



**science and technology**

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Department:  
Science and Technology  
**REPUBLIC OF SOUTH AFRICA**

# **NATIONAL ROLL - OUT PLAN TO ESTABLISH THE NETWORK OF SCIENCE CENTRES IN SOUTH AFRICA**

**(2007/8 - 2032/33)**

**2032 Vision**

## **PREFACE**

The approval of the White Paper on Science and Technology in 1996 created enabling policy framework for the role infrastructure such as museums and science centres could play in demystifying science and technology, and contributing towards development of human capital in areas of scarce resources. Following the promulgation of the White Paper, extensive consultations on the development of science centres in South Africa ensued. The consensus policy framework adopted through these consultative processes was the Norms and Standards for a Network of Science Centres. The following are the major consultative consultations facilitated by the Department of Science and Technology prior to the approval of the Norms and Standards for a Network of Science Centres as policy:

- a survey on Science and Technology Centres in South Africa commissioned by the then Department of Arts, Culture, Science and Technology (DACST) - 1999;
- a feasibility study for the establishment of a Network of Science Centres in South Africa commissioned by the Department of Science and Technology - 2004;
- nine Provincial consultative workshops to gather data and/or responses towards the findings of the feasibility study and inputs for a Policy Framework - July 2004;
- a national consultative conference with key role-players and stakeholders on the findings of the feasibility study report and draft National Norms and Standards for a Network of Science Centres in South Africa - August 2004;
- written input by the Southern African Association of Science and Technology Centres (SAASTEC) on the draft Policy Framework and the feasibility study - November 2004; and

The approval of the Norms and Standards for a Network of Science Centres in 2005 paved the way to the development of this National Roll-out Plan. The draft Plan was discussed at the National Consultative Conference on Youth into Science Strategy. The Conference's input has been taken into consideration in the development of this Plan which outlines the two modes through which fixed science centres will be delivered. It sets out a 25-year governance and management model of the envisaged Network.

The success of this Plan depends on the support we will receive from other Government Departments, other spheres of Government, public and private sectors as well as civil society. Various role-players and stakeholders will continuously be engaged to raise the resources and other forms of support to realise the goals of this Plan. Nothing short of a concerted effort can make the intention captured in the spirit of this Plan a reality.

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## ACRONYMS

ASPAC	the Asian Pacific Network of Science and Technology Centres
ASTC	Association of Science and Technology Centres
ASTEN	Australasian Science and Technology Exhibitors Network
DACST	Department of Arts Culture Science and Technology
DST	Department of Science and Technology
DOE	Department of Education
ECSITE	European Collaborative for Science Industry and Technology Exhibitions
ETQA	Education and Training Quality Assurance
IT	Information Technology
MO	Management Office
MPCC	Multi-purpose Community Centre
NAM	Non-Aligned Movement
PUSET	Public Understanding of Science Engineering and Technology
PPP	Public-private Partnership
NAT	National Accreditation Team
NSB	National Standards Bodies
NSI	National System of Innovation
PCC	Presidential Coordinating Committee
R&D	Research and Development
RG	Reference Group
SAASTEC	Southern African Association of Science and Technology Centres
SAQA	South African Qualifications Authority
S&T	Science and Technology
ST	Steering Team

# 1. INTRODUCTION AND BACKGROUND

## 1.1 Policy and Strategic Perspective

Economic growth and quality of citizen's lives are the goals of the National System of Innovation (NSI). In line with global trends, South Africa's science and technology policy has in many respects adequately positioned itself as an effective sub-system of the country's NSI. The White Paper on Science and Technology (DACST, 1996) recognizes the role of public understanding of science, engineering and technology (PUSET) in the development of the country's NSI. Availability of high level skills necessary for Research and Development (R&D) is another determinant of innovation in a knowledge-based economy and society.

South Africa has relatively low science and technology research skills base (DST, 2002). On the same note, the Accelerated and Shared Growth Initiative of South Africa (ASGISA) (Presidency, 2006) programme identified shortage of skilled professionals (including engineers and scientists) as an impediment for public and private infrastructure investment programmes in the country (Presidency, 2006).

The Department of Science and Technology is already embarking on strategic interventions to improve the above situation. Given the history of South Africa, the improvement of skills base in question should be accompanied by creation of a workforce reflective of the country's demographics in order to eliminate existing racial and gender skewedness identified by the National Research and Development Strategy (DST, 2002). Increased enrolment for science-based degree studies, particularly by previously disadvantaged sections of the population, is another key success determinant of such interventions. This in turn depends on a strong school science education system which provides a pipeline into careers requiring highly trained scientists, engineers and technologists.

