 000	7 000	7 000
GOAL 4:Globally competitive national space industry (economic capital)	Value-added services and products for navigation, communication, mineral exploration, satellite systems, power distribution	• Provision of geospace and space weather services and products for industry (navigation, communication, mineral exploration, power distribution) • Development of magnetic technology products and services for the commercial sector	Number of industrial/commercial sector services/products (SS15)	10	New	New	5	7	8	10
GOAL 5: Make South Africa a recognised global space citizen (global capital)	• Membership of international organisations of strategic importance] • Beneficial multinational agreements, partnerships and projects • High impact contribution to global initiatives	Develop and maintain active international partnerships	Number of multi-national projects (SS16)	8	5	8	6	6	8	8

Quarterly targets 2014/15

Table 14: Quarterly targets: Space Science

Indicator	Audited performance	Estimate	Annual target	Quarterly targets			
	2012/13	2013/14	2014/15	1st	2nd	3rd	4th
Strategic Objective 1: Offer a state-of-the-art research platform and applied science/technology service platforms							
Amount (Tb) of science data acquired and archived (3SS1)	2,9	1,5	2	0,7	0,3	0,3	0,7
Strategic Objective 2: Conduct cutting-edge research, development and innovation							
Number ISI publications (3SS4)	New	New	20	0	5	5	10
Strategic Objective 3: Development of human capital in space science and science advancement							
Number of students/interns supported/trained (3SS6)	36	25	40 (16 MScs 6 PhDs)	30	4	1	5
Number of short courses conducted (3SS9)	15	8	10	2	3	2	3
Proportion (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager) (3SS12)	40%	55%	55%	55%	55%	55%	55%
Number of learners reached through direct and specific engagement (3SS13)	4 654	4 000	5 000	1 000	1 000	2 000	1 000
Strategic Objective 4: Active contribution to South African aerospace industry							
Number of industrial/commercial sector services/ products (3SS15)	New	5	7	6	0	1	0
Strategic Objective 5: Establish and maintain effective and mutually beneficial international partnerships in line with national strategic alignment							
Number of multinational projects (3SS16)	8	6	6	5	0	1	0

Space Science budget and MTEF estimates

Programme 4 - Space Science - Source of Funds

Transfers and Revenue	Approved Budget	Adjusted estimates	Medium-Term Expenditure Estimate			Total MTEF	% of Total
R'000	2013/14	2013/14	2014/15	2015/16	2016/17		
Parliamentary Grant	21,773	22,347	23,665	24,877	25,002	73,544	70%
Contract income: Public	7,000	5,948	7,819	6,157	6,188	20,164	19%
Contract income: Private	-	771	401	218	219	838	1%
Research Grants	4,104	4,328	4,306	3,025	3,040	10,371	10%
Other income		154	180	170	171	521	0%
Total Transfers and Revenue	32,877	33,548	36,371	34,447	34,620	105,438	100%

The Space Science programme is funded mainly from the parliamentary grant and supplemented by contract income largely from public sector customers.

The directorate also applies for research grants to supplement research and human capital development initiatives.

Programme 4: Space Science - Expenditure estimates

Table15: Space Science budget

Sub Programme	Approved Budget	Adjusted estimates	Medium-Term Expenditure Estimate			Total MTEF	% of Total
R'000	2013/14	2013/14	2014/15	2015/16	2016/17		
Science Research and Applications	5,589	14,762	16,366	15,501	15,579	47,446	45%
Applied Science and Technology	8,877	6,710	7,274	6,889	6,924	21,087	20%
Research Support Unit	10,192	7,715	7,274	6,889	6,923	21,086	20%
Science Advancement Unit	4,274	4,361	5,457	5,168	5,194	15,819	15%
Total	32,877	33,548	36,371	34,447	34,620	105,438	100%
Economic Classification							
Current payments	29,477	30,695	35,200	32,297	32,459	99,956	95%
Compensation of employees	16,200	19,737	21,848	22,619	22,732	67,199	64%
Goods and services	13,277	10,958	13,352	9,678	9,727	32,757	31%
Payments for Capital Assets	3,400	2,853	1,171	2,150	2,161	5,482	5%
Machinery and equipment	3,400	2,853	1,171	2,150	2,161	5,482	5%
Total expenses	32,877	33,548	36,371	34,447	34,620	105,438	100%

Programme economic classification breakdown 2014/15

The programme will, over the MTEF period, spend R32 million (R13 million for 2014/15) on goods and services, R67 million (R21 million for 2014/15) on employee costs and R5 million (R1 million for 2014/15) on capital infrastructure. Of the goods and services expenditure for the 2014/15 financial year, R2,5 million is earmarked for HCD and science advancement initiatives and a further R4,3 million for research and applied science and technology platforms.

