|  |  |
| --- | --- |
| **THE UNITED REPUBLIC OF TANZANIA** | |
| <<include the name of the institution>> | **Document Name:**  Enterprise Architecture |
| **Document Number:** <<Insert your own document reference code>> |

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| --- | --- | --- | --- | --- |
| **APPROVAL** | **NAME** | **JOB TITLE/ ROLE** | **SIGNATURE** | **DATE** |
| Approved by | <<Name of AO>> | <<Title e.g. CEO>> | <<Signature>> | <<Date>> |

Table of Contents

[List of Tables 5](#_Toc175921230)

[List of Figures 7](#_Toc175921231)

[1 INTRODUCTION 8](#_Toc175921232)

[1.1 Overview 8](#_Toc175921233)

[1.2 Rationale 8](#_Toc175921234)

[1.3 Purpose 8](#_Toc175921235)

[1.4 Methodology 8](#_Toc175921236)

[2 ENTERPRISE ARCHITECTURE 8](#_Toc175921237)

[2.1 Architecture Vision 9](#_Toc175921238)

[2.1.1 Business Goals, Drivers, and Core Value 9](#_Toc175921239)

[2.1.2 Stakeholders’ Concerns 10](#_Toc175921240)

[2.1.3 Business Transformation Readiness 10](#_Toc175921241)

[2.1.4 Architecture Scope 12](#_Toc175921242)

[2.1.5 Expected Outcomes 13](#_Toc175921243)

[2.1.6 Architecture Vision Statement 14](#_Toc175921244)

[2.2 Business Architecture 14](#_Toc175921245)

[2.2.1 Business Architecture Principles 14](#_Toc175921246)

[2.2.2 Organization Vision, Mission and Objectives 16](#_Toc175921247)

[2.2.3 Organization Structure, Business Functions, and Services 16](#_Toc175921248)

[2.2.4 <<include the name of the institution>> Value Streams 17](#_Toc175921249)

[2.2.5 Business Reference Model 18](#_Toc175921250)

[2.2.6 Baseline Business Architecture 19](#_Toc175921251)

[2.2.7 Target Business Architecture 19](#_Toc175921252)

[2.2.8 Gap Analysis 20](#_Toc175921253)

[2.3 Data Architecture 20](#_Toc175921254)

[2.3.1 Data Architecture Principles 20](#_Toc175921255)

[2.3.2 Data Reference Model 21](#_Toc175921256)

[2.3.3 Baseline Data Architecture 24](#_Toc175921257)

[2.3.4 Target Data Architecture 25](#_Toc175921258)

[2.3.5 Gap Analysis 26](#_Toc175921259)

[2.4 Application Architecture 26](#_Toc175921260)

[2.4.1 Application Architecture Principles 26](#_Toc175921261)

[2.4.2 Application Reference Model 28](#_Toc175921262)

[2.4.3 Baseline Application Architecture 28](#_Toc175921263)

[2.4.4 Target Application Architecture 29](#_Toc175921264)

[2.4.5 Target Application Architecture Graphical Overview 30](#_Toc175921265)

[2.4.6 Gap Analysis 30](#_Toc175921266)

[2.5 Technology Architecture 31](#_Toc175921267)

[2.5.1 Technology Architecture Principles 31](#_Toc175921268)

[2.5.2 Technology Reference Model 32](#_Toc175921269)

[2.5.3 Baseline Technology Architecture 32](#_Toc175921270)

[2.5.4 Target Technology Architecture 33](#_Toc175921271)

[2.5.5 Gap Analysis 33](#_Toc175921272)

[2.6 Security Architecture 33](#_Toc175921273)

[2.6.1 Security Architecture Principles 34](#_Toc175921274)

[2.6.2 Security Reference Model 35](#_Toc175921275)

[2.6.3 Baseline Security Architecture 35](#_Toc175921276)

[2.6.4 Target Security Architecture 36](#_Toc175921277)

[2.6.5 Gap analysis 38](#_Toc175921278)

[2.7 Architecture Requirements Management 38](#_Toc175921279)

[2.7.1 Architecture Requirements 38](#_Toc175921280)

[2.7.2 Interoperability Requirements 39](#_Toc175921281)

[2.7.3 Opportunities and Solutions 39](#_Toc175921282)

[2.7.4 Consolidated Gap Analysis with their Solutions 39](#_Toc175921283)

[2.8 Migration Planning 40](#_Toc175921284)

[2.8.1 Implementation and Migration Strategy 40](#_Toc175921285)

[2.8.2 Implementation and Migration Plan 41](#_Toc175921286)

[2.8.3 <<Include the name of public institution>> Architecture Roadmap 42](#_Toc175921287)

[2.9 Architecture Implementation 42](#_Toc175921288)

[2.9.1 Implementation Standards 42](#_Toc175921289)

[2.10 Architecture Governance 42](#_Toc175921290)

[2.10.1 Architecture Governance Structure 42](#_Toc175921291)

[2.10.2 Architecture Compliance Review 42](#_Toc175921292)

[2.11 Architecture Change Management 44](#_Toc175921293)

[2.11.1 Architecture Change Approaches 45](#_Toc175921294)

[2.11.2 Architecture Change Management Procedures 45](#_Toc175921295)

[3 IMPLEMENTATION, ENFORCEMENT AND REVIEW 46](#_Toc175921296)

[3.1 Implementation and Reviews 46](#_Toc175921297)

[3.2 Exceptions 46](#_Toc175921298)

[4 GLOSSARY AND ACRONYMS 47](#_Toc175921299)

[**4.1** **Glossary** 47](#_Toc175921300)

[**4.2** **Acronyms** 47](#_Toc175921301)

[5 RELATED DOCUMENTS 48](#_Toc175921302)

[6 DOCUMENT CONTROL 48](#_Toc175921303)

# 

# List of Tables

[Table 1: Stakeholders’ concerns: 10](#_Toc175567678)

[Table 2: Risks on Development and Implementation of <<Insert name of public institution>> Enterprise Architecture 11](#_Toc175567679)

[Table 3: Summary of the Business Architecture Principles 14](#_Toc175567680)

[Table 4: Key Functions and Services Provided in Each Directorate 16](#_Toc175567681)

[Table 5: Supporting Directorate/Department/Unit and their Key Objectives 17](#_Toc175567682)

[Table 6: Summary of the Target Business Architecture 19](#_Toc175567683)

[Table 7: Summary of the business Architecture Gap analysis 20](#_Toc175567684)

[Table 8: Outlines the Guiding Principles for Data Architecture 20](#_Toc175567685)

[Table 9: Components of Data Reference Architecture Framework 22](#_Toc175567686)

[Table 10: Metadata Elements 23](#_Toc175567687)

[Table 11: <<Insert name of public institution>> Baseline Data Entity 25](#_Toc175567688)

[Table 12: Data Source 25](#_Toc175567689)

[Table 13: <<Insert name of public institution>> Target Data Entity 25](#_Toc175567690)

[Table 14: Data Architecture Gap Analysis 26](#_Toc175567691)

[Table 15: Application Architecture Principles 27](#_Toc175567692)

[Table 16: <<include the name of the institution>> Core Business Functions with their Existing Applications 28](#_Toc175567693)

[Table 17: <<include the name of public institution>> Supporting Business Functions with their Existing Applications 28](#_Toc175567694)

[Table 18: <<include the name of the institution>> Core Business Functions with their Target Applications 29](#_Toc175567695)

[Table 19: Supporting Business Functions with their Target Applications 30](#_Toc175567696)

[Table 20: Application Architecture Gaps with their Respective Recommendations. 30](#_Toc175567697)

[Table 21: Technology Principles 31](#_Toc175567698)

[Table 22: Baseline Technology Architecture 32](#_Toc175567699)

[Table 23: Target Technology Architecture 33](#_Toc175567700)