The Department of Science and Technology recognises challenges associated with attracting learners into this pipeline, retaining them there and eventually enrolling them into science-based degree studies. As a result, the Department seeks to respond to these challenges through the Youth into Science Strategy, which broadly seeks to respond to the following two strategic thrusts and objectives:

- ***science and technology literacy:*** *To enhance science and technology literacy among the public in general and the youth in particular; and*
- ***nurturing youth talent and potential for science, engineering and technology-based careers:*** *To enrol more and representative youth with talent and potential into science, engineering and technology-based careers.*

## 1.2 Relevance of Science Centres

Science centres provide an environment enabling the public to engage with science through the use of hands-on interactive science exhibits and related activities

(science is used in this context to cover engineering, technology and mathematics). This, therefore, creates a platform for public dialogue with science initiatives, leading to improved public understanding of complex science and technology issues that affect people's daily lives and/or enhanced science and technology literacy. On one hand, science centres complement formal learning of science, technology, engineering and mathematics through experiences which extend classroom learning.

A study involving science centres in the four major international science centres and museums networks, (*viz. the Association of Science and Technology Centres, the European Collaborative for Science, Industry and Technology Exhibitions, the Australasian Science and Technology Exhibitors Network, and the Asian Pacific Network of Science and Technology Centres*) confirmed that science centres have a more personal impact ([www.astc.org](http://www.astc.org)). A personal impact, which is defined as a change that occurs in an individual as a result of his/her contact with a science centre, includes factors such as:

- *science learning;*
- *changed attitudes towards science;*
- *social experience;*
- *career directions formation;*
- *increased professional experience; and*
- *personal enjoyment.*

The Non-Aligned Movement Science and Technology Centre (NAM S&T Centre) and the Southern African Association of Science and Technology Centres (SAASTEC) also discussed and adopted measures to establish networks of science centres to enhance their educational impact in developing countries.

The above background positions science centres in South Africa, as infrastructure through which the Youth into Science Strategy can be implemented. To date, the Department has successfully implemented a number of its strategic projects through existing science centres. Examples of such strategic projects include the National Science Week and the Platform Months. In recognition of science centres' role, the Department of Science and Technology developed a Policy Framework, the National Norms and Standards for the Network of Science Centres in South Africa (DST, 2005), which underpins the establishment of the Network of Science Centres through this Plan.

### **1.3 Implementation of Policy Framework**

The National Norms and Standards for the Network of Science Centres in South Africa (DST, 2005) seeks to establish a group of science centres that are interconnected, aligned to and supported by the Department of Science and Technology (*referred to as Network*). The National Roll-out Plan is an appropriate point of departure towards establishing the Network which will contribute towards achieving the following four goals:

- *promotion of science and technology literacy among the youth and the population in general;*

- *enhancing of learner participation and performance in science, technology, engineering and mathematics;*
- *identification and nurturing youth talent and potential in science, technology, engineering and mathematics; and*
- *provision of career education in science, technology, engineering and mathematics.*

## **2. DESCRIPTION OF NATIONAL ROLL-OUT PLAN**

The National Roll-out Plan entails creating an environment enabling science centres in the Network to perform their core functions, define and achieve the four goals of the Network, as well as broadening access to science centres' services by the target audience.

### **2.1 Objectives**

The National Roll-Out Plan seeks to:

- 2.1.1 establish a group of science centres that are interconnected, aligned to and supported by the Department of Science and Technology;
- 2.1.2 establish Limited Service Science Centres at strategic points throughout the country;
- 2.1.3 to strengthen the capacity of existing and new science centres; and
- 2.1.4 to facilitate the development of Full Service Science Centres, which could, in the long-term, compare well with those found in developed countries

### **2.2 Scope**

The objectives of this Plan will be realised through the implementation of its four components, viz. (a) formalising the establishment the Network of Science Centres in South Africa, (b) infrastructure development, (c) capacity building and (d) operations support.

#### **2.2.1 Formally Establishing the Network of Science Centres**

The Network of Science Centres, which is a group of science centres that are interconnected, aligned to and supported by the Department of Science and Technology, will be an outcome of two processes:

##### *2.2.1.1 Accreditation of science centres*

Accreditation standards for the Network of Science Centres in South Africa will be developed and used to admit individual science centres to the Network.

### 2.2.1.2 *Establishment of Network's institutional arrangement*

Planning, implementing and managing various parts of the envisaged Network will be achieved through a project institutional arrangement established from various formations. These will be a combination of identified existing and purposefully formed new structures.

