



National Data Standards

National Planning Council



Strategic Alignment

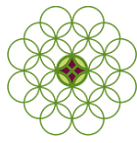
**Qatar National
Vision 2030**



Economic
development

Build world-class infrastructure with efficient and effective delivery mechanisms for public services and institutions.

**Third National
Development
Strategy 2024 - 2030**



Building a
Sustainable Future

Plan for the next phase of Qatar's development journey towards realizing the Qatar National Vision 2030.

**Personal Data
Privacy Protection
Regulations
by NCSA**



National Cyber
Security Agency

Oversee and ensure the safety and reliability of the national Qatar cyber security ecosystem through; delivering robust cyber security services.





Document Summary

Name	National Data Standards
Version	1.0
Document Reference	S001
Document Type	Standards
Summary	<p>The “National Data Standards” published by the National Planning Council (NPC) outlines guidelines for effective data management across entities in the State of Qatar. It aims to leverage data as a strategic resource to drive innovation and economic growth in alignment with Qatar’s National Vision 2030 and National Development Strategy 3.0. The document details standards for several key data management domains, ensuring that data handling processes are robust, compliant with international best practices, and capable of supporting Qatar’s digital transformation goals and the third national development strategy goals. These standards mandate compliance for continuous improvement and strategic alignment of data management and statistics initiatives.</p>
Publishing Date	October 2024
Adoption Period	All entities addressed by the provisions of these standards are required to achieve compliance within 36 months from the date of their publication, in accordance with the timelines specified in this document.
Owner	National Planning Council (NPC)
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Acronyms

NPC

National
Planning Council

DAMA

Data
Management Association

DMBOK

Data Management
Book of Knowledge

NCSA

National Cyber
Security Agency

NDS

National Development
Strategy 3.0

ISO

International Organization
for Standardization

DCMI

Dublin Core
Metadata Initiative

TOGAF

The Open Group
Architecture Framework

NQAF

National Quality
Assurance Framework

GSBPM

Generic Statistical
Business Process Model



Glossary of Terms and Definitions

In the context of the National Data Standards, the terms and phrases used herein are defined as follows, except where the context explicitly indicates otherwise:

Term	Definition
Government Entity	Ministries, government bodies, authorities, or public institutions, as applicable.
Semi-government Entity	Private institutions of public benefit, sports institutions, associations, and similar entities whose budgets are funded or partially supported by the country.
Private Sector	Commercial companies operating in the state, whether owned by the state, with state participation, or owned by private sector individuals.
Algorithm Design	The process of defining a step-by-step solution to a problem, including the creation of pseudocode, flowcharts, and detailed logic for data processing tasks.
Artificial Intelligence (AI)	The simulation of human intelligence in machines that are programmed to think, learn, and perform tasks typically requiring human intelligence, such as decision-making, problem-solving, and language understanding.
Charging Model	A structure or plan used to determine how data services and products are priced, billed, and paid for by users. This model outlines various pricing strategies, usage metrics, and billing cycles.
Data & Analytics Director	A member of the executive management team responsible for the enterprise's overall data strategy, data governance, data quality, and data utilization. The Data & Analytics Director ensures that data assets are maximized for value, compliance with data-related regulations is maintained, and data-driven decision-making is enabled across the organization.
Class Diagrams	A type of static structure diagram in UML that describes the structure of a system by showing its classes, attributes, operations, and the relationships among the objects.
Conceptual Data Model	A high-level, technology-agnostic diagram of data objects and their relationships. It outlines the structure of organizational data without detailing any specifics of how data is stored, managed, or manipulated. This model helps in understanding the big picture of the data landscape and is crucial during the initial phase of database design.
Data Analytics	The process of examining data sets to draw conclusions about the information they contain, often using specialized software and algorithms. This includes descriptive, diagnostic, predictive, and prescriptive analytics

Term	Definition
Data Committee	A group of key stakeholders responsible for overseeing data management practices, ensuring alignment with business objectives, and guiding the implementation of the data strategy
Data Contract	An agreement that outlines the terms and conditions under which data is provided or exchanged, including parties involved, data description, security and privacy requirements, terms of access, customer obligations, termination conditions, and data retention and deletion policies.
Data Flow Diagrams (DFD)	Visual representations of the flow of data within a system, showing how data is processed by various components and interactions between different system parts.
Data Marketplace	An online platform where data providers can list and sell their data to interested buyers, including both raw data and APIs.
Data Monetization	The process of leveraging data assets to generate revenue, often through the sale of data or insights derived from data analysis
Data Platform	A comprehensive platform that not only provides data but also includes tools and functionalities to analyze and visualize that data.
Data Products	Outputs generated from data processing activities that can be sold or used to add value to the organization. This includes raw data, Data-as-a-Service (DaaS), data platforms, and data marketplaces
Data Profiling	The process of examining data from an existing information source to collect statistics and information about its structure, content, and quality
Data Readiness	The extent to which data is prepared and suitable for use in analytics and decision-making, including its quality, completeness, and availability
Data Steward	A role responsible for overseeing data quality, data management, and data policy enforcement, ensuring that data standards and policies are developed and maintained in accordance with the best interests of the organization.
Data-as-a-Service (DaaS)	A service model where data is provided through an API or online service, allowing customers to access up-to-date or real-time data directly through web services.

Term	Definition
Database Schema Design	The blueprint of how a database is structured, including tables, columns, data types, and relationships between tables.
Generative AI (GenAI)	A subset of AI that uses algorithms and models to create new content, such as text, images, or music, based on training data, enabling machines to generate human-like responses and outputs.
Governance Checkpoint Process	A review or control mechanism within an organization’s governance framework where decisions are reviewed, outcomes are evaluated, and compliance with established policies, standards, or regulations is assessed. It ensures alignment with strategic goals and governance requirements.
Information System	A coordinated set of components and resources which collect, process, store, and distribute information. Typically includes software, hardware, data, procedures, and the people who interact with these components.
KPIs (Key Performance Indicators)	Metrics used to measure the effectiveness and performance of data management activities
Logical Model	An extension of the conceptual model, incorporating attributes for business entities and adding less significant entities and relationships
Metadata	Information that describes other data, providing details such as origin, structure, usage, and meaning. Key aspects include metadata quality, ingestion, update, lineage, and certification
Ontology Development	The creation of semantic models that define the relationships between different data elements, facilitating data integration and interoperability.
Physical Model	A physical representation of the logical data models within key system components, including physical table names, attribute names, data types, and primary and foreign keys
Raw Data	Data in its most basic form, unprocessed and unaltered, often sold as bulk downloads or physical media transfers.
Recovery Point Objective (RPO)	The target amount of time a business process or an information system must be restored after a disaster to avoid unacceptable consequences associated with a break in business continuity. It defines the maximum amount of downtime that is tolerable.
Recovery Time Objective (RTO)	The target amount of time a business process or an information system must be restored after a disaster to avoid unacceptable consequences associated with a break in business continuity. It defines the maximum amount of downtime that is tolerable.

Term	Definition
Security Specifications	Detailed requirements outlining the security controls, encryption techniques, and measures needed to protect data and ensure its integrity, confidentiality, and availability.
Sequence Diagrams	UML diagrams that show how objects interact in a particular sequence, detailing the order of interactions and the timing of message exchanges between objects.
State Diagrams	Diagrams used to describe the behavior of systems, showing states, transitions, events, and actions within the system's lifecycle.
Taxonomy Creation	The development of hierarchical classifications of data elements, aiding in data discovery and retrieval by aligning business and operational contexts.
Use Case	A specific scenario or application of data analytics to solve a business problem or achieve a business objective. Examples include descriptive, diagnostic, predictive, and prescriptive analytics
Security Specifications	Detailed requirements outlining the security controls, encryption techniques, and measures needed to protect data and ensure its integrity, confidentiality, and availability.
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State Diagrams	Diagrams used to describe the behavior of systems, showing states, transitions, events, and actions within the system's lifecycle.
Taxonomy Creation	The development of hierarchical classifications of data elements, aiding in data discovery and retrieval by aligning business and operational contexts.
Use Case	A specific scenario or application of data analytics to solve a business problem or achieve a business objective. Examples include descriptive, diagnostic, predictive, and prescriptive analytics
User Journeys	Descriptions of how users interact with a system, outlining user actions, system responses, and the sequence of interactions to achieve specific goals.

Contents

1.	Introduction	14
1.1	Purpose	14
1.2	Scope	16
1.3	Applicability	17
2.	Guiding Principles	18
3.	Compliance & Enforcement	20
4.	Alignment to Standards	21
5.	Standards Structure	22
5.1	Control Structure	22
5.2	Capability Levels	26
6.	National Data Standards	27
6.1	Data Management Strategy and Governance Domain	27
6.2	Data Architecture & Modeling Domain	38
6.3	Data Quality Management Domain	50
6.4	Master & Reference Data Management Domain	60
6.5	Document & Content Management Domain	72
6.6	Data Catalog & Metadata Management Domain	83
6.7	Data Storage & Operations Domain	94

6.8	Data Sharing, Integration and Interoperability	104
6.9	Statistics and Analytics Domain	118
6.10	Data Monetization Domain	126
6.11	Data Security, Privacy, and Other Regulations Domain	136
6.12	Data Culture & Literacy Domain	141
7.	Reference List	148
8.	Document Control	150



Table of Figures

Figure 1 - National Data Management Framework	16
Figure 2 - Illustrative Standards Structure	23
Figure 3 - Standard Structure - Data Management Strategy and Governance domain	28
Figure 4 – Standard Structure - Data Architecture & Modeling domain	39
Figure 5 - Standard Structure - Data Quality Management Domain	51
Figure 6 – Standard Structure Master & Reference Data Management (MRDM) domain	61
Figure 7 - Standard Structure - Document & Content Management domain	73
Figure 8 - Standard Structure - Data Catalog & Metadata Management domain	84
Figure 9 - Standard Structure - Data Storage & Operations domain	95
Figure 10 - Standard Structure - Data Sharing, Integration and Interoperability domain	105
Figure 11 - Standard Structure- Statistics and Analytics domain	119
Figure 12 - Standard Structure - Data Monetization domain	127
Figure 13 - Standard Structure - Data Culture & Literacy domain	142



1. Introduction

In the era of digital transformation, data stands as the cornerstone of innovation, economic development, and enhanced governance. Recognizing its pivotal role, the State of Qatar is committed to using data as a strategic asset to fuel knowledge-based economic growth and improve the quality of life for its citizens. The National Data Standards for the State of Qatar have been developed to establish a robust framework for managing data across all government, semi-government entities. These standards aim to streamline data processes, enhance data quality, and promote a culture of data-driven decision making that aligns with The Third National Development Strategy, Qatar National Vision 2030.

According to Emiri Decision No. 13 of 2024, Article No. 14, Clause 8, issuing this document falls within the jurisdiction of the National Planning Council, which is the national body regulating data management in the State of Qatar. The document is designed to ensure that data is managed effectively across all entities, fostering interoperability, ensuring security, and maximizing data utility by ensuring single source of truth for the data. Through the implementation of these standards, state of Qatar seeks to position itself at the forefront of digital governance. By optimizing data management practices, the government aims to enhance public services, drive innovation, statistical practices and boost competitiveness on a global scale. This initiative not only supports the nation's strategic objectives but also sets a benchmark for excellence in data stewardship that other nations might follow.



1.1 Purpose

The Qatar National Data Standards document serves as detailed standards for government, semi-government entities and relevant stakeholders, focusing on the implementation of data management controls in all domains. These Standards are aligned with the National Data Policy and aim to ensure consistent application of data management controls to ensure a trusted single source of truth across all entities. The standards included in this document define the obligations of government entities regarding data management and statistics. These are divided into 12 interrelated and mutually supportive domains. Government and semi-government entities responsible for data management are required to understand and apply these standards to manage the data assets within their scope of responsibility.

The National Data Standards will contribute to accelerating the adoption of the governance model that aligns with best practices in data management. The Standards, and the assessments based on them, aim to support the achievement of the following key objectives:

- 1.** Aligning to National Development Strategy 3.0
- 2.** Aligning to Digital Agenda 2030
- 3.** Standardizing Data Management Practices
- 4.** Elevating Data Maturity
- 5.** Facilitating Data Sharing Between Entities
- 6.** Driving AI Readiness
- 7.** Ensuring Regulatory Compliance



1.2 Scope

The National Data Standards define management and technical control standards across the 12 data management domains, as specified in the National Data Management Framework:

QATAR NATIONAL DATA MANAGEMENT FRAMEWORK

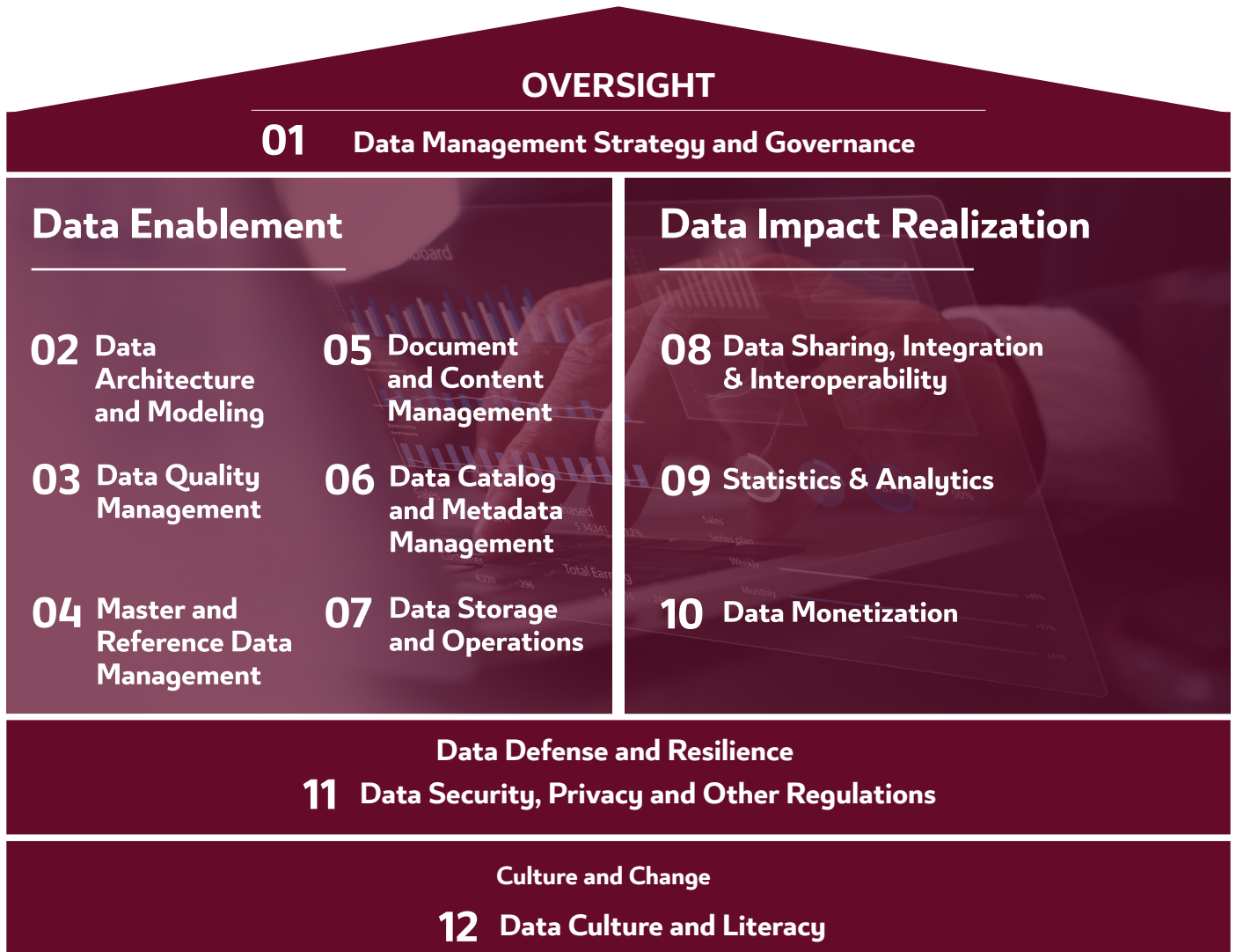


Figure 1 - National Data Management Framework

This document's functional scope addresses the wider realm of data management and statistics. The domains outlined above are interconnected and mutually dependent, yet a hierarchical structure is inherent within the National Data Standards. All government, semi-government entities must implement the data management program across all 12 data management domains. Entities are required to collect evidence from their business and technology functions to demonstrate adherence to these Standards by all data users. Furthermore, the data management domains should guide the implementation of any digital transformation program that touches any data management component.

1.3 Applicability

These standards apply to all government and semi-government entities involved in the creation, collection, reception, transmission, storage, or processing of data and information for the purpose of producing data analyses and statistics. The specified standards in this document are applicable to all data-related projects and programs carried out by the entity, whether conducted internally or through external parties.



2. Guiding Principles

The 12 data management domains are aligned with the PEARL guiding principles previously defined in the Qatar National Data Policy. These principles aid in comprehending the broader data management landscape, offering a structured approach to understanding the hierarchy and sequencing of data management efforts.

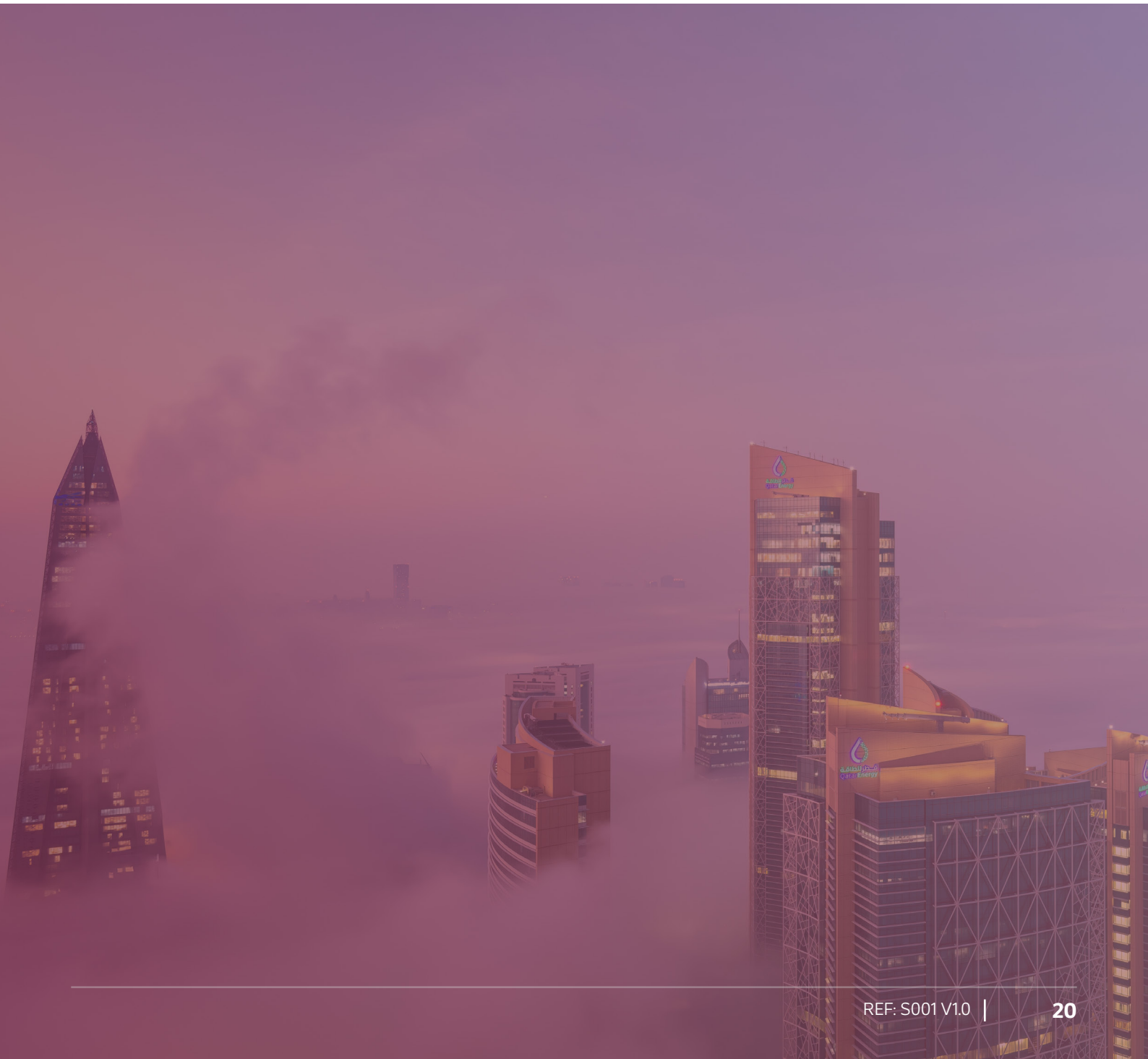
Principle	Definition	Domains
Protected	The 'Protected' principle emphasizes the critical importance of securing data assets within the State of Qatar, including the implementation of necessary measures to protect them from unauthorized access, breaches, and other cybersecurity threats. This principle ensures that all data handling complies with national and international regulations, aiming to maintain the privacy and integrity of data. It underpins the commitment to building a secure digital environment where data privacy and security are paramount, fostering trust in digital interactions and transactions.	Data Security, Privacy, and Other Regulations Data Storage and Operations
Enhanced	The 'Enhanced' principle focuses on elevating the quality, integrity, and relevance of data to maximize its utility for decision-making, operations, and service delivery. This principle promotes systematic improvements across the structural design of data, the meticulous management of critical data elements, and the rigorous upkeep of data quality. By refining how data is structured, standardized, and maintained, entities within Qatar can leverage reliable, high-quality data as a foundational element for governance and strategic initiatives.	Data Architecture and Modeling Data Quality Management Master and Reference Data Management
Accessible	The "Accessible" principle focuses on the importance of making data available to authorized users and promotes the principle of "Open By Default." This principle states that all data should be available without restrictions unless there is a legal justification for withholding it. It also supports effective participation and collaboration across sectors by achieving efficient integration and interoperability of data systems, which enhances transparency and improves the efficiency of public services.	Data Catalog and Metadata Management Data Sharing, Integration and Interoperability Document and Content Management



Principle	Definition	Domains
<p>Responsible</p>	<p>The ‘Responsible’ principle highlights the importance of ethical management and the governance of data, especially in the new of artificial intelligence technologies. It ensures that all data management practices align with Qatar’s societal values and ethical standards, particularly in modern technology fields like AI. This principle governs how data is used within technologies, promoting transparency, accountability, and fairness in automated decision-making processes. It aims to cultivate trust among citizens and stakeholders committing to ethical practices in the collection, usage, and management of data.</p>	<p>Data Management Strategy & Governance</p>
<p>Leveraged</p>	<p>The “Leveraged” principle focuses on maximizing the strategic value of data to drive innovation, efficiency, and service improvement, thereby enhancing Qatar’s competitiveness in the global digital economy. This principle identifies opportunities that data can provide, whether through the application of statistics and analytics, delivering new services, improving operational efficiencies, or through data monetization strategies. Additionally, it encourages a proactive approach to using data to foster economic growth, improve services, and instill a culture of data and awareness, enabling data assets to significantly contribute to achieving national objectives.</p>	<p>Statistics and Analytics Data Monetization Data Culture & Literacy</p>

3. Compliance & Enforcement

All entities in the State of Qatar are required to comply with these Standards, starting with the implementation of priority Standards. During the first year of release of the Standards, each Entity must conduct a self-assessment to verify ongoing compliance. This will typically be achieved through a Governance Checkpoint Process and presenting justifications to the entity's internal Data Committee. The Data and Analytics Director (or equivalent) of each Entity is tasked with overseeing this process and submitting compliance evidence to the National Planning Council (NPC). After the first year of issuing these standards, the National Planning Council will be responsible for developing a phased strategy for compliance assessments and distributing it to all entities in the State of Qatar, with the aim of assessing compliance and ensuring a smooth transition toward full adherence by all entities.