Programme 5: Space Engineering

Programme purpose

The Space Engineering programme fosters engineering and project management excellence in SANSA, and drives a small satellite build programme in South Africa.

Space technology is recognised globally as an essential and strategic tool to meet social, technological, economic and foreign policy objectives. The technology required to design, build and launch a satellite demands the utmost discipline in system engineering and project management.

Thus, a satellite engineering project has many spinoffs, from stimulating pockets of high-technology industry in a country and developing competence in scientists and engineers, to creating new technologies that benefit other disciplines.

Accordingly, many governments around the world are increasing their investments in space activities, to advance their space capabilities. Returns are derived from export potential over the medium- to long term, and from industrial participation programmes (IPPs).

South Africa has seen much space industry reconfiguration, including the procurement of SunSpace core capability (IP and key personnel) by the DST.

The IP has been transferred to SANSA for use by the South African industry, while the personnel have been transferred to Denel Dynamics to form Denel Spaceteq.

SANSA Corporate Office has established the Space Programme division to oversee space systems acquisitions management and act as custodian of space engineering activities.

The Space Programme division reports to an Executive Director: Space Programme, which will enable it to run cross-cutting engineering programmes across SANSA, building a core engineering discipline that will filter across the organisation.

Staff will be appointed in 2014/15, starting with the Executive Director. The Space Engineering programme will focus on two main thrusts during the MTEF period:

- SSP
- SIC programme.

Figure 7: SumbandilaSat image before launch

Space Systems programme

The biggest initiative in the next few years is the EO-Sat1 satellite development. Whereas South Africa's first two satellites (SunSAT and Sumbandila SAT) were technology demonstrators, EO-Sat1 is a user-driven satellite with a five to seven year lifetime.

With the user requirements and primary mission finalised in 2013/14, the Space Systems programme will focus in 2014/15 on oversight of the satellite build process, quality and contract management.

A rigorous systems engineering project management methodology is being followed to ensure that the end product meets reliability and lifetime requirements, and the end-user requirements identified in the primary mission.

SIC programme

The development of EO-Sat1 creates opportunities to revive the satellite building industry in South Africa. SANSA is administering funding for this purpose on behalf of the DST, and work will be done under the following streams:

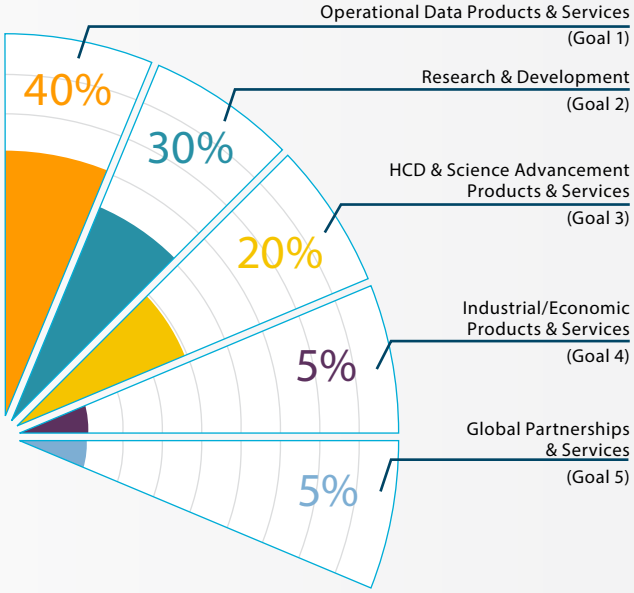
- Industrial development
- Graduate, staff and professional development
- Capability and capacity development of Denel SpaceTeq and Houwteq
- Forming strategic technology partnerships to reduce risk, and to contribute to strengthening existing satellite engineering competence at SANSA.

