INFORMATION TECHNOLOGY PLANNING

GUIDELINES

SOUTH AFRICAN GOVERNMENT

YEAR 2002

Information Technology Plan Guidelines

1. Background

The information age demands that government be flexible and respond speedily to citizens' demand for services. This era is characterised by, what we would call, information overload and the need to share data and information within and across government departments. The government long-term objectives are to improve productivity, lower costs, and bring about citizens' convenience in delivering services. To achieve this government cannot continue to spend on technology without any benefits or improvement to service delivery. For technology to be a true business enabler, technology must support business. This requires that CIO's understand their departmental environment and plan systems that are aligned to their departmental mission and objectives. These systems must help government achieve its long-term objectives.

The process of planning and mapping technology to support business is called Information Technology Planning.

Information Technology Planning is a process by which the business objectives and business strategies are mapped and technologies and applications are identified and prioritized in line with these strategies and objectives.

Systems planning aims to integrate human resources (people); data and information; business activities and processes; infrastructure and networks to the benefit of the government.

An Information Technology Planning document must capture all the necessary information to allow for its implementation. All other supporting documents are to be included as part of the appendix. For example, it is sufficient in the main

document to mention identified business areas and include detailed analysis of matrices in deriving the said business areas in the appendix. The other example is listing all identified projects and their priorities and include priority matrices and detailed business cases as part of the appendix.

The guidelines outlined in this document shall apply across government departments to allow consistency in Information Technology Planning and documentation. The guidelines will also facilitate easy consolidation of all Information Technology Plans by the Department of Public Service and Administration into a single Government Wide Information Technology Plan. The consolidated Information Technology Plan shall be approved by the GITO Council and ratified by the Governance and Administration Director General Cluster before being approved by Cabinet for implementation.

The guidelines include the following areas, executive summary, introduction, business strategy, enterprise models, technology architecture, business case, projects, operational plans and Appendices.

1.1. Framework and international best practice

The guidelines form part of the overall process of uplifting IT Governance within the South African Government to international best practice. The developed guidelines comply with the requirements of the COBIT – Control Objective for Information and related Technologies. The COBIT framework measures IT Governance in organisations based on Information, Planning and organisation, acquisition and implementation, delivery and support and monitoring. These are further divided into 34 IT processes. The 34 IT processes are further subdivided into 318 objectives and audit guidelines.

The Information Technology Planning forms part of the Planning and Organisation of the COBIT framework. The Planning and Organisation aims to

address the effectiveness and efficiency in IT delivery. Effectiveness and efficiency form part of the information criteria of Information governance. The planning and organisation in COBIT looks at the following processes:

- Define an IT strategic plan.

- Define information architecture.

- Determine the technological direction.

- Define the IT organisation and relationship.

- Manage IT investment.

- Communicate management aims and directions.

- Manage human resources.

- Ensure compliance with external requirements.

- Assess risks.

- Manage projects.

- Manage quality

The above processes have been taken into consideration in the development of the Information Technology Planning Guidelines.

2. The executive summary

This is a summary of the entire Information Technology Planning document. The information contained in this section should be sufficient to enable management to get a clear picture of the entire Information Technology Plan.

3. Introduction

This section gives a brief background to the development of the Information Technology Plan and the planning methodology used.

3.1. Purpose of the Planning

This section outlines the purpose of information technology planning, highlighting the objectives of the planning process and benefits that will accrue to the department as a result of the planning process.

3.2. Objective of the ITP

This section outlines the objectives to be attained through the Information Technology Plan.

3.3. Planning Methodology

The methodology used in the planning process should be clearly outlined, including tools applied in collecting and analysing data. Below is the recommended process to be applied across government department.