## 2.2.2 Infrastructure Development

Infrastructure development in the context of this National Roll-out Plan takes two forms:

### 2.2.2.1 *Provision of buildings*

Provision of buildings entails upgrading of existing science centres to recommended minimum specifications, alteration of under-utilized Government buildings, conversion of educational resource centres to science centres and construction of new science centre buildings.

### 2.2.2.2 *Provision of equipments*

Equipments referred to here are the following:

- *interactive exhibits required to achieve personal impact on science centres' target audience;*
- *equipments required for conducting certain programmes, for example, computers; and*
- *equipments required for conducting outreach programmes, for example, suitable mobile units such as bakkies and trailers.*

## 2.2.3 Capacity building

Science centres in the Network will be assisted to increase performance of their core functions, and define and achieve the goals of the Network. These will be achieved through a capacity building programme concentrating on the following areas:

### 2.2.3.1 *Creation and expansion of existing partnerships*

- The Department will create an environment conducive for science centres in the Network to interact with like-minded organisations globally. Some of the targeted institutions are the *Centre for Science and Technology for the Non-aligned and Other Developing Countries (NAM S&T Centre)* and the four major international science centres and museums networks, viz. *Asia Pacific Network of Science and Technology Centres (ASPAC)*, *Australasian Science and Technology Exhibitors Network (ASTEN)*, *European Collaborative for Science, Industry & Technology Exhibitions (ECSITE)* and *The Association of Science-Technology Centres (ASTC)*.



- Where appropriate, links will be established with individual science centres abroad. A point of departure in this networking category will be the Flemish-based Technopolis. This science centre has volunteered to share knowledge and expertise with science centres in South Africa.
- Existing bilateral and multilateral agreements within the Department and the South African Government as a whole will be explored for opportunities that could benefit the Network. The "*Exchange of Notes in respect of the Japan Overseas Co-operation Volunteers in the Republic of South Africa*" is one example. This Agreement between South Africa and Japan allows the deployment of technically skilled Japanese volunteers to identified science centres in South Africa. Development of science centres will also be recognised when new bilateral and multi-laterals agreements are negotiated by the Department of Science and Technology.
- A strategy to maximize the participation of corporate sector organisations in the development of science centres will be devised. Involvement of corporate sector organisations will range from human resource development, sponsoring exhibits to investment of their corporate social investment funds in the development of science centre buildings.

#### *2.2.3.2 Internship and mentoring programmes*

The Department of Science and Technology currently drives an internship programme allowing workplace placement of graduates within its operations and in science councils. The internships which run for a minimum of twelve months will be extended to science centres in the Network to expand technical personnel capacity and promote career-pathing of science centre-based work. Such interns will, in turn, be mentored by science centre personnel to enable development of appropriate skills from work experience.

#### *2.2.3.3 Training*

- The audit of existing science centres conducted in 2004 as part of the feasibility study identified several skills gaps in existing science centres. The Department of Science and Technology has since responded to this by implementing a formal training programme for personnel in existing science centres. To maintain the momentum, science centres in the Network will be provided with on-going and needs-specific training.
- The Department will collaborate with the South African Qualification Authority (SAQA) and other relevant stakeholders, to facilitate the establishment of a National Standard Body (NSB). The NSB will among others, recommend standards and qualifications for science centres to SAQA. This process will even bring the country to a point where there is an Education and Training Quality Assurance Body (ETQA) which ensures the quality of learning achievements in training programmes for science centres' staff.

## 2.2.4 Operations Support

Science centres are unable to generate enough revenue to sustain themselves from their own operations. Studies have shown that around 70 % of visitors to science centres in South Africa are learners.

A thirty percent across the board subsidy on operating expenses is a much favoured option by the South African science centres community. Some of the shortcomings associated with this approach are:

- *there is a positive relationship between the design of a science centre and the size of some of its operating expenses; and*
- *the approach has a greater direct dependency on Government funding, and given a stiff competition for Government funding from various critical services to the citizens, the mooted thirty percent subsidy on operating expenses might not be sustainable.*

Alternatives to contribute towards sustenance of science centres' operations should therefore be sought, and the following have been identified:

### 2.2.4.1 *Fixed rate learners' subsidy*

Science centres will receive from the Department of Science and Technology, a fixed rate subsidy per learner visiting science centres to participate in selected and approved programmes. The subsidy rate to be recommended will be based on break-even analysis.

### 2.2.4.2 *Funded posts by Provincial Governments*

The Department of Science and Technology will negotiate with Provincial Governments to consider funding posts in science centres and/or seconding officials to serve in science centres.