These broad workstreams cover satellite development, industry stimulation, technology development capacity, technology platforms, and the development of engineering-specific human capacity.

The efforts are aligned with South Africa's strategic drive for its own satellite system development capabilities, unique technologies and related skills to create a technology base for South Africa's industry and promote initiatives in advanced manufacturing and technology. Further, they will ensure access to facilities for space system assembly, integration and testing (AIT) for national and regional use.

Alignment of programme to strategic goals

Figure 8: Space Engineering goal matrix



This graph represents the level of focus in efforts and, to some extent, resources for the strategic goals of SANSA.

In summary, the objectives of the Space Engineering programme include:

1. Developing a South African indigenous capability in space systems, thus creating a certain level of self-reliance in satellite technology;

2. Using satellite development to develop technologies that will have a wider impact on the economy (e.g. innovations in control technology can assist the manufacturing industry as well);

3. Developing the scarce skills and innovative capability needed for technology development, and

4. Stimulating the local industry through the development of new technologies and skills, contracting opportunities, and increased export and import channels through SANSA

Space Engineering programme overview

The programme delivers on its mandate through the following subprogrammes:

Subprogramme	Subprogramme purpose
Space Programme Management	• Driving the development of a South African indigenous capability in space systems, thus creating a certain level of self-reliance in satellite technology • Running cross-cutting engineering and project management programmes across SANSA, building a core engineering discipline that will filter across the organisation.
Industrial Development	• Developing the local space industry and using satellite development to develop technologies that will have a wider impact on the economy (eg control technology) • Developing rare skills and innovative capability.
HCD and Science Advancement	Driving science advancement among the youth, public and policymakers as well as HCD in space engineering and related technology

Programme key priorities and projects 2014/15

Subprogramme	Subprogramme purpose
Space Programme Management	• Capacitating the new division with high-quality engineering, contract management and satellite engineering skills • Fully rolling out EO-Sat1 design • Facilitating the design and development phase of the end user applications of EO-Sat1 • Developing facilities to support the AIT of satellite systems • Finalising all service provider contracting arrangements • Finalising all programme governance structures
Industrial Development	• Facilitating the development of a competitive national satellite industry cluster • Involving the national space industry in the satellite build programme • Reviving existing competence in satellite engineering and AIT • Developing capacity in space technology
HCD and Science Advancement	• Rolling out an HCD advancement programme in support of satellite engineering, with a focus on student development and professional development.

Table16: Space Engineering measurable objectives and medium-term output targets

Space Engineering Programme									
SANSA Goal	Outputs	Activities	Indicators	Five-year targets (targets to be attained by 2017)	Audited performance	Estimate	Medium-term targets		
					2012/13	2013/14	2014/15	2015/16	2016/17
GOAL 1: World-class and efficient services and societal benefits (societal capital)	National space engineering competence (workforce and facilities) in satellite development	1. Satellite system and sub-system design and development 2. AIT facilities in line with national needs 3. Full operationalisation of the Space Programme division	Number of jobs directly supported by the satellite build programme (SE1)	70	New KPI	30	40	60	70
GOAL 2: Cutting-edge research, development, innovation, technology and applications (intellectual capital)	Technology and mission development	1. Space systems development 2. Technical capacity development	Number of national satellite projects (SE2)	2	1	1	2	2	2
			EO-Sat1 project implementation (SE3)	100%	4%	18%	50%	84%	100%
			Proportion (%) of budget expenditure spent on technology development (SE4)	40%	-	0%	26%	37%	40%
GOAL 3: Effective development of human capital, transformation and science advancement (human capital)	Focused HCD in space engineering and active engineering advancement	1. Space industry cluster 2. Commercialisation of systems 3. Export success	Number of students/interns supported/trained (SE5)	25	-	12	15	20	25
GOAL 4: Globally competitive national space industry (economic capital)	National space industry transformed and sustainable	1. Space industry cluster 2. Commercialisation of systems 3. Export success	Proportion (%) of budget expenditure spent on industry development (SE8)	10%	-	80%	80%	80%	10%*
GOAL 5: Make South Africa a recognised global space citizen (global capital)	South Africa playing lead in ARMC, Africa and India/Brazil/ South Africa (IBSA) programmes	Engage in multinational projects	Number of multinational programmes (SE7)	3	1	2	2	2	3