Information Planning - Process Overview

Vision & Strategies

Business

Current IS/IT

Required IS/IT Support

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Prioritised List of Initiatives

Plan & Justification
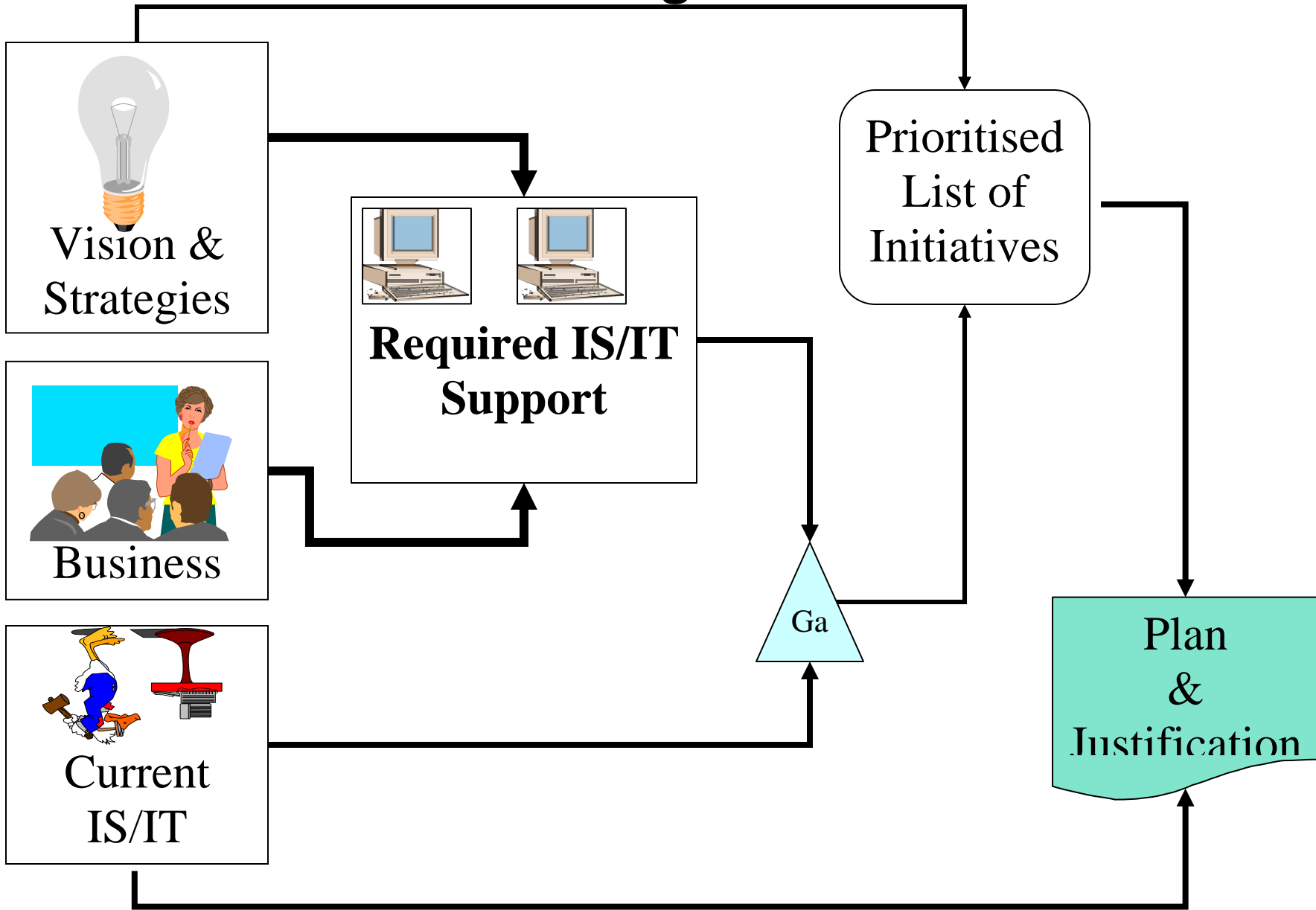
Information Planning - Some Process Detail