### 2.2.4.3 *Equipment maintenance and replacements grants*

The Department of Science and Technology will provide science centres in the Network with grants towards maintenance and replacement of equipment. Daily use of equipments (e.g. exhibits) in science centres will expose them to normal wear and tear. The exhibit development strategy to be developed will also include the following:

- a cost effective approach of maintaining equipment;
- guidelines to determine equipment maintenance funding requirements; and
- depreciation schedules for various categories of equipment.

#### 2.2.4.4 *Service provision*

The Department of Science and Technology delivers some of its strategic projects through existing science centres. Science centres in the Network will continue to play this role whilst recouping a market related project management fee. A marketing strategy is required to entice other Government Departments to consider implementing some of their strategic projects through science centres in the Network. Some of the initiatives in which science centres can play a role and their line Departments include:

- *Energy week - (Department of Minerals and Energy);*
- *Water Week - (Department of Water Affairs and Forestry);*
- *Construction Week (Department of Public works); and*
- *Educator in-service training and supplementary tuition - (Department of Education).*

#### 2.2.4.5 *Facilitating access to other funding sources*

DST will facilitate science centres's access to various sources of funding, and the following are targeted sources:

- *National Lottery:* In its current form, the current Lotteries Act 57 of 1997 does not recognise science and technology activities among those qualifying for financial support from the National Lottery Distribution Trust Fund. Efforts will be made to get the Act reviewed for inclusion of science and technology activities.
- *Overseas development assistance:* The DST's International Resources and Cooperation Programme will lead initiatives to access financial resources available in the form of Overseas Development Assistance and other foreign sources.
- *Other local development assistance:* Private sector in South Africa showed interest in providing financial support to science centres. The DST will seek ways to access and use financial resources from private sector to develop and sustain the Network. Secured funds will be located in relevant structures, e.g. funds received for infrastructure development will be transferred to a structure handling infrastructure development.

### **3. DELIVERY MODELS**

Although the Policy Framework accommodates different forms of science centres, the National Roll-out Plan focuses on the development of fixed science centres. Fixed science centres fall into two broad classes. These are, a Limited Service Science Centre (between 600 m<sup>2</sup> and 1800 m<sup>2</sup> in floor area) and a Full Service Science Centre (1800

m<sup>2</sup> and above in floor area). Two types of science centres can be developed under any of these two broad classes, viz. a generic and specialised science centre. A "Model" in the context of this Plan refers to the mode through which either a Limited Service Science Centre or Full Service Science Centre will be delivered. Development of the two broad classes of science centres in South Africa will be carried out in terms of the following two broad development models:

### 3.1 The Redress Model

The Redress Model entails development of smaller generic science centres at strategic points throughout the country. Science centres developed under this model will be in the size range of between 600 m<sup>2</sup> and 1800 m<sup>2</sup>. In terms of the National Norms and Standards, a science centre within this size range is a *Limited Service Science Centre*. A *Limited Service Science Centre* will accommodate between 25 000 and 50 000 visitors per annum through direct visits to the centre and outreach initiatives.

The redress model will have the operating and development characteristics outlined here-under:

#### 3.1.1 Strategic positioning criterion

The redress model is mainly about improving people's access to and effective use of science centres services. The Cabinet Resolution by the Presidential Coordinating Committee (PCC) that all service delivery Departments endeavour to align their functional boundaries to the constitutionally proclaimed municipal boundaries, will as a result be the basis for positioning *Limited Service Science Centres* developed under the Redress Model. In implementing this criterion, factors such as population distribution and schools' population will be taken into consideration.

#### 3.1.2 Infrastructure development

##### 3.1.2.1 Buildings

To minimize the fiscal impact of providing science centre buildings, utilization of existing buildings, with alterations where necessary, will be prioritized. The following will be the approach:

- *Existing science centres will be upgraded to the level of recommended minimum standards and/or features.*
- *Some Provincial Education Departments have established Education Resource Centres or Science and Technology Education Resource Centres. Either way, upgrading such facilities to recommended minimum standards and/or features for science centres in this category would be an effective cost saving approach. Arrangements will also be made to use existing (education) resource centre as satellites for science centres.*
- *Under-utilized Government buildings will be targeted for conversion to science centres. Following the restructuring of Educators' Training*

*Colleges, there are now several buildings that could be considered for the development of science centres.*

- *It will be only in instances where there is no existing building that the consideration will be given to building a new science centre. In such instances, the science centre development will be clustered with other Government initiatives like the Multipurpose Community Centres (MPCC).*

### 3.1.2.2 Equipments

Special projects to develop and supply the required equipments will be prioritized. This is aimed at ensuring that most of the exhibits in the science centres are produced locally. Such projects will even be designed to support youth service in the country; for example, unemployed youth who have completed learnerships in Information Technology (IT) Systems Support Engineer and IT Technical Support could, through entrepreneurial initiatives, provide required information technology service to science centres in the Network. Some higher education institutions have already shown interest in developing exhibits for science centres as part of their engineering student final year projects and/or experiential training programmes. Such efforts will be condoned and supported by the Department of Science and Technology.