[Table 24: Technology Architecture Gap Analysis 33](#_Toc175567701)

[Table 25: Security Architecture Principles 34](#_Toc175567702)

[Table 26: Baseline Security Architecture 35](#_Toc175567703)

[Table 27: Target Security Architecture 37](#_Toc175567704)

[Table 28: Security Architecture Gap Analysis Results 38](#_Toc175567705)

[Table 29: Architecture Requirements 38](#_Toc175567706)

[Table 30: Consolidated Gaps, Solutions and Dependencies Matrix 39](#_Toc175567707)

[Table 31: Implementation and Migration Plan 41](#_Toc175567708)

# List of Figures

[Figure 1: Sample Business Reference Model 18](#_Toc171614969)

[Figure 2: Sample Data Reference Model 22](#_Toc171614970)

[Figure 3: Data Life Cycle 24](#_Toc171614971)

# INTRODUCTION

Overview

The Government of Tanzania leverages the potential of ICT to achieve good governance, social and economic development by establishing effective, systematic, and productive e-Government. Additionally, improving the efficiency and capability of Government processes and services. In line with this, e-Government related standards and guidelines have been defined to be adopted across Public Institutions in improving the efficiency and capability of Government processes and services through Information and Communication Technology (ICT).

Rationale

The drive for developing <<insert the name of the public institution>> Enterprise Architecture is <<Provide a clear statement of why the Enterprise Architecture need to be developed >>. <<Provide a detailed explanation of why the Enterprise Architecture is required in public institution>><< Explain the contribution of Enterprise Architecture towards alignment of ICT and business>>

Purpose

The purpose of this enterprise architecture is to provide a practical approach to align business and Information and Communication Technologies (ICT) within <<insert the name of the public institution>> as directed by Section 3.4.1 of the e-Government Guideline 2017. The enterprise architecture will create a cohesive and efficient ICT environment that supports the <<insert the name of the public institution>>’s strategic objectives, enhances agility and drives continuous improvement.

Methodology

The <<insert the name of the public institution>>’s enterprise architecture has been developed <<Explain the architecture framework and reference models adopted during development of enterprise architecture for your institution>>, <<outline all stakeholders engagement >>, <<outline necessary steps and actions involved to transition from current to target architecture>>.

# ENTERPRISE ARCHITECTURE

<<Insert name of public institution>> enterprise architecture provides strategic framework used to align an <<insert name of public institution>>’s business process, information systems, and technology infrastructure with its overall strategy and objectives. It provides a comprehensive view of <<Insert name of public institution>>, capturing the relationships and interactions between different components to ensure coherence and efficiency. This enterprise architecture contains key sections namely architecture vision, business architecture, data architecture, application architecture, technology architecture, security architecture, opportunities and solutions, migration planning, architecture implementation, architecture governance, and architecture change management.

Architecture Vision

This part outlines the high-level aspirations, purpose, and scope of the <<insert the name of the public institution>> enterprise architecture. It describes the key business goals and objectives that the architecture is intended to achieve, along with the value proposition and the strategic intent behind the architecture.

### Business Goals, Drivers, and Core Value

#### Business Goals

The overall business goal of <<insert the name of the public institution>> is <<include public institution’s business goals>>.

#### Business Drivers

The development of <<insert the name of the public institution>> enterprise architecture is driven by various factors that require <<insert the name of the public institution>> to take a strategic approach aligning ICT and business processes. The drivers that led to the development of <<insert the name of the public institution>> enterprise architecture are:-

1. **Improve Alignment of Business and Technology:** The developed enterprise architecture will help to align ICT with business goals, ensuring a smooth transition and integration;
2. **Improve Operational Efficiency:** For example, streamlining business processes, eliminating redundancies, and optimizing resource utilization. The developed enterprise architecture helps to identify inefficiencies and provides a roadmap for process optimization and cost reduction;
3. <<Insert business driver >>, <<Update business driver depending on public institution>>

#### Core Values

<<Insert public institution’s core values >>

### Stakeholders’ Concerns

Stakeholders' concerns are the specific issues, needs, and interests that different stakeholders have regarding the enterprise architecture. This part categorized <<Insert name of public institution>> stakeholders into following categories namely internal (i.e. Core Functions, Business Support Functions. Employees etc.) and external (i.e. Suppliers, Service providers, regulators, citizen) with their respective concerns and requirements as described in Table 1.

Table 1: Stakeholders’ concerns:

| **Category** | **Stakeholder** | **Stakeholder Concerns** | **Ranking of**  **stakeholders**  **(H- High;**  **M-Medium;**  **L-Low)** |
| --- | --- | --- | --- |
| <<Insert Stakeholder Category such as Governance, Core Functions, Business Support Functions and External Stakeholders >> | <<Insert Stakeholder name>> | <<Insert Stakeholder concern>> | <<Insert Stakeholder ranking (H, M, L)>> |
| Example:  Internal | Employee | * Fulfilling employees’ personal objective. | H |

### Business Transformation Readiness

#### Assumptions

Successful implementation of the <<Insert name of public institution>> enterprise architecture is based on the following assumptions: -

1. **Stakeholder Engagement**

Stakeholders will be actively engaged, committed and supportive throughout the enterprise architecture development and implementation;

1. **Endorsement from Decision-Makers**

Decision-makers will provide continued interest, motivation, and support;

1. **Resource Availability**

Necessary resources, including budget, personnel, and technology, will be available to support the development, implementation and maintenance of the enterprise architecture;

<<Add or update assumptions based on public institution>>

#### Risks

This part describes risks that could hamper the development and implementation of <<Insert name of public institution>> enterprise architecture and their corresponding mitigation strategies as shown in Table 2.

Table 2: Risks on Development and Implementation of <<Insert name of public institution>> Enterprise Architecture

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/N** | **Risk** | **Likelihood** | **Impact** | **Mitigation** |
|  | Inadequate stakeholder engagement  Failure to involve key stakeholders can result in a lack of understanding, misalignment with business needs, and resistance to change. | Low | High | Stakeholders’ engagement throughout the enterprise architecture development and implementation process. Conducted regular meetings and feedback sessions to ensure their needs and concerns are addressed. |
|  | <<Insert public institution’s risk>> |  |  |  |

#### Dependencies

1. **Alignment with Business Strategy:** The success of enterprise architecture depends on its alignment with the organization’s strategic goals;
2. **Stakeholder Engagement:** Effective engagement with stakeholders is critical for gathering requirements;
3. **Technology Infrastructure:** The underlying technology infrastructure must support the new architecture;

<<Update or add dependencies according to public institution>>

#### Constraints

1. **Budget Limitations:** Limited budget for ICT projects may restricts the scope and scale of new architecture initiatives. In this situation a prioritization of projects becomes crucial, and some initiatives may need to be postponed or scaled down;
2. **Skill Gaps:** This includes lack of necessary skills within the current team to implement and support new technologies. This may require training or hiring, and could delay project timelines;
3. **Technology Limitations:** Existing hardware and software capabilities may be insufficient to support new requirements; and

<<Update or add constraints according to public institution >>

### Architecture Scope

The scope of the <<insert name of public institution >> enterprise architecture will be defined into two dimensions namely breadth and architecture domain.

#### Breadth

The breadth of the enterprise architecture scope outlines the range of <<Insert name of public institution>> business areas and processes that the architecture will encompass. This includes the different business, departments/directorates/units, and geographical locations.

1. **Business Departments/Directorates/Units:** <<List all department /directorate/unit of the public institution >>;
2. **Geographical Scope:** <<Insert name of public institution >>workstations including <<include location of the institution’s offices if any>>); and
3. **Processes:** <<Include end-to-end business processes for public institution>>.

#### Architecture Domain

The architecture domain scope outlines specific areas within the enterprise architecture that will be addressed, including business, data, application, technology, and security architectures as described below.

