Information and Data Management Policy

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1 PURPOSE AND OBJECTIVES

The Information and Data Management policy sets out the commitment, direction and intent of strategic management pertaining to governance of the information and data management practice of Telkom SA SOC Limited (hereinafter referred to as "Telkom").

The purpose of the policy is to inform the Telkom-wide approach for effectively managing information and data, in a unified and consistent manner. This is to ensure successful data and information use and relevant input to the management making decisions aligned to Telkom's strategic and operational priorities.

The objective of the policy is to provide guiding principles for:

I. Identifying the information business needs (current and future);

II. Sourcing, categorising and storing information and data;

III. Managing the use of information;

IV. Managing the use of data and its transformation into information;

V. Adopting a data governance framework and strategies; and

VI. Compliance to legislation.

2 APPLICABILITY AND SCOPE

This policy outlines Telkom's information and data management policy and is applicable to all underlying information across its owned entities, clients, systems, people, and processes. The information and data management policy provides guiding principles in the following areas: Data Governance and Management; Data Architecture; Data Modelling and Design; Metadata; Reference and Master Data; Data Integration and Interoperability; Data Security; Data Storage and Operations; Document and Content Management; Data Quality; Warehousing and Business Intelligence; Data Maturity Assessments; and Data Science.

3 CONTEXTUAL BACKGROUND

Telkom shall adopt the DAMA - DMBoK framework and the TM Forum guidebook for data management to establish its enterprise-wide data management program that is critical to Telkom in order to meet regulatory and business imperatives.

The policy commits the intention of data governance to ensure that data in the enterprise is reliable, consistent, complete, easily available to data users, and unavailable to those without a legitimate need or authorisation for it.

Architecture plays a key role in Telkom achieving a mature Data Management and Governance practice. Solution Architecture, Enterprise Architecture and Data Architecture are the supporting disciplines.

Solution Architecture: The objectives of solution architecture are to define and manage architecture that relates to the specific Information System design that caters towards a specific business capability, e.g., Core Commerce Management.

Enterprise Architecture: The objectives of enterprise architecture are to define and manage architecture that ensures coherence between diverse business entities, solutions and technologies.

4 POLICY STATEMENT IN RESPECT OF INFORMATION AND DATA MANAGEMENT

4.1 Data Governance and Management

4.1.1 Data Governance

A Data Governance framework, including standards and process, has been established, implemented, operated, monitored, reviewed, maintained and improved to ensure that appropriate authority and control is applied to data, and that data is managed in line with legislative and other compliance obligations, such as regulations and contracts.

4.1.2 Data Management

Data is considered as a corporate asset which must be readily available to staff with a legitimate business need. The data management process shall specify data collection, storage, access, use, disclosure, archiving and disposal to meet the data quality and legislative and regulatory stipulations. Data attributes shall include data accuracy, completeness, timeliness, trustworthiness, business rules compliance, consistency and ability to integrate. Each dataset shall be assigned a data owner and data steward that ensures the data is fit for purpose.

4.2 Data Architecture

Data Architecture in the context of Solution Architecture often relates to higher level data entities, their relationships in line with a standardized model, as well as Data transfer objects and the defined boundaries of system and business integration points.

Data Architecture in the context of Enterprise Architecture often relates to Low Level Data Entities, their relationships, as well as Data Transfer Objects internal to the solution, and defined integration points for the solution.

Data architecture shall address data in storage and data in motion (data being transported between locations either within or between computer systems); descriptions of data stores, data groups and data items; and mappings of those data artefacts to data qualities, applications, and locations. Data shall be defined consistently, and the definitions are understandable and available to all users.

4.3 Reference and Master Data

Telkom shall establish reference and master data management processes of defining how master data and reference data shall be created, integrated, maintained and used. Master data refers to data units that are non-transactional and remains unchanged over a period of time. Reference data refers to the data objects relevant to transactions, consisting of sets of values, statuses or classification schema.

The master data management process shall comprise of people, processes, and technology and shall link corporate critical data together and provide a common point of reference and sharing to facilitate computing in multiple system architectures, platforms and applications.

4.4 Data Integration and Interoperability

Telkom shall establish data integration and interoperability processes relating to the movement and consolidation of data within and between business boundaries, data stores and applications. Integration shall consolidate data into consistent forms, either physical or virtual. Conceptual, logical and/or physical data models shall enable data integration between

systems. Data owners shall ensure that data is fit-for-purpose and shall facilitate data integration. Telkom shall maintain a shared library of data exchange standards.