* Taken as a percentage of the industrial development funding, which is not allocated for 2016/17

Quarterly targets for 2014/15

Table 17: Space Engineering quarterly targets

Indicator	Audited performance	Estimate	Annual target	Quarterly targets			
	2012/13	2013/14	2014/15	1st	2nd	3rd	4th
Strategic Objective 1: Offer a state-of-the-art satellite AIT platform and services							
Number of jobs directly supported by the satellite build programme (3SE1)	N/A	30	40	40	0	0	0
Strategic Objective 2: Technical coordination of satellite system and sub-system development on behalf of SANSA							
Number of national satellite projects (3SE2)	1	1	2	0	1	0	1
EO-Sat1 project implementation (3SE3)	4%	18%	50%	25%	5%	10%	10%
Proportion (%) of budget expenditure spent on technology development (3SE4)	-	9%	26%	5%	10%	3%	8%
Strategic Objective 3: Focused HCD in space engineering in partnership with space industry, universities and other partners							
Number of students/interns supported/trained (3SE5)	N/A	12	15 (4 PhDs 11 Msc/MTechs)	10	2	0	3
Strategic Objective 4: Promotion of a conducive environment for industrial/private involvement in satellite system and sub-system development							
Proportion (%) of budget expenditure spent on industry development (3SE8)	N/A	8%	80%	10%	20%	30%	20%
Strategic Objective 5: Establish and maintain effective and mutually beneficial international partnerships and customer relations in line with national strategic alignment							
Number of multinational projects (3SE7)	1	2	2	0	1	0	1

Space Engineering budget and MTEF estimates

Expenditure estimates

The budget for the Space Engineering programme is estimated at R516 million for the 2014 MTEF.

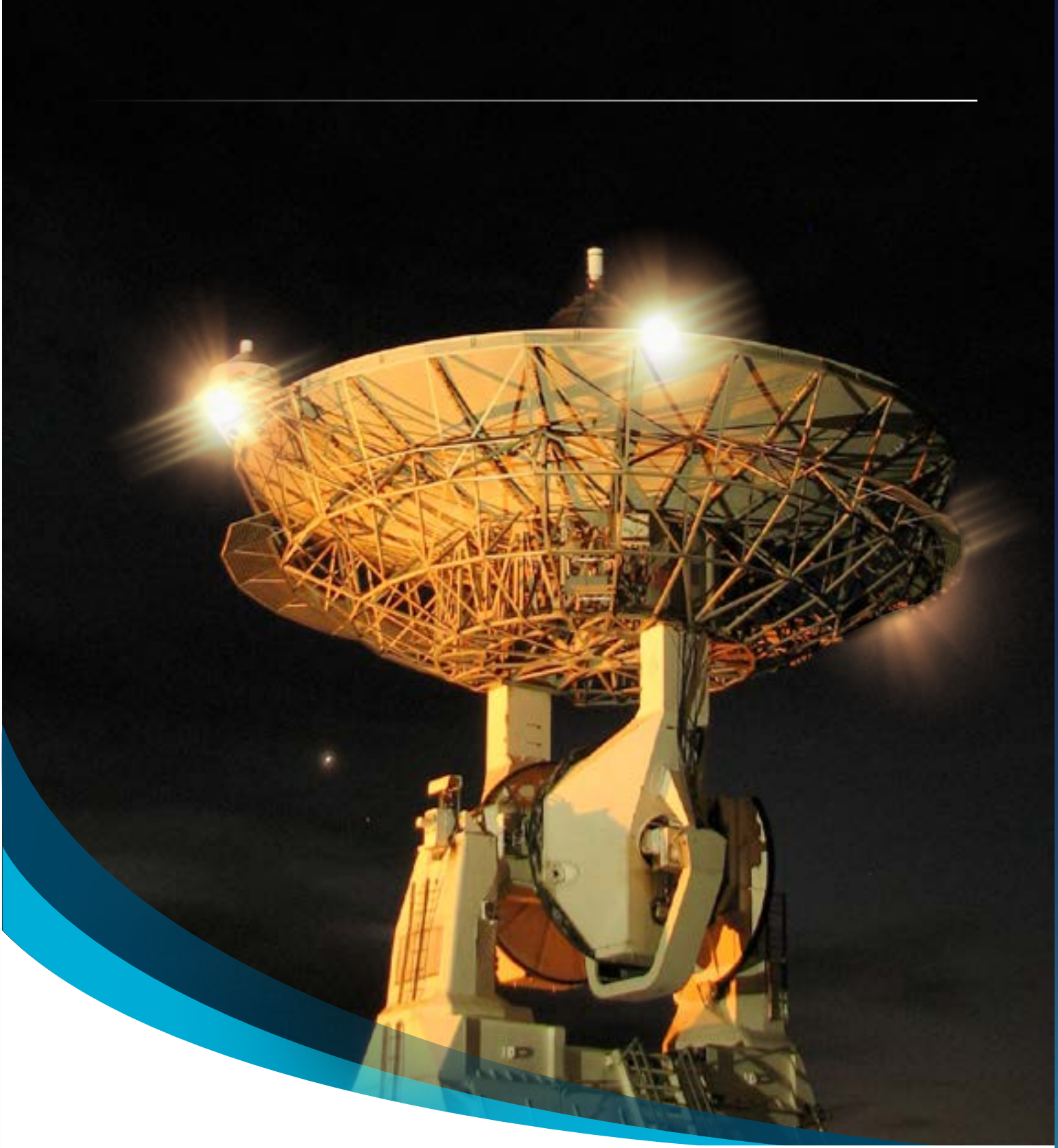
The main expenditure item is the development of the EO satellite, the related facility upgrade and the retention and development of the space systems capacity.