### 3.1.3 Recommended minimum features

The following are recommended minimum features of *Limited Service Science Centres* developed under the Redress Model:

- *Exhibit hall to house interactive science exhibits of different science disciplines.*
- *Auditorium to host science shows, talks, workshops, theatres, e.t.c.*
- *Computer laboratory, which in addition to providing computer literacy programmes to the public, will enable science centres to conduct computer-based curriculum support programmes in mathematics, science and technology.*
- *Career centre to expose educators, learners and parents to science-based career options; the kinds of support available and how to access them (e.g. bursaries); potential employers; and on-line career search and applications for admission to higher education institutions. Some corporate sector organisations only accept on-line bursary applications, and a career centre with internet facility would therefore come handy.*
- *Innovation and knowledge development space to provide learners with an environment enabling them to apply their basic scientific knowledge to the development of projects relevant to practical problems in their own communities. This will enable learners to conceptualise, design and build projects for local and international expos, which contribute to talent and potential unearthing.*
- *Mini-workshop to enable a science centre to carry out normal maintenance and repairs of interactive exhibits, as well as research and development of new exhibits.*
- *Mobile Unit to deliver science centre's outreach activities.*

## 3.2 The Public Private Partnership (PPP) Model

A PPP is a contract between a public sector institution and a private party, in which the private party assumes substantial financial, technical and operational risks in the design, financing, building and operation of a project (National Treasury, 2004). This development model is intended to:

- *afford South Africa an opportunity to have generic and/or specialised Full Service Science Centres which could, in the long-term, compare well with those found in developed countries such as the Ontario Science Centre in Canada;*
- *develop big Full Service Science Centres with minimised fiscal impact; and*
- *accommodate individuals or organizations wishing to develop Full Service Science Centres in partnership with the Department. The Department is being inundated by proposals for partnerships from individuals and organizations intending to develop Full Service Science Centres in different provinces. The PPP approach of Government provides criteria for selecting best partners.*

The PPP model will have the following operating and development characteristics:

### 3.2.1 Strategic positioning criteria

There will be, by 2032, at least one science centre developed under this model per Province. Existing science centres opting to become Full Service Science Centres will have the liberty to achieve this through a PPP approach.

### 3.2.2 Infrastructure development

Since the Treasury Regulation 16 to the Public Finance Management Act (PFMA) caters for a wide variety of PPP types, science centres under the PPP Model will allow combining of private risk in various ways for designing, financing, building, operating, infrastructure and services, and for owning and transferring assets.

### 3.2.3 Recommended minimum features

- *The Department will only describe the output specifications. Therefore the PPP model will allow development of science centres with a range of different characteristics.*
- *Science centres developed under this model will be at least 1800 m<sup>2</sup> in size, therefore qualifying to be Full Service Science Centres in terms of the National Norms and Standards for the Network of Science centres in South Africa (2005). Full Service Science Centres will accommodate 50 000 and more visitors per annum.*
- *Science centres developed under this model will be expected to conduct outreach programmes through Limited Service Science Centres.*

In addition to the above, both Limited Service and Full Service Science Centres could also emerge from initiatives by individuals, organisations or group of organisations pursuing to achieve societal impact. Societal impact refers to the effect that a science centre has on organizations, groups of people, built and natural environment, e.g. urban redevelopment ([www.astc.org](http://www.astc.org)). The following are common instances in South Africa where science centres could be used to achieve social impact objectives:

- *urban renewal;*
- *rural development;*
- *corporate social investment initiatives;*
- *initiative of the research facilities and related institutions; and*
- *tourism.*

## **4. INSTITUTIONAL ARRANGEMENT**

Implementation of the National Roll-out Plan and the management of the Network will be made possible by complementary roles of various structures. The project institutional arrangement presented here-under and depicted in figure 1 (*Annexure A*) constitutes the governance structure during the implementation of the Plan and management of the Network. It identifies particular role players, responsibilities, accountability and relationships among them.