4. Alignment to Standards

The development of these Standards has been informed by leveraging international best practices in data management. The primary references and sources for this development include:

- Dublin Core® Metadata Initiative (DCMI) (Dublincore.org, 2019), (Standardized in ISO 15836:2009)
- ISO 8000 Data Quality (2022)
- The Open Group Application Framework (TOGAF)
- ISO11179 Metadata Registries
- Data Catalogue Vocabulary (DCAT) (W3.org, 2019)
- ISO 15489-1:2001 Information and documentation (2016)
- ISO 22301 Business Continuity Management Systems
- ISO 27017 Cloud Security Standards
- ISO 27018 Handling of Personally Identifiable Information
- ISO 8601 Internationalization - (2019)
- Asset Description Metadata Schema (ADMS) (W3C, 2013)
- Common Warehouse Metamodel (OMG, 2003)
- Generic Statistical Business Process Model (GSBPM)

5. Standards Structure

This section outlines the control structure within the National Data Standards. The control structure is organized into a 5-level hierarchy that ensures a systematic approach to data management. By understanding and following this structure, entities can achieve compliance and elevate their data management practices. The hierarchy includes domains, dimensions, controls, specifications, and sub-specifications, each playing a role in the overall hierarchy.

5.1 Control Structure

The standards control structure is a 5-level hierarchy:

01

Level 1

Domain:

Domains are a data management knowledge area as defined by the Qatar National Data Management Framework.

02

Level 2

Dimension:

Dimensions group Controls into phases: Plan (sets strategies and objectives), Implement (executes plans), and Operate (monitors and optimizes processes).

03

Level 3

Control:

Controls are groupings of Specifications addressing a common theme within a Data Management Domain.

04

Level 4

Specification:

Specifications define the detailed required outcomes that need to be achieved to be compliant with the National Data Standards.

05

Level 5

Sub-Specification:

Sub-specifications provide more granular, detailed requirements that support the achievement of their respective specification. They break down the specifications into actionable and measurable components.



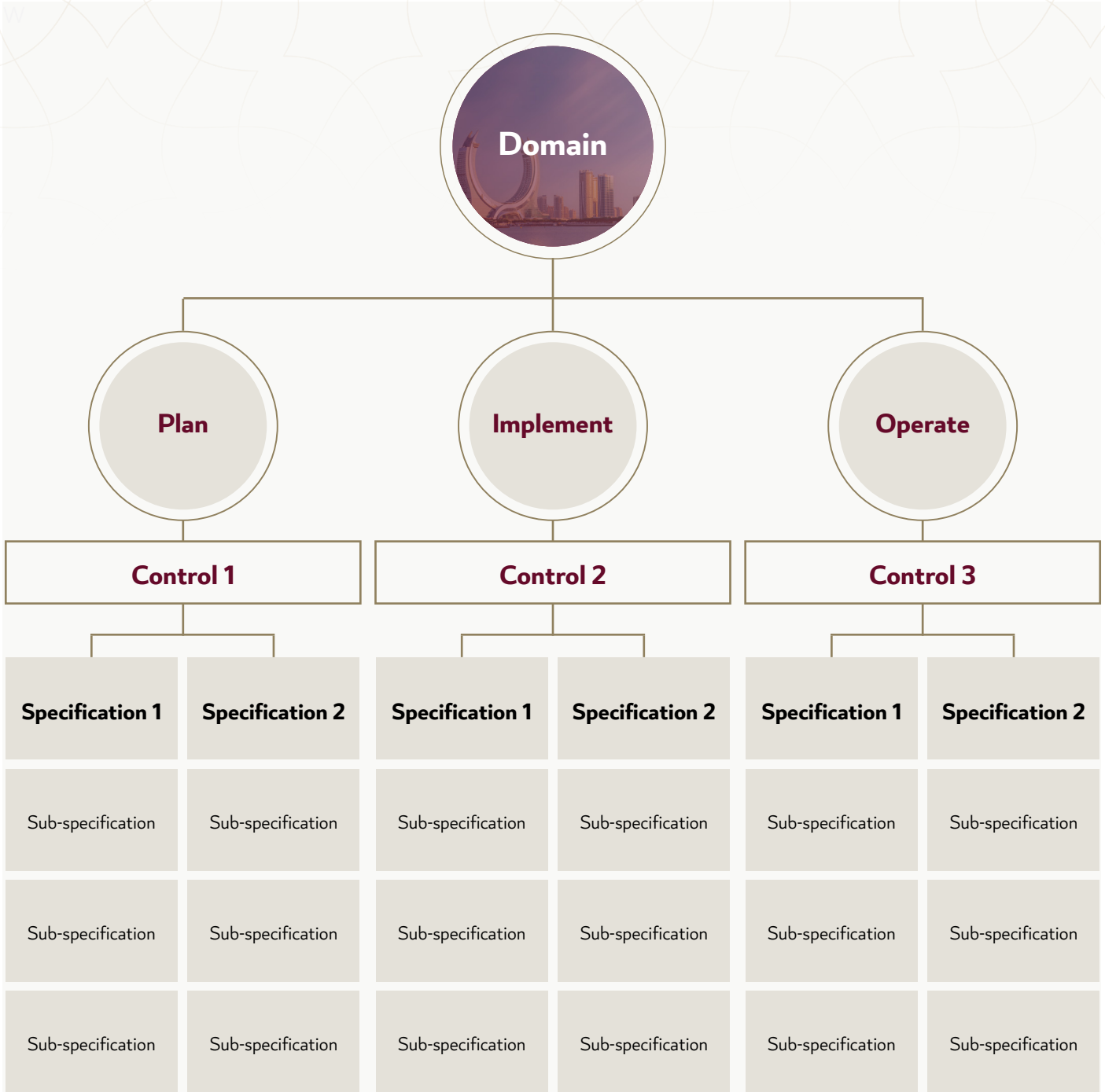
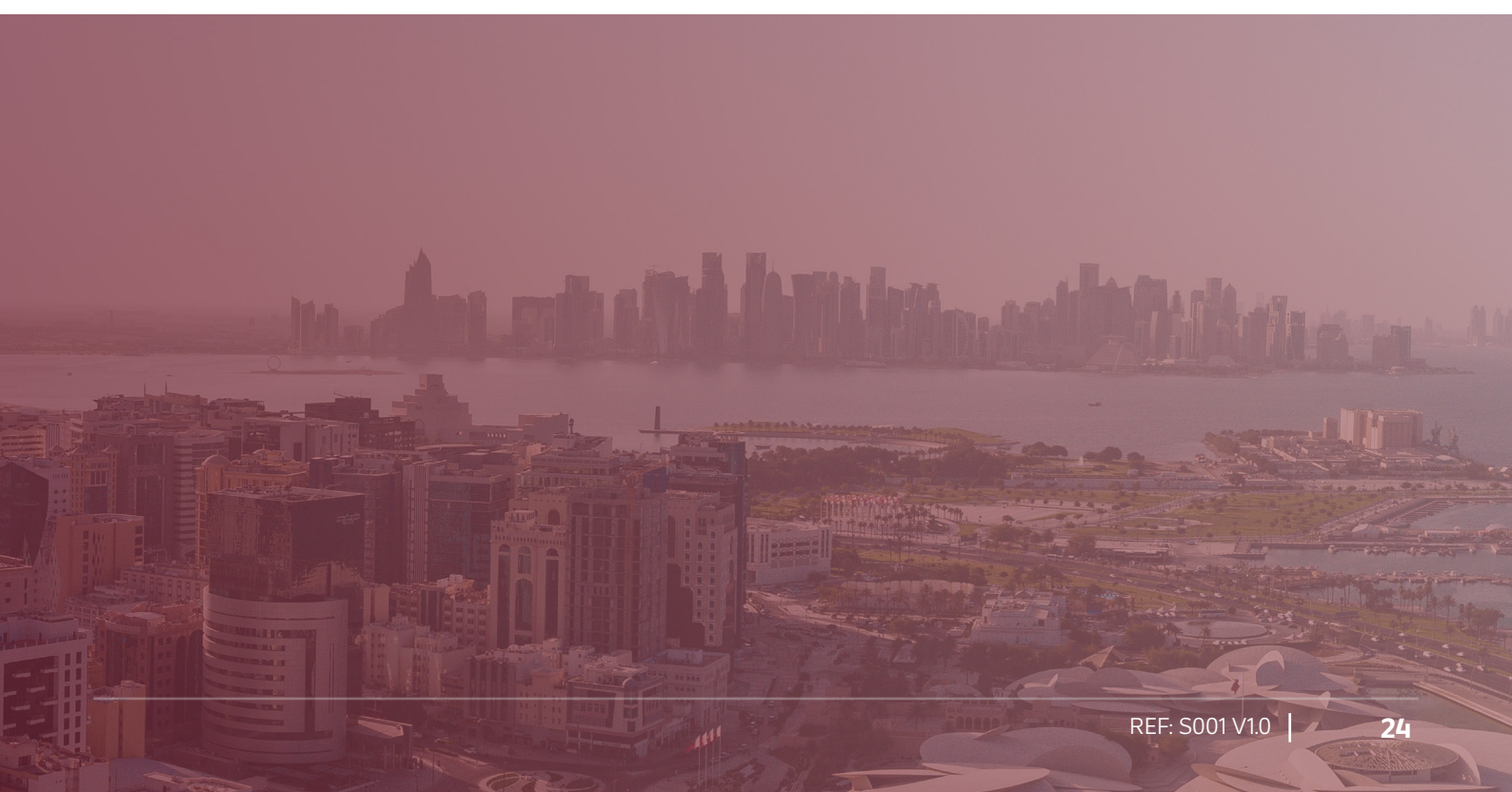


Figure 2 - Illustrative Control Structure

Each of the 12 Data Management domains are broken down into several controls, with each control further divided into numerous related specifications. Each specification (except for those in the Data Security, Privacy, and Other Regulations domain) contains a set of sub-specifications. The details for each control, including its description, ID, and any dependencies, are clearly specified. Similarly, every specification is assigned a unique number, a detailed description, and a capability level to indicate its advancement.

Dimension	<input type="checkbox"/> Plan (DomainID.1) <input type="checkbox"/> Implement (DomainID.2) <input type="checkbox"/> Operate (DomainID.3)
Control ID & Name	Control ID & Control Name
Control Description	Control Description
Control Dependencies	Control Dependencies
Version	Version & Release Date

Specification Number	Specification Name	Control Specification	Capability Level
Specification ID Number	Specification Name	Description of the Specification	Capability Level



ID	Element	Description
01	Domain Name	The name of the domain is a specific area of data governance within an organization, aligned with business functions and governed by consistent data stewardship policies, e.g. Data Architecture & Modeling
02	Domain ID	A unique identifier of the Domain, e.g. DAM for Data Architecture & Modeling
03	Dimension Name	Dimension Name refers to the label assigned to a specific dimension, which typically represents one of the following implementation phases of the domain: Plan, Implement, or Operate.
04	Dimension ID	A unique identifier for the dimension, which is always 1 for Plan, 2 for Implement, and 3 for Operate (e.g.: the plan dimension for Data Architecture & Modeling is DAM.1)
05	Control Name	The designated title of a specific control within a governance or management framework. The control name serves as a reference point for ensuring compliance, guiding processes, and maintaining standards within the specified area e.g. Data Architecture & Modeling Assessment & Planning
06	Control ID	A unique identifier using the format [DomainID.DimensionID.NUMBER], where "NUMBER" is the sequential number of the Control within its respective Domain. For instance, 'DAM.1.2' refers to the second Control within the plan dimension of the Data Architecture & Modeling domain
07	Control Description	A broad overview of the Control, detailing the Specifications it encompasses
08	Specification Number	A unique identifier following the format [DomainID.DimensionID.ControlID.NUMBER], where "NUMBER" represents the position of the Specification within its Control. For example, 'DAM.1.2.3' indicates the third Specification in the second Control of the Plan dimension in the Data Architecture & Modeling domain
09	Specification Name	The title of the specification that describes the key activity to be undertaken. e.g.: Data Architecture Plan
10	Sub-Specification	The tasks and activities needed to ensure compliance are listed as sub-specifications, denoted using the format: SS#, where # is the sub-specification number within the control
11	Capability Level	A level that establishes the degree of advancement of the specification (foundational, advanced, very advanced)
12	Version History	A version history helps in tracking any revisions to the document following the document's first release
13	Dependencies	Requirements from other Controls that must be met by the Entity to ensure the effectiveness of this Control

5.2 Capability Levels

Qatar’s National Data Standards Specifications are arranged in a priority sequence that guides the implementation order. The details are as follows:

The standards include 61 controls and 162 specifications, organized by capability level:



Foundational:

Foundational requirements that form the core of data management practices. These are to be implemented by all entities within the first year after the standards are released.



Advanced:

Specifications aimed at advancing data management practices. All entities shall have these implemented by the second year following the release of the standards.



Very Advanced:

Specifications intended to elevate the data management practices in line with global trends and technological advancements. All entities are expected to adopt these beginning in the third year after the standards are released.

The distribution of controls, specifications, and capability levels spans across 12 domains as follows:

ID	Domain	# of Controls	# of Specifications (across all capability levels)	Specifications Capability Levels		
				Foundational	Advanced	Very Advanced
01	Data Management Strategy & Governance	6	16	15	1	0
02	Data Architecture & Modeling	5	13	10	3	0
03	Data Quality Management	5	14	10	3	1
04	Master & Reference Data Management	5	16	10	5	1
05	Document & Content Management	5	24	3	15	6
06	Data Catalog & Metadata Management	6	12	10	2	0
07	Data Storage & Operations	4	15	9	5	1
08	Data Sharing, Integration & Interoperability	6	15	14	1	0
09	Statistics & Analytics	4	11	6	4	1
10	Data Monetization	4	13	3	7	3
11	Data Security, Privacy & Other Regulations	7	1	1	0	0
12	Data Culture & Literacy	4	12	10	1	1
-	Total	61	162	101	47	14

6. National Data Standards

6.1 Data Management Strategy and Governance Domain

6.1.1 Domain Summary

The Data Management Strategy and Governance domain is organized across three dimensions: planning, implementation, and operation. This domain includes six controls and fifteen specifications, sometimes divided by capability level into basic, advanced, or very advanced. This domain provides guidance for developing a comprehensive data strategy and designing an operating model that aligns with the entity's business objectives. It also supports the transformation of the entity into a data-driven organization by setting a clear roadmap. In addition, this domain establishes a data governance policy that includes forming a data committee, task forces, and assigning the roles and functions necessary to operationalize the operating model.



Data Management Strategy & Governance Domain



Figure 3 - Standard Structure - Data Management Strategy and Governance domain



6.1.2 Controls & Specifications

Dimension	<input checked="" type="checkbox"/> Plan (DMSG.1) <input type="checkbox"/> Implement (DMSG.2) <input type="checkbox"/> Operate (DMSG.3)
Control ID & Name	DMSG.11: Data Strategy Current State
Control Description	As part of the data strategy current state control, the Entity shall review and align with its current business objectives, assess its current capabilities across all data domains, and assess its source systems and data readiness.
Control Dependencies	Entity's Business Objectives & Requirements
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DMSG.11.1	Business Objectives & Requirements	The Entity shall review and align with its business objectives and perform, at a minimum: <ul style="list-style-type: none"> SS1. Identify the stakeholder map needed to establish the data strategy, including both business and technical stakeholders, and engage with them to document their requirements and priorities SS2. Document internal operational data management and analytics business requirements. The analytics use cases shall include different types as Descriptive, Diagnostic, Predictive & Prescriptive. SS3. Design a use case prioritization framework based on business impact, and ease of implementation of the use cases, and share prioritized list of use cases with stakeholders to confirm SS4. Develop use case cards for all prioritized use cases. These cards shall include, at a minimum: <ul style="list-style-type: none"> a. Title b. Description c. Impact (High/Medium/Low) d. Priority level e. Analytics Type (Descriptive/Diagnostic/Predictive) f. Complexity g. Stakeholders h. Current Challenges i. Expected Benefits j. Required datasets & source systems SS5. Validate the prepared use cards and update business requirements document with the finalized use cases to be activated through data strategy 	Foundational

<p>DMSG.11.2</p>	<p>Current State Capabilities Maturity Assessment</p>	<p>The Entity shall self-assess the current capabilities across all data management domains, and technology landscape. The entity shall, at a minimum:</p> <ul style="list-style-type: none"> SS1. Assess the maturity across all Data management domains to provide maturity rating and areas of improvements of each data management capability SS2. Document list of all existing technologies and tools within the Entity used for data management including data storage, processing, integration, analytics, and security SS3. Document list of existing data platforms within the Entity such as data warehouse and data lake SS4. Document list of key operational and analytical dashboards and reports SS5. Develop Data management current state maturity report to identify data management domains gaps and prioritize domains that require uplifting SS6. Create a benchmark study for analytics use cases and when needed other specific and emerging technologies with best practices already delivered at similar entities in other countries 	<p>Foundational</p>
<p>DMSG.11.3</p>	<p>Current State Capabilities Maturity Assessment</p>	<ul style="list-style-type: none"> SS1. The Entity shall automate the Data management maturity assessment framework using accelerators or tools to facilitate periodic self-assessment in the future, to save time and cost 	<p>Advanced</p>
<p>DMSG.11.4</p>	<p>Data Discovery & Readiness Assessment</p>	<p>The Entity shall assess the source systems and readiness of data needed to deliver the business requirements and prioritized use cases. The Entity shall, at a minimum:</p> <ul style="list-style-type: none"> SS1. Document necessary datasets and critical data elements and their readiness criteria that must be met to consider data fit for use SS2. Develop the source system analysis template and prepare source system analysis report after performing the analysis. The template shall cover the following: <ul style="list-style-type: none"> • Schemas • Key entities • Key attributes per entity • Data Owner & Data Stewards • Data Domain • Reference & master objects/entities • Data volumes • Attributes count • Records count • Environments • Basic data quality checks SS3. Generate data profiling report that includes quality insights about critical data elements to indicate data readiness 	<p>Foundational</p>

Dimension	<input checked="" type="checkbox"/> Plan (DMSG.1) <input type="checkbox"/> Implement (DMSG.2) <input type="checkbox"/> Operate (DMSG.3)
Control ID & Name	DMSG.1.2: Data Strategy Current State
Control Description	As part of the data strategy target state control, the Entity shall align with key business and technical stakeholders, define its guiding principles for shaping the data strategy, design the target data & platform architecture and enterprise analytical data model, and detail the data operating model and data strategy roadmap.
Control Dependencies	<ul style="list-style-type: none"> Entity's Business Objectives & Requirements DMSG.1.1: Data Strategy Current State
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DMSG.1.2.1	Data Strategy Vision, Mission, and Strategic Objectives	The Entity shall align with the key relevant business stakeholders and with its strategic objectives to do the following: <ul style="list-style-type: none"> SS1. Develop a vision statement that outlines the long-term goals and aspirations of the data strategy, and a mission statement that defines the core purpose and operational approach of the data strategy SS2. Adopt, at a minimum, the following themes to drive the strategic objectives of the data strategy and guiding principles: <ul style="list-style-type: none"> Data Management Capability Building & Data Culture: focuses on building the required data management capabilities (process, organization & technology) and driving the organization data culture forward. Strong Data Foundation: focuses on building a strong data foundation in terms of reference & master data, quality of data, metadata & data cataloging Data Value Realization: focuses on driving value from data through the entire data value chain Regulatory Compliance: focuses on compliance with different regulatory requirements 	Foundational
DMSG.1.2.2	Data Platform Architecture	The Entity shall design the high-level target data & platform architecture including enterprise analytical data model aligned to the data architecture and modeling standards and supporting the prioritized use cases. The Entity shall at a minimum, develop the following: <ul style="list-style-type: none"> SS1. High-level target data & platform architecture design document (Referring to the standards in the Domain) SS2. Enterprise Analytical Data Model Design Document 	Foundational

<p>DMSG.1.2.3</p>	<p>Data Management Strategy Roadmap</p>	<p>In alignment with the defined strategic objectives, the Entity shall consolidate the documented operational and analytics business requirements into a comprehensive list of initiatives. These initiatives shall then be prioritized for implementation to ensure the successful achievement of the strategic objectives. To develop the data strategy roadmap, the Entity shall at a minimum:</p> <p>SS1. Develop a prioritization framework to prioritize the identified initiatives based on business impacts and ease of implementation and identify the immediate priority, mid-term, and long-term initiatives</p> <p>SS2. Develop initiative charters for the identified initiatives including at a minimum:</p> <ul style="list-style-type: none"> • Overview • Owner • Stakeholders • Budget • Key Activities • Indicative Timeline • Expected outcomes <p>SS3. Develop a data strategy roadmap by listing all the initiatives and develop a consolidated timeline for all initiatives and key activities, considering their priority and dependencies</p> <p>SS4. Develop the overall data strategy budgetary estimates for the initiatives collectively, and develop detailed budgetary estimate per each initiative and related milestone</p>	<p>Foundational</p>
<p>DMSG.1.2.4</p>	<p>Data Operating Model</p>	<p>The Entity shall design the data operating model needed to activate and drive the data strategy including, at a minimum:</p> <p>SS1. Data committee charter and required working groups charters (including the mandate, members, key activities, key outcomes, meeting frequency) based on the data management requirements</p> <p>SS2. Target org. structure design in alignment with National organizational structure guidelines</p> <p>SS3. Design interim-state and target-state data capacity plan for data roles and responsibilities in alignment with the national data operating model based on the entity's requirements and size</p> <p>SS4. Manpower sourcing framework and criteria in alignment with national guidelines and templates to identify the jobs / roles that could be outsourced for the Entity</p> <p>SS5. Processes needed to manage the interaction between various departments inside the Entity and other external partners or entities</p>	<p>Foundational</p>