Programme 5: Space Engineering - Source of funds

Table 18: Space Engineering budget

Transfers	Approved Budget	Adjusted Estimates	Medium-Term Expenditure Estimate			Total MTEF
R'000	2013/14	2013/14	2014/15	2015/16	2016/17	
Parliamentary Grant	37,200	82,200	150,000	165,246	105,760	421,006
Total Transfers	37,200	82,200	150,000	165,246	105,760	421,006

Economic Classification	Approved Budget	Revised Estimates	Medium-Term Expenditure Estimate			Total MTEF
R'000	2012/13	2013/14	2014/15	2015/16	2016/17	
Current payments	-	45,000	55,000	65,000	-	120,000
Goods and services	-	45,000	55,000	65,000	-	120,000
Payments for Capital Assets	37,200	37,200	95,000	100,246	105,760	301,006
Machinery and equipment	37,200	37,200	95,000	100,246	105,760	301,006
Total expenses	37,200	82,200	150,000	165,246	105,760	421,006



Part C

Links to Other Plans

LINKS TO THE LONG TERM- INFRASTRUCTURE AND OTHER CAPITAL PLANS

To be updated

CONDITIONAL GRANTS

Not applicable

PUBLIC PRIVATE-PARTNERSHIPS

Not applicable

Acronyms

Acronym	Full Name
AfriGEOSS	African chapter of GEOSS
AIT	Assembly, integration and testing
APP	Annual Performance Plan
ARC	Agricultural Research Council
ARMC	African Resource Management Constellation
CGS	Council for Geoscience
CEOS	Committee on Earth Observation Satellites
CPUT	Cape Peninsula University of Technology
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DBE	Department of Basic Education
DEA	Department of Environmental Affairs
DHET	Department of Higher Education and Training
DHS	Department of Human Settlements
DMR	Department of Mineral Resources
DoC	Department of Communications
DoD	Department of Defence
DoE	Department of Energy
DoT	Department of Transport
DPME	Department of Performance Monitoring and Evaluation
DRDLR	Department of Rural Development and Land Reform
DST	Department of Science and Technology
DWA	Department of Water Affairs
EO	Earth observation
GEO	Geostationary Satellite or Group on Earth Observations, depending on context
GEOSS	Global Earth Observation System of Systems
GIS	Geographic information system
HCD	Human capital development
HEIs	Higher education institutions
IBSA	India/Brazil/South Africa
ICT	Information and communications technology
IOT	In-orbit testing/tests
IPPs	Industrial participation programmes
ISI	Institute for Scientific Information
KPI	Key performance indicator
LEI	Leadership excellence index