### **4.1 Department of Science and Technology (DST)**

The DST will play a leading and coordinating role in the implementation of this Plan and management of the Network. Its key responsibilities will include:

- Establishing institutional arrangement.
- Serving as interface between the project implementation process, the Network and the external environment.
- Securing Political and Administrative buy-in of the Plan by all tiers of Government and the public.

### **4.2 Reference Group (RG)**

This is a stakeholder forum which will meet at least once a year to review progress made in the implementation of the Plan, and give its independent view which will be included in the Steering Team's annual reports to the DST. The RG will preferably be chaired by a Senior Manager in the DST and will draw its membership from role-players and stakeholder institutions which are likely to be impacted upon by the outcome of the Roll-out Plan.

### **4.3 Steering Team (ST)**

The Steering Team, which will be chaired by a Senior Manager in the DST, will assume implementation overseeing role through the following:

- making sure that various outcomes of the Plan are achieved;
- continuous monitoring of the implementation of the Plan;
- making sure that execution of the Plan is consistent with the expectations of the DST;
- responding to any issue that has potential implications for the DST and/or attainment of the outcomes of the Plan;
- approving changes up to a certain level, and where the complexity of the matter dictates, recommend necessary measures to the DST; and
- providing the DST with regular and annual progress reports on the implementation of the Plan.

### **4.4 Management Office (MO)**

The DST's Management Office, led by a Middle Manager in the DST, will have the following responsibilities:

- develop terms of reference for various structures of the institutional arrangement;
- manage DST's expectations through formal specifications and/or agreements with various role players;
- develop and maintain project operational plan;
- manage and monitor project implementation according to approved operational plans; and
- regularly reporting to the Project Steering Team and the DST.

### **4.5 Infrastructure Development**

The Department will appoint the Independent Development Trust (IDT) to drive the implementation of science centre buildings infrastructure. The IDT is mandated by the Ministry of Public works to manage the implementation of Government development programmes, and supports all spheres of Government in meeting their development targets.

### **4.6 Technical Support and Exhibit Development**

The DST will appoint the South African Agency for Science and Technology Advancement (SAASTA), which in collaboration with other institutions will provide science centres in the Network with technical support. The envisaged technical support will prioritise the following areas:

- making sure that science centres develop their programmes and exhibits in a manner consistent with the goals of the Network;



- organise travelling exhibits to be shared among various centres in the country;
- providing the National Accreditation Team (see below) with a technical report in support of accreditation applications from science centres,
- leading the initiative of exhibit development, including exhibition themes;
- dissemination of information and/or facilitating information sharing in the Network;
- providing technical support necessary for the development of individual science centre's business plan;
- providing content-based information to inform the infrastructure design exercise (e.g. exhibitions themes); and
- recommending programmes/projects to be considered for fixed rate learners' subsidy.

## **4.7 National Accreditation Team (NAT)**

The National Accreditation Team will be established to use established criteria to accredit science centres to the Network. NAT will report directly to the DST through the DST's Management Office.

## **4.8 Task Teams**

As and when deemed suitable, Project Task Teams will be formed with defined mandates to be achieved through collaboration of Group members. Working Groups will disband on completion of their tasks. Membership of such Groups will, depending on the task to be performed, be drawn from organisations considered to have expertise and experience in the subject area concerned and/or organisations likely to be affected or influence the outcome of a particular Working Group's task.

The following three Project Task Teams have been identified to start with:

### **4.8.1 Physical Infrastructure Team**

To assist implementation of the Redress Model, each of the nine Provinces will have a team to identify existing buildings for possible conversion into science centres. The team will focus on under-utilised buildings and resource centres existing in most Provinces under Provincial Education Departments.

The team will emerge with a list of recommended buildings for conversion into science centres. Where there are neither existing buildings nor science centres for incorporation into the plan, the team will recommend a convenient site in terms of the strategic positioning criteria of the Redress Model. On conclusion of its work, this Task Team will also submit a map of recommended sites.

### **4.8.2 Qualifications Accreditation Team**

This Project Task Team will collaborate with the South African Qualification Authority (SAQA) towards the development of accredited qualifications and/or training programmes for science centres.

#### 4.8.3 Accreditation Standards & Policy Development Team

The team will develop accreditation and policy manual to be used for accreditation of science centres seeking membership of the Network.

## 5. IMPLEMENTATION TRAJECTORY

### 5.1 Limited Service Science Centres (through the Redress Model)

5.1.1 It is estimated that 52 *Limited Service Science Centres* will be established in South Africa over a period of 25 years (2007/8 - 2032/33) and at a rate of 2-3 science centres per year. These centres will be located in 46 District Municipalities and 6 Metropolitan Municipalities.