Dimension	<input type="checkbox"/> Plan (DMSG.1) <input checked="" type="checkbox"/> Implement (DMSG.2) <input type="checkbox"/> Operate (DMSG.3)
Control ID & Name	DMSG.2.1: Data Governance Policy
Control Description	As part of the data governance policy control, the Entity shall create or enhance the existing data governance policy and publish it across all relevant stakeholders.
Control Dependencies	<ul style="list-style-type: none"> • Qatar National Data Management Policy • Entity's Business Objectives • DMSG.1.2: Data Strategy Target State
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DMSG.2.1.1	Data Governance Policy Creation	<p>The Entity shall establish a data governance policy to ensure that data will be managed and governed across the Entity effectively, securely, and efficiently through the data lifecycle.</p> <p>SS1. The policy shall cover, at a minimum:</p> <ul style="list-style-type: none"> • Overview, purpose, scope, and objectives of the policy • Policy applicability, validity, and review • Policy guidelines in alignment to the National Data Management Policy and Standards • Detailed policy statements covering, at a minimum, the following: <ul style="list-style-type: none"> a. Data management and organizational structure b. Change management and organizational awareness c. Performance management and monitoring d. Escalation and issue management e. Periodic policy review and updates f. Key policy performance indicators • Roles and Responsibilities • References 	Foundational
DMSG.2.1.2	Data Governance Policy Publication	<p>The Entity shall publish the data governance policy following the below guidelines:</p> <p>SS1. Review the draft policy with the Entity's Data Committee or equivalent body</p> <p>SS2. Incorporate Data Committee or equivalent body's feedback</p> <p>SS3. Review draft policy for auditability</p> <p>SS4. Incorporate internal audit feedback</p> <p>SS5. Seek policy review and guidance from the National Data Governance Office, and incorporate the received feedback</p> <p>SS6. Publish the policy on Entity's digital channels (eg,the entity's website)</p> <p>SS7. Socialize the policy within the Entity to drive adoption and change management</p>	Foundational

Dimension	<input type="checkbox"/> Plan (DMSG.1) <input checked="" type="checkbox"/> Implement (DMSG.2) <input type="checkbox"/> Operate (DMSG.3)
Control ID & Name	DMSG.2.2: Governance Activation
Control Description	As part of Governance Activation control, the Entity shall activate the designed organizational structure, operating model, and data committee by appointing the roles and positions outlined in each governance body.
Control Dependencies	<ul style="list-style-type: none"> • DMSG.1.2: Data Strategy Target State • DMSG.2.1: Data Governance Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DMSG.2.2.1	Organizational Structure & Operating Model	The Entity shall activate the data organization and operating model by appointing / fulfilling all roles and positions determined in the designed operating model. The Entity shall, at a minimum: <ul style="list-style-type: none"> SS1. Detail job descriptions and qualifications for each of the roles outlined in the data organization capacity plan SS2. Map all selected data organization job families and positions outlined in the data organization capacity plan to the entity's HR jobs structures SS3. Assess existing data & analytics talents within the Entity (to be appointed in the defined roles) against the capacity plan and develop a recruitment plan for acquiring missing data management talent, this shall include target onboarding dates, hiring managers, etc. SS4. Detail hiring processes for data management and analytics talents SS5. Ensure onboarding the new hires to the data management program 	Foundational
DMSG.2.2.2	Data Committee	The Entity shall activate the data committee and working groups defined in the data operating model by accomplishing at a minimum: <ul style="list-style-type: none"> SS1. Determine the individuals who will play the determined roles identified in the data committee and working groups charters SS2. Conduct a kickoff meeting led by the chairperson of each working group and data committee SS3. Schedule data committee and working groups meetings as per meeting frequency outlined in the charters 	Foundational

Dimension	<input type="checkbox"/> Plan (DMSG.1) <input type="checkbox"/> Implement (DMSG.2) <input checked="" type="checkbox"/> Operate (DMSG.3)
Control ID & Name	DMSG.3.1: Change & Performance Management
Control Description	As part of the change & performance management control, the Entity shall engage the key stakeholders, establish operational and strategic KPIs, and monitor and report on the data strategy.
Control Dependencies	<ul style="list-style-type: none"> • DMSG.1.2: Data Strategy Target State • DMSG.2.1: Data Governance Policy • DMSG.2.2: Governance Activation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DMSG.3.1.1	Strategy Socialization	The Entity shall ensure stakeholders are aware of the data strategy and roadmap and of their specific responsibilities within the data strategy. The Entity shall, at a minimum: <ul style="list-style-type: none"> SS1. Conduct an executive meeting with business, technical, and other key stakeholders to share and socialize the data strategy SS2. Formally communicate the strategy across the Entity 	Foundational
DMSG.3.1.2	Data Strategy KPIs	The Entity shall establish key performance indicators (KPIs) to measure and report on the Entity's data strategy. KPIs shall include, at a minimum: <ul style="list-style-type: none"> SS1. Strategic key performance indicators (KPIs) to enable executive stakeholders to measure and monitor the impact of the data strategy SS2. Operational key performance indicators (KPIs) to monitor and report the performance of data strategy operational activities 	Foundational
DMSG.3.1.3	Data Strategy Monitoring & Reporting	The Entity shall monitor and report on the data strategy at a predefined frequency and based on the defined KPIs. This shall include, at a minimum: <ul style="list-style-type: none"> SS1. Dashboards to track, analyze, and display data in an aggregated format to gain deeper insight on the overall performance and trends across the operational data strategy KPIs SS2. Reports detailing, at a minimum: <ul style="list-style-type: none"> • Executive summaries highlighting key achievements and challenges across the data strategy • Detailed analysis of strategic and operational KPIs and performance metrics • Progress against the data strategy roadmap • Financial analysis including budget adherence • Identified risks and mitigations 	Foundational

Dimension	<input type="checkbox"/> Plan (DMSG.1) <input type="checkbox"/> Implement (DMSG.2) <input checked="" type="checkbox"/> Operate (DMSG.3)
Control ID & Name	DMSG.3.2: Data Management Strategy & Governance Policy Refresh
Control Description	As part of the data management strategy & governance policy refresh, the Entity shall establish a process for refreshing the data strategy and data governance policy.
Control Dependencies	<ul style="list-style-type: none"> • DMSG.1.2: Data Strategy Target State • DMSG.2.1: Data Governance Policy • DMSG.2.2: Governance Activation • DMSG.3.1: Change & Performance Management
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DMSG.3.2.1	Data Management Strategy & Governance Policy Refresh	<p>The Entity shall establish a process for refreshing the data management strategy and governance policy, which shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Scheduled reviews of the data management strategy and governance policy on an annual basis (at a minimum) to determine the need for any changes or updates to the existing version SS2. Unscheduled reviews if significant changes in the external environment take place SS3. Stakeholder engagement through meetings and workshops to gather diverse perspectives and insights based on any identified gaps, opportunities, or changes in the external environment SS4. Add approved data strategy changes to a backlog to track changes and approvals SS5. Add approved data governance policy changes to a backlog to track changes and approvals SS6. Refine and update the data strategy based on the changes and associated priorities in the backlog SS7. Update the data governance policy based on the changes and associated priorities in the backlog 	Foundational

6.2 Data Architecture & Modeling Domain

6.2.1 Domain Summary

The Data Architecture & Modeling domain is structured across the 3 dimensions of Plan, Implement, and Operate, and includes 5 controls and 13 specifications, with some specifications divided into two or more specifications depending on the capability: Foundational, Advanced, or Very Advanced. The Data Architecture & Modeling domain focuses on developing and maintaining robust data architecture and modeling practices. This domain supports the creation of analytical enterprise data architecture, including the development of baseline and target state architectures, detailed data models, and a clear roadmap for transitioning between states. It emphasizes the importance of systematic documentation, monitoring, and reporting, ensuring alignment with business objectives and regulatory standards..



Data Architecture & Modeling Domain



Figure 4 – Standard Structure - Data Architecture & Modeling domain

6.2.2 Controls & Specifications

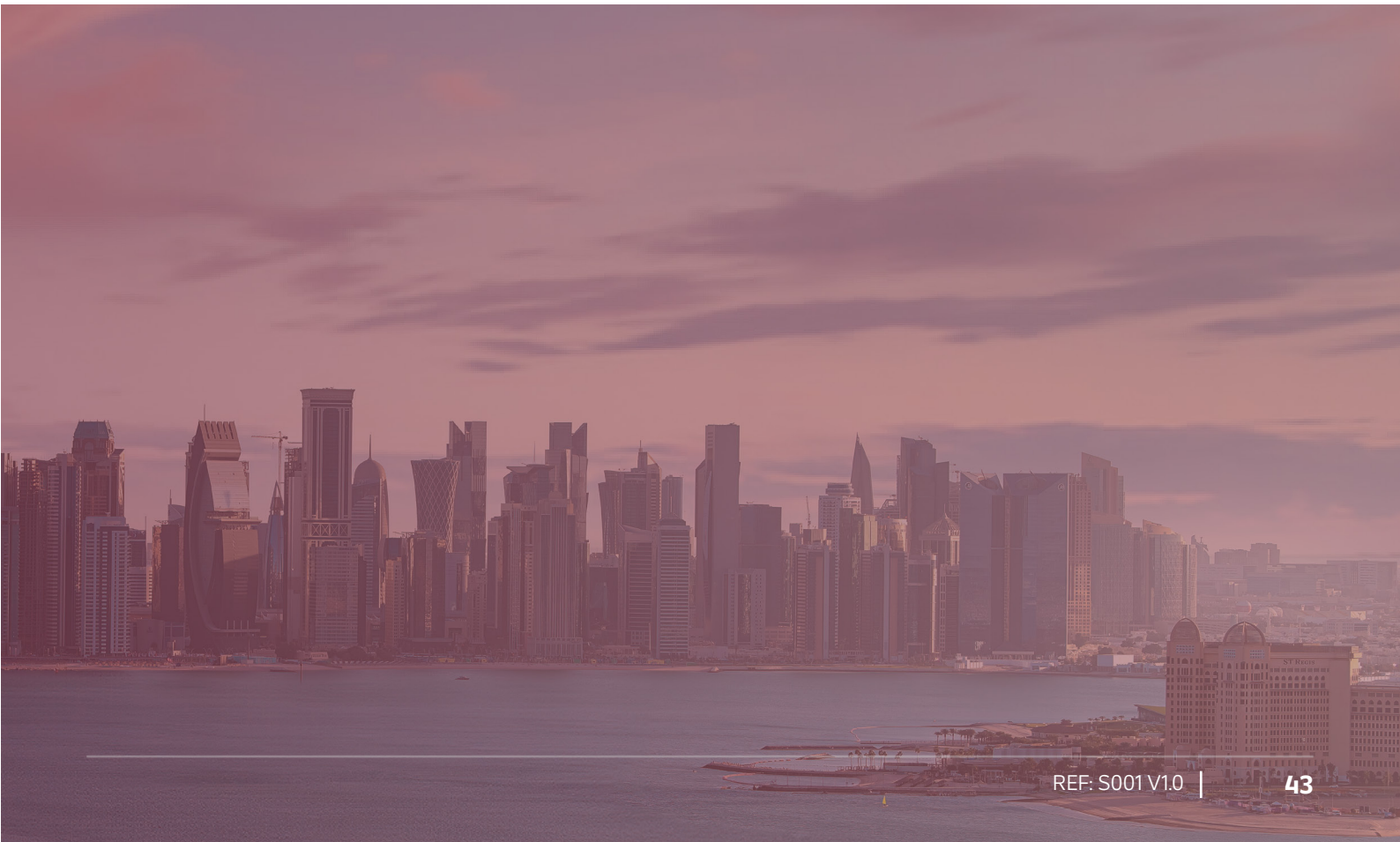
Dimension	<input checked="" type="checkbox"/> Plan (DAM.1) <input type="checkbox"/> Implement (DAM.2) <input type="checkbox"/> Operate (DAM.3)
Control ID & Name	DAM.11: Data Architecture & Modeling Assessment & Planning
Control Description	<p>As part of the Data Architecture & Modeling Assessment & Planning control, the Entity shall establish and adopt a comprehensive enterprise-level system and data architecture process within a recognized Enterprise Architecture Framework, develop and document comprehensive data modeling guidelines and methodologies, establish its current baseline Data Architecture, define and develop a comprehensive target data architecture, conduct a thorough gap analysis between the baseline and target data architectures, and develop a detailed roadmap for guiding the Entity in transitioning from the baseline data architecture to the target data architecture.</p>
Control Dependencies	<ul style="list-style-type: none"> Entity's Data Strategy Qatar National Data Management Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DAM.11.1	Data Architecture Plan	<p>The Entity shall establish and adopt a comprehensive enterprise-level system and data architecture process within a recognized Enterprise Architecture Framework, such as the Open Group Architecture Framework (TOGAF). The high-level data architecture development process shall consider and include, at a minimum:</p> <p>SS1. Current System Data Architectures: Documenting the architecture of existing information systems containing data</p> <p>SS2. Current Enterprise Data Architecture: Integrating inputs from key system architectures to outline the current state at the enterprise level</p> <p>SS3. Target Enterprise Data Architecture: Outlining the desired future state of analytical enterprise data architecture across the Entity</p> <p>SS4. Target System Data Architectures: Designing system architectures influenced by the roadmap to bridge identified gaps. The Entity should plan to update and maintain these architectures throughout the software development lifecycle and validate them during governance checkpoints</p>	Foundational

<p>DAM.11.2</p>	<p>Data Modeling Guidelines & Methodology</p>	<p>The Entity shall develop and document comprehensive data modeling guidelines and methodologies to ensure a consistent and standardized approach to data modeling across the organization. These guidelines and methodologies shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Establish and document principles and best practices for developing conceptual, logical, and physical data models SS2. Define standards for creating and maintaining data models, including naming conventions, data types, and relationships SS3. Provide guidelines on various modeling techniques, such as entity-relationship diagrams and other tools to represent data structures SS4. Ensure that data models are integrated with the overall data architecture to support business objectives SS5. Establish procedures for version control and detailed documentation of data models SS6. Integrate data modeling guidelines with data governance and quality management processes to ensure accuracy and consistency SS7. Implement a regular review and update process to keep the guidelines and methodologies current and relevant SS8. Reference international standards and best practices for data modeling to ensure global alignment 	<p>Foundational</p>
<p>DAM.11.3</p>	<p>Baseline Data Architecture Assessment</p>	<p>The Entity shall establish its current baseline Data Architecture. The current state Data and Technical architecture should include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Data Model: The Entity's existing Enterprise Data Model, detailed at the Conceptual, Logical, and Physical levels. Each level should cover, at a minimum: <ul style="list-style-type: none"> • Conceptual Model: Identification of key business entities and their relationships, organized into business subject areas. • Logical Model: An extension of the conceptual model, incorporating attributes for business entities and adding less significant entities and relationships. • Physical Model: A physical representation of the logical data models within key system components, including physical table names, attribute names, data types, and primary and foreign keys. SS2. Key Processes: The crucial current processes involved in the Entity's ongoing business operations and decision-making. SS3. Key System Components: The essential current applications, data storage solutions, data processing platforms, and data analytics solutions involved in key processes. SS4. Data Flows and Lineage: A visualization of the current data movement across key processes and system components. 	<p>Foundational</p>

<p>DAM.11.4</p>	<p>Target Data Architecture</p>	<p>The Entity shall define and develop a comprehensive target data architecture which shall be reviewed and approved at the appropriate governance checkpoints to ensure alignment with the Entity's overall data strategy and business objectives. The target Data Architecture shall include, at a minimum:</p> <p>SS1. Data Model: The Entity's target Enterprise Data Model at Conceptual, Logical, and Physical levels. Each data model level shall include, at minimum:</p> <ul style="list-style-type: none"> • Conceptual Model: Identification of key business entities and their relationships, organized into business subject areas • Logical Model: Extension of the conceptual model with attributes for business entities and the inclusion of less significant entities and relationships • Physical Model: Physical representation of logical data models within key system components, including physical table names, attribute names, data types, and primary and foreign keys <p>SS2. Key Processes: Identification of essential target processes involved in ongoing business operations and decision-making</p> <p>SS3. Key System Components: Identification of essential target applications, data storage solutions, data processing platforms, and data analytics solutions involved in key processes</p> <p>SS4. Data Flows and Lineage: Visualization of target data movement across key processes and system components, ensuring a clear understanding of data flow and lineage</p>	<p>Foundational</p>
<p>DAM.11.5</p>	<p>Data Architecture Gap Analysis</p>	<p>The Entity shall conduct a thorough gap analysis between the baseline and target data architectures. This analysis shall, at a minimum:</p> <p>SS1. Identify business data requirements that are currently not being fulfilled</p> <p>SS2. Highlight technical data components that are absent between the baseline and target architectures</p> <p>SS3. Assess gaps in roles, skills, tools, and training required to support the target data architecture</p>	<p>Foundational</p>

<p>DAM.11.6</p>	<p>Data Architecture Roadmap</p>	<p>Based on the results of the gap analysis, the Entity shall develop a detailed roadmap for guiding the Entity in transitioning from the baseline data architecture to the target data architecture. The roadmap shall, at a minimum:</p> <ul style="list-style-type: none"> SS1. Include timelines for implementation, budgetary estimates, and required capabilities. SS2. Specify the priority and sequence for changing, upgrading, replacing, or retiring components and systems, while maintaining flexibility to adapt to business priorities. SS3. Undergo periodic review by the Data Committee to ensure alignment with both the baseline and target data architectures, and include an evaluation and justification of changes in priority or exceptions to the roadmap as reviewed by the Data Committee (if applicable). 	<p>Foundational</p>
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Dimension	<input type="checkbox"/> Plan (DAM.1) <input checked="" type="checkbox"/> Implement (DAM.2) <input type="checkbox"/> Operate (DAM.3)
Control ID & Name	DAM.2.1: Data Architecture & Model Design
Control Description	As part of the Data Architecture & Model Design control, the Entity shall define, develop, and maintain a comprehensive Enterprise Data Model (EDM), and define and maintain comprehensive metadata for all data models.
Control Dependencies	DAM.11: Data Architecture & Modeling Assessment & Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DAM.2.1.1	Enterprise Data Model	<p>The Entity shall define, develop, and maintain a comprehensive Enterprise Data Model (EDM) that provides a structured representation of the organization's data assets, supporting consistency, integration, and effective data management across all systems and processes. The Entity shall, at a minimum:</p> <ul style="list-style-type: none"> SS1. Ensure that the Enterprise Data Model aligns with the Entity's data model design guidelines, EDM frameworks, and national data modeling standards SS2. Ensure that its data models are updated to reflect any changes, ensuring consistency with the EDM guidelines and assets SS3. Align conceptual, logical, and physical data models with the Entity's master data profiles and the common profiles in the national government data catalog SS4. Publish data models for reference and re-use within the Entity. Data Architect roles shall be responsible for evaluating other pre-existing data models and for aligning or re-using data models for new information systems where possible. Where this is not possible, justification shall be given in the system design and approved by the Data Committee. SS5. Adopt the "Data by Design" principle in developing its Enterprise Data Model. This involves proactively identifying and documenting potential data attributes and objects not currently collected or available within the Entity 	Foundational