4.5 Data Security

Telkom shall establish data security measures including protective digital privacy measures that are applied to prevent unauthorised access to computers, networks, systems, databases and websites/portals. The data security process shall include the planning, development, and implementation of data related security policies, standards and procedures (such as Data Classification Standard and Database Security Standard) to provide proper authentication, authorisation, access, and auditing of data and information assets, to protect information in alignment with privacy and confidentiality regulations, and contractual agreements.

4.6 Data Classification

Telkom shall establish a data classification standard and data protection requirements with the following classification taxonomy:

I. Top Secret: Data relating to the most confidential and commercially sensitive information within Telkom;

II. Confidential: Personal, commercially or financially sensitive data that is functionally restrictive;

III. Internal Use: Data that is for internal Telkom use and relates to confidential or proprietary processes; and

IV. Public: Data that may be freely shared with all parties within Telkom and externally.

4.7 Data Storage and Operations

Telkom shall establish data storage and operations processes which shall include the design, implementation, and support of stored data, to maximize its value throughout its lifecycle, from creation/acquisition to disposal. Data and information shall be stored throughout its existence in an environment suited to its format and security classification, to ensure its preservation from degradation and its security from loss or unauthorised access.

Information shall be stored in systems and according to classifications, frameworks and procedures that enable it to be readily identified and retrieved throughout its existence. Information held in digital formats shall be managed and stored in such a way as to ensure usability and accessibility through time.

Business units and System/Data Owners are responsible for the storage of data in an environment that is secure, robust and resilient. Telkom adopts a consistent approach towards data server hosting and exploit the benefits of using a centrally managed and virtualised private ‘cloud’ solution. A disaster recovery plan shall be created, implemented and rehearsed to ensure service disruption is minimised in the event of a system outage. Database administrators (DBAs) shall be involved in both aspects of data storage and operations as this is a highly technical side of data management.

4.8 Document and Content Management

Telkom shall establish document and content management processes to control the capture, storage, access and use of data and information stored outside relational databases with a focus on maintaining the integrity of and enabling access to documents and other

unstructured or semi-structured information which makes it roughly equivalent to data operations management for relational databases.

4.9 Data Quality

Telkom shall establish data quality programs and standards to ensure its data is up-to-date, complete and of sufficient quality appropriate to support its intended use. Data quality criteria include: the integrity, accuracy, completeness, timeliness, relevance, consistency and reliability of data. quality metrics for Telkom data shall be established, and a data quality profiling and cleansing plan be created.

4.10 Warehousing and Business Intelligence

Telkom shall establish an enterprise data warehouse as a central repository of integrated data from disparate sources of current and historical data for data analysis, reporting and decision-making. The data warehouse shall support data virtualization in the organisation. Whilst warehousing extracts the data out of operational context for analysis, data virtualization keeps the data in an operational context for use by systems.

4.11 Data Management Maturity Assessment

Telkom shall establish a data management maturity program to assess the enterprise data management function. This function shall be sustained by business and the program shall centre around the Data Management Maturity (DMM) model, a comprehensive framework of data management practices in six key categories that helps organisations benchmark their capabilities, identify strengths and gaps, and leverage their data assets.

4.12 Data Science and AI

Artificial Intelligence (AI) is the simulation of human intelligence by Computer Systems. The adoption of AI will enable the organisation to become more productive, efficient, and competitive by automating tasks, providing advanced analytics and enhanced decision-making capabilities. Telkom shall establish a policy that will guide the practice and adoption of Data Science and AI in operations and technology.

5 ROLES AND RESPONSIBILITIES

5.1 Ownership of Policy

Policies that inform the governance of Information and Data Management are established, maintained and monitored by IT Governance. The Information and Data Management policy shall be commissioned, reviewed and approved by the policy owner. The policy owner approves key performance indicators for measuring the process.

5.2 Ownership of Frameworks, Processes and Procedures

Processes and procedures relating to the management of the Information and Data Management Policy, are established, maintained and monitored under the custodianship of IT Governance. The process owner has complete responsibility and accountability for the Service Management process. The owner provides input into the process scope and design; and review and approve process documentation to be used throughout the Service Management process.

6 OPERATIONAL ROLES AND RESPONSIBILITIES

6.1 Data Owner

At executive level or higher, this senior leader in the organisation has the authority to make decisions regarding data, is responsible for the quality of data; and is ultimately accountable for the state of the data as an asset in their domains.