1. **Business Architecture:** This architecture aligns <<Insert name of public institution >> business strategy and key business processes;
2. **Data Architecture:** This architecture defines the structure of <<Insert name of public institution>> logical and physical data assets and data management resources;
3. **Application Architecture:** This architecture provides application systems to be deployed, the interactions between the application systems, and their relationships to the core business processes of <<Insert name of public institution >>;
4. **Technology Architecture:** This architecture describes the hardware, software, and network infrastructure required to support the deployment of application systems; and
5. **Security Architecture:** This architecture ensures the confidentiality, integrity, and availability of information. It includes implementation of security controls and measures to protect against threats and vulnerabilities.

### Expected Outcomes

The expected outcomes of successful implementation of the <<Insert name of public institution >>enterprise architecture are: -

1. **Efficient Processes:** All ICT initiatives and solutions will be aligned with the business goals and strategic direction;
2. **Increased Operational Efficiency and Reduced Costs:** Streamlined processes and reduced operational costs through better coordination and use of resources;
3. **Enhanced Customer Experience:** Improved customer satisfaction through better service delivery and user experience;

<<Update or add expected outcomes according to Public Institution >>

### Architecture Vision Statement

The vision of <<Insert name of public institution >>is, <<add public institution vision statement >>

Business Architecture

Business Architecture is a holistic representation of business capabilities, end-to-end value delivery, information and organizational structure along with the relationships to the strategies, products, policies, initiatives, and stakeholders.

The objectives of the <<Insert name of public institution >> Business Architecture are:-

<<*Example 1*. Alignment of ICT and <<Insert name of public institution >> Strategic Plan: Ensuring that technology initiatives are closely aligned with the overall business goals and strategies. This involves understanding business objectives and translating them into technological solutions that drive growth and efficiency>>

<<*Example 2.* Enhanced Agility and Flexibility: Creating a business architecture that allows <<Insert name of public institution >>to quickly adapt to market changes and new opportunities. This includes developing scalable and modular ICT systems that can be easily modified or expanded>>

### Business Architecture Principles

Business architecture principles are guiding rules for managing business processes and functions. The principles are the fundamental guidelines that shape and guide the design and implementation of the <<Insert name of public institution >>’s business architecture. Table 3 summarizes the business architecture principles.

Table 3: Summary of the Business Architecture Principles

|  |  |
| --- | --- |
| **Principle #B1** | <<Insert principle name>>  << *Example 1*. Maximize Benefit to the Government >> |
| **Statement** | << Should succinctly and unambiguously communicate the fundamental rule>>.  << *Example 1*. Information management decisions are made to provide maximum benefit to the enterprise as a whole. >> |
| **Rationale** | <<Should highlight the business benefits of adhering to the principle, using business terminology.>>  << *Example 1*. This principle embodies "service above self". Decisions made from an enterprise-wide perspective have greater long-term value than decisions made from any particular organizational perspective. Maximum return on investment requires information management decisions to adhere to enterprise-wide drivers and priorities. No minority group will detract from the benefit of the whole. However, this principle will not preclude any minority group from getting its job done. >> |
| **Implications** | <<Should highlight the requirements, both for the business and IT, for carrying out the principle in terms of resources, costs, and activities/tasks>>  << *Example 1*. Achieving maximum enterprise-wide benefit will require changes in the way we plan and manage information — technology alone will not bring about this change |
| **Principle #BN** | **<< Example N. Business Continuity >>** |
| **Statement** | <<*Example N*. Enterprise operations are maintained in spite of system interruptions.>> |
| **Rationale** | << *Example N.* As system operations become more pervasive, we become more dependent on them; therefore, we must consider the reliability of such systems throughout their design and use. Business premises throughout the enterprise must be provided with the capability to continue their business functions regardless of external events. Hardware failure, natural disasters, and data corruption should not be allowed to disrupt or stop enterprise activities. The enterprise business functions must be capable of operating on alternative information delivery mechanisms.>> |
| **Implications** | << *Example N.* Some organizations may have to concede their own preferences for the greater benefit of the entire enterprise>> |

### Organization Vision, Mission and Objectives

#### Vision

<< Insert public institution’s vision statement>>

#### Mission

<< Insert public institution’s mission statement >>

#### Core Values

In accomplishing its vision, mission and function, <<insert name public institution>> is guided by the following core values:

<< insert public institution’s core values>>

#### Objectives

<<insert objectives according to organization strategic plan>>

### Organization Structure, Business Functions, and Services

#### Organization Structure

<<Insert organization structure>>

#### Organization Map

<<Draw organization map showing interaction between directorates/departments/units>>

#### Business Function and Services

<<Provide description of the core business function department/directorates>>

#### Core Functions

The Table 4 describes the key function and services provided in each directorate.

Table 4: Key Functions and Services Provided in Each Directorate

| **Department/Directorate/Unit** | **Description of function** | **Sub function** | **Services** |
| --- | --- | --- | --- |
| <<Describe name of Department/Directorate /Unit as per public institution’s structure>> | <<Describe functions of Department/Directorate /Unit>> | <<Describe section making the Directorate/Department/Unit (where applicable)>> | <<Describe services offered by the section >> |

#### Supporting Functions and Services.

For smooth operation and <<include name of public institution>> capability to delivers its main function, Table 5 describes the supporting directorate/unit and their key objectives in management of activities and operations.

Table 5: Supporting Directorate/Department/Unit and their Key Objectives

| **Department/Directorate/Unit** | **Description of function** | **Sub function** | **Services** |
| --- | --- | --- | --- |
| <<Describe name of Department/Directorate /Unit as per public institution’s structure>> | <<Describe functions of Department/Directorate /Unit>> | <<Describe section making the Directorate/Department/Unit (where applicable)>> | <<Describe services offered by the section >> |

### <<include the name of the institution>> Value Streams

The primary reason that an organization exist is to provide value to one or more stakeholders. This step includes the ability to decompose the creation, capture and delivery of value into discrete stages of value-producing activities, each of which is enabled by the effective application of business capabilities.

#### << Identify the list of value-adding activities for each identified Directorate/Department/Unit>>

#### << Draw a value stream diagram for each identified Directorate/Department/Unit>>

### Business Reference Model

The Business Reference Model (BRM) is a functional framework focusing on providing an organized, tiered hierarchical construct representing the business functions of the <<include the name of public institution>>. It aims to provide a functional view identifying common business capabilities across <<include the name of public institution>> required to provide service to internal and external stakeholders. The BRM can be viewed as a generic business architecture requirement that will drive and shape subsequent data, application and technology architectures of the <<include the name of public institution>>.