<p>DAM.2.1.2</p>	<p>Data Model Metadata</p>	<p>The Entity shall define and maintain comprehensive metadata for all data models to ensure proper management, traceability, and version control. The Entity shall, at a minimum:</p> <ul style="list-style-type: none"> SS1. Ensure that each data model has a unique identifier in the format: [Entity Initials]-[Reference Number]-[Version]. For example, NPC-123-V1.0 represents Version 1.0 of model 123 for NPC. SS2. Clearly define roles using the RACI matrix (Responsible, Accountable, Consulted, Informed) SS3. Indicate whether the model is in Draft or Published status SS4. Document the history of changes, including dates, authors, and descriptions of changes made SS5. Store data models in a repository with robust version control capabilities. The recommended options for repositories, in order of preference, include: <ul style="list-style-type: none"> • Integrated version control within data modeling tools • External version control repositories or document management systems supporting version control • Version control through organized file system structures (as an interim or last resort solution) 	<p>Foundational</p>
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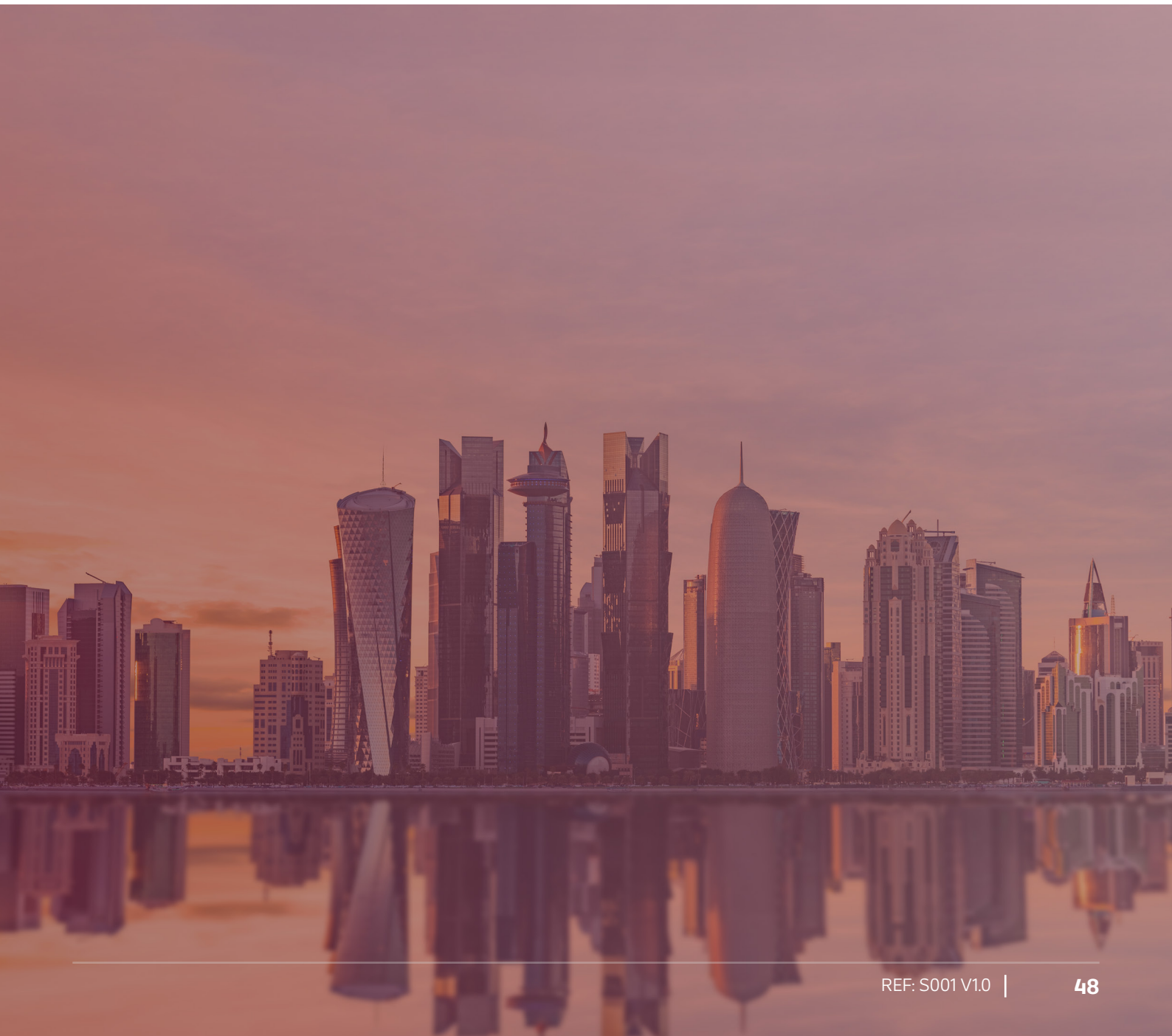
Dimension	<input type="checkbox"/> Plan (DAM.1) <input checked="" type="checkbox"/> Implement (DAM.2) <input type="checkbox"/> Operate (DAM.3)
Control ID & Name	DAM.2.2: Data Architecture & Modeling Tools
Control Description	As part of the Data Architecture & Modeling Tools control, the Entity shall select and implement a suite of technologies to facilitate data architecture and modeling activities.
Control Dependencies	N/A
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DAM.2.2.1	Data Architecture & Modeling Tools	<p>The Entity shall select and implement a suite of technologies to facilitate data architecture and modeling activities. The selected toolset shall include, at a minimum, the following functionalities:</p> <p>SS1. Data Architecture:</p> <ul style="list-style-type: none"> Tools for visually representing data and system components Creating data flow diagrams to illustrate the movement of data within and between systems <p>SS2. Data Modeling:</p> <ul style="list-style-type: none"> Creating and modifying data and system objects, attributes, and relationships Support to reverse engineering of existing data models to integrate and update legacy systems Ability to create IE or IDEF1X-compliant models Support for modeling both structured and unstructured datasets Capability to link conceptual, logical, and physical data models Use of the Common Warehouse Metamodel (CWM) for modeling data warehouse systems Associating metadata with models to facilitate and promote reuse Model versioning and traceability features <p>SS3. Data Lineage:</p> <ul style="list-style-type: none"> Capturing and maintaining data flows between systems Performing impact analysis to understand the effects of data changes across systems 	Foundational

Dimension	<input type="checkbox"/> Plan (DAM.1) <input type="checkbox"/> Implement (DAM.2) <input checked="" type="checkbox"/> Operate (DAM.3)
Control ID & Name	DAM.3.1: Data Architecture & Modeling Performance & Change Management
Control Description	As part of the Data Architecture & Modeling Performance & Change Management control, the Entity establish key performance indicators (KPIs) to measure the state and effectiveness of its Data Architecture and Modeling capabilities, implement a systematic process for monitoring and reporting on the established KPIs, and establish and implement a structured data architecture change management process.
Control Dependencies	DAM.2.2: Data Architecture & Modeling Tools
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DAM.3.1.1	Data Architecture & Modeling KPIs	The Entity shall establish key performance indicators (KPIs) to measure the state and effectiveness of its Data Architecture and Modeling capabilities. These KPIs shall include, at a minimum: <ul style="list-style-type: none"> SS1. Metrics to track progress in transforming current state data architecture towards a target state data architecture SS2. Data Architecture Compliance (i.e.: percentage of compliant target state data architecture layers) SS3. Data model completeness (i.e.: number and percentage of completed data models) SS4. Adherence to Data Modeling Standards (i.e.: number and percentage of compliant data models) 	Advanced
DAM.3.1.2	Data Architecture & Modeling Monitoring & Reporting	The Entity shall monitor and report on the established data architecture and modeling KPIs. This shall include, at a minimum: <ul style="list-style-type: none"> SS1. Implementing continuous monitoring mechanisms to track KPIs. The frequency of monitoring shall, at a minimum, be on a quarterly basis SS2. Defining clear escalation protocols for performance deviations and non-compliance. The Data Committee shall be responsible for overseeing and managing the escalation process to address issues promptly 	Advanced

<p>DAM.3.1.3</p>	<p>Data Architecture Change Management Process</p>	<p>The Entity shall establish and implement a structured change management process for reviewing, approving, and implementing changes to both the current and target state data architectures, to ensure that all modifications are systematically evaluated and aligned with the Entity's strategic objectives. This process shall include, at a minimum, the following components:</p> <ul style="list-style-type: none"> SS1. Handling requests for new data architecture and data modeling projects SS2. Managing changes to the Statement of Architecture Work documents for ongoing initiatives 	<p>Advanced</p>
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Dimension	<input type="checkbox"/> Plan (DAM.1) <input type="checkbox"/> Implement (DAM.2) <input checked="" type="checkbox"/> Operate (DAM.3)
Control ID & Name	DAM.3.2: Data Architecture & Modeling Documentation
Control Description	As part of the Data Architecture & Modeling Documentation control, the Entity shall establish and maintain a centralized repository to store all data and technical architecture project documentation, reference materials, and data model designs.
Control Dependencies	DAM.2.2: Data Architecture & Modeling Tools
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DAM.3.2.1	Data Architecture & Modeling Repository	<p>The Entity shall establish and maintain a centralized repository to store all data and technical architecture project documentation, reference materials, and data model designs. This repository shall, at a minimum:</p> <p>SS1. Include comprehensive documentation of data architecture and modeling activities, such as structural diagrams (UML, IE, IDEF1X, Class Diagrams, Entity Relationship Diagrams, Component Diagrams, Deployment Diagrams, Dimensional Diagrams)</p> <p>SS2. Implement version control to track changes and updates to documentation and models, ensuring accuracy and traceability</p> <p>SS3. Indicate master/ slave or federated relationships between datasets, showing how data is managed across systems (e.g., master, slave, federated)</p> <p>SS4. Include documentation to support data lineage and integration, ensuring consistency and reducing redundancy</p> <p>SS5. Include data modeling artifacts such as Entity Relationship Diagrams and Data Flow Diagrams. These artifacts shall:</p> <ul style="list-style-type: none"> • Form part of the Entity’s mandatory system design and architecture documentation • Be produced for both structured and unstructured data to support comprehensive data management 	Foundational

6.3 Data Quality Management Domain

6.3.1 Domain Summary

The Data Quality Management domain is structured across the 3 dimensions of Plan, Implement, and Operate, and includes 6 controls and 11 specifications, with some specifications divided into two or more specifications depending on the capability: Foundational, Advanced, or Very Advanced. Data Quality Management is an essential aspect of data management, focused on ensuring data is fit for its intended purpose. This domain includes defining data quality requirements, identifying and addressing data issues, implementing improvement initiatives, and monitoring data quality metrics to support reliable decision-making and effective business operations. It is particularly crucial within an Entity's core business domains covering the main data domains; additionally, in the fields of Artificial Intelligence (AI), the reliability and integrity of both structured and unstructured data critically influence the performance and dependability of AI models.



Data Quality Management Domain



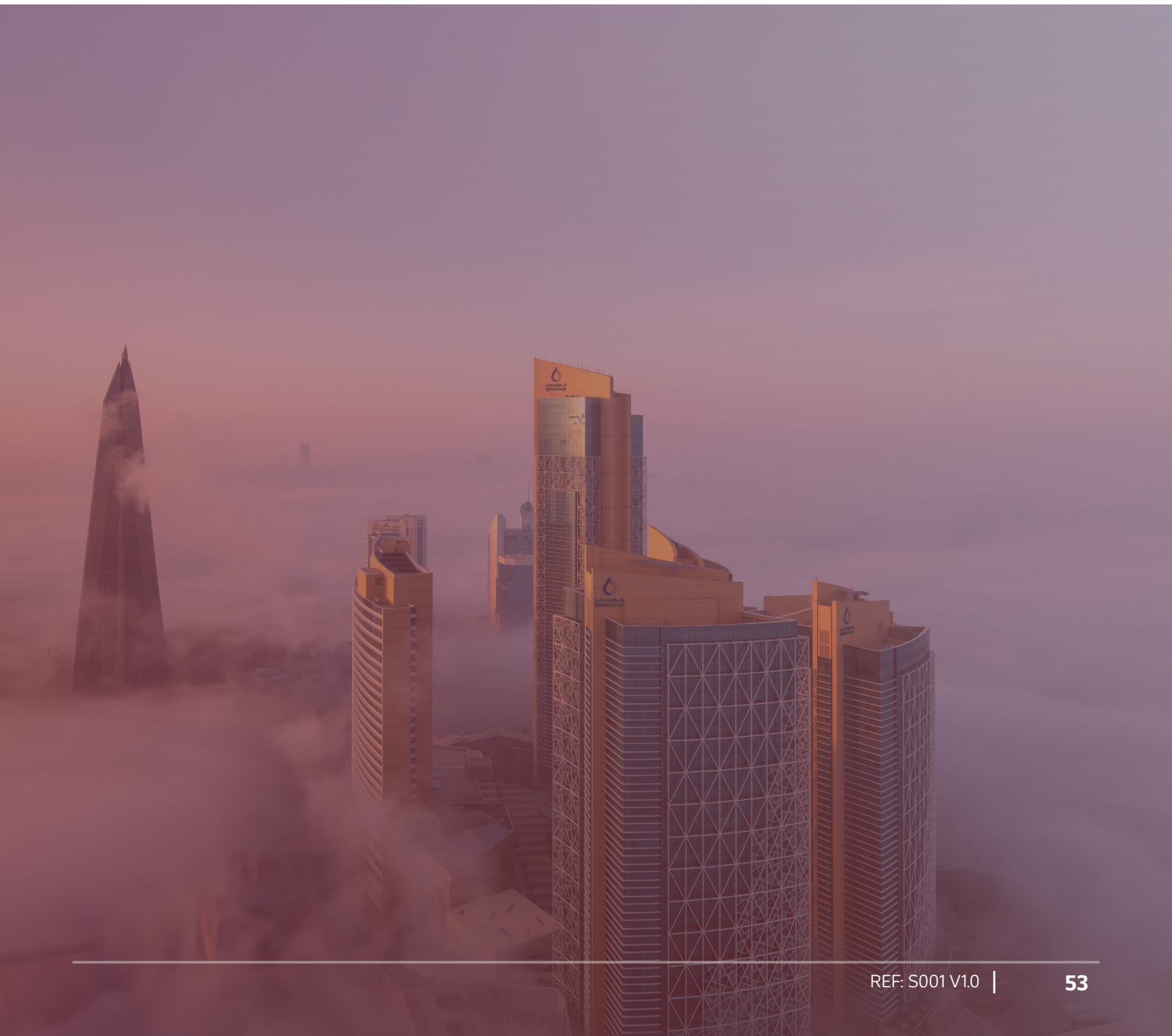
Figure 5 - Standard Structure - Data Quality Management Domain

6.3.2 Controls & Specifications

Dimension	<input checked="" type="checkbox"/> Plan (DQM.1) <input type="checkbox"/> Implement (DQM.2) <input type="checkbox"/> Operate (DQM.3)
Control ID & Name	DQM.1.1: Data Quality Policy
Control Description	As part of the Data Quality Policy control, the Entity shall establish and publish a Data Quality Management Policy to ensure data integrity and reliability throughout its lifecycle.
Control Dependencies	<ul style="list-style-type: none"> Qatar National Data Management Policy Entity's Data Strategy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DQM.1.1.1	Data Quality Policy Creation	<p>The Entity shall create a data quality policy in alignment with National Quality Assurance Framework (NQAF) published by the NPC to ensure data is qualified for statistics and analytics purposes and elevating data quality across systems and sources within the Entity.</p> <p>SS1. The policy shall cover, at a minimum:</p> <ul style="list-style-type: none"> Overview, purpose, scope, and objectives of the policy Policy applicability, validity, and review Policy guidelines in alignment to the National Data Management Policy and Standards Detailed policy statements covering, at a minimum, the following: <ol style="list-style-type: none"> Data quality dimensions including, at a minimum: uniqueness, completeness, validity, accuracy, consistency, timeliness Critical data elements (CDEs) identification Developing Data Quality Rules and Thresholds Data Profiling and Quality Assessment Data Quality Escalations and Issue Management Data Quality Remediation Process Performance management and monitoring Periodic policy review and updates Key policy performance indicators Roles and Responsibilities References 	Foundational

<p>DQM.1.1.2</p>	<p>Data Quality Policy Publication</p>	<p>The Entity shall publish its data quality policy following the below guidelines:</p> <ul style="list-style-type: none"> SS1. Review the draft policy with the Entity's Data Committee or equivalent body SS2. Incorporate Data Committee or equivalent body's feedback SS3. Review draft policy for auditability SS4. Incorporate internal audit feedback SS5. Seek policy review and guidance from National Data Governance Office and incorporate the provided feedback SS6. Publish the policy on Entity's digital channels (eg. the entity's website) SS7. Socialize the policy within the Entity to drive adoption and change management 	<p>Foundational</p>
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Dimension	<input checked="" type="checkbox"/> Plan (DQM.1) <input type="checkbox"/> Implement (DQM.2) <input type="checkbox"/> Operate (DQM.3)
Control ID & Name	DQM.1.2: Data Quality Planning
Control Description	As part of the Data Quality Planning control, the Entity shall profile its data and develop a data quality plan.
Control Dependencies	DQM.1.1: Data Quality Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DQM.1.2.1	Data Profiling	The Entity shall identify CDEs and perform initial data profiling for the identified CDEs. The data profiling exercise shall include, at minimum: <ul style="list-style-type: none"> SS1. Identification and documentation of the main business domains to be covered as part of the data quality scope SS2. Documentation of the source systems, datasets, and CDEs required to be elevated as per the prioritized business domains and their business impact, in addition to those already identified previously in the Entity's data strategy SS3. Conduct data profiling and publish the results in data profiling reports or dashboards using the Entity's established data quality dimensions 	Foundational
DQM.1.2.2	Data Quality Plan	Based on the initial data profiling results, the Entity shall develop a data quality plan, in alignment with the Entity's data strategy, that will be used and monitored to implement and activate data quality initiatives across the Entity. The plan shall include, at a minimum: <ul style="list-style-type: none"> SS1. List of activities and milestones. The plan should account for quick wins and longer-term strategic changes SS2. Owners and stakeholders SS3. Interdependencies, assumptions, and risks SS4. Implementation timeline and cost 	Foundational

Dimension	<input type="checkbox"/> Plan (DQM.1) <input checked="" type="checkbox"/> Implement (DQM.2) <input type="checkbox"/> Operate (DQM.3)
Control ID & Name	DQM.2.1: Data Quality Implementation
Control Description	As part of the Data Quality Implementation control, the Entity shall design and document the data quality rules and implement a data quality tool.
Control Dependencies	DQM.1.2: Data Quality Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DQM.2.1.1	Data Quality Rules & Thresholds	The Entity shall define and document a set of data quality rules and acceptable thresholds for the CDEs in alignment with business and technical stakeholders. The definition of data quality rules shall include, at minimum: <ul style="list-style-type: none"> SS1. Rule description (detailed explanation of the rule) SS2. Rule type, specifying whether the rule is a business rule or a technical rule SS3. List of data fields the rule applies to SS4. Rule condition and business logic SS5. Relevant data quality dimension (as outlined in DQM.1.1.1) to which a rule is being assigned to SS6. Data quality thresholds SS7. Recommended remediation action (e.g.: rejection, correction, notification) SS8. Rule owner (e.g.: business user, business analyst, subject matter expert) SS9. Data steward (e.g.: IT professional, data architect, data engineer, DBA) 	Foundational
DQM.2.1.2	Data Quality Tool Implementation	The Entity shall implement a data quality tool aligned with the Entity's architecture. The tool shall, at a minimum, support the implementation of the following: <ul style="list-style-type: none"> SS1. Automated data profiling (i.e.: support continuous analysis of data to understand and detect anomalies) SS2. Creating the data quality rules (as defined in DQM.2.1.1) SS3. Conducting data quality assessment by executing the defined data quality rules SS4. Generate data quality assessment reports containing the list of data quality issues identified 	Foundational

<p>DQM.2.1.3</p>	<p>Data Quality Tool Implementation</p>	<p>The Entity shall enhance its data quality tooling capabilities to support the following:</p> <ul style="list-style-type: none"> SS1. Automated data cleansing and standardization (i.e.: rules for cleansing and standardizing data to remove duplicates, correct the format of a data field, etc.) SS2. API integration support (i.e.: facilitate integration with external systems through APIs) SS3. Data quality issue logging (i.e.: to record data quality issues and track workflow) SS4. Collaboration Features (i.e.: support collaboration and communication among data stewards and stakeholders) 	<p>Advanced</p>
<p>DQM.2.1.4</p>	<p>Data Quality Tool Implementation</p>	<p>The Entity shall further enhance its data quality tooling capabilities to support the following:</p> <ul style="list-style-type: none"> SS1. AI Powered Data Quality Management (i.e.: providing an AI/ML approach to data quality management such as AI-powered rules for automatically generating common data quality rules) 	<p>Very Advanced</p>



Dimension	<input type="checkbox"/> Plan (DQM.1) <input type="checkbox"/> Implement (DQM.2) <input checked="" type="checkbox"/> Operate (DQM.3)
Control ID & Name	DQM.3.1: Data Quality Issue Management
Control Description	As part of the Data Quality Issue Management control, the Entity shall design and implement a data quality issues management and remediation process.
Control Dependencies	DQM.2.1: Data Quality Implementation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DQM.3.1.1	Data Quality Issues Management & Remediation Process	<p>The Entity shall design and implement a process for on-going data quality issue management and remediation. The process shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Prioritization of data quality issues based on their impact on business processes SS2. Conducting root cause analysis of data quality issues (e.g.: by examining symptoms, tracing data lineage, and pinpointing root causes) SS3. Formulating remediation options based on the root cause analysis (e.g.: by addressing non-technical root causes such as training, leadership support, accountability, modifying systems to eliminate technical root causes, developing preventive controls, and directly correcting flawed data) SS4. Resolving data quality issues once the remediation options are identified 	Foundational

Dimension	<input type="checkbox"/> Plan (DQM.1) <input type="checkbox"/> Implement (DQM.2) <input checked="" type="checkbox"/> Operate (DQM.3)
Control ID & Name	DQM.3.2: Data Quality Performance Management
Control Description	As part of the Data Quality Performance Management control, the Entity shall establish key performance indicators (KPIs) to monitor, measure and report on the Entity's Data Quality trends and on the performance of the Entity's Data Quality issues resolution process and establish and implement service-level agreements (SLAs).
Control Dependencies	DQM.2.1: Data Quality Implementation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DQM.3.2.1	Data Quality KPIs	The Entity shall establish key performance indicators (KPIs) to measure and report on the Entity's Data Quality trends and guide continuous improvement initiatives. KPIs shall include, at minimum: <ul style="list-style-type: none"> SS1. Data quality levels across the established data quality dimensions SS2. Number of data quality rules SS3. Data quality rule compliance SS4. Number and percentage of data quality issues reported SS5. Number and percentage of data quality issues resolved SS6. Average age of open data quality issues (in days) SS7. Number and percentage of escalated data quality issues 	Foundational
DQM.3.2.2	Data Quality Monitoring & Reporting	The Entity shall monitor and report on the Entity's data quality based on the defined Data Quality rules and KPIs. This shall include, at a minimum: <ul style="list-style-type: none"> SS1. Data quality dashboards to track, analyze, and display data in an aggregated format to gain deeper insight on the overall performance and trends across data quality KPIs SS2. Data quality scorecard report providing a high-level view comparison of data quality rules with the thresholds, highlighting areas which do not meet the thresholds (e.g.: with red-yellow-green colors) 	Foundational

<p>DQM.3.2.3</p>	<p>Data Quality Monitoring & Reporting</p>	<p>The Entity shall enhance its data quality monitoring and reporting capabilities as follows:</p> <ul style="list-style-type: none"> SS1. Generating process control reports, primarily for use by data engineers. The reports will include custom reports (e.g.: for monitoring quality checks during data processing, based on operational metadata) or quality gate reports (e.g.: for capturing key business KPIs and ensuring data consistency across various data layers in the data warehouse or data lake) SS2. Generating automated Alerts and Notifications by implementing a system/ dashboard that automatically alerts data stewards and owners when data quality issues are detected or when certain thresholds are breached 	<p>Advanced</p>
<p>DQM.3.2.4</p>	<p>Data Quality SLAs</p>	<p>The Entity shall establish and implement service-level agreements (SLAs) for business-critical data quality issues. The SLAs shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Data elements covered by the agreement SS2. Business impacts associated with data flaws SS3. Data Quality dimensions and business rules associated with each data element SS4. Methods for measuring against those expectations SS5. Acceptability threshold for each measurement SS6. Steward(s) to be notified in case the acceptability threshold is not met SS7. Timelines and deadlines for expected resolution or remediation of the issue SS8. Escalation process when the SLA is not met 	<p>Foundational</p>
<p>DQM.3.2.5</p>	<p>Data Quality SLAs</p>	<p>The Entity shall enhance its data quality SLAs capabilities as follows:</p> <ul style="list-style-type: none"> SS1. Automate the monitoring of SLAs by implementing a system that automatically monitor compliance with SLAs SS2. Generate automated notifications and actions by implementing systems that automatically trigger emails or notifications to relevant stakeholders if SLAs are breached 	<p>Advanced</p>

6.4 Master & Reference Data Management Domain

6.4.1 Domain Summary

The Master & Reference Data Management (MRDM) domain is structured across the 3 dimensions of Plan, Implement, and Operate, and includes 5 controls and 12 specifications, with some specifications divided into two or more specifications depending on the capability: Foundational, Advanced, or Very Advanced. Master & Reference Data Management is a domain within data management that focuses on the governance, storage, and maintenance of critical data entities known as master data and reference data. Master data represents the core business domains such as customers, products, and employees, while reference data consists of standardized codes, classifications, or lists used to categorize and describe data elements. This domain involves establishing processes, standards, and tools for ensuring the accuracy, consistency, and integrity of master and reference data across the Entity. .