* Project Charter
* Project Plan
* Team formation

Project Preparation

* Enterprise Structure Review
* Vision, Goals & Strategy
* Business
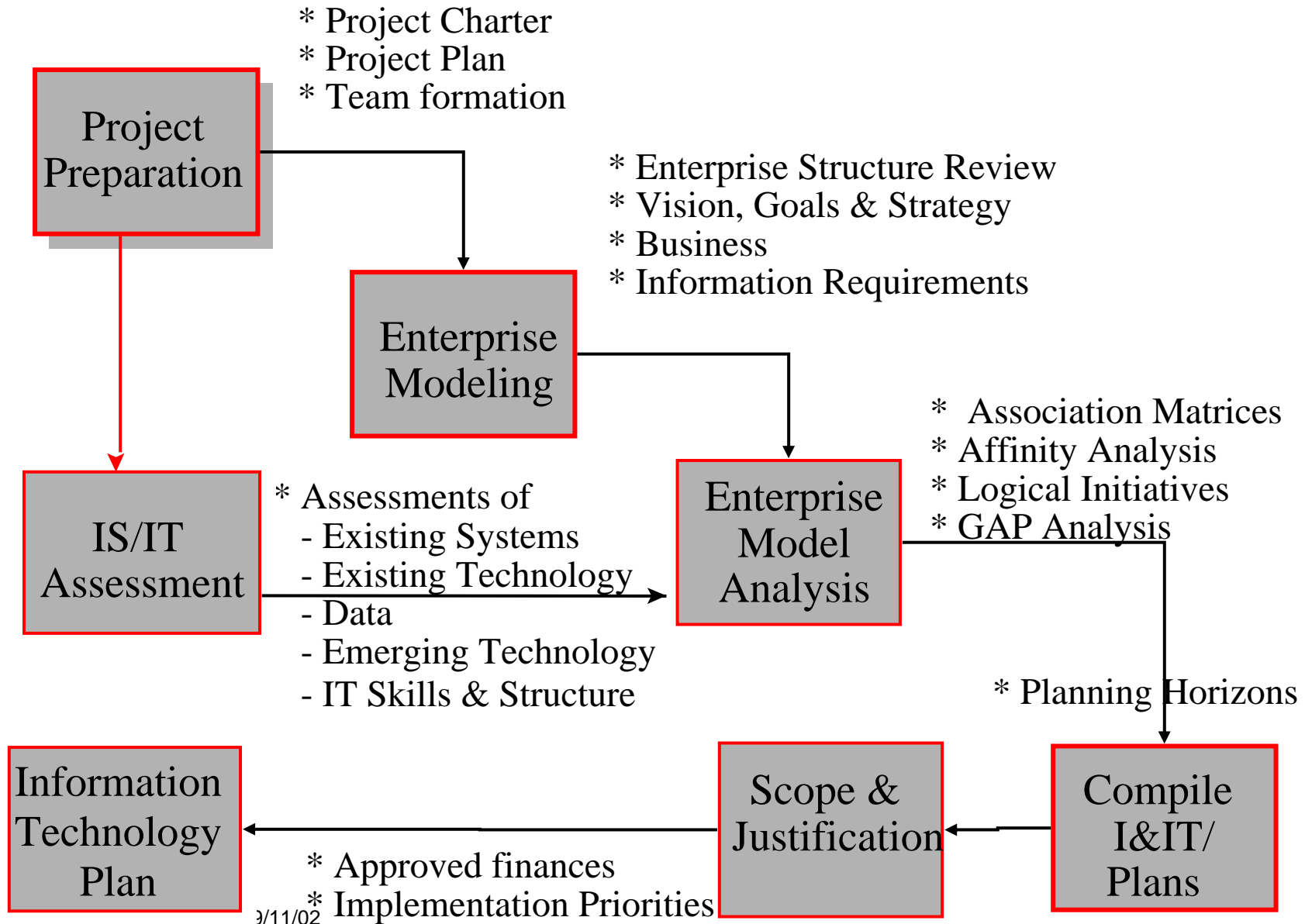* Information Requirements

Enterprise Modeling

* Association Matrices
* Affinity Analysis
* Logical Initiatives
* GAP Analysis

IS/IT Assessment

* Assessments of
  - Existing Systems
  - Existing Technology
  - Data
  - Emerging Technology
  - IT Skills & Structure

Enterprise Model Analysis

* Planning Horizons

Information Technology Plan

* Approved finances
* Implementation Priorities

Scope & Justification

Compile I&IT/ Plans

9/11/02

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4. Organisational strategy

Organisational strategy outline the purpose of information technology planning, the business direction and business capabilities.