<<Update Figure 1 as per institution’s organizational structure>>

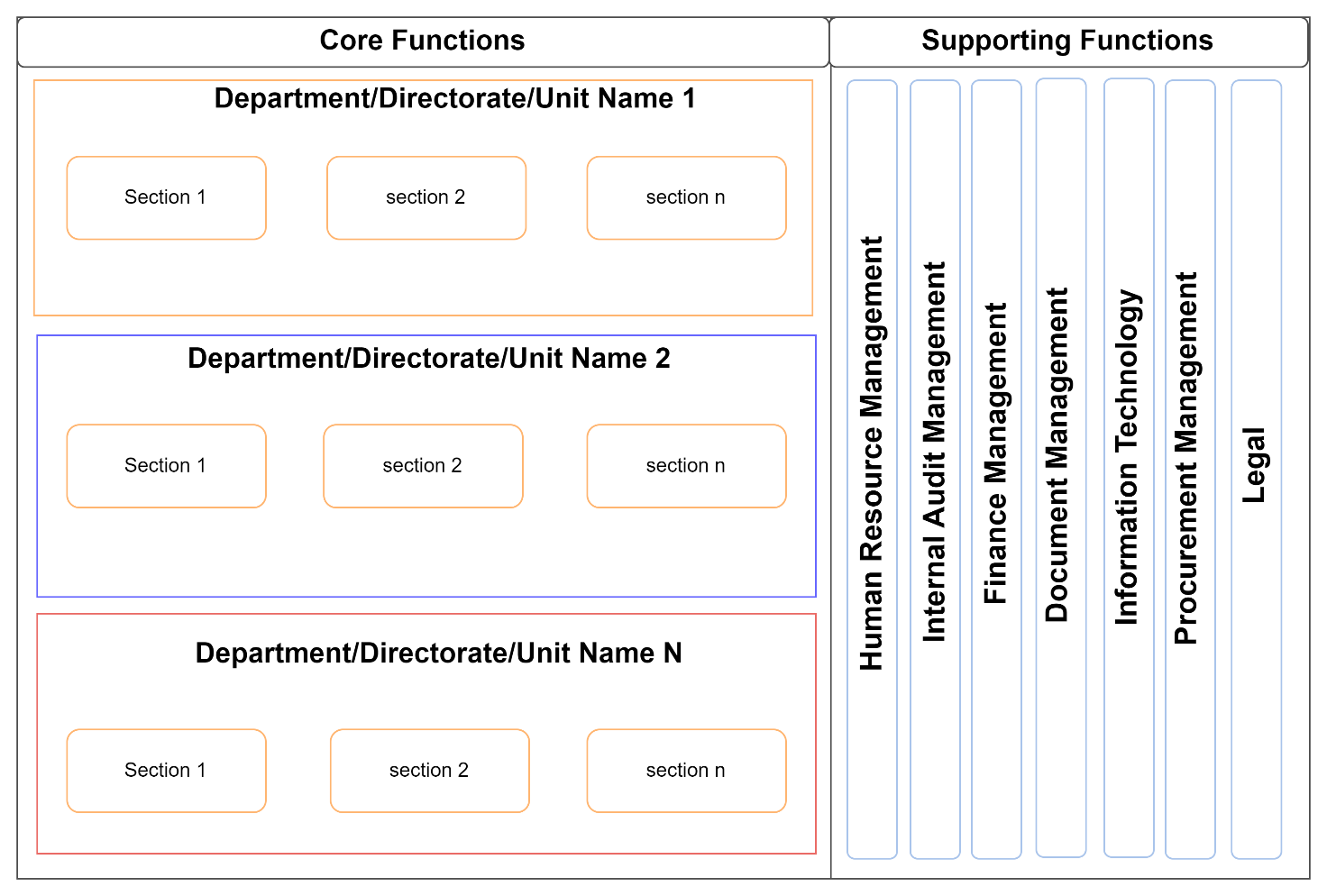


Figure 1: Sample Business Reference Model

### Baseline Business Architecture

Baseline business architecture describes the current business processes and their challenges in achieving the business goals. The current business processes and/or standard operating procedures (SOP) for the <<include the name of public institution>> has been documented in the <<include the name of public institution>>’s <<document name>> with document number <<include document number>>.

#### Challenges Faced in the Baseline Business Architecture

The current <<include the name of the institution>> business architecture has the following challenges:

<<List all challenges facing baseline business processes at public institution institution>>

<<Example 1. Low involvement of key stakeholders during development and implementation of shared ICT initiatives. This has led to difficulties in operationalization of the existing ICT system (shared system). Moreover, Public institutions have less awareness on most of the existing shared systems;>>

### Target Business Architecture

The target business architecture describes how <<insert name of public institution>> should operate to effectively and efficiently achieve its vision, mission and objectives. Table 6 describes the recommended improvements needed to be done on business processes.

Table 6: Summary of the Target Business Architecture

| S/N | Business Process | Recommended Improvements |
| --- | --- | --- |
|  | <<Insert name of target business process  Example Technical Support/assistance>> | << Insert recommendations:  Example Enhancement in tracking number of requested Technical Support/assistance>> |

The target business processes should be improved as follows:

<<List and draw according to the public institution target business processes>>

### Gap Analysis

Table 7 describes gaps in the baseline business architecture and offers recommendations for better operations of the <<include the name of public institution>>.

Table 7: Summary of the business Architecture Gap analysis

|  |  |  |
| --- | --- | --- |
| S/N | Gap | Recommendations |
|  | << Insert gap description  Example Engagement of stakeholder in development of systems >> | << Insert recommendations  Example key stakeholder need to be engaged in development of system>> |

Data Architecture

Data architecture provide high-level blueprint that guides the <<include the name of public institution>> on design and implementation of solutions that contain high quality and secured data component. The <<include the name of public institution>>data architecture define creation, capturing, storing, maintenance disposal, access and sharing of electronic data. The objectives of the <<include the name of public institution>> data architecture are: -

<<*Example 1*. Data Management: Define processes for managing data throughout its lifecycle, including how it is acquired, stored, processed, Archived and disposed. Enhance a framework for data management, including data storage, backup, and disaster recovery>>

<< *Example 2.* Data Governance: Create data governance policies and procedures to ensure <<include the name of public institution>>’s data comply with international standards and regulatory requirements>>

### Data Architecture Principles

The establishment of application architecture and decisions regarding applications should be guided by specific principles. These principles can assist decision-makers in making choices that align with the <<include the name of the institution>> goals.

Table 8: Outlines the Guiding Principles for Data Architecture

|  |  |
| --- | --- |
| **Principle #D1** | <<Insert principal name>>  << *Example 1*. Data is an Asset >> |
| **Statement** | << Should succinctly and unambiguously communicate the fundamental rule>>.  << *Example 1*. Information management decisions are made to provide maximum benefit to the enterprise as a whole. >> |
| **Rationale** | <<Should highlight the business benefits of adhering to the principle, using business terminology.>>  << *Example 1*. Data is the foundation of our decision-making, so we must also carefully manage data to ensure that we know where it is, can rely upon its accuracy, and can obtain it when and where we need it.>> |
| **Implications** | <<Should highlight the requirements, both for the business and IT, for carrying out the principle in terms of resources, costs, and activities/tasks>>  << *Example 1*. Data owner must have the authority and means to manage the data for which they are accountable as stipulated in Electronic Data Management Guidelines>> |

### Data Reference Model

<<include the name of public institution>> Data Reference Model (DRM) provides a structure that facilitates the development of data that can be effectively shared for better and more effective service delivery, improved decision making and improved performance.

The diagram in Figure 2 illustrates an example of data reference architecture framework with the components in Table 9:

*<< Public institution should develop its Data Reference Model>>*

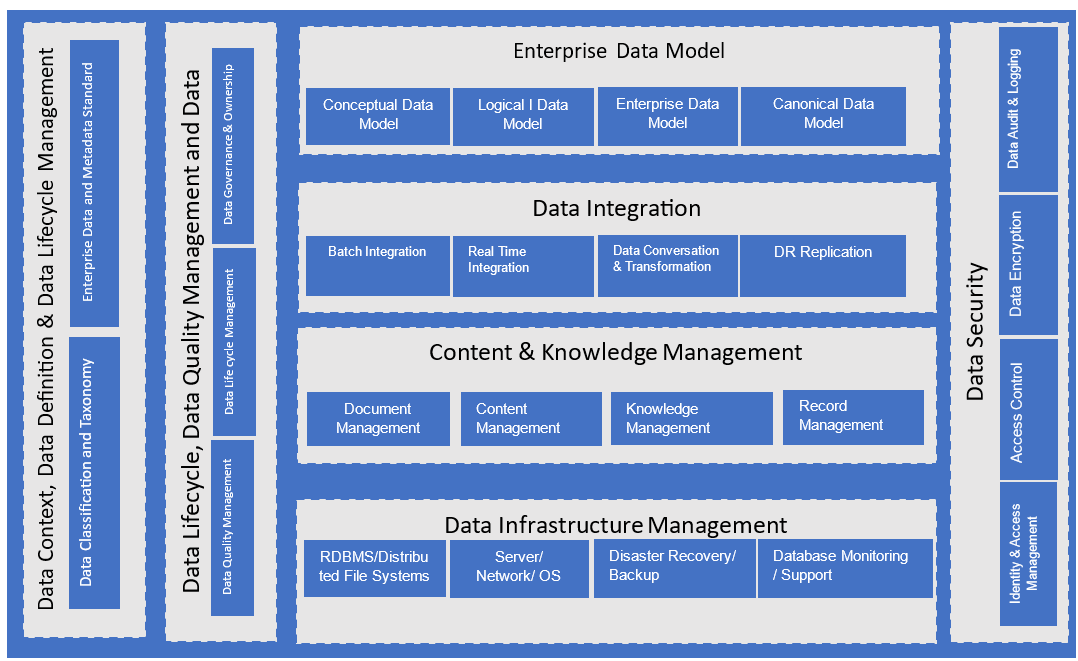
****

Figure 2: Sample Data Reference Model

#### Components of Data Reference Architecture Framework

Table 9: Components of Data Reference Architecture Framework

|  |  |  |
| --- | --- | --- |
| **S/N** | **Components** | **Description** |
|  | Data Life Cycle | <<Describe how the public institution manages data assets across data life cycle from creation, acquisition through archival and disposal >> |
|  | Data Quality | <<Describe how the public institution monitors and impose data quality based on the data quality management mechanism >> |
|  | Data Retention and Disposal | <<Describe how the public institution manages data retention and disposal >> |
|  | <<Update information here as per public institution data reference model >> | <<Update information here as per public institution data reference model >> |

#### Metadata Standards

<<Insert name of public Institution >> captures the following as minimum information during the creation of data dictionary: -

Table 10: Metadata Elements

|  |  |  |
| --- | --- | --- |
| **S/N** | **Metadata Elements** | **Description** |
|  | Data Element Name | This is the name of the data element |
|  | Reference Id | Unique code for data identification |
|  | Variable Name | Name of the generic or custom data element to be used in the database |
|  | Description | A simple and unambiguous definition of Generic or Custom Data Element |
|  | Category | **Generic or Custom**  Generic: A commonly used data element across different <<include the name of public institution>> applications  Custom: Used in a particular application only |
|  | Data Type | Varchar/Character/Decimal (for real/floating number)/Integer (Whole number)/Date etc |
|  | Data Format | Is the arrangement of data? |
|  | Maximum Size | Maximum Size of the data element |
|  | Validations | Generic validations for Generic Data and Specific Validations for custom data to be applied for acceptance of data |
|  | Values | List of Acceptable Values |
|  | Default Value | For any list of values, the default value to be used unless otherwise stated. |
|  | Owner | Name(s) of the public institution or departments who owns the data element/code directory and has the rights for updating |
|  | Based on | Reference to document/standard on the basis of which the data element is standardized. |
|  | Version | The version number of Data element |
|  | Status | Current status of Standard (Draft or Accepted) |
|  | Date Agreed | The date on which this version was accepted as Data Standard for Government |
|  | Verification | Steps taken to establish the correctness of Generic or Custom Data Elements. Such steps taken for different level of verifications by departments will be detailed here. |
|  | Comments | Additional Notes, if any (In English or Swahili) |
|  | Date of Publishing | The date on which Standard is published or PDF version will be created. |
|  | Example/Illustration | Suitable example of the data element to be given for clarity and ready reference. |
|  | Dependences | Condition if a variable is only allowed to be used if another variable has a specific value. |

#### Data Lifecycle Diagram

This part describes the <<Insert name of public institution>>’s data management throughout its life cycle: collection, creation, storage, transmission, data usage, data sharing, data retention and disposal as depicted below:



Figure 3: Data Life Cycle

### Baseline Data Architecture

The baseline data architecture outlines the existing state of data within <<Insert name of public institution>> where data entities and data sources are described.

#### Data Entities

The baseline data entity, description and basic data elements for data created and used across the <<Insert name of public institution>> are as described below.

Table 11: <<Insert name of public institution>> Baseline Data Entity

|  |  |  |  |
| --- | --- | --- | --- |
| **S/N** | **Data Entity** | **Data Entity Description** | **Basic data elements** |
|  | <<Insert data entity name>> | <<Insert Description of the data entity>> | <<List data element of the data entity>> |

#### Data Source

The <<Insert name of public institution>>data is obtained from its core business process, business support systems, and externally supporting organization;

#### <<include the name of public institution>> Entity Relationship Diagram

Table 12: Data Source

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/N** | **Processes** | **System** | **Description** | **Source of Data** |
|  | <<Insert process name>> | <<Insert system name>> | <<Insert process description>> | <<Insert process data source>> |

#### Challenges

<<Describe the challenges facing public institution’s data architecture:

*Example* Data Privacy and Protection: Ensuring the privacy and protection of citizens' data is paramount. This involves implementing robust security measures to prevent data breaches and unauthorized access;>>

### Target Data Architecture

The target data architecture outlines the future state of data within the <<insert name of public institution>> where data entities and data sources are described.

#### Data Entities

The target data entity, description and basic data elements for data created and used across the <<insert name of public institution>> are as described below.

Table 13: <<Insert name of public institution>> Target Data Entity

|  |  |  |  |
| --- | --- | --- | --- |
| **S/N** | **Data Entity** | **Data Entity Description** | **Basic data elements** |
|  | <<Insert data entity name>> | <<Insert Description of the data entity>> | <<List data element of the data entity>> |

The target data architecture should be improved as follows:

<<Describe suggested improvement in the public institution target data architecture>>

### Gap Analysis

This section focuses on valuation of the existing data architecture against the target data architecture envisioned to meet the desired state. Table 14 outlines the identified gaps with their respective recommendations intended to enhance the target application architecture.

Table 14: Data Architecture Gap Analysis

|  |  |  |
| --- | --- | --- |
| **S/N** | **Gap Description** | **Recommendation** |
|  | <<Insert gap description **Example** Data Governance >> | <<Insert recommendation Example Establish Data Policies, Data Dictionary, processes, and controls to ensure data quality, security, and compliance with regulations and organizational standards.>> |

Application Architecture

Application architecture refers to the high-level structure of applications, including how various components interact and work together to achieve the intended objectives while meeting business requirements and user needs, thereby enhancing operational efficiencies. This architecture should play a vital role in ensuring that <<Insert name of public institution>> applications support strategic goals and are adaptable to future challenges.

Application architecture has the following objectives: -

<<Insert application architecture objectives for public institution.

*Example 1***.** User-Centric Design**:** Enhance user satisfaction and productivity by prioritizing usability and accessibility >>

### Application Architecture Principles

The establishment of application architecture and decisions regarding applications should be guided by specific principles. These principles can assist decision-makers in making choices that align with the <<include the name of public institution>> goals. Table 15 outlines the guiding principles for <<include the name of the institution>> application architecture.