Master & Reference Data Management (MRDM) Domain



Figure 6 – Standard Structure Master & Reference Data Management (MRDM) domain

6.4.2 Controls & Specifications

Dimension	<input checked="" type="checkbox"/> Plan (MRDM.1) <input type="checkbox"/> Implement (MRDM.2) <input type="checkbox"/> Operate (MRDM.3)
Control ID & Name	MRDM.1.1: Master & Reference Data Management Policy
Control Description	As part of the Master & Reference Data Management Policy control, the Entity shall establish and publish a Master & Reference Data Management Policy to enforce a single source of truth of Master & Reference Data throughout the Entity.
Control Dependencies	<ul style="list-style-type: none"> Entity's Data Strategy Qatar National Data Management Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
MRDM.1.1	Master & Reference Data Management Policy Creation	<p>The Entity shall establish a Master & Reference Data Management Policy to enforce a single source of truth of Master & Reference Data throughout the Entity.</p> <p>SS1. The policy shall cover, at a minimum, the following:</p> <ul style="list-style-type: none"> Overview, purpose, scope, and objectives of the policy Policy applicability, validity, and review Policy guidelines in alignment to the National Data Management Policy and Standards Detailed policy statements covering, at a minimum, the following: <ol style="list-style-type: none"> Master and reference data plan Identification of master and reference data Implementation of technology to support master and reference data management Operation of master and reference data to support consuming systems Performance management and monitoring Escalation and issue management Periodic policy review and updates Key policy performance indicators Roles and Responsibilities References 	Foundational

<p>MRDM.1.1.2</p>	<p>Master & Reference Data Management Policy Publication</p>	<p>The Entity shall publish its master & reference data management policy following the below guidelines:</p> <ul style="list-style-type: none"> SS1. Review the draft policy with the Entity's Data Committee or equivalent body SS2. Incorporate Data Committee or equivalent body's feedback SS3. Review draft policy for auditability SS4. Incorporate internal audit feedback SS5. Seek policy review and guidance from National Data Governance Office and incorporate the provided feedback SS6. Publish the policy on Entity's digital channels (e.g. the entity website) SS7. Socialize the policy within the Entity to drive adoption and change management 	<p>Foundational</p>
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Dimension	<input checked="" type="checkbox"/> Plan (MRDM.1) <input type="checkbox"/> Implement (MRDM.2) <input type="checkbox"/> Operate (MRDM.3)
Control ID & Name	MRDM.1.2: Master & Reference Data Management Planning
Control Description	As part of the Master & Reference Data Management Planning control, the Entity shall identify Master & Reference Data attributes, identify the authoritative data source for the identified Master & Reference Data attributes, and develop a Master & Reference Data Management plan to oversee and execute Master & Reference Data Management activities.
Control Dependencies	MRDM.1.1: Master & Reference Data Management Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
MRDM.1.2.1	Master & Reference Data Discovery & Prioritization	<p>SS1. The Entity shall define and implement a systematic process for identifying Master & Reference data attributes and defining the Master & Reference data domains that need to be managed (e.g.: customer, product, and supplier data). The identified Master & Reference data attributes shall be prioritized, as needed, based on criticality to the Entity's operations.</p>	Foundational
MRDM.1.2.2	Master & Reference Data Authoritative Source & Custodianship	<p>SS1. The Entity shall identify and document the authoritative data source for each master & reference data attribute, ensuring that it refers to and utilizes the Reference Data published by the National Planning Council (NPC), as it is the authoritative Entity for reference data.</p> <p>SS2. The Entity shall validate and obtain approval from NPC for the business specific Reference Data created internally. The Reference Data should only be consumed by the Entity after it has been officially approved and shared by NPC.</p> <p>SS3. For attributes where the Entity is not the authoritative data source nor the data custodian, the Entity shall define a request process for acquiring necessary master & reference data from the respective external authoritative sources</p> <p>SS4. For attributes where the Entity is the authoritative data source and/ or custodian, the Entity shall define a process to make these attributes available to external entities as required. This process for sharing the data shall ensure adherence to National Data Sharing, Integration, and Interoperability Standards</p>	Foundational

<p>MRDM.1.2.3</p>	<p>Master & Reference Data Management Plan</p>	<p>The Entity shall develop a detailed master and reference data management plan, in alignment with the Entity's data strategy, that will be used and monitored to implement and activate master and reference data management initiatives across the Entity. The plan shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. List of activities and milestones. The plan should account for quick wins and longer-term strategic changes SS2. Owners and stakeholders SS3. Interdependencies, assumptions, and risks SS4. Implementation timeline and cost 	<p>Foundational</p>
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Dimension	<input type="checkbox"/> Plan (MRDM.1) <input checked="" type="checkbox"/> Implement (MRDM.2) <input type="checkbox"/> Operate (MRDM.3)
Control ID & Name	MRDM.2.1: Master & Reference Data Management Assessment & Design
Control Description	As part of the Master & Reference Data Management Assessment & Design control, the Entity shall develop Master & Reference Data rules and define the architectural approach to Master & Reference Data Management.
Control Dependencies	MRDM.1.2: Master & Reference Data Management Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
MRDM.2.1.1	Master & Reference Data Rules	<p>The Entity shall develop rules for accurately matching and merging attribute instances. These shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Attribute trust rules that define the level of trust associated with specific attributes within a source system or across multiple systems (e.g.: an attribute trust rule may specify that the customer name from a verified and reliable source system has a higher trust level compared to the same attribute from other sources) SS2. Similarity rules for identifying duplicate attributes during the match process SS3. Survivorship rules that determine which data attributes will be chosen in the final master record during the merge process 	Foundational

<p>MRDM.2.1.2</p>	<p>Master & Reference Data Architecture & Modeling</p>	<p>SS1. The Entity shall adopt a common architecture archetype for its master & reference data, in alignment with the enterprise data model, the data catalog & metadata standard, and the data architecture and modeling standard. Examples of common architecture archetypes include:</p> <ul style="list-style-type: none"> • Registry: The registry model is the simplest form of MRDM architecture. It links multiple systems through a central registry that maintains a reference to Master & Reference data without storing the data itself. This model provides a consolidated view of Master & Reference data but doesn't centralize data storage • Consolidation: In the consolidation model, data from various source systems is aggregated into a central MDM hub. The MRDM system cleanses and deduplicates this data to create a "golden record" that serves as a read-only reference (data is not updated back to the source systems) • Coexistence: The coexistence model allows for the bidirectional flow of data between the MRDM hub and the source systems. This model both feeds the consolidated, cleansed data back into the source systems and receives ongoing updates from them • Centralized: Under the centralized model, the MRDM system acts as the primary source of Master & Reference data. All data is entered directly into the MRDM system and then distributed to other systems. This model provides the highest level of control over Master & Reference data 	<p>Foundational</p>
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Dimension	<input type="checkbox"/> Plan (MRDM.1) <input checked="" type="checkbox"/> Implement (MRDM.2) <input type="checkbox"/> Operate (MRDM.3)
Control ID & Name	MRDM.2.2: Master & Reference Data Management Implementation
Control Description	As part of the Master & Reference Data Management Implementation control, the Entity shall select and implement Master & Reference Data tools.
Control Dependencies	MRDM.2.1: Master & Reference Data Management Assessment & Design
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
MRDM.2.2.1	Master & Reference Data Management Tools	The Entity shall implement Master & Reference Data Management tool, aligned with the Entity's technology architecture. The tools shall include, at a minimum: <ul style="list-style-type: none"> SS1. Workflow management for master and reference data (i.e.: manage and streamline workflows related to master and reference data) SS2. Version control for master and reference data (i.e.: support for maintaining multiple versions of and reference data) SS3. Master and reference data import and export capabilities (e.g.: XML) SS4. Validation and matching at data entry (i.e.: validate and match data at the point of entry and in batch processing) SS5. Web services integration (i.e.: integrate with external systems via web services for data interaction) 	Foundational
MRDM.2.2.2	Master & Reference Data Management Tools	The Entity shall enhance its master and reference data management tooling capabilities to support the following: <ul style="list-style-type: none"> SS1. API integration support (i.e.: facilitate integration with external systems through APIs) SS2. Dynamic data synchronization (i.e.: facilitate real-time data exchange across distributed systems) SS3. Dataset version mapping (i.e.: provide capabilities to map and manage transitions between dataset versions) SS4. Hierarchical datasets support (i.e.: support management of data in hierarchical structures) SS5. Multilingual data handling (e.g.: manage and support reference data in multiple languages) SS6. Customizable user interface design (i.e.: offer customizable interfaces to meet diverse operational needs) 	Advanced

<p>MRDM.2.2.3</p>	<p>Master & Reference Data Management Tools</p>	<p>The Entity shall further enhance its data quality tooling capabilities to support the following:</p> <p>SS1. AI Powered Master and Reference Data Management (i.e.: providing an AI/ML approach to master and reference data management such as automated discovery and identification of master data, pre-trained ML models for entity resolution, etc.)</p>	<p>Very Advanced</p>
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Dimension	<input type="checkbox"/> Plan (MRDM.1) <input type="checkbox"/> Implement (MRDM.2) <input checked="" type="checkbox"/> Operate (MRDM.3)
Control ID & Name	MRDM.3.1: Master & Reference Data Performance Management
Control Description	As part of the Master & Reference Data Performance Management control, the Entity shall assign roles and responsibilities for data stewardship activities, assign and document roles and responsibilities for data stewardship, establish key performance indicators (KPIs) to measure and report on the effectiveness of Master & Reference Data Management efforts and guide continuous improvement initiatives, and establish and implement service-level agreements (SLAs) that specify the performance criteria for Master & Reference Data Management.
Control Dependencies	MRDM.2.2: Master & Reference Data Management Implementation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
MRDM.3.1.1	MRDM Stewardship & Maintenance Process	<p>SS1. The Entity shall assign and document roles and responsibilities for data stewardship activities to support ongoing the maintenance of master & reference data management. Below is an indicative, non-exhaustive list of activities that data stewards can be expected to perform:</p> <ul style="list-style-type: none"> Monitoring and validating the quality and integrity of Master and Reference Data to ensure they are accurate, complete, and up to date in alignment with the Entity's Data Quality Policy Analyzing records to identify anomalies after the matching-merging process, and providing feedback to source system owners to improve data accuracy and consistency Participating in the development and refinement and fine-tuning of algorithms and processes used in Master & Reference Data Management tools Facilitating cross-departmental collaboration to establish and maintain common values and definitions for Master & Reference Data Managing metadata for Master & Reference Data, including steward name, originating organization, expected frequency of updates, schedule for updates, and processes using the Master & Reference Data Overseeing workflows for the review and approval of changes to Master & Reference Data 	Foundational

<p>MRDM.3.1.2</p>	<p>Master & Reference Data Management KPIs</p>	<p>The Entity shall establish Key Performance Indicators (KPIs) to measure the effectiveness of Master & Reference Data Management efforts and guide continuous improvement initiatives. KPIs shall include, at minimum:</p> <p>SS1. Master and reference data quality metrics, as defined in the data quality domain (refer to DQM.3.2.1)</p>	<p>Foundational</p>
<p>MRDM.3.1.3</p>	<p>Master & Reference Data Management Monitoring & Reporting</p>	<p>The Entity shall monitor and report on the Entity's master and reference data management efforts based on the defined KPIs. This shall include, at a minimum:</p> <p>SS1. Align master and reference data quality monitoring and reporting to all the data quality monitoring and reporting foundational sub-specifications as outlined in DQM.3.2.2</p> <p>SS2. A register recording all change requests for reference and master data, along with the decisions and rationale for each action taken in response to these requests</p>	<p>Advanced</p>
<p>MRDM.3.1.4</p>	<p>Master & Reference Data Management Monitoring & Reporting</p>	<p>The Entity shall enhance its master and reference data management monitoring and reporting capabilities as follows:</p> <p>SS1. Align master and reference data quality monitoring and reporting to all the data quality monitoring and reporting advanced sub-specifications as outlined in DQM.3.2.2</p>	<p>Advanced</p>
<p>MRDM.3.1.5</p>	<p>Master & Reference Data Management SLAs</p>	<p>The Entity shall establish and implement service-level agreements (SLAs) that specify the performance criteria for Master & Reference Data Management. The SLAs shall include, at a minimum:</p> <p>SS1. Align master and reference SLAs to all the data quality SLAs foundational sub-specifications as outlined in DQM.3.2.3</p>	<p>Foundational</p>
<p>MRDM.3.1.6</p>	<p>Master & Reference Data Management SLAs</p>	<p>The Entity shall enhance its master and reference data management SLAs capabilities as follows:</p> <p>SS1. Align master and reference SLAs to all the data quality SLAs advanced sub-specifications as outlined in DQM.3.2.3</p>	<p>Advanced</p>

6.5 Document & Content Management Domain

6.5.1 Domain Summary

The Document & Content Management domain is structured across the 3 dimensions of Plan, Implement, and Operate, and includes 5 controls and 18 specifications, with some specifications divided into two or more specifications depending on the capability: Foundational, Advanced, or Very Advanced. Document and content management is focused on ensuring the efficient handling of information assets within an organization. This domain includes defining the various levels of priority across different information assets, workflow priorities, the tools needed to manage information assets, and how to manage documents throughout their entire lifecycle from creation, storage, access, retrieval, retention, versioning, backup, through to final disposition or archival. This comprehensive approach helps organizations maintain control over their information assets while enhancing operational efficiency.



Document & Content Management Domain



Figure 7 - Standard Structure - Document & Content Management domain

6.5.2 Controls & Specifications

Dimension	<input checked="" type="checkbox"/> Plan (DCM.1) <input type="checkbox"/> Implement (DCM.2) <input type="checkbox"/> Operate (DCM.3)
Control ID & Name	DCM.11: Document & Content Management Policy
Control Description	As part of the document & content management policy control, the Entity shall create a policy to ensure the secure, and standardized handling and management of documents and content, focused on managing documents through their lifecycle from creation and storage to disposition and archiving.
Control Dependencies	<ul style="list-style-type: none"> Entity's Data Strategy Qatar National Data Management Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCM.11.1	Document & Content Management Policy Creation	The Entity shall create a document and content management policy to ensure the secure, standardized handling and management of documents and content throughout their lifecycle (creation, storage, access, retrieval, retention, versioning, backup, disposition or archival). SS1. The policy shall cover, at a minimum: <ul style="list-style-type: none"> Overview, purpose, scope, and objectives of the policy Policy applicability, validity, and review Policy guidelines in alignment to the National Data Management Policy and Standards Detailed policy statements covering, at a minimum, the following: <ol style="list-style-type: none"> Retention, archival, and disposal of documents Security measures for each type of document Document and content management tool features Training and awareness Roles and Responsibilities References 	Foundational
DCM.11.2	Document & Content Management Policy Publication	The Entity shall publish the created policy guided by the following steps: SS1. Review the policy draft with key stakeholders SS2. Incorporate key stakeholder's feedback SS3. Review the policy draft for auditability SS4. Incorporate internal audit feedback SS5. Publish the document and content management policy on Entity's digital channels SS6. Socialize the policy within the Entity to drive adoption	Foundational

Dimension	<input checked="" type="checkbox"/> Plan (DCM.1) <input type="checkbox"/> Implement (DCM.2) <input type="checkbox"/> Operate (DCM.3)
Control ID & Name	DCM.1.2: Document & Content Management Planning
Control Description	As part of the document & content management planning control, the Entity shall develop a document and content management plan for implementation and activation of the domain across the Entity.
Control Dependencies	<ul style="list-style-type: none"> Entity's Data Strategy DCM.1.1: Document & Content Management Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCM.1.2.1	Document & Content Management Plan	Aligning with the Entity's data strategy, the Entity shall develop a document and content management plan for implementation and activation of document and content management across the Entity. The plan shall include, at a minimum, the following: <ul style="list-style-type: none"> SS1. List of initiatives, activities, and milestones. The plan should account for quick wins and longer-term strategic changes SS2. List of owners and stakeholders SS3. Interdependencies, assumptions, and risks SS4. Implementation timeline and cost 	Foundational

Dimension	<input type="checkbox"/> Plan (DCM.1) <input checked="" type="checkbox"/> Implement (DCM.2) <input type="checkbox"/> Operate (DCM.3)
Control ID & Name	DCM.2.1: Document & Content Management Assessment & Design
Control Description	As part of the document & content management assessment & design control, the Entity shall conduct an inventory assessment, prioritize documents within its Document Management System (DMS), prioritize crucial processes to be implemented as automated workflows, and develop its information architecture.
Control Dependencies	DCM.1.2 Document & Content Management Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCM.2.1.1	Inventory Assessment	The Entity shall: SS1. Develop current state assessment report on the document management system or equivalent (if available) to ensure understanding and management of the Entity's information assets	Advanced
DCM.2.1.2	Document Prioritization	The Entity shall: SS1. Develop list of prioritized documents for storage and management. The prioritized list of documents shall then be utilized to optimize the setup and ongoing management of the Entity's Document Management System (DMS). Documents shall be prioritized considering their operational importance and relevance	Advanced

<p>DCM.2.1.3</p>	<p>Workflow Prioritization</p>	<p>The Entity shall prioritize and design the workflows that are to be implemented as automated workflows within the Document Management System (DMS). Prioritization shall be determined based on criteria such as, but not limited to business criticality and ease of implementation. The Entity shall:</p> <p>SS1. Develop a list of prioritized workflows based on critical business processes within the Entity to be implemented</p> <p>SS2. Design the identified prioritized workflows</p>	<p>Advanced</p>
<p>DCM.2.1.4</p>	<p>Information Architecture</p>	<p>The Entity shall develop an information architecture. The architecture shall identify the links and relationships between documents and content and specify document attributes. In detail, the Entity shall:</p> <p>SS1. Design an architecture that methodically organizes documents and content to support the entity's business objectives and adhere to compliance standards. The architecture shall cover, at a minimum, the following:</p> <ul style="list-style-type: none"> • Design and implement controlled vocabularies to ensure consistent terminology across all documents • Design and utilize taxonomies and ontologies to organize documents and content • Design navigation maps that facilitate easy access to documents and content • Design the metadata maps that outline the required metadata for documents and content • Specify search functionality that allows users to efficiently find documents and content • Design user flows that describe how users interact with documents and content 	<p>Advanced</p>

Dimension	<input type="checkbox"/> Plan (DCM.1) <input checked="" type="checkbox"/> Implement (DCM.2) <input type="checkbox"/> Operate (DCM.3)
Control ID & Name	DCM.2.2: Document & Content Management Implementation
Control Description	As part of the document & content management implementation control, the Entity shall adopt document and content management tools to automate their management, set processes for records & content capture, versioning & control, and establish retention policies and SLAs.
Control Dependencies	DCM.2.1 Document & Content Management Assessment & Design
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCM.2.2.1	Document & Content Management Tool Implementation	The Entity shall implement a Document Management System (DMS), which is a comprehensive tool for the electronic capture, storage, and management of documents, including electronic files and digital media. SS1. The system shall include, at a minimum, the following features: <ul style="list-style-type: none"> • Document versioning, including histories of changes • Secured document access • Global search and discovery on the registered documents • Collaboration capabilities 	Advanced
DCM.2.2.2	Document & Content Management Tool Implementation	SS1. The system shall include the following additional features: <ul style="list-style-type: none"> • OCR (Optical Character Recognition) functionality to analyze imported images • Document indexing • Documents workflows development • Workflow automation • Web Content Management System (WCMS): an application designed for storing and managing web content utilized by the Entity's portals and internet sites 	Very Advanced

<p>DCM.2.2.3</p>	<p>Records & Content Capture</p>	<p>The Entity shall implement a standardized records and content capture process to ensure collection of information across its platforms. The Entity shall, at a minimum, do the following:</p> <ul style="list-style-type: none"> SS1. Catalog all documents by tagging documents with the appropriate metadata SS2. Define document quality criteria and conduct quality and usage assessments accordingly, and identify document redundancies or gaps SS3. Evaluate and document how will the documents support the business requirements 	<p>Advanced</p>
<p>DCM.2.2.4</p>	<p>Versioning & Control</p>	<p>The Entity shall establish and enforce a versioning and control process within the entity's Document Management System (DMS). The process shall, at a minimum, have the following features:</p> <ul style="list-style-type: none"> SS1. Systematic tracking of all changes made to documents SS2. Recovery of previous versions when necessary SS3. Complete history of all document modifications SS4. Real-time collaborative editing capabilities where document changes by multiple users are tracked and merged 	<p>Advanced</p>
<p>DCM.2.2.5</p>	<p>Versioning & Control</p>	<ul style="list-style-type: none"> SS1. Automated Change Notifications: Implement notifications that automatically alert relevant stakeholders when changes are made to critical documents SS2. Versions Comparison: Integrate tools within the DMS that allow users to easily compare different versions of a document. This feature shall highlight changes between versions, making it easier for users to review and understand modifications without having to manually inspect each version 	<p>Very Advanced</p>
<p>DCM.2.2.6</p>	<p>Backup & Recovery</p>	<ul style="list-style-type: none"> SS1. The Entity shall incorporate the document management systems into the overarching backup and recovery plan, and the plan should include at minimum: <ul style="list-style-type: none"> • Definition of the criteria for determining critical records • Identification of critical records • Plans for the protection and recovery of critical records 	<p>Advanced</p>