6.2 Data Steward

The role of the team of data stewards is clearly described and outlined in the Data Governance Framework. Collectively, data stewards manage data, on behalf of their respective business units, to the best interests of the organisation and work towards a common goal i.e., increasing the quality and integrity of data within the organisation.

6.3 Enterprise Architecture Team - Data Architects

Data Architects define the data architecture that exists between the Business Architecture and the Information Systems Architecture. They highlight how data is used in a business process/function and passed between business processes/functions. It also highlights from and to which information systems that data is passed.

6.4 Database Administrator

The database administrator performs the day-to-day data operations and security activities.

7 GOVERNANCE OF INFORMATION AND DATA MANAGEMENT

The data governance organisation will comprise various role players who will fulfil different roles, from strategic to tactical to operational. Every Business Unit/Subsidiary will have their compliment of role players to execute the data governance and data management mandates.

7.1 Strategic level

The Data and Information Governance Forum govern ownership over data assets in order to meet regulatory and business imperatives in Telkom. Their oversight includes strategic alignment of data management, data privacy and regulatory compliance and data classification, quality of data and business intelligence.

7.2 Tactical level

The IT Leads are responsible to direct and monitor data management of all data within their domains. Data architecture in respect of systems under development is managed within the respective projects and system development life cycle.

7.3 Operational level

Monitoring of data, corrupted data and problem areas, are monitored at operational level by the relevant IT Operations Managers.

8 APPENDIX A: DEFINITIONS, ACRONYMS, REFERENCE DOCUMENTS, LAWS & REGULATIONS

8.1 Definitions

Definitions	Description
Accuracy	The degree to which data are the correct values.
Consistency	The degree to which documentation, definitions, methodologies, classifications and target populations are common within and across areas of the flow of data to information.
Completeness	The degree to which all data required by standards are captured. The degree to which the documentation underlying the data is complete.
Data	Distinct pieces of information i.e., facts and statistics, collected together and formatted in a special way for reference or analysis.
Data Architecture	Defining the blueprint for managing data assets.
Data Assets	An identifiable collection of data stored in any manner and recognised as having value for the purpose of enabling an organisation to perform.
Data Governance	The exercise of authority and control (planning, guiding and monitoring) over the management of an organisation's data assets.
Data Quality Management	Defining, monitoring and improving data quality.
Data Virtualization	Data virtualization technology gives users fast access to data housed throughout the enterprise - including in traditional databases, big data sources, and cloud and IoT systems.
Dataset	A collection of related sets of information that is composed of separate elements but can be manipulated as a unit by a computer.
Entity Data Model	A set of concepts that describe the structure of data, regardless of its stored form. The Entity Data Model addresses these challenges by describing the structure of data in terms of entities and relationships that are independent of any storage schema.
Framework	A library that provides a skeleton for your application. It provides generic things that almost all tasks/applications need.
Information	Facts provided or learned about something or someone – provides context for data.
Integrity	The quality of correctness, completeness, wholeness, soundness and compliance with the intention of the creators of the data.

Definitions	Description
Metadata	Metadata includes information about technical and business processes, data rules and constraints, and logical and physical data structures. It describes the data itself (e.g., databases, data elements, data models), the concepts the data represents (e.g., business processes, application systems, software code, technology infrastructure), and the connections (relationships) between the data and concepts.
Project	A series of tasks that need to be completed in order to reach a specific outcome.
Timeliness	The time difference between the end of the reference period and when the data for that period is made available.

8.2 Acronyms

Acronyms and Abbreviations	Description
BU	Business Unit
CDM	Conceptual Data Model
DAMA - DMBoK	The Data Management Body of Knowledge
DBA	Database Administrator
DMM	Data Management Maturity
DW	Data warehouse
EDM	Enterprise Data Management Council
ERD	Entity Relationship Diagram
ISO	International Organisation for Standardisation
IT	Information Technology
SLA	Service Level Agreement

8.3 Reference Documents

I. King IV Code on Corporate Governance
II. DAMA - DMBoK Edition 2, 2017
III. TM Forum
IV. ISO 8000 - Guidance on data and information
V. Data Classification Standard

VI. Database Security Standard

8.4 Laws and Regulations

I. The Promotion of Access to Information Act 2 of 2000

II. Electronic Communications and Transactions Act 25 of 2002

III. The Protection of Personal Information Act 4 of 2013