Table 15: Application Architecture Principles

|  |  |
| --- | --- |
| **Principle #A1** | <<Insert principles name>>  << *Example 1*. Technology Neutral >> |
| **Statement** | << Should succinctly and unambiguously communicate the fundamental rule>>.  << *Example 1*. applications should be designed and developed to be independent of specific technologies, allowing flexibility in choosing or switching technologies without requiring significant changes to the application itself. >> |
| **Rationale** | <<Should highlight the business benefits of adhering to the principle, using business terminology.>>  << *Example 1* Technology neutrality ensures that applications are not tightly coupled to any specific technology, platform, or vendor. This approach reduces the risk of technology obsolescence, minimizes vendor lock-in, and provides the flexibility to adopt new technologies as they emerge.>> |
| **Implications** | <<Should highlight the requirements, both for the business and IT, for carrying out the principle in terms of resources, costs, and activities/tasks>>  << *Example 1* Avoid using features or extensions that are specific to a particular vendor's technology, which can limit portability; and  Design applications to run on multiple operating systems and environments to ensures the application can be deployed in diverse IT environments.>> |

### Application Reference Model

This section outlines the Application Reference Model (ARM) which serves as a framework to be utilized in the development and implementation of applications in the <<include the name of public institution>>:

*<< public institution should develop its Application Reference Model>>*

### Baseline Application Architecture

The baseline application architecture outlines the existing state of applications within the *<<include the name of public institution>>.* It details their management alongside their appropriate business functions.

#### Baseline Applications

*<<Describe public institution baseline application architecture >>*

Table 16: <<include the name of the institution>> Core Business Functions with their Existing Applications

| **Department/Directorate/Unit** | **Description of function** | **Sub function** | **Application** |
| --- | --- | --- | --- |
| <<Describe name of Department/Directorate /Unit as per public institution’s structure>> | <<Describe functions of Department/Directorate /Unit>> | <<Describe section making the Directorate/Department/Unit (where applicable)>> | <<Describe services offered by the section >> |

Table 17: <<include the name of public institution>> Supporting Business Functions with their Existing Applications

| **Core Function** | **Sub function** | **Services** | **Application** |
| --- | --- | --- | --- |
| <<Describe name of Department/Directorate /Unit as per public institution’s structure>> | <<Describe section making the Directorate/Department/Unit (where applicable)>> | <<Describe services offered by the section >> | <<Describe Application used to offer service >> |

#### Baseline Application Graphical Overview

<<Provide diagrammatic representation of baseline applications architecture of public institution>>

#### Baseline Application Architecture Challenges

<<Describe the challenges facing public institution’s application architecture:

*Example*. Presence of Manual and Semi-Automated Systems: Despite some automation efforts, the <<include the name of public institution>> still relies on several manual processes that lack an automated system for streamlining. Additionally, other processes are only partially automated and not integrated, resulting in systems performing some tasks while the remaining steps require manual intervention.>>

### Target Application Architecture

Target application architecture entails creating a desired state for application architecture, which acts as a strategic framework to guide the development, deployment, and maintenance of software applications. This ensures alignment with business objectives and technical standards.

#### Target Applications

*<<Describe public institution target application architecture >>*

Table 18: <<include the name of the institution>> Core Business Functions with their Target Applications

| **Core Function** | **Sub function** | **Services** | **Application** |
| --- | --- | --- | --- |
| <<Describe name of Department/Directorate /Unit as per public institution’s structure>> | <<Describe section making the Directorate/Department/Unit (where applicable)>> | <<Describe services offered by the section >> | <<Describe Application used to offer service >> |

Table 19: Supporting Business Functions with their Target Applications

| **Supporting Function** | **Sub function** | **Services** | **Application** |
| --- | --- | --- | --- |
| <<Describe name of Department/Directorate /Unit as per public institution’s structure>> | <<Describe section making the Directorate/Department/Unit (where applicable)>> | <<Describe services offered by the section >> | <<Describe Application used to offer service >> |

### Target Application Architecture Graphical Overview

<<Provide diagrammatic representation of target application architecture of public institution>>

### Gap Analysis

This section involves a systematic evaluation of the existing architecture, processes, capabilities, and technologies against the target architecture envisioned to meet future needs. Table 20 outlines the identified gaps with their respective recommendations intended to enhance the target application architecture.

Table 20: Application Architecture Gaps with their Respective Recommendations.

| **S/N** | **Gaps** | **Recommendations** |
| --- | --- | --- |
|  | <<Insert gap description for application>> | <<Insert recommendation for the described gap>> |

Technology Architecture

<< Provide preamble on technology architecture in relation to business operation at public institution>>

<<Insert objectives of technology architecture at public institution>>

*Example*. Alignment with business goals: Ensure that technology infrastructure directly supports and enhances <<include the name of public institution>> strategic objectives, goals and business processes with agility and adaptability to changing business needs>>

### Technology Architecture Principles

Guiding principles for <<include the name of public institution>> technology architecture that will assist in creating resilient, scalable, secure, and user-centric technology solutions that deliver value to <<include the name of the institution>> and its stakeholders are as illustrated in Table 21:

Table 21: Technology Principles

|  |  |
| --- | --- |
| **Principle #T1** | <<Insert principle name>>  << Example 1. Infrastructure Resilience and Scalability >> |
| **Statement** | << Should succinctly and unambiguously communicate the fundamental rule>>.  << Example 1 Software and hardware should be built and set up to support business continuity, ensuring that operations can be resumed at the last recorded state despite potential technical and non-technical failures.>> |
| **Rationale** | <<Should highlight the business benefits of adhering to the principle, using business terminology.>>  << Example 1. To provide a scalable environment to support the overall SLA requirements that addresses availability and performance issues.>> |
| **Implications** | <<Should highlight the requirements, both for the business and IT, for carrying out the principle in terms of resources, costs, and activities/tasks>>  << Example 1. With regard to Archival and Backup, ensure that the infrastructure will have data and their sources span across multiple years. The archival and backup policy, and mechanisms have to address the archival and backup requirement of the system and are aligned with existing regulatory requirements>> |

### Technology Reference Model

The Technology Reference Model (TRM) provides a structured framework for understanding, selecting, and integrating technology components that support <<include the name of public institution>> business objectives and architectural requirements. This TRM supports and enables the delivery of application reference model, service components and capabilities as well as provides a foundation to advance the re-use and standardization of technology and service components from an organization-wide perspective.

*<< public institution should develop its Technology Reference Model>>*

### Baseline Technology Architecture

Baseline technology architecture covers the current state of an <<include the name of public institution>>technology environment. Baseline technology architecture description provides existing technology components as described below:

Table 22: Baseline Technology Architecture

|  |  |  |
| --- | --- | --- |
| **S/N** | **Component** | **Baseline Technology Architecture Description** |
|  | <<include the name of technology component>> | <<Include technology components currently used in public institution based on TRM such as Computing, Storage, Network, security, software and Infrastructure architecture>> |

#### Baseline Technology Architecture Challenges

<<Describe the challenges facing public institution’s technology architecture:

Example. Presence of outdated operating systems that pose security risks and challenges to effectively run up-to-date software applications.>>

### Target Technology Architecture

The technology architecture provides a clear path for development, implementation and management of <<include the name of public institution>> technology resources. The technology target architecture depicts a future state based on the vision and provides a technological framework for making that future a reality. The technology architecture aims to identify <<include the name of public institution>> requirements for future competitiveness and establish avenues for developing required technologies and skills. In addition, it assists the government in identifying and mitigating potential risks and uncertainties associated with technology advancement.

Target technology architecture description will include <<list all technology components desired to be used in public institution based on TRM such as Computing, Storage, Network, security, software and Infrastructure architecture>>

Table 23: Target Technology Architecture

|  |  |  |
| --- | --- | --- |
| **S/N** | **Component** | **Target Technology Architecture Description** |
|  | <<include the name of technology component>> | <<Include technology components desired to be used in public institution based on TRM such as computing, storage, network, security, software and infrastructure architecture>> |

### Gap Analysis

Table 24: Technology Architecture Gap Analysis

| **S/N** | **Gaps** | **Recommendations** |
| --- | --- | --- |
|  | <<Insert technology description >> | <<Insert recommendation>> |

Security Architecture

Security architecture provides a comprehensive framework that ensures the confidentiality, integrity and availability of information systems and data while maintaining alignment with the overall <<include the name of public institution>> Strategic Plan. Security architecture encompasses the whole ICT security posture including the current state, targeted state, and technical controls necessary to safeguard against internal and external threats.