<p>DCM.2.2.7</p>	<p>Backup & Recovery</p>	<p>SS1. Differential and Incremental Backup activities: Implement differential and incremental backup activities to reduce the volume of data transferred and stored during each backup operation</p>	<p>Very Advanced</p>
<p>DCM.2.2.8</p>	<p>Retention & Disposal</p>	<p>The Entity shall establish a retention and disposal process that is aligned to the retention periods that have been defined in the document and content management policy. The Entity shall, at a minimum, do the following:</p> <p>SS1. Review and confirm the necessity of records before disposal. This entails documentation of the confirmation process, including timestamps, user IDs, and reasons for disposal</p> <p>SS2. Adopt suitable retirement and disposal techniques. Suitable techniques can be any of the following:</p> <ul style="list-style-type: none"> • Physical destruction of media, such as overwriting and secure deletion • Extended retention within the Entity in an offline or nearline repository • Transfer to an appropriate archival facility or body • Delegation of responsibility to another Entity engaged in ongoing management 	<p>Advanced</p>
<p>DCM.2.2.9</p>	<p>Document & Content Metadata</p>	<p>The Entity shall publish metadata for documents and content housed within the Entity's Document Management Systems (DMS) using the Entity's data catalog tool. At a minimum, the Entity shall:</p> <p>SS1. Populate the metadata in accordance with the procedures established in the metadata and data catalog management domain.</p> <p>SS2. Incorporate metadata enrichment and integration tools that expand the metadata attributes to include, at a minimum, the following:</p> <ul style="list-style-type: none"> • Content sensitivity level • User access history • Inter-document relationships 	<p>Advanced</p>
<p>DCM.2.2.10</p>	<p>Content Publishing & Delivery</p>	<p>The Entity shall establish a content publishing and delivery process to do the following:</p> <p>SS1. Define the publishing channels and ensure dissemination of information across them</p> <p>SS2. Define the formatting, approval, and distribution processes, and implement them to enhance the accessibility and reliability of published content</p> <p>SS3. Incorporate the use of metadata and keyword tagging to classify content within an appropriate information architecture, allowing search engines to return content based on keywords</p>	<p>Advanced</p>

Dimension	<input type="checkbox"/> Plan (DCM.1) <input type="checkbox"/> Implement (DCM.2) <input checked="" type="checkbox"/> Operate (DCM.3)
Control ID & Name	DCM.3.1: Performance Management
Control Description	As part of the Performance Management control, the Entity shall establish key performance indicators (KPIs) to measure and report on the Document Management System (DMS), monitor it, and establish audit guidelines.
Control Dependencies	DCM.2.2 Document & Content Management Implementation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DQM.3.1.1	Document & Content Management KPIs	The Entity shall establish key performance indicators (KPIs) to measure and report on the Document Management System (DMS). KPIs shall include, at a minimum, the following: <ul style="list-style-type: none"> SS1. Total quantity of documents stored and managed within the Entity's Document Management System (DMS) SS2. Total number of users accessing the Entity's Document Management System (DMS) SS3. Percentage of paper-based documents converted to electronic format within the Entity 	Advanced
DCM.3.1.2	Document & Content Management KPIs	<ul style="list-style-type: none"> SS1. Advanced Analytical KPIs: Introduce more sophisticated KPIs that measure not only basic metrics but also user engagement and efficiency of document retrieval and processing 	Very Advanced
DCM.3.1.3	Document & Content Management Monitoring & Reporting	The Entity shall further monitor the Entity's Document Management System (DMS) on a regular basis based on the defined KPIs. Monitoring shall include, at a minimum, the following: <ul style="list-style-type: none"> SS1. Reports detailing performance against the established KPIs and tracking the issues and resolution SS2. Reporting of identified issues to the identified internal organizational unit responsible for managing documents and content 	Advanced

<p>DCM.3.1.4</p>	<p>Document & Content Management Monitoring & Reporting</p>	<p>SS1. Automated Reporting Tools: Implement automated reporting tools that generate real-time analytics on DMS performance. These tools shall provide dashboard views that are accessible to key stakeholders, offering insights into system usage patterns, bottleneck identification, and efficiency improvements</p>	<p>Very Advanced</p>
<p>DCM.3.1.5</p>	<p>Document & Content Management SLAs</p>	<p>The Entity shall establish and implement Service-Level Agreements (SLAs) for business-critical document and content management services. These SLAs shall include, at a minimum, the following:</p> <ul style="list-style-type: none"> SS1. The types of documents and content covered by the SLA SS2. The potential business impacts associated with the mismanagement or poor handling of documents and content SS3. The standards for content quality, including accuracy, accessibility, completeness, and security, and the outline of business rules for managing each type of document SS4. Methods for measuring compliance with the SLA, such as frequency of content updates, accuracy of content categorization, and response times for document retrieval SS5. Acceptable performance thresholds for each metric, detailing minimum performance levels required SS6. Notification protocol for Identifying the steward(s) or responsible parties if performance falls below the acceptability threshold SS7. Clear timelines and deadlines for the resolution or remediation of identified issues SS8. Escalation procedures for addressing SLA breaches, including steps to mitigate ongoing risks and the involvement of higher management SS9. Potential rewards for consistent compliance with the SLA and penalties for failures 	<p>Advanced</p>
<p>DCM.3.1.6</p>	<p>Advanced Document & Content Management SLAs</p>	<p>SS1. Automated Monitoring of SLAs: Implementing systems that automatically monitor compliance with SLAs. This ensures that issues are identified and addressed promptly without requiring manual checks</p>	<p>Very Advanced</p>
<p>DCM.3.1.7</p>	<p>Document & Content Management Audit</p>	<p>The Entity shall provide input and support to internal and external auditors on document and content management related topics. The Entity shall:</p> <ul style="list-style-type: none"> SS1. Provide audit guidelines for document and content management audit aligned to the national data management compliance framework - document and content management topic 	<p>Advanced</p>

6.6 Data Catalog & Metadata Management Domain

6.6.1 Domain Summary

The Data Catalog & Metadata Management domain is structured across the 3 dimensions of Plan, Implement, and Operate, and includes 6 controls and 11 specifications, with some specifications divided into two or more specifications depending on the capability: Foundational, Advanced, or Very Advanced. Data Catalog & Metadata Management focuses on the systematic collection and management of metadata to support data governance, compliance, and usability across an organization. This domain encompasses the creation and maintenance of a centralized data catalog that provides a comprehensive view of data assets, facilitating data discovery, understanding, and trust. It involves defining and documenting data sources, content, and context, thereby enabling more efficient data integration, data quality enhancement, and support for analytics and decision-making. The domain also includes the management of metadata that describes the structure, policies, and control mechanisms of the data, ensuring proper alignment with business needs and regulatory requirements.



Data Catalog and Metadata Management Domain



Figure 8 - Standard Structure - Data Catalog & Metadata Management domain

6.6.2 Controls & Specifications

Dimension	<input checked="" type="checkbox"/> Plan (DCMM.1) <input type="checkbox"/> Implement (DCMM.2) <input type="checkbox"/> Operate (DCMM.3)
Control ID & Name	DCMM.1.1: Data Catalog & Metadata Management Policy
Control Description	As part of the Data Catalog & Metadata Management Policy control, the Entity shall establish and publish a Data Catalog & Metadata Management Policy that governs the creation, operation, maintenance, and dissemination of metadata across the Entity.
Control Dependencies	<ul style="list-style-type: none"> Entity's Data Strategy Qatar National Data Management Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCMM.1.1	Data Catalog & Metadata Management Policy Creation	The Entity shall create a Data Catalog & Metadata Management policy that governs the creation, operation, maintenance, and dissemination of metadata across the Entity. The policy shall cover, at a minimum: <ul style="list-style-type: none"> SS1. Overview, purpose, scope, and objectives of the policy SS2. Policy applicability, validity, and review SS3. Policy guidelines in alignment to the National Data Management Policy and Standards SS4. Detailed policy statements covering, at a minimum, the following: <ul style="list-style-type: none"> • Metadata quality dimensions – refer to DQM.1.11.SS1 • Critical metadata attributes (CMAs) identification • Developing Metadata Guidelines and Standards • Metadata Profiling and Quality Assessment • Metadata Quality Escalations & Issue Management • Metadata Quality Remediation Process • Metadata governance framework and stewardship • Metadata Integration and Interoperability • Metadata Cataloging and Classification • Metadata Versioning and Change Management • Metadata Security and Privacy • Performance management and monitoring • Periodic policy review and updates • Key policy performance indicators SS5. Roles and Responsibilities SS6. References 	Foundational

<p>DCMM.11.2</p>	<p>Data Catalog & Metadata Management Policy Publication</p>	<p>The Entity shall publish its Data Catalog & Metadata Management policy following the below guidelines:</p> <ul style="list-style-type: none"> SS1. Review the draft policy with the Entity's Data Committee or equivalent body SS2. Incorporate Data Committee or equivalent body's feedback SS3. Review draft policy for auditability SS4. Incorporate internal audit feedback SS5. Seek policy review and guidance from National Data Governance Office and incorporate the provided feedback SS6. Publish the policy on Entity's digital channels (e.g. the entity's website) SS7. Socialize the policy within the Entity to drive adoption and change management 	<p>Foundational</p>
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Dimension	<input checked="" type="checkbox"/> Plan (DCMM.1) <input type="checkbox"/> Implement (DCMM.2) <input type="checkbox"/> Operate (DCMM.3)
Control ID & Name	DCMM.1.2: Data Catalog & Metadata Management Planning
Control Description	As part of the Data Catalog & Metadata Management Planning control, the Entity shall develop a Data Catalog & Metadata Management Plan.
Control Dependencies	DCMM.1.1: Data Catalog & Metadata Management Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCMM.1.2.1	Data Catalog & Metadata Management Plan	<p>In alignment with the Entity's data strategy, the Entity shall develop a data catalog & metadata management plan, that will be used and monitored to implement and activate data catalog and metadata management initiatives across the Entity. The plan shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. List of activities and milestones. The plan should account for quick wins and longer-term strategic changes SS2. Owners and stakeholders SS3. Interdependencies, assumptions, and risks SS4. Implementation timeline and cost 	Foundational

Dimension	<input type="checkbox"/> Plan (DCMM.1) <input checked="" type="checkbox"/> Implement (DCMM.2) <input type="checkbox"/> Operate (DCMM.3)
Control ID & Name	DCMM.2.1: Metadata Management Assessment & Design
Control Description	As part of the Metadata Management Assessment & Design control, the Entity shall design an Entity-wide Meta Model.
Control Dependencies	DCMM.1.2: Data Catalog & Metadata Management Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCMM.2.11	Meta Model Design	<p>The Entity shall design an Entity-wide Meta Model, ensuring the metamodel adheres to the existing data architecture standards and aligns with organizational goals. The design process shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Conduct stakeholder interviews to develop initial knowledge about the range of data held and metadata required and gather requirements for business, technical, and other identified types of metadata SS2. Integrate the metamodel within the broader context of the Entity's data model SS3. Design multiple levels of metamodels (i.e.: high-level conceptual model, middle-level logical model, low-level physical model) - refer to Data Architecture & Modeling Domain SS4. Define and document the Meta-Entities and their Meta-Attributes to standardize the structure of data models (i.e.: tables, columns, data types, constraints) SS5. Include control activities (i.e.: job scheduling and monitoring, load statistical analysis, backup/ recovery/ archive/ pugging, query and report generation, etc.) SS6. Evaluate existing metadata sources and repositories, and integrate the metamodel with current metadata management tools, systems, and repositories SS7. Document the relationships and hierarchies within the metadata (i.e.: data flows mapping, parent-child relationships documentation, hierarchical structure establishment) SS8. Establish procedures for ongoing maintenance and updates (i.e.: updates schedule setup, maintenance workflows definition, reviews processes establishment) 	Foundational

Dimension	<input type="checkbox"/> Plan (DCMM.1) <input checked="" type="checkbox"/> Implement (DCMM.2) <input type="checkbox"/> Operate (DCMM.3)
Control ID & Name	DCMM.2.2: Metadata Lifecycle Management
Control Description	As part of the Metadata Lifecycle Management control, the Entity shall develop a Metadata Terms Standardization across the Entity, identify and prioritize the data sources that are required to the Entity's metadata lifecycle management, and define and implement the processes that are required to the Entity's metadata lifecycle management.
Control Dependencies	DCMM.2.1: Metadata Management Assessment & Design
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCMM.2.2.1	Metadata Standardization	<p>Aligning with the Entity's metamodel design, the Entity shall develop a Metadata Terms Standardization across the Entity. The standardization shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Generation and standardization of data elements (i.e.: common elements, data element creation protocols, uniformity in data element usage) SS2. Identification of basic attributes of data elements (i.e.: data type, length, format, relationships, usage guidelines) SS3. Rules and guidelines for the formulation of data definitions (i.e.: standards terminology, business processes and requirements) SS4. Naming and identification principles for data elements (i.e.: standardization of naming conventions, descriptive and meaningful of names, prevention of naming conflicts) SS5. Registration of data elements (i.e.: metadata registry, attributes documentation, easy access and searchability) SS6. Development of ontologies (i.e.: semantic models, business domain knowledge, data integration and interoperability) SS7. Creation of taxonomy (i.e.: data elements hierarchical classifications, data discovery and retrieval support, business and operational contexts alignment) 	Foundational

<p>DCMM.2.2.2</p>	<p>Datasets Identification & Prioritization</p>	<p>SS1. The Entity shall identify and prioritize the datasets that are required to be populated in the Entity's Data Catalog. Particular consideration shall be given to the sequence in which metadata is captured; typically, business-level metadata followed by technical metadata</p> <p>SS2. The Entity's Data & Analytics Director (or equivalent) shall develop a roadmap for populating the Data Catalog, which shall be submitted to the Data Committee for approval</p>	<p>Foundational</p>
<p>DCMM.2.2.3</p>	<p>Metadata Management Processes</p>	<p>The Entity shall define and implement the processes that are required to the Entity's metadata lifecycle management. The identified steps of the processes shall include, at a minimum:</p> <p>SS1. Metadata structure (i.e.: data types, metadata schemas, hierarchical relationships)</p> <p>SS2. Metadata Ownership & Stewardship Coverage (i.e.: assigning stewards for identified metadata types, clarifying responsibilities for metadata management, outlining accountability for metadata quality, establishing ownership for specific metadata elements)</p> <p>SS3. Metadata population (i.e.: business terms, technical specifications, data sources description)</p> <p>SS4. Metadata ingestion (i.e.: metadata extraction automation from different databases, metadata integration from third-party tools)</p> <p>SS5. Metadata update (i.e.: periodic metadata refreshes schedule, business terms definition update as they evolve, outdated metadata documentation updates)</p> <p>SS6. Metadata lineage (i.e.: documentation of data flow from source to destination, tracking of changes in data transformations, mapping of data dependencies)</p> <p>SS7. Metadata quality (i.e.: metadata validation checks, metadata quality rules) – refer to DQM domain</p> <p>SS8. Metadata annotation (i.e.: annotation of business terms with usage examples, addition of context notes to technical metadata, linkage of metadata entries)</p> <p>SS9. Metadata certification (i.e.: certification of metadata through thorough data stewardship reviews, data governance committee approval)</p> <p>SS10. Metadata audit trail (i.e.: logging of metadata modification timestamps, recording of user changes, tracking of version history)</p> <p>SS11. Versioning & Control (i.e.: maintenance of version history of metadata updates, implementation of access controls for metadata edits, management of metadata rollback procedures)</p>	<p>Foundational</p>

Dimension	<input type="checkbox"/> Plan (DCMM.1) <input checked="" type="checkbox"/> Implement (DCMM.2) <input type="checkbox"/> Operate (DCMM.3)
Control ID & Name	DCMM.2.3: Data Catalog Implementation
Control Description	As part of the Data Catalog Implementation control, the Entity shall implement a data catalog tool that is required to act as an inventory of the Entity's data assets metadata.
Control Dependencies	DCMM.2.2: Metadata Lifecycle Management
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCMM.2.3.1	Data Catalog Tool Implementation	The Entity shall implement a data catalog tool that is required to act as an inventory of the Entity's data assets metadata. The tool shall include, at a minimum: <ul style="list-style-type: none"> SS1. Data Catalog automation (i.e.: metadata extraction from databases, metadata updates, metadata refreshes) SS2. Data Catalog notifications (i.e.: email notifications for metadata updates, alerts for quality issues, reminders for metadata reviews) SS3. Data Catalog audit trail (i.e.: metadata logging modifications, user actions recording, version history tracking) SS4. Data Catalog tool versioning (i.e.: version control for tool updates, legacy version maintenance for updates, previous versions rollback if needed) 	Foundational

Dimension	<input type="checkbox"/> Plan (DCMM.1) <input type="checkbox"/> Implement (DCMM.2) <input checked="" type="checkbox"/> Operate (DCMM.3)
Control ID & Name	DCMM.3.1: Metadata & Data Catalog Performance Management
Control Description	As part of the Metadata & Data Catalog Performance Management control, the Entity shall monitor and report on the performance of its Data Catalog and metadata management efforts.
Control Dependencies	<ul style="list-style-type: none"> • DCMM.2.2: Metadata Lifecycle Management • DCMM.2.3: Data Catalog Implementation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCMM.3.1.1	Data Catalog KPIs	The Entity shall establish key performance indicators (KPIs) to measure and report on the Entity's Data Catalog Adoption & Usage. KPIs shall include, at minimum: <ul style="list-style-type: none"> SS1. Number of registered Data Catalog users SS2. Number of active Data Catalog users SS3. Number of logins to Data Catalog SS4. Number of performed metadata queries SS5. Number of annotations (tags, comments) added to data assets SS6. Number of ratings added to data assets SS7. Number of assigned trust certificates to metadata 	Foundational
DCMM.3.1.2	Metadata Quality KPIs	The Entity shall establish Key Performance Indicators (KPIs) to measure the effectiveness of Metadata Management efforts and guide continuous improvement initiatives. KPIs shall include, at minimum: <ul style="list-style-type: none"> SS1. Defining measurements for the quality of metadata according to the Data Quality Management standards 	Foundational

<p>DCMM.3.1.3</p>	<p>Metadata & Data Catalog Monitoring & Reporting</p>	<p>The Entity shall monitor and report on the Entity's metadata data management efforts based on the defined KPIs. This shall include, at a minimum:</p> <p>SS1. Align metadata quality monitoring and reporting to all the data quality monitoring and reporting foundational sub-specifications as outlined in DQM.3.2.2</p>	<p>Foundational</p>
<p>DCMM.3.1.4</p>	<p>Metadata & Data Catalog Monitoring & Reporting</p>	<p>The Entity shall enhance its metadata management monitoring and reporting capabilities as follows:</p> <p>SS1. Align metadata quality monitoring and reporting to all the data quality monitoring and reporting advanced sub-specifications as outlined in DQM.3.2.2</p> <p>SS2. Set up automated notifications within the Data Catalog tool to track changes to the Entity's metadata, ensuring that users of the Entity's data catalog are promptly informed of any updates</p> <p>SS3. Implement a tracking feature in the Data Catalog automated tool to oversee user activities. This includes recording user logins and the operations they perform within the tool</p>	<p>Advanced</p>

6.7 Document & Content Management Domain

6.7.1 Domain Summary

The Data Storage & Operations domain is structured across the 3 dimensions of Plan, Implement, and Operate, and includes 4 controls and 14 specifications, with some specifications divided into two or more specifications depending on the capability: Foundational, Advanced, or Very Advanced. Data Storage & Operations focuses on the design, implementation, and maintenance of systems that ensure secure, efficient, and effective storage and operation of data. This domain covers the architecture of storage solutions, operational management, and the integration of security practices to protect data integrity and privacy. It also includes the management of data throughout its lifecycle, from creation to disposal, and emphasizes the importance of robust backup and recovery processes to safeguard data against loss while ensuring compliance with relevant regulations and organizational policies.