5.1.2 The development work will involve conversion of existing Government buildings, upgrading of existing science centres to a level of recommended minimum standards/requirements and establishment of completely new science centre buildings.

### 5.2 Full Service Science Centres (through Public Private Partnership Model)

The pace of development under this model cannot be predicted since the willingness of the private sector parties to come on board is the most determinant factor. Given the time required to put together a PPP transaction, the model is targeted for piloting in at least one Province by 2032.

## 6. FUNDING ESTIMATES

### 6.1 Development of Limited Service Science Centres

About R350 million will be required over a period of 25 years. This is based on an estimate of R6 million per centre for both the building and equipments. With the development of 2-3 science centres aimed at per annum, an annual budget of R12 - R18 million will be required.

### 6.2 Development of Full Service Science Centres

Everything will be done according to the Treasury Regulations.

## **7. MONITORING AND EVALUATION**

Monitoring and Evaluation will take place at two levels, viz. implementation of this National Roll-out Plan and personal impact of the of the Network.

### **7.1 Implementation of the National Roll-out Plan**

Formative or continuous evaluation will be conducted throughout the implementation of this National Roll-out Plan and its subordinate plans. In order to ensure adherence to the original plan, the exercise will also provide quality assurance. The Planning Matrix at *Annexure B* will serve as a monitoring and evaluation tool at this level.

### **7.2 Impact of the Network**

A comprehensive Monitoring and Evaluation System for the Network of Science Centres in South Africa will be developed. The System will be developed taking into consideration the "*Implementation Plan for a Government-Wide Monitoring and Evaluation System*" of the South African Government and the monitoring and evaluation system for the Youth into Science Strategy. This Monitoring and Evaluation System will focus on a change that occurs in individuals as a result of their interactions with science centres in the Network, and will be assessed through summative evaluation with particular reference to science centres' contribution to the following:

- *improved science and technology literacy among the youth and the population in general;*
- *enhanced learner participation and performance in science, technology, engineering and mathematics;*
- *identification, nurturing youth talent and potential in science, technology, engineering and mathematics; and*
- *provision of career education in science, technology, engineering and mathematics.*

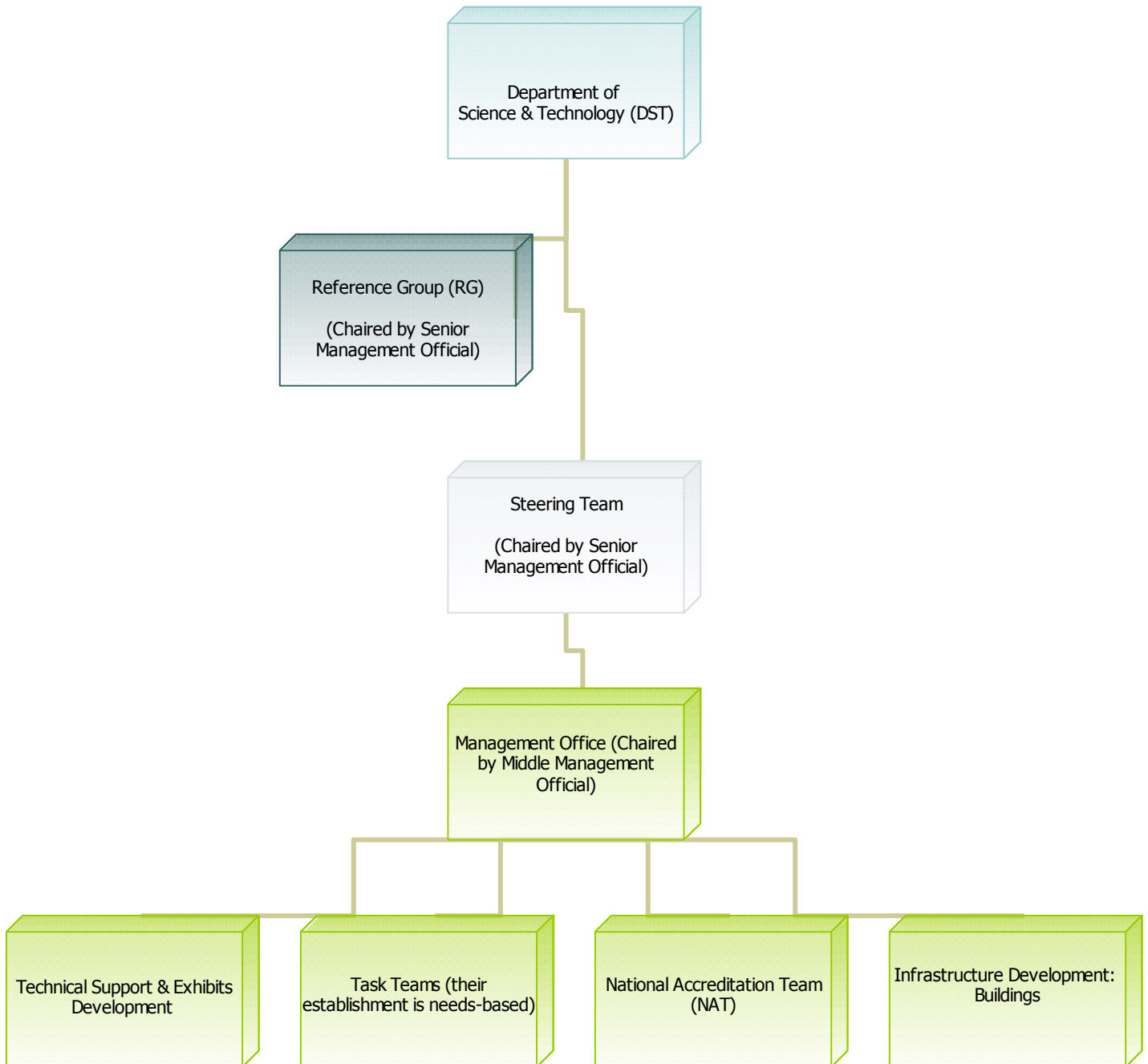
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# **ANNEXURE A**