<<Insert objectives of security architecture at public institution>>

*<<Example*. Confidentiality: Protect sensitive information by implementing strong encryption, access control mechanism, from unauthorized access and disclosure.>>

### Security Architecture Principles

The creation of security architecture and associated decisions should be guided by specific principles. These principles ensure that ICT security plans and initiatives align with the <<include the name of public institution>> objectives. Table 23 outlines the guiding principles for the <<include the name of public institution>> security architecture.

Table 25: Security Architecture Principles

|  |  |
| --- | --- |
| **Principle # S1** | **<<Insert principle name>>**  **<<Example: Secure by design>>** |
| **Statement** | << Should succinctly and unambiguously communicate the fundamental rule>>.  << Example 1: Incorporate security considerations into the design, development and deployment of systems and infrastructure. >> |
| **Rationale** | <<Should highlight the business benefits of adhering to the principle, using business terminology.>>  << Example 1: Embedding security into the design phase helps identify and mitigate potential vulnerabilities early in the development process and reduces vulnerabilities, cost and efforts associated with retroactive fixes.>> |
| **Implications** | <<Should highlight the requirements, both for the business and IT, for carrying out the principle in terms of resources, costs, and activities/tasks>>  << Example 1. Ensure that security requirements are defined during the initial stages of project planning.>> |

### Security Reference Model

The Security Reference Model (SRM) is a structured framework designed to comprehensively represent the ICT security posture and functions of the <<include the name of public institution>>. Its purpose is to offer a functional perspective that identifies the essential security capabilities needed to protect ICT systems and infrastructure. As a foundational security architecture requirement, the SRM will influence and guide the development of both baseline and target security architectures, thereby enhancing the overall ICT security posture of the <<include the name of public institution>>.

*<< public institution should develop its Security Reference Model>>*

### Baseline Security Architecture

Baseline security architecture provides an overview of the <<include the name of public institution>> current security posture. This outlines various security initiatives and efforts implemented by the <<include the name of public institution>>, utilizing ten (10) Government Security Domains. Table 24 below illustrates baseline security architecture of the <<include the name of public institution>>.

Table 26: Baseline Security Architecture

|  |  |  |
| --- | --- | --- |
| **S/N.** | **Government Security Domains** | **Domain Status**  << Include baseline security architecture component applicable for each security domain>> |
| 1. | ICT security governance and management |  |
| 2. | ICT security operation |  |
| 3. | Identity and access management |  |
| 4. | Security of ICT assets |  |
| 5. | ICT security incident management |  |
| 6. | Information system continuity management |  |
| 7. | Information system acquisition Development and Maintenance |  |
| 8. | Human resource security |  |
| 9. | Physical and environment security |  |
| 10. | ICT security compliance and audit |  |

#### Security Architecture Challenges

<<Describe the challenges facing public institution’s security architecture:

<<Example: The rise in global cyber threats has intensified the effort required to maintain a secure environment. Persistent vulnerabilities pose significant risks, necessitating immediate and comprehensive mitigation strategies to safeguard organization ICT systems and infrastructure effectively.>>

### Target Security Architecture

Target security architecture presents the envisioned future state of an <<include the name of public institution>> security posture. It aims to provide a comprehensive, adaptive, and resilient security position that aligns with the <<include the name of public institution>> strategic goals. Through these target security efforts, the <<include the name of public institution>> can create a secure environment that protects against cyber threats, supports regulatory compliance, and provides a stable foundation for future security enhancements. Table 27 below outlines target security architecture.

Table 27: Target Security Architecture

|  |  |  |
| --- | --- | --- |
| **S/N.** | **Government Security Domains** | **Domain Status**  *<< Include target security architecture component applicable for each security domain>>* |
| 1. | ICT security governance and management |  |
| 2. | ICT security operation |  |
| 3. | Identity and access management |  |
| 4. | Security of ICT assets |  |
| 5. | ICT security incident management |  |
| 6. | Information system continuity management |  |
| 7. | Information system acquisition Development and Maintenance |  |
| 8. | Human resource security |  |
| 9. | Physical and environment security |  |
| 10. | ICT security compliance and audit |  |

### Gap analysis

Table 28: Security Architecture Gap Analysis Results

|  |  |  |
| --- | --- | --- |
| S/N | Gaps | Recommendations |
|  | <<Insert security description >> | <<Insert recommendation.>> |

Architecture Requirements Management

### Architecture Requirements

Architectural requirements detailing the technical and operational needs that an <<include the name of public institution>> architecture must fulfil to ensure that the system or structure meet the intended goals and perform as expected are outlined in the Table 29 below;

Table 29: Architecture Requirements

|  |  |  |
| --- | --- | --- |
| **S/N** | **DESCRIPTION**  **<<Describe appropriate architectural requirement for public institution>>** | **PRIORITY** |
|  | <<Example 1: The architecture implemented shall align with <<include the name of public institution>> business goals and objectives>> | <<High>> |
|  | <<Example 2: All business processes shall be integrated and allow seamless information exchange>> | <<High>> |

### Interoperability Requirements

Interoperability provides a framework to share, collaborate and integrate information and <<include the name of public institution>> processes by use of common standards. Interoperability requirements refer to the specifications and guidelines that ensure different systems, applications, and components can work together effectively.

<<insert interoperability requirements for public institutions. Example: Ensure that business processes across different sections or departments are aligned, which includes having compatible workflows, procedures, and practices that facilitate seamless interaction;>>

### Opportunities and Solutions

This phase is essential for setting the foundation and direction for successful implementation of the <<include the name of public institution>>’s enterprise architecture initiatives. It involves identifying potential areas where enterprise architecture can add value by improving business processes, aligning ICT with business goals, enhancing agility, and driving innovation. In order to achieve all the aforementioned, the <<include the name of public institution>> has identified projects, programs, and portfolio that will effectively deliver the <<include the name of public institution>>’s target architecture identified in previous phases.

### Consolidated Gap Analysis with their Solutions

Table 30: Consolidated Gaps, Solutions and Dependencies Matrix

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Consolidated Gaps, Solutions, and Dependencies Matrix** | | | | |
| **S/N** | **Architecture** | **Gap** | **Potential Solutions** | **Dependencies** |
| 1. | Business | <<Example: Inadequate of automation >> | <<Example: automate business process in existing systems>> | <<Example: Availability of fund, expertise>> |
| 2. | Technology | <<Example: Outdated Operating Systems>> | <<Example: Replace all operating systems that have reached end of life with supported ones.>> | <<Example: Availability of trained personnel, Availability of equipment>> |
| 3. | Data | <<Example: Lack of standardized data exchange protocols >> | <<Example: Adopt and enforce open standards (e.g., XML, JSON, APIs) >> | <<Example: Develop comprehensive data governance framework. >> |
| 4. | Application | <<Example: Inadequate System documentation >> | <<Example: Ensure all aspects of systems development are well-documented. >> | <<Example: Documentation tools, Business analyst, technical writers, developer cooperation, continuous integration processes. >> |
| 5. | Security | <<Example: Multi-factor authentication (MFA) >> | <<Example: Implement a comprehensive cybersecurity framework including multi-factor authentication (MFA) >> | <<Example: Fund, Developers, ICT security expertise and integration with existing security systems. >> |

Migration Planning

### Implementation and Migration Strategy

<<Include implementation and migration strategy detailing strategic approach to implement proposed solution. Example: Customization of opensource solutions, this involves adopting existing open source solutions and modify to meet organization needs for reducing costs and enhancing security while ensuring compliance with regulations and standards.>>

### Implementation and Migration Plan

Below is a structured process that involves several key steps to ensure <<include the name of public institution>> achieve a successful alignment of its business and IT strategies. The developed implementation and migration plan for <<include the name of public institution>> outlines the steps necessary to successfully deploy the new system and transition from the old system to the new one. This includes but not limited to infrastructure preparation, training users, migrating data, and ensuring minimal disruption to operations. Detailed Implementation and Migration plan depicted in Table 31.