Data Storage & Operations Domain



Figure 9 - Standard Structure - Data Storage & Operations domain

6.7.2 Controls & Specifications

Dimension	<input checked="" type="checkbox"/> Plan (DSO.1) <input type="checkbox"/> Implement (DSO.2) <input type="checkbox"/> Operate (DSO.3)
Control ID & Name	DSO.11: Data Storage & Operations Policy
Control Description	As part of the Data Storage & Operations Policy control, the Entity shall establish and publish a Data Storage & Retention Policy that governs the secure and efficient storage of different types of data, ensuring compliance with legal laws and regulations.
Control Dependencies	<ul style="list-style-type: none"> Entity's Data Strategy Qatar National Data Management Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DSO.11.1	Data Storage & Retention Policy Creation	<p>The Entity shall establish a data storage & retention policy that governs the secure and efficient storage of different types of data such as real-time data, near real-time data and offline data, ensuring compliance with legal laws and regulations.</p> <p>SS1. The policy shall cover, at a minimum, the following:</p> <ul style="list-style-type: none"> Overview, purpose, scope, and objectives of the policy Policy applicability, validity, and review Policy guidelines in alignment to the National Data Management Policy and Standards Detailed policy statements covering, at a minimum, the following: <ol style="list-style-type: none"> Data storage and retention principles Information systems prioritization based on their business criticality and potential risks (e.g.: financial) as a result of emergency or disaster Database access rules (e.g.: role-based access control) Data backup and recovery Storage conditions based on approved regulations Retention periods of data based on its type, classification, business requirements, and relevant contractual, regulatory, and legal requirements Secure disposal and deletion of data based on the data type and classification Required actions in the event of an accidental permanent loss of data Roles and Responsibilities References 	Foundational

<p>DSO.11.2</p>	<p>Data Storage & Retention Policy Publication</p>	<p>The Entity shall publish its data storage & retention policy following the below guidelines:</p> <ul style="list-style-type: none"> SS1. Review the draft policy with the Entity's Data Committee or equivalent body SS2. Incorporate Data Committee or equivalent body's feedback SS3. Review draft policy for auditability SS4. Incorporate internal audit feedback SS5. Seek policy review and guidance from National Data Governance Office and incorporate the provided feedback SS6. Publish the policy on Entity's digital channels (e.g. the entity's website) SS7. Socialize the policy within the Entity to drive adoption and change management 	<p>Foundational</p>
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Dimension	<input checked="" type="checkbox"/> Plan (DSO.1) <input type="checkbox"/> Implement (DSO.2) <input type="checkbox"/> Operate (DSO.3)
Control ID & Name	DSO.1.2: Data Storage & Operations Planning
Control Description	As part of the Data Storage & Operations Planning control, the Entity shall assess and document the baseline data storage architecture, conduct periodic forecasts of the storage capacity, design a target data storage infrastructure architecture, and develop a data storage & operations roadmap.
Control Dependencies	DSO.1.1: Data Storage & Operations Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DSO.1.2.1	Baseline Data Storage Capability Assessment	<p>The Entity shall assess and document the baseline data storage architecture of datasets, information systems and services under its control. The Entity shall, at a minimum:</p> <ul style="list-style-type: none"> SS1. Conduct a comprehensive audit of data storage inventory (within both physical and virtual locations including Data Centers, Cloud, or any other site or location) SS2. Conduct infrastructure utilization audits on all of its information systems and servers to determine the actual loads across the usage scenarios. An indicative list of measures (both peak and baseline measures) that the audits can record include CPU loads, memory loads, disk IO loads, network IO load, server availability, etc. SS3. Categorize of all its information systems into at least one of the following portability categories: Legacy, Virtualize-able, and Cloud-able. This classification will aid in assessing the compatibility of an application or system with a selected target architecture and will facilitate the evaluation of its migration suitability 	Foundational

<p>DSO.1.2.2</p>	<p>Data Storage and Usage Requirements Forecasting</p>	<p>The Entity shall conduct periodic forecasts of the storage capacity required to support future business requirements. Capacity and growth should be estimated not only for the space the data itself holds, but also for indexes, logs, and any redundant images such as mirrors.</p> <ul style="list-style-type: none"> SS1. Initial storage capacity estimate for the first year of operations SS2. Storage capacity growth projection for the following 3-5 years SS3. Estimation of the budget for future storage acquisitions 	<p>Foundational</p>
<p>DSO.1.2.3</p>	<p>Target Data Storage Infrastructure Architecture</p>	<p>Guided by the Baseline Data Storage Capability Assessment (DSO.1.2.1) and Data Storage and Usage Requirements Forecasting (DSO.1.2.2), the Entity shall design a target data storage infrastructure architecture to support business requirements and technological advancements. This shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Engaging an infrastructure architecture team to determine a suitable target architecture for the storage of all data and records it holds, which shall be reviewed and approved by the Entity's Data Committee during governance checkpoints, and NPC when necessary SS2. Ensuring that its target architecture reflects the latest flexible infrastructure capabilities (e.g., Private Cloud, Virtualization, Storage Virtualization, Infrastructure-as-a-Service, Platform-as-a-Service, Software-as-a-Service, etc.) and is in alignment with the Cloud First Policy 	<p>Foundational</p>
<p>DSO.1.2.4</p>	<p>Data Storage & Operations Roadmap</p>	<p>The Entity shall develop a data storage & operations roadmap, in alignment with the Entity's data strategy, that will be used and monitored to implement and activate the data storage & operations initiatives across the Entity. The roadmap shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Key initiatives, milestones, and timelines needed to transition from the current to the target data storage infrastructure architecture SS2. The tools that need to be implemented to support data storage & operations such as data modeling tools, database monitoring tools, database management tools, and developer support tools SS3. Resource allocation outlining the budget, personnel, and technology resources required for each initiative 	<p>Foundational</p>

Dimension	<input type="checkbox"/> Plan (DSO.1) <input checked="" type="checkbox"/> Implement (DSO.2) <input type="checkbox"/> Operate (DSO.3)
Control ID & Name	DSO.21: Data Storage & Operations Implementation
Control Description	As part of Data Storage & Operations Implementation control, the Entity shall establish and implement a process to grant its employees access to databases, establish and implement a process for data backup and recovery, establish, implement, and rehearse a process to ensure business continuity in the event of disaster or adverse events, and activate the defined Data Storage & Operations Roadmap Activation.
Control Dependencies	DSO.12: Data Storage & Operations Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DSO.2.11	Database Access Control	<p>SS1. The Entity shall establish and implement a process to grant its employees access to databases, utilizing Role-Based Access Control (RBAC) which involves defining specific roles within the organization, assigning appropriate permissions to these roles (e.g.: based on job functions), and enforcing access control to ensure compliance with privacy regulations and prevent unauthorized access</p>	Foundational

<p>DSO.2.1.2</p>	<p>Data Backup & Recovery</p>	<p>The Entity shall establish and implement a process for data backup and recovery including, at a minimum:</p> <ul style="list-style-type: none"> SS1. Defining backup frequency for each information system, as specified in the Data Storage SLAs (DSO.3.1.1) SS2. Defining the backup scope for each information system, which shall include all critical data and database transaction logs to ensure comprehensive data recovery capability SS3. Storing backups on physically separate storage media from the operational data. The primary backup location shall be on a RAID-configured Storage Area Network (SAN), with additional off-site storage to ensure data integrity in case of a local disaster. SS4. Performing periodic validations of backup integrity by restoring data from backup files to a non-production system. This ensures that the backup is complete, and the data is recoverable in its entirety. 	<p>Foundational</p>
<p>DSO.2.1.3</p>	<p>Disaster Recovery & Business Continuity</p>	<p>The Entity shall establish, implement, and rehearse a process to ensure business continuity in the event of disaster or adverse events that impact the Entity's systems and its ability to use its data. The Entity shall also refer to Qatar's Cloud First Policy and the ISO 22301:2021 standard while defining the Disaster Recovery & Business Continuity process.</p> <ul style="list-style-type: none"> SS1. Prioritized list of information systems defining an order of the information systems recovery SS2. Assignment of roles responsible for addressing an incident response, including contact details of all stakeholders to be involved during an incident SS3. Details of actions to be taken to activate a response to the incident SS4. Details of actions to be taken to reduce the damage and mitigate the consequences of an incident on Entity's critical operations SS5. Details of Recovery Point Objectives (a maximum targeted period within which data might be lost without causing damage to business) for each information system covered SS6. Details of Recovery Time Objectives (a maximum targeted duration of time within which database can be down without causing damage to business) for each information system SS7. Details of recovery activities 	<p>Foundational</p>
<p>DSO.2.1.4</p>	<p>Data Storage & Operations Roadmap Activation</p>	<p>The Entity shall activate the Data Storage & Operations Roadmap defined in DSO.1.2.4. The Entity shall, at a minimum:</p> <ul style="list-style-type: none"> SS1. Demonstrate progress by adhering to the predefined milestones and timelines specified in the roadmap, to clearly reflect the transition stages from the current to the target data storage infrastructure SS2. Document deviations from the planned milestones and timelines, if any, and submit to the Data Committee for approval 	<p>Advanced</p>

Dimension	<input type="checkbox"/> Plan (DSO.1) <input type="checkbox"/> Implement (DSO.2) <input checked="" type="checkbox"/> Operate (DSO.3)
Control ID & Name	DSO.31: Data Storage & Operations Performance and Change Management
Control Description	As part Data Storage & Operations Performance and Change Management control, the Entity shall establish and implement data storage service-level agreements (SLAs), continuously monitor data storage systems to ensure optimal performance, establish and implement configuration management processes to record modification to the database configuration, and conduct database maintenances and updates.
Control Dependencies	DSO.21: Data Storage & Operations Implementation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DSO.3.1.1	Data Storage SLAs	The Entity shall establish and implement data storage service-level agreements (SLAs) governed through formal agreements between IT data management services organizations and data owners, and that specify system performance, data availability, recovery expectations, and backup frequency. The SLAs shall include, at a minimum: <ul style="list-style-type: none"> SS1. Timeframes during which databases are expected to be available for use SS2. Maximum allowable execution time for application transactions SS3. Backup frequency of the databases SS4. Escalation process when the SLA is not met 	Advanced
DSO.3.1.2	Data Storage SLAs	The Entity shall enhance its data storage SLAs capabilities as follows: <ul style="list-style-type: none"> SS1. Automate the monitoring of SLAs by implementing a system that automatically monitor compliance with SLAs SS2. Generate automated notifications and actions by implementing systems that automatically trigger emails or notifications to relevant stakeholders if SLAs are breached 	Very Advanced

<p>DSO.3.1.3</p>	<p>Database Performance Monitoring</p>	<p>The Entity shall continuously monitor data storage systems to ensure optimal performance, making necessary adjustments to accommodate increasing data volumes or evolving organizational needs, and resolve any issues promptly. This shall include, at a minimum:</p> <p>SS1. Establishing reports and/ or dashboards to monitor and report on database performance on an on-going basis, covering metrics such as:</p> <ul style="list-style-type: none"> • Capacity metrics (e.g.: amount of storage used, number of storage containers, etc.) • Performance metrics (e.g.: transaction frequency and quantity, query execution time, storage system uptime, etc.) <p>SS2. Identifying and documenting any negative trends by running activity and performance reports against both the DBMS and the server during periods of heavy activity, and comparing these reports to previous reports to facilitate ongoing analysis of issues</p>	<p>Advanced</p>
<p>DSO.3.1.4</p>	<p>Database Configuration Management</p>	<p>The Entity shall establish and implement configuration management processes to record modification to the database configuration, structures, constraints, permissions, thresholds, etc. The process shall include, at a minimum, the following steps:</p> <p>SS1. Configuration identification (i.e.: identification and documentation of the attributes defining the database system configuration)</p> <p>SS2. Configuration change control (i.e.: implementation of changes in the defined database configuration)</p> <p>SS3. Configuration status accounting (i.e.: tracking of implemented changes in the configuration)</p> <p>SS4. Configuration audits (i.e.: ensuring that the installed database configuration is consistent with the documented configuration)</p>	<p>Advanced</p>
<p>DSO.3.1.5</p>	<p>Database Maintenance and Updates</p>	<p>The Entity shall conduct database maintenances and updates to ensure integrity, security, and operational efficiency of its database systems. The Entity shall, at a minimum:</p> <p>SS1. Implement maintenance patches provided by the database system vendor across all environments (e.g.: from development to production) following recommendations and prioritization by DBA specialists, security experts, and management</p> <p>SS2. Ensure that its database systems and tools are updated to the latest published Vendor release. If the latest release is not applicable to the Entity, the Entity shall document the justification and submit to the Data Committee for approval</p> <p>SS3. Ensure that it complies with all licensing agreements and regulatory requirements by conducting information asset tracking covering aspects such as software license costs, annual support costs, and server lease agreements costs</p>	<p>Advanced</p>

6.8 Data Sharing, Integration and Interoperability

6.8.1 Domain Summary

The Data Sharing, Integration and Interoperability domain is structured across the 3 dimensions of Plan, Implement, and Operate, and includes 7 controls and 15 specifications, with some specifications divided into two or more specifications depending on the capability: Foundational, Advanced, or Very Advanced. Data Sharing, Integration and Interoperability supports the entities managing data in motion, discovering, and integrating data within the Entity and with external Entities through specific processes and integration platform, and support consolidating data from different sources fostering a harmonious internal and external communication between various systems. It also supports entities addressing the prospect of publishing information as 'Open Data' enabling it to be shared with and utilized by stakeholders, including those outside of government (e.g.: citizens and other individuals, commercial companies and other organizations, other nations, etc.).



Data Sharing, Integration & Interoperability Domain



Figure 10 - Standard Structure - Data Sharing, Integration and Interoperability domain

6.8.1 Controls & Specifications

Dimension	<input checked="" type="checkbox"/> Plan (DSII.1) <input type="checkbox"/> Implement (DSII.2) <input type="checkbox"/> Operate (DSII.3)
Control ID & Name	DSII.1.1: Data Sharing, Integration & Interoperability Policy
Control Description	<p>As part of the Data Sharing, Integration & Interoperability Policy control, the Entity shall develop and publish data sharing & Integration policy to ensure secure, efficient, and compliant data sharing, integration and interoperability across various internal functions/systems and external entities. The policy shall align with the Entity's business objectives and national standards for data sharing and integration, ensuring consistency and compliance throughout all data interactions.</p>
Control Dependencies	<ul style="list-style-type: none"> Entity's Data Strategy Qatar National Data Management Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DSII.1.1.1	Data Sharing, Integration & Interoperability Policy Creation	<p>SS1. The Entity shall create a data sharing, integration & Interoperability policy in alignment with the national data standards to ensure a focused approach for the ability of consistently share high-quality data both within the Entity and between Government Entities. The policy shall cover at minimum, the following:</p> <ul style="list-style-type: none"> Overview, purpose, scope, and objectives of the policy Policy applicability, validity, and review Policy guidelines in alignment to the National Data Management Policy and Standards Detailed policy statements covering, at a minimum, the following: <ol style="list-style-type: none"> Data Sharing Process Data Sharing Agreements Current and Target Data Integration & Interoperability Architecture Integration & Interoperability Solution Development Lifecycle Integration & Interoperability Platform and Tools Performance management and monitoring Periodic policy review and updates Key policy performance indicators 	Foundational

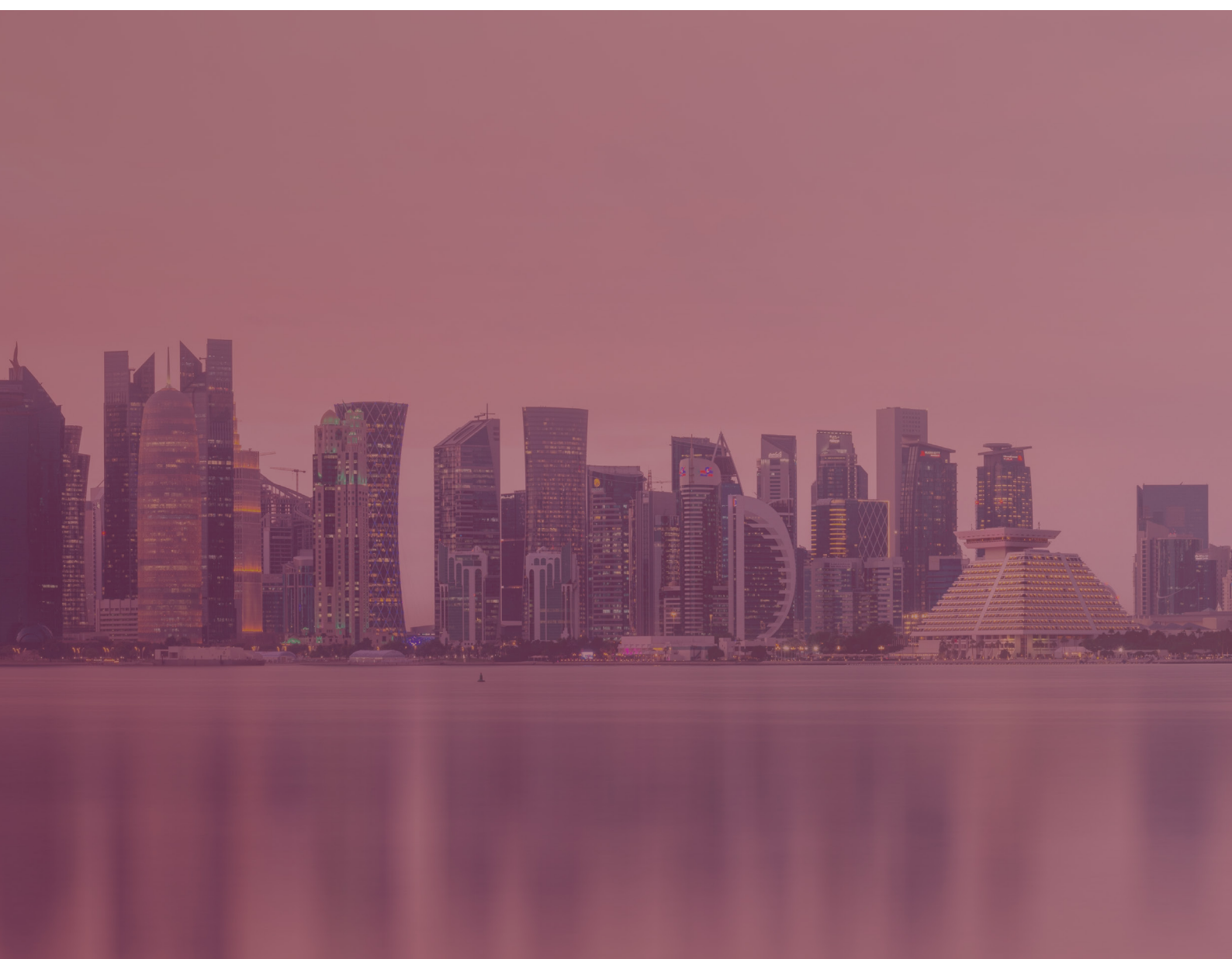
<p>DSII.1.1.2</p>	<p>Data Sharing, Integration & Interoperability Policy Publication</p>	<p>The Entity shall publish its data sharing, Integration and interoperability policy following the below guidelines</p> <ul style="list-style-type: none"> SS1. Review the draft policy with the Entity's Data Committee or equivalent body SS2. Incorporate Data Committee or equivalent body's feedback SS3. Review draft policy for auditability SS4. Incorporate internal audit feedback SS5. Seek policy review and guidance from National Data Governance Office and incorporate the provided feedback SS6. Publish the policy on Entity's digital channels SS7. Socialize the policy within the Entity to drive adoption and change management 	<p>Foundational</p>
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Dimension	<input checked="" type="checkbox"/> Plan (DSII.1) <input type="checkbox"/> Implement (DSII.2) <input type="checkbox"/> Operate (DSII.3)
Control ID & Name	DSII.1.2: Data Sharing, Integration & Interoperability Planning
Control Description	As part of the Data Sharing, Integration & Interoperability Planning control, the Entity shall conduct thorough assessments and gap analyses to identify existing capabilities and deficiencies in data sharing, integration practices across the Entity. This practice shall facilitate targeted improvements by pinpointing specific areas for enhancement and documenting the technical and business requirements necessary to ensure seamless, secure, and effective internal / external data integrations and exchange.
Control Dependencies	DSII.1.1: Data Sharing, Integration & Interoperability Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DSII.1.2.1	Data Sharing & Integration Assessment & Requirements	<p>The Entity shall document the requirements related to data sharing, integration and interoperability; and perform an Initial assessment to identify pain points and inefficiencies in the data movement and the integration across the Entity. The Entity shall perform, at minimum, the following:</p> <ul style="list-style-type: none"> SS1. Document the business and technical requirements from the relevant stakeholders related to data sharing, data integration and systems interoperability SS2. Create an inventory of all existing data sources, systems, applications and data stores. SS3. Document a high-level Data Lineage including the rules according to which data is changed, and the frequency of changes SS4. Document data models used by the Entity's source systems SS5. Document the list of identified data movement and integration gaps and pain points 	Foundational

<p>DSII.1.2.2</p>	<p>Data Sharing & Integration Plan</p>	<p>In Alignment with Entity's data strategy and based on the documented requirements and the conducted open data assessment, the Entity shall develop a Data Integration Plan to identify and orchestrate the implementation of the data sharing and integration initiatives taking into account the efforts required to migrate all internal and external data exchange and peer-to-peer applications data sharing to internal middleware platform. The plan shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. List of activities and milestones. The plan should account for quick wins and longer-term strategic changes SS2. Roadmap with the activities and key milestones for the implementation of Data sharing and integration initiatives SS3. Owners and stakeholders SS4. Interdependencies, assumptions, budget, and risks 	<p>Foundational</p>
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Dimension	<input checked="" type="checkbox"/> Plan (DSII.1) <input type="checkbox"/> Implement (DSII.2) <input type="checkbox"/> Operate (DSII.3)
Control ID & Name	DSII.1.3: Open Data Planning
Control Description	As part of the Open Data Planning control, the Entity shall conduct thorough assessments and gap analyses to identify existing capabilities and deficiencies in open data practices across the Entity. This practice shall facilitate targeted improvements by pinpointing specific areas for enhancement and documenting the technical and business requirements necessary to ensure seamless, secure, and effective data publication for external use.
Control Dependencies	DSII.1.1: Data Sharing, Integration & Interoperability Policy
Version	1.0 (October 2024)

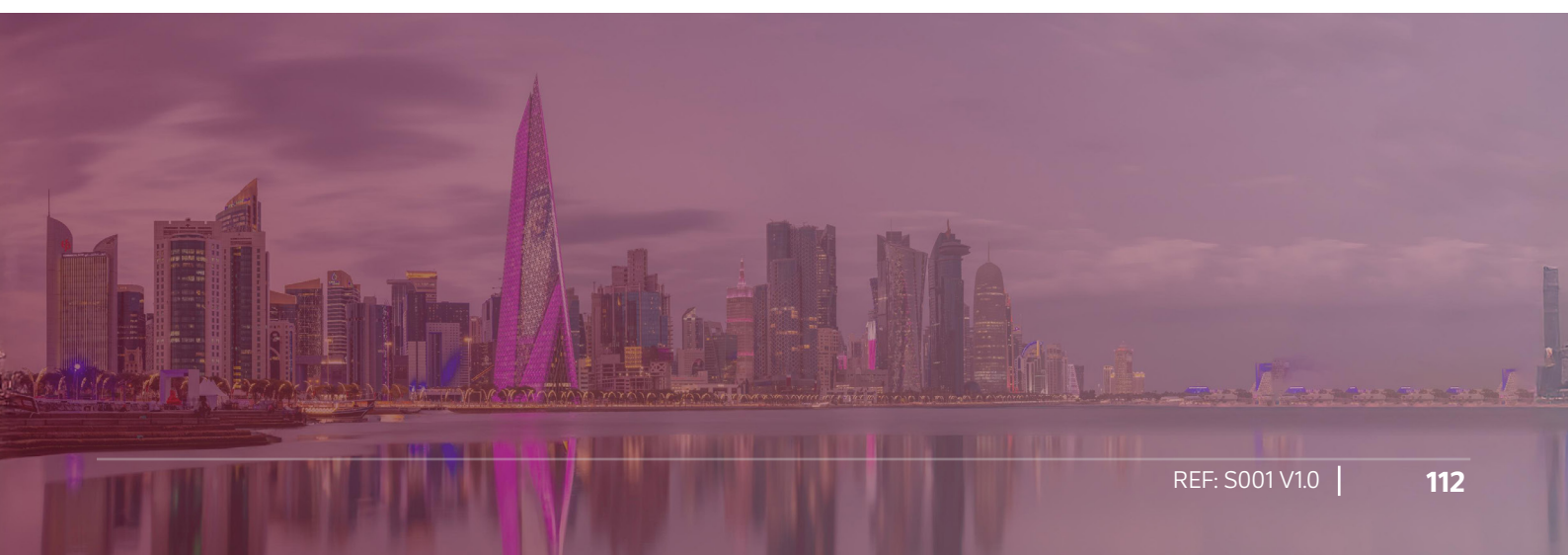
Specification Number	Specification Name	Control Specification	Capability Level
DSII.1.3.1	Open Data Assessment & Requirements	The Entity shall document the requirements related to open data and perform an initial assessment to identify pain points and inefficiencies in the open data lifecycle across the Entity. The Entity shall perform, at minimum, the following: <ul style="list-style-type: none"> SS1. Document the business and technical requirements from the relevant stakeholders related to the publication, accessibility, and use of open data SS2. Create an inventory of all datasets eligible for open data publication, including details about their sources, formats, and current usage SS3. Conduct a data quality assessment for the datasets intended for open data publication, documenting any issues and gaps that need to be addressed SS4. In alignment with current National Open Data Policy, assess and document the legal, ethical, and privacy considerations for the datasets to ensure compliance with relevant laws and regulations before publication SS5. Document the data models used by the Entity's systems for datasets that will be published as open data 	Foundational
DSII.1.3.2	Open Data Plan	In Alignment with Entity's data strategy and based on the documented requirements and the conducted open data assessment, the Entity shall develop an open data plan to identify and coordinate the publishing of its Open Datasets. The plan shall include, at minimum, the following: <ul style="list-style-type: none"> SS1. List of activities and milestones. The plan should account for quick wins & longer-term strategic changes SS2. Roadmap with the activities and key milestones for the implementation of Open Data initiatives. SS3. Owners and stakeholders SS4. Interdependencies, assumptions, budget, and risks 	Foundational