**Figure 1: National Plan's Institutional Arrangement**



## **ANNEXURE B**

**Figure 2: Implementation Monitoring & Evaluation Matrix**

<b>PROJECT OBJECTIVES</b>	<b>PROGRESS INDICATOR</b>	<b>MEANS OF VERIFICATION</b>	<b>TARGET DATE</b>	<b>ASSUMPTIONS</b>
1. Establishing a group of science centres that are interconnected, aligned to and supported by the Department of Science and Technology.	Accreditation of science centres.	National Accreditation Team established.	June 2007	
		Appointment of an organisation to provide the Network with technical support.	July 2007	
		National register of science centres in South Africa established.	September 2008	
2. Establishing Limited Service Science Centres at strategic points throughout the country.	Redress Model implemented.	Map of targeted strategic locations.	June 2007	Political & administrative buy-in of various tiers of Government secured.
		Plan to establish 2 – 3 centres established per year between 2007/8 & 2032/33	March 2008	Development of science centre infrastructure included in the 25 year Government's infrastructure macro-plan.

<b>PROJECT OBJECTIVES</b>	<b>PROGRESS INDICATOR</b>	<b>MEANS OF VERIFICATION</b>	<b>TARGET DATE</b>	<b>ASSUMPTIONS</b>
3. Strengthening capacity of existing and new science centres	Training programmes implemented.	Existing Capacity Building Programme is sustained.	Continuous	Continuous needs-analysis proves need for the intervention.
	Promotion of careers in science centres.	Internship and mentoring programme extended to science centres.	April 2007	Human Resources Sub-Programme of the DST support the initiative.
	Accredited training programmes.	Approved standards & qualifications by South African Qualification Authority (SAQA).	March 2011	
	Expansion of existing & creation of new partnerships.	5 <sup>th</sup> NAM S&T International Workshop on Science Centres & Museums is hosted.	February 2008	
		Relations are established with four major international Networks on Science Centres & Museums.	March 2008	Initiative supported by International Resources & Cooperation Programme of the DST.
		Relations are established with Flemish-based Technopolis Science Centre.	March 2007	Initiative supported by International Resources & Cooperation Programme of the DST.
		Implementation of Japan Overseas Volunteer Programme in local science centres.	October 2007	Department of Foreign Affairs accepts DST's request.
		Recognition of science centre development in new/ revised bilateral & multilateral agreements.	Continuous	Initiative supported by International Resources & Cooperation Programme of the DST.

<b>PROJECT OBJECTIVES</b>	<b>PROGRESS INDICATOR</b>	<b>MEANS OF VERIFICATION</b>	<b>TARGET DATE</b>	<b>ASSUMPTIONS</b>
4. Facilitating development of Full Service Science Centres, which could, in the long-term, compare well with those found in developed countries.	Approval of DST's PPP project by National Treasury.	Appointment of a Project Officer and Transaction Advisor.	Depends on National Treasury's approval	Private parties attracted to come on board.
		PPP Model piloted in at least one Province by 2016/17.		Project feasibility study report meets viability criteria.