4.1. Vision and Mission

This relates to the vision and mission of the department and not that of the Information Technology Branch or Component. This is the key starting point as the Information Technology Plan aim is to ensure that technology is a business enabler designed to support the business to achieve its long-term objectives.

4.2. Business goals and Multiple Business objectives for each goal

The planning team needs to identify all documented and undocumented business goals. For each of the identified business goals, the team needs to identify all the related objectives necessary to achieve these goals. The developed Information Technology Plan will align to these goals and objectives.

4.3. SWOT Analysis

A thorough investigation of the strengths, weaknesses, opportunities and threats needs to be examined and outlined in this section. This section will help identify training and development needs and priority areas when deciding on which areas to prioritise. It is not suffient to compile a SWOT list. It is important to show how strength will be used to exploit the opportunities and how weaknesses and threats will be addressed.

4.4. *Assumptions and Critical Success Factors*

All critical success factors necessary for the development of a sound Information Technology Plan needs to be considered. This section should further list all the planning assumptions.

5. Enterprise/Departmental models

There are a number of approaches to enterprise modeling that include modeling using people, business activities, data or networks. This framework will only concentrate on activities modeling and data modeling, as they are more relevant to government environment.

Activity Modeling – This model the business based on business function and business processes, independent of the organisational chart. Top-down hierarchy chart or decomposition diagram are best tools suited to use with activity modeling.

Business functions are what is commonly known as Components in government at the departmental level and are ongoing activities. A global view of government would see department classified as business function. These eventually decompose into business processes.

Business processes are distinct activities that have a start and an end. The processes can cut across components or across departments. These processes are not ongoing e.g. the application for birth certificate could cut across different departments. Health department is responsible for birth recording, department of Social Development might require data for use in child support grants if

applicable, while the Department of Home Affairs would require data to register the child in the population register and issue a birth certificate. The process clearly starts with birth recording and registration and end with the issuing of birth certificate.

Data Modeling – This involves modeling on a high level subject data models that identifies subjects about which management believes government should store data. Subjects data models are key to integrating future applications through shared databases.

6. Information Architecture

This section of the Information Technology Plans has two objectives. The first objective is to define data, applications, networks, information services, and technology infrastructure for future information systems. The second objective is to identify and prioritise logical business areas and application development projects according to business areas.

There are a number of tools that can be used to define the information architecture and these include Association Analysis, Affinity Analysis and Clustering.

Association Analysis is a technique that examines the natural association or relationship between any two objects or ideas. This technique uses association matrices to examine relationships. The association matrix relates any two performance measures or model objects.

In the South African Government context the model may be constructed to study the following within a department or across government departments.

- Which department uses what data?

- Which department collects what data?

- Which department is better positioned to maintain what data?

- Which department is better positioned to delete/archive data?

- Which business objectives are pertinent to which component or department?

Basically, the matrices can assist to identify which component within department or which department across government are better positioned to create, read, delete, modify and use what data.

Affinity Analysis is a technique used for identifying properties that different "things/objects" have in common to allow the combination of "things/objects" into logical groups. This approach is contrary to the usual "divide and conquer" approach, which result in silos and system that are not integrated or interoperable. The affinity analysis creates logical groups that allow system integration and interoperability.

For example, government may want to construct matrices to compare variables such as the following:

- What data is created, maintained, or used by what processes?

- What data is used at what geographic location?

- What activities are performed at what location?

- What departments are at what location?