Table 31: Implementation and Migration Plan

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Program** | **Project** | **Milestones** | **Timeline** | | | **Resource Requirements and Costs** |
| **Duration** | **Start Date** | **End date** |  |
| <<*Example 1*: Documentation >> | <<Example 1: Data Policy >> | <<*Example 1*: Approved Data Policy >> | <<*Example 1: 4* Month >> | <<*Example 1*: Nov 2024 >> | <<Example 1: Jan 2025 >> | <<Example 1: -Financial Resources  -Personnel >> |
| <<*Example 2*: Acquisition and Configuration >> | <<*Example 2:* Supply and installation of hardware and software:  Storage, servers, switch and router >> | <<*Example 2:* Acquired Software/Hardware >> | <<Example 2: 12 Month >> | <<*Example* 2: Jan 2025>> | <<*Example* 2: Dec 2025 >> | <<*Example 2*: -Financial Resources  -Personnel  -Procurement Regulations >> |

### <<Include the name of public institution>> Architecture Roadmap

<<Draw architecture roadmap based on implementation and migration plan>>

Architecture Implementation

This section outlines the standards and guidelines that <<include the name of public institution>> will adhere during the implementation of enterprise architecture.

### Implementation Standards

<<include the name of public institution>> shall adhere with the existing e-Government Standards and Guidelines during the implementation of enterprise architecture.

Architecture Governance

Governance of enterprise architecture is essential for ensuring that <<include the name of public institution>> enterprise architecture initiatives are aligned with business goals, compliant with standards, and effectively managed. The governance of <<include the name of public institution>> enterprise architecture will ensure consistency, enhances decision-making, and mitigates risks, ultimately contributing to the achievement of organization strategic goals and objectives.

### Architecture Governance Structure

<<Define and establish architecture governance structure and framework>>

<<Describe roles and responsibilities of each component of organization structure for enterprise architecture>>

### Architecture Compliance Review

Enterprise architecture compliance review involves assessing whether <<include the name of public institution>> ICT projects, systems, and processes align with enterprise architecture principles, standards, and guidelines. This process ensures that ICT investments support <<include the name of public institution>> business goals and strategy. Compliance review of <<include the name of public institution>> enterprise architecture will be conducted by a team that will be formulated by the Enterprise Architecture Committee. The procedures for conducting enterprise architecture compliance review are:-

#### Architecture Review Preparation

#### Define the Scope

1. Identify projects and systems by listing all the projects, applications, systems, and technologies to be reviewed; and
2. Establish the criteria and checklist for architecture compliance review based on the <<include the name of public institution>> enterprise architecture framework, principles, standards, and policies.

#### Gather Documentation

1. Collect the enterprise architecture documents, including principles, standards, reference models, and guidelines; and
2. Gather relevant project documents, such as architecture diagrams, technical specifications, design documents, and implementation plans.

#### Architecture Review Process

#### Initial Assessment

1. Evaluate the gathered documentation against the enterprise architecture standards and principles; and
2. Identify any discrepancies or gaps between the project/system and the enterprise architecture guidelines.

#### Stakeholder Interviews

1. Interview key stakeholders, such as project managers, architects, developers, and business analysts, to gain insights into the project and its alignment with the enterprise architecture; and
2. Use interviews to clarify any issues or ambiguities found in the initial assessment.

#### Detailed Analysis

1. Perform a detailed analysis of each project/system to assess its compliance with the enterprise architecture principles and standards; and
2. Utilize checklists to evaluate compliance across various dimensions, such as business, data, application, technology, and security architectures.

#### Architecture Compliance Review Reporting

#### Compliance Review Report

1. Compile the findings of the compliance review, highlighting areas of compliance, partial compliance, and non-compliance; and
2. Offer recommendations for addressing non-compliance issues, such as architectural changes, additional documentation, or process improvements.

#### Compliance Review Report Presentation

1. Present the findings and recommendations to key stakeholders, including project teams, and business owners; and
2. Discuss and agree on action plans to address identified gaps and improve compliance.

#### Implementation Follow Up

#### Monitor Implementation

1. Monitor the implementation of the recommended actions to ensure that compliance issues are being addressed; and
2. Offer ongoing support and guidance to project teams as they work to align with enterprise architecture standards.

#### Re-Assessment

1. Conduct the enterprise architecture compliance review semi-annually to ensure continuous compliance with the enterprise architecture framework; and
2. Update the enterprise architecture documentation as necessary to reflect changes in standards, technologies, or business needs.

Architecture Change Management

Architecture change management will ensure changes to the <<include the name of public institution>> enterprise architecture is managed in a controlled and systematic way. This process will enable <<include the name of public institution>> to effectively adapt the enterprise architecture to evolving business needs, technology advancements, and regulatory requirements while maintaining alignment with overall strategic goals.

### Architecture Change Approaches

This part describes approaches that will be used by <<include the name of public institution>> during the execution of architectural change depending on the nature of change. The architectural change approach may be one of the following.

1. **Simplification Change**: This change approach aims to streamline and optimize the existing architecture by consolidating systems and simplifying processes. These changes often have minimal impact on the overall architecture but can significantly improve efficiency and reduce complexity;
2. **Incremental Change**: This change approach involves making gradual improvements and enhancements to the existing architecture. These changes are planned and executed in small, manageable increments, allowing for continuous improvement without significant disruption; and
3. **Re-Architecting Change**:This change involves a fundamental overhaul of the existing architecture. These changes are typically driven by significant shifts in business strategy, technology advancements, or major issues with the current architecture.

### Architecture Change Management Procedures

The steps for target architectural change management are:-

1. **Initiate Change Request**: Stakeholder/Enterprise Architecture Team identifies a need for architectural change and submit to the Enterprise Architecture Committee. This could be due to new technologies, business needs, or addressing existing issues.
2. **Preliminary Review**: The Enterprise Architecture Committee conducts an initial review to ensure completeness and categorizes the request.
3. **Impact Analysis**: A detailed analysis is performed by the Enterprise Architecture Committee to understand the impact and risks associated with the change.
4. **ICT Steering Committee Review**: The ICT Steering Committee reviews the request and decides whether to approve or reject it.
5. **Planning**: If the change has been approved, a detailed implementation plan is developed, and stakeholders are informed.
6. **Implementation**: The change is executed according to the plan, with on-going monitoring to track progress.
7. **Review and Close**: A post-implementation review is conducted to ensure the change has been successful, and documentation is updated.

# IMPLEMENTATION, ENFORCEMENT AND REVIEW

Implementation and Reviews

* + 1. This document shall come into operation once approved, and then shall be considered mandatory for all <<include the name of public institution>> business operations;
    2. This document shall be reviewed within three years, or whenever business environment of <<include the name of public institution>> changes in a way that affects this current document.
    3. In case of any exceptions to this document, it shall be thoroughly documented and follow through a proper channel of authorization using the same authority which approved this document.

Exceptions

In case of any exceptions to this document, it shall be thoroughly documented and follow through a proper channel of authorization using the same authority which approved this document.

# GLOSSARY AND ACRONYMS

## **Glossary**

|  |  |
| --- | --- |
| **Term** | **Description** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

## **Acronyms**

|  |  |
| --- | --- |
| **Term** | **Description** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

# RELATED DOCUMENTS

<<List related documents that were referred during development of the enterprise architecture>>

# DOCUMENT CONTROL

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Name | Comment | Date |
| Ver. 1.0 | <<include the name of public institution>> | Creation of Document | << MM/YYYY>> |