MEI	Management excellence index
MTEF	Medium Term Expenditure Framework
NGI	National Geospatial Information
NDP	National Development Plan
NDVI	National Difference Vegetation Index
NEOP	National Earth Observation Programme
NRF	National Research Foundation
NSI	National System of Innovation
NSEP	National Space Engineering Programme
NSP	National Space Programme
NSOP	National Space Operations Programme
NSS	National Space Strategy
NSSP	National Space Science Programme
NT	National Treasury
OECD	Organisation for Economic Cooperation and Development
OEI	Operational excellence index
PFMA	Public Finance Management Act
R&D	Research and development
RIMS	Receiver integrity monitoring system
ROI	Return on investment
SAEOS	South African Earth Observation System
SANAP	South African National Antarctic Programme
SANBI	South Africa National Biodiversity Institute
SANSA	South African National Space Agency
SAPS	South African Police Service
SBAS	Space-based augmentation system
SHEQ	Safety, health, environment and quality
SIC	Space industry capacity
SRA	Science research applications
SSP	Space Systems Programme
SWC	Space Weather Centre
TIA	Technology Innovation Agency
TT&C	Telemetry, tracking and command
WRC	Water Research Council

References

1. DST Ministerial Review Committee on the Science, Technology and Innovation Landscape in South Africa, 2012
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3. Science councils and NSI reports
4. South African Government reports and plans
5. The Space Report 2013: The Authoritative Guide to Global Space Activity

ANNEXURE A

Strategic Outcome-oriented Goals

SANSA has five strategic objectives:

Strategic Outcome-Oriented Goal 1	World-class and efficient services and societal benefits (societal capital)
Goal statement	SANSA contributes to the improvement of the quality of the lives of South Africans in a sustained and conserved environment through the use of space science and technology for day-to-day societal benefits. This is achieved through the provision of geospatial data, value-added data products, information and services for the operational needs of the country. These services include:
	(i) Decision-making, policymaking and planning instruments;
	(ii) Agriculture and food security services;
	(iii) Water resource management;
	(iv) Disaster management;
	(v) Safety and security, and
	(vi) Space weather and geospace services.

Strategic Outcome-Oriented Goal 2	Cutting-edge research, development, innovation, technology and applications (intellectual capital)
Goal statement	SANSA uses space science and technology to increase South Africa's intellectual capital, advance technology capital and global new knowledge share. This is achieved through the provision of geospatial data, value-added data products, and information and services to R&D institutions and tertiary educational institutions. This is to serve the intellectual, technological and innovation needs of the country and to contribute to the global data and knowledge fabric. These services include:
	(i) Data procurement and acquisition;
	(ii) Low-level data processing, archiving and distribution;
	(iii) R&D platform provision;
	(iv) Research and development, and
	(v) Facilitating the application of R&D.

Strategic Outcome-Oriented Goal 4	Globally competitive national space industry (economic capital)
Goal statement	SANSA provides South Africa with the necessary space applications that are increasingly permeating and driving successful economies around the world to ensure South Africa's global competiveness. SANSA undertakes the following:
	(i) Space operations for the space industry;
	(ii) Positioning, navigation and timing services;
	(iii) Promotion of industry participation in EO, space operations, space science and space engineering programmes, and
	(iv) Creates international opportunities for South African industries through global partnerships.

Strategic Outcome-Oriented Goal 5	Make South Africa a recognised global space citizen (global capital)
Goal statement	SANSA is the primary point of contact and face of South Africa in the global space arena and a vehicle for strategically positioning the country among the community of spacefaring nations.

ANNEXURE B

Changes to SANSA 2012 – 2017 Strategic Plans

Changes to five-year targets between the strategic plan and annual performance plan 2014/15

The Agency has not reviewed its 2012 – 2017 strategic plan due to no major policy shift and changes in the service delivery environment. Some of the performance indicators and targets have been revised to meet the SMART criteria (Specific, Measurable, Achievable, Relevant, Timebound) principle.