Clustering is a technique that forms logical groups of "things/objects" based on affinity measures. There exist a number of Planning CASE tools in the market which simplifies the process of clustering. As clustering operates on threshold between 0 and 1, by inputting a threshold the CASE tool rearranges the rows and columns of the matrix to clearly identify the logical groups.

6.1. Business Areas Analysis and Descriptions

A business area is a logical grouping of business processes, data, and location that will be supported by highly integrated information systems applications. The business areas are cross-functional. They cut across barriers and silos and break down applications built to support a single organisation. It includes business processes from multiple departments. A business area allows high degree of data sharing by business area processes within the area and less sharing with other business areas.

The created Affinity Analysis and Clusters created above is used to identify subject data models around which business areas can be built. The identified business areas should be prioritised and ranked. The ranking should reflect the relative importance to the entire business and be in line with the business goals and objectives.

To complete this section, further subdivide the enterprise model according to business areas.

6.2 Identify New Information Technologies

At this point a thorough analysis of the technology environment and technology trends is important. Once a thorough understanding of technology is established, then technology architecture can be developed.

Different technology options will be considered including decisions on centralised or distributed systems. Technology architecture mapping should also consider application development decisions between enterprise wide and business areas application development. Other decisions will include which operating system to use in the organisations, standards to implement, software technology and

development methods to use in application development, communication technologies, system management tools and networks.

6.3 *Identify existing Information Technologies*

Having identified what technologies we need to implement to support the business to meet its mission, visions, goals and objectives we then turn and look at what technologies do exist. The sequence is to ensure that we are not biased towards the existing technologies in our planning and try to force the business to align with the existing technology.

6.4. *ICT Policies*

A comprehensive view of all current and planned ICT policies. These are Government wide and departmental specific policies.

6.5. *Gap Analysis of Existing and New Information Technologies*

The result of the new information technology identification and existing technologies are compared to identify those technologies that already exist and are in line with business priorities. This process considers existing systems that require minor modification to meet the requirements of certain business areas. Finally a list of existing technologies and those that will need to be procured is compiled.

7. Business Case for the ICT strategy

A broad overview of the impact of the strategy on the enterprise along with high level commercial justification. This should include a business perspective of the benefits and risks.

8. Identify and plan projects portfolio

A projects portfolio needs to be identified according to business areas priority matrix. The high priority business areas' projects are to be implemented first and low priority business areas projects are to be implemented last. For each of the identified projects a business case needs to be developed showing the business benefits and how the identified technology is going to increase productivity, lower costs and bring about convenience in service delivery to citizens. The business case will serve as measures in evaluating completed projects value add against the promised value add to government.

9. Operational Planning

This section covers those areas that will enable continuous operation of the information technology. The IT/IM governance issues are covered in this section. The human resources, policy and standards of the organisation are covered in this section. The section also includes list of service agreements, the contracting parties to the agreements, and the validity period of the service level agreements. The section also lists the identified service level agreements and contracting dates for these service level agreements including the duration of each of these service level agreements. The detailed service level agreements are attached as part of the appendixes. The section also includes summary on each of the following with detailed reports attached as part of the appendices.

- Problem Management
- Change Management
- Recovery Management
- Capacity Planning
- Network Management
- Human Resource & Resources Management

10.   Appendixes

These section includes all attachments, that is, business areas analysis detailed report, enterprise models report, questionnaires, "architecture definition", matrices, prioritisation matrices, detailed business cases.

11.   Conclusion

The DPSA hope that these guidelines will assist Chief Information Officers in government to deliver value to both their departments and more importantly to government as a whole. With these guidelines we believe that not only will we not have the results of the findings of the Presidential Review Commission report chapter 6 (1998) and the Inventory of Government Wide Information Systems (2001) but we will not see the need to conduct these studies. The approach will help us show value to government per projects and or per projects portfolio.

SITA will have to standardise on a repository for data storage and management independent of the technology.

Finally, the Government of South Africa would like to acknowledge authors, institutions and all other organisations whose work served as a reference in developing these Information Technology Guidelines.