EO changes

- Number of images acquired from regular sensors (EO1) – five-year target changed from 5 000 to 28 000.
- Number of images distributed (EO2) – five-year target changed from 60 000 to 80 000.
- Number of images distributed for research (EO4) – five-year target changed from 20 000 to 32 000.
- Number of technical reports and research publication will be reported separately as Number of technical reports (EO6) changed from 10 to 18.
  Number of research publications (EO17) new KPI - new target
- Number of short courses conducted (EO9) – five-year target changed from 3 to 13.

Space Operations changes

- Number of students/interns supported/trained (3SO5) – five-year target changed from 6 to 8.
- Proportion (%) of permanent staff from designated groups in the top two management levels (manager, senior manager) (3SO9) – five-year target changed from 40% to 65%.
- Number of learners reached through direct and specific engagement (3SO10) – five-year target changed from 1 000 to 5 400.

Space Science changes

- Number of ISI publications per researcher (SS4) - changed to number of ISI publications (SS4)
- Number of students/interns supported/trained (SS6) at any point during the financial year – five-year target changed from 30 to 40.
- Number of short courses conducted (SS9) – five-year target changed from 8 to 10.
- Amount (TB) of science data acquired (SS1) – five-year target reduced to 2.5TB from 5TB.

ANNEXURE C

Links to National Space Strategy

Examples of SANSA contribution to achieving priorities in the NSA

Outcome	SANSA contribution
EO programmes	
Establish an EO data centre	SANSA has been involved in acquiring, archiving and processing satellite imagery from many EO satellites and today hosts an impressive archive containing more than 150 terabytes of remote sensing data dating back to 1972.
Develop a platform to integrate satellite and in-situ data	SANSA contributes data to SAEOS portal, which can be accessed as Metadata.
Develop medium to high resolution payloads	SANSA has partners with the Council for Scientific and Industrial Research (CSIR) on sensor development initiatives.
Develop the ARMC in partnership with other African countries	SANSA has made commendable progress in contributing to the ARMC by investing time and resources in EO-Sat1 satellite development.
Consolidate the acquisition of space data for the government	SANSA acquires and archives imagery from Landsat, 5, 7 and 8, Spot5, Spot 6, Modis (Aqua and Terra), Spot 1, 2, 3, 4, NOAA AVHRR, CBERS 2B, MISR and SumbandilaSat. It consolidates space data through the OECD data is accessible through the online catalogue and recently, the DIMS system has integrated all datasets to be easily accessible to all national departments.
Navigation programmes	
Develop a navigation augmentation system	SANSA, through two FP7 projects with European partners under the EU-SA space dialogue - which involves organisations such as the European Space Agency (ESA) - has completed all background work for the project phases to establish a space-based augmentation system (SBAS) in the region. Work has stalled due to funding constraints.
Develop navigation applications to support user requirements	As part of the SATSA FP7 project, SANSA established a testbed SBAS system to demonstrate to the user community navigation application in agriculture, logistics and the geographic information system (GIS). This work will theoretically be continued through an extension of the testbed with satellite dissemination of the SBAS signal. It is already required as background infrastructure for three H2020 proposals that will further develop user applications.
Space Science programmes	
Develop joint partnerships in space science payloads	SANSA collaborates with the Cape Peninsula University of Technology (CPUT) on the launch of the first CubeSat project – HF beacon payload design phase for secondary payload on EO-Sat1.
Establish and support centres of competence	SANSA is investigating funding models and discussing these with universities.
Establish and support research chairs	The development of the EO satellite will support HCD at higher education institutions (HEIs), thereby assisting research chairs. Dedicated chairs are being considered of specific interest to the project.

Communication programmes	
Develop technologies for low data rate payloads	The DST, DoC, SANSA and private industry have begun preliminary discussions on satellite communication.
Develop technologies for applications in e-education, telemedicine, and rural communication and disaster support	The DST, DoC, SANSA and private industry have begun preliminary discussions on satellite communication. SANSA space weather applications in support of satellite communication are ongoing.
Launch a small GEO satellite	The DST, DoC, SANSA and private industry have begun preliminary discussions on satellite communication. SANSA is building a mini satellite for EO. Additional funding has been allocated to SANSA for industrial development of the satellite industry in South Africa. In building the satellite, SANSA is also running HCD and industrial development programmes to build industry capability and capacity.

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