Dimension	<input type="checkbox"/> Plan (DSII.1) <input checked="" type="checkbox"/> Implement (DSII.2) <input type="checkbox"/> Operate (DSII.3)
Control ID & Name	DSII.2.1: Data Sharing, Integration & Interoperability Implementation
Control Description	As part of the Data Sharing, Integration & Interoperability Implementation control, the Entity shall develop Data Sharing Principles and Processes, develop Data Sharing, Agreements & Contracts, and develop Data Integration & Interoperability Architecture
Control Dependencies	DSII.1.2: Data Sharing, Integration & Interoperability Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DSII.2.11	Data Sharing Principles, Process	<p>The Entity shall, at a minimum:</p> <p>SS1. Develop and adopt the data sharing principles that will control the data sharing process within the Entity and with other Entities. Data Sharing principles shall include the following:</p> <ul style="list-style-type: none"> • Data Sharing Culture: The Entity shall share the master data that it produces for the purpose of achieving data sharing and integration with other entities. The Entity shall adopt the “Single Source of Truth (SSOT)” principle to share / obtain the data from its proper sources and to avoid data duplication, inconsistency, and multiple sources. • Legitimate Purpose: The Entity shall share the data for legitimate purposes based on a legal ground or a justified practical need that aims to deliver a public interest without inflicting any harm on national interests, entity activities, privacy of individuals or environmental safety. • Authorized Access: The Entity shall have the appropriate authority to access, obtain and use the data shared by other entities • Transparency: The Entity shall avail all the data that is necessary for a successful data sharing process. • Accountability: The Entity shall hold the accountability for the shared data from other parties ensuring the security controls as defined and prescribed by National Law, policy, and regulations • Ethical Data Use: The Entity shall apply ethical practices on the data shared by 	Foundational

other entities to ensure fairness, integrity, trust, and respect in data use

- SS2.** Develop and adopt the data sharing process that will govern the data sharing practice within the Entity and with other entities to standardize data sharing practice and ensure that all necessary principles and requirements are met. Data Sharing process shall include the following:
- Data Sharing Request Reception: The Entity shall submit a data sharing request from its data offices to the data office of the other entity requested to share the data
 - Roles assignment: The Entity's data office shall forward the received data sharing request to the relevant business data steward to address and evaluate the request
 - Data Classification level check: The Business data steward shall check the classification level of the requested data
 - Data Sharing Principles Assessment: the business data steward shall assess the data request against the data sharing principles
 - Data Sharing Decision and Feedback: The Entity shall proceed with the data sharing only if all data sharing principles are fully satisfied, otherwise the Entity shall not proceed with the data sharing until all data sharing principles are satisfied
 - Business Data Executive Approval: The Business data steward shall obtain the business data executive approval to proceed with the data sharing process once all data sharing principles are satisfied
 - Design and implementation of Data Sharing controls: The Entity's business data steward shall set the required controls (such as, Legal basis, Authorization, Data Type, Data sharing means, data usage and protection, data sharing duration and frequency and termination) with the requestor Entity to ensure compliance with the data sharing principles
 - Data Sharing agreement signing: The Entity's business data steward shall provide clear details thereof in the data sharing agreement; all parties involved in the sharing process shall sign the data sharing agreement.
 - Sharing Data with the requestor: The Entity's data office Shall share the requested data with the requestor once the data sharing agreement is signed

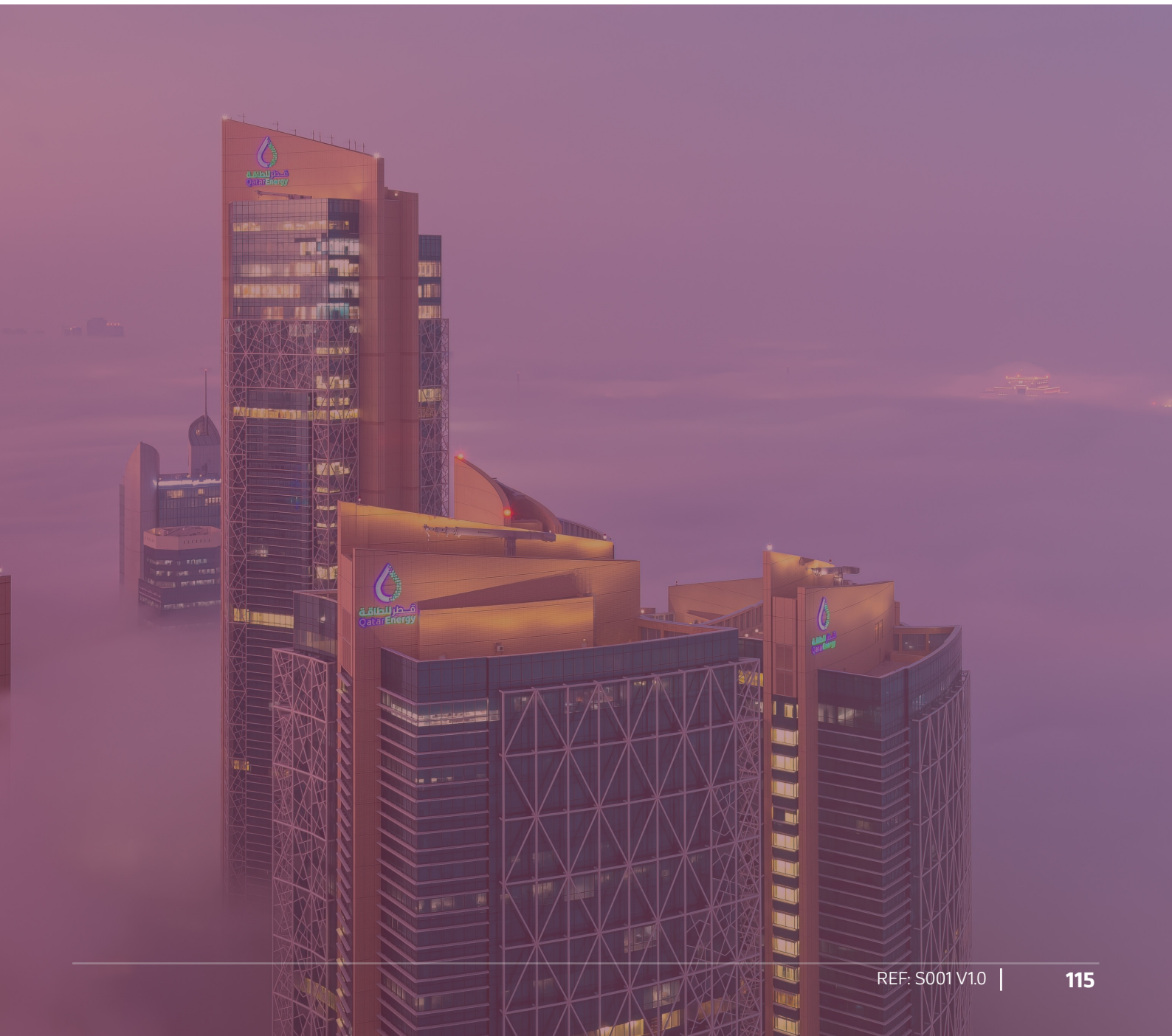


<p>DSII.2.1.2</p>	<p>Data Sharing, Agreements & Contracts</p>	<p>The Entity shall, at a minimum:</p> <p>SS1. Develop and follow an internal and external data sharing agreement template that shall be used when data shared between information systems within the Entity and other external Entities. The data sharing agreement template shall include, at minimum, the following:</p> <ul style="list-style-type: none"> • Parties to the Agreement • Authorized signatories • Purpose of Data Sharing • Duration of the Agreement • Methods of Data Access • Data Access Rights and Privileges • Lawful basis for sharing • Liability Provisions <p>SS2. Implement data contract template to be utilized during data products sharing within the Entity or with other external Entities. The data contract template shall include, at minimum, the following:</p> <ul style="list-style-type: none"> • Data Contract Title and description • Data Contract Owner • Data Contract link • Data Contract terms (Usage, Limitations, Validity Period) • Data Definitions • Data Types • Data Format • Data Structure • Data Constraints • Data Classification 	<p>Foundational</p>
<p>DSII.2.1.3</p>	<p>Data Integration & Interoperability Architecture</p>	<p>The Entity shall, at a minimum:</p> <p>SS1. Develop and maintain a data exchange directory to register all its existing data sharing and exchange internally and externally, including information on which sources are being requested, by whom, how often and for what purpose.</p> <p>SS2. Design and implement an integration layer architecture based on the Integration requirements to facilitate connecting internal and external information systems and enable the exchange of data. The integration layer architecture shall give consideration to the followings:</p> <ul style="list-style-type: none"> • Internal data migration into and out of internal systems. • Includes at minimum the following data integration methods: <ul style="list-style-type: none"> a. File-based data Integration b. Message-based data Integration c. Database to database data Integration • Data Orchestration: The flow of data from start to finish in the data integration architecture • Source-To-Target Mapping: Set of data transformation rules that determine how to convert the structure and content of data in the source system to the structure and content needed in the target system. <p>SS3. Include the integration layer in the Entity's target enterprise data architecture.</p>	<p>Foundational</p>

Dimension	<input type="checkbox"/> Plan (DSII.1) <input checked="" type="checkbox"/> Implement (DSII.2) <input type="checkbox"/> Operate (DSII.3)
Control ID & Name	DSII.2.2: Open Data Implementation
Control Description	As part of the Open Data Implementation control, the Entity shall design the required open data processes and identify the metadata necessary within the open datasets and identify Open Data Formats & Metadata
Control Dependencies	DSII.1.3: Open Data Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DSII.2.2.1	Open Data Processes	<p>The Entity shall develop, and document processes required across the lifecycle of Open Data, including, at minimum, the following:</p> <p>SS1. Processes to identify public datasets to be published the Entity, the process shall include at minimum the followings:</p> <ul style="list-style-type: none"> • Identify and document all data classified as 'public' and prioritize each dataset identified as Open Data • Perform a valuation of the identified dataset to drive decision making on whether it should be published as open data or not • Assess whether some combination of any publicly available data and the data intended to be published could allow for the unauthorized disclosure of personal information or create any other security or privacy risk or threat <p>SS2. Processes to publish and maintain the Open Datasets on Qatar's open data platform with the appropriate format, timeliness, and overall high quality and ensure the exclusion of any restricted data.</p> <p>SS3. Processes for gathering feedback, analyzing performance at the Entity level, and improving the overall Open Data national impact</p> <p>SS4. Processes to perform continuous review of the published Open Datasets to ensure they meet defined regulatory requirements</p> <p>SS5. Processes to regularly update and document changes to the published Open Datasets and associated metadata whenever changes occur</p>	Foundational

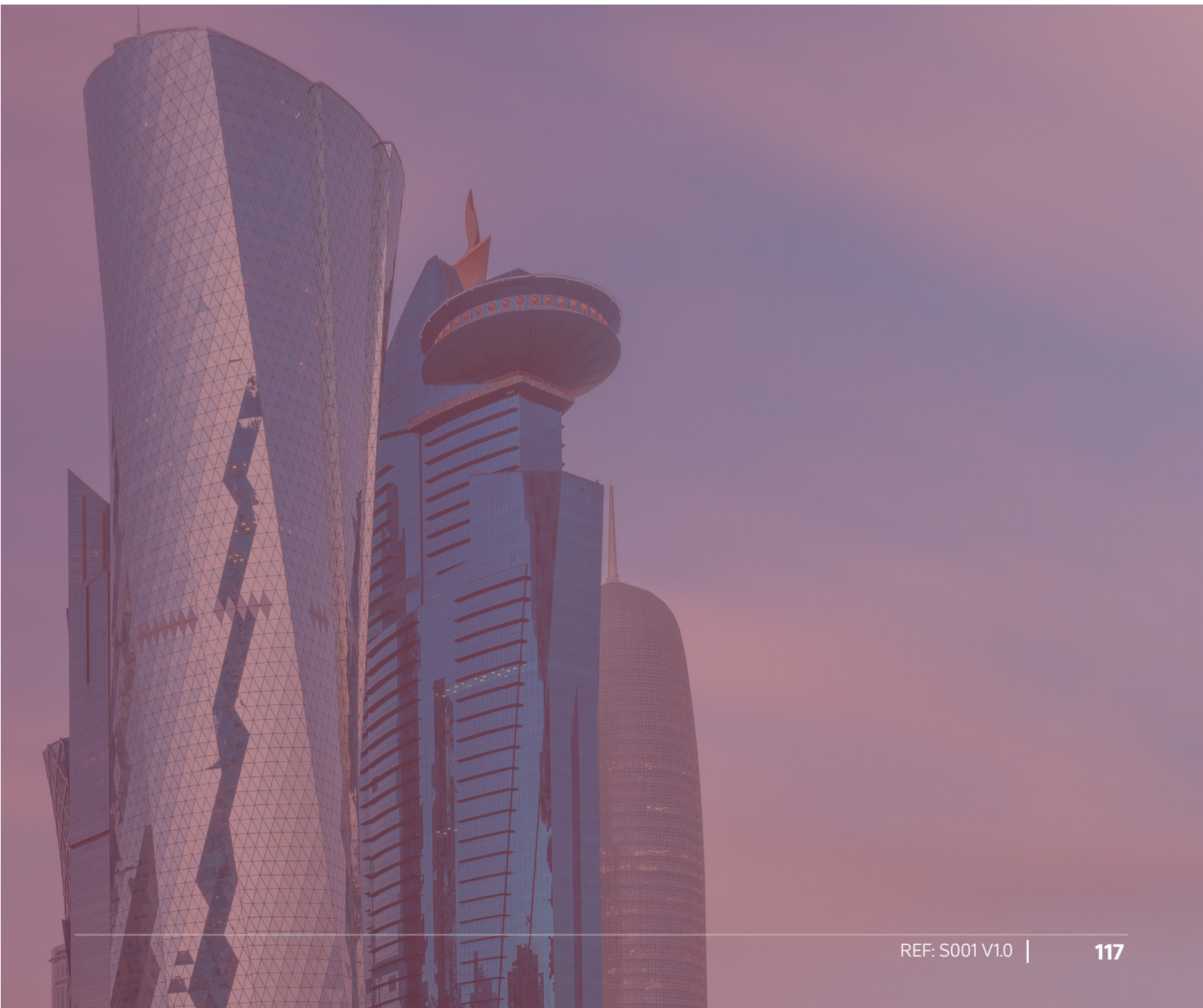
<p>DSII.2.2.2</p>	<p>Open Data Format & Metadata</p>	<p>The Entity shall</p> <p>SS1. Identify and document the metadata necessary within the Open Dataset to easily identify, describe and search for it once published</p> <p>SS2. Standardized formats when publishing its datasets that are, at minimum, in machine-readable form. Common formats that meet this standard include, but may not be limited to, the following:</p> <ul style="list-style-type: none"> • CSV - Comma Separated Values • JSON - JavaScript Object Notation • XML - Extensible Markup Language • RDF - Resource Description Framework <p>SS3. Accompany datasets with documentation containing instructions on how to use them in relation to its published format</p>	<p>Foundational</p>
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Dimension	<input type="checkbox"/> Plan (DSII.1) <input type="checkbox"/> Implement (DSII.2) <input checked="" type="checkbox"/> Operate (DSII.3)
Control ID & Name	DSII.3.1: Data Sharing, Integration & Interoperability Performance Management
Control Description	As part of the Data Sharing, Integration & Interoperability Performance Management control, the Entity shall monitor the effectiveness of data integration solutions and data sharing activities and maintain a copy of the approved Open Data Assessment checklist for any future reference or audits.
Control Dependencies	<ul style="list-style-type: none"> DSII.2.1: Data Sharing, Integration & Interoperability Implementation DSII.2.2: Open Data Implementation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DSII.3.1.1	Data Sharing, Integration & Interoperability KPIs	The Entity shall establish Key Performance Indicators (KPIs) to measure the progress and effectiveness of data integration solutions and data sharing activities and guide continuous improvement initiatives. KPIs shall include, at minimum: <ul style="list-style-type: none"> SS1. Data transfer rate between systems/ applications SS2. The latency between data sources and data targets SS3. The number of Data Sharing requests received SS4. The number of Data Sharing requests accepted/ denied SS5. The number of Data Sharing requests sent SS6. The number of ongoing Data Sharing agreements SS7. The average duration of the Data Sharing requests evaluation process (to be expressed in days) 	Foundational
DSII.3.1.2	Data Sharing, Integration & Interoperability Monitoring & Reporting	The Entity shall monitor and report on the Entity's Data Sharing, Integration & Interoperability efforts based on the defined KPIs. This shall include, at a minimum: <ul style="list-style-type: none"> SS1. Tracking the defined KPIs in DSII.3.1.1 through dashboards and reports 	Foundational
DSII.3.1.3	Data Sharing, Integration & Interoperability Monitoring & Reporting	The Entity shall enhance its Data Sharing, Integration & Interoperability monitoring and reporting capabilities as follows: <ul style="list-style-type: none"> SS1. Configure an alert system supporting troubleshooting of issues in the pipelines, to ensure that the pipeline runs smoothly 	Advanced

<p>DSII.3.14</p>	<p>Open Data Audit</p>	<p>SS1. In alignment with the Open Data Policy (2014), The Entity shall maintain copy of the approved Open Data Assessment checklist for any future reference or audits. The Open Data Assessment shall be completed by Entities to ensure that there are no legal, policy, or contractual restrictions to making the Data publicly available as Open Data.</p>	<p>Foundational</p>
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6.9 Statistics and Analytics Domain

6.9.1 Domain Summary

The Statistics and Analytics domain is structured across the 3 dimensions of Plan, Implement, and Operate, and includes 4 controls and 11 specifications, with some specifications divided into two or more specifications depending on the capability: Foundational, Advanced, or Very Advanced. Statistics and Analytics focuses on the methodologies, processes, and technologies used by organizations to transform raw data into meaningful and actionable insights and generate statistical figures. It involves the collection, integration, analysis, and presentation of business information. Statistics involves the application of mathematical theories and methodologies to collect, review, analyze, and draw conclusions from data. Analytics encompasses a broader range of techniques, including predictive and prescriptive analytics, to forecast future trends and prescribe optimal actions. Together, these disciplines enable data-driven decision-making, supporting strategic, tactical, and operational business processes.



Statistics and Analytics Domain



Figure 11 - Standard Structure- Statistics and Analytics domain

6.9.2 Controls & Specifications

Dimension	<input checked="" type="checkbox"/> Plan (SA.1) <input type="checkbox"/> Implement (SA.2) <input type="checkbox"/> Operate (SA.3)
Control ID & Name	SA.1.1: Statistics and Analytics Planning
Control Description	As part of the Statistics and Analytics Planning control, the Entity shall identify and prioritize statistics indicators and analytics use case portfolio, detail each shortlisted Indicators and use cases charters, develop an implementation plan, and identify data sources and develop a data sourcing plan for each use case identified.
Control Dependencies	<ul style="list-style-type: none"> Entity's Data Strategy Qatar National Data Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
SA.1.1.1	Statistics indicators and Analytics Use Case Identification and Prioritization	<p>The Entity shall identify and prioritize statistics indicators and analytics use case portfolio based on the Entity's business strategy and key sector requirements. This list should extend beyond the indicators and use cases identified during the data strategy development phase, encompassing all the Entity's business domains. This shall include, at a minimum:</p> <p>SS1. Conducting ideation workshops and identify a long list of use cases (covering descriptive, diagnostic, predictive and prescriptive use cases) and indicators documented in a portfolio, with its name, description, and stakeholders to be involved in this use case and indicator.</p> <p>SS2. Prioritize the long list of indicators and use cases for implementation based on a predefined prioritization framework/ matrix with criteria such as business impact and ease of implementation. Below is an indicative prioritization approach that can be followed:</p> <ul style="list-style-type: none"> High value, Low effort to build (i.e.: quick wins) High value, High effort to build (i.e.: differentiators/ big projects) Low value, Low effort (i.e.: fill-ins) Low value, High effort (i.e.: time sinks/ money pits) 	Foundational

<p>SA.11.2</p>	<p>Statistics Indicators and Analytics Use Case Detailing</p>	<p>The Entity shall detail each shortlisted use case in charters. The use case charters shall be compiled in use cases portfolio and include, at a minimum:</p> <p>SS1. Use case description and development rationale SS2. Type of Analytics leveraged (i.e.: discovery, descriptive, diagnostic, predictive, prescriptive) SS3. The expected benefits and business value aimed to be derived (ROI), as well as the estimated costs of implementation through the development of a business case SS4. Stakeholders involved in the implementation of the use case, the owner that would lead the use case, and the target consumers that would benefit from the insights generated by the use case SS5. List of business requirements to implement the use case SS6. List of functional requirements to implement the use case SS7. Data sources that would feed the use case with the required data fields SS8. Dependencies that need to be overcome to initiate development of the data product (e.g.: technologies, resources, and capabilities required to implement the use cases) SS9. Indication if ethical, security and privacy components exist may exist and how they shall be addressed SS10. The Entity Shall document in details each shortlisted statistics indicator at minimum with:</p> <ul style="list-style-type: none"> • Indicator Type • Description • Data elements • Data Source(s) • Calculation formula • Indicator owner 	<p>Foundational</p>
<p>SA.11.3</p>	<p>Statistics indicators and Analytics Use Case Implementation Plan</p>	<p>The Entity shall develop an implementation plan documenting the required activities to pilot the use cases and indicators, followed by production and then monitoring results. The implementation plan shall address, at a minimum:</p> <p>SS1. High-Level Design – Conceptual design of the solution (e.g.: wireframes) SS2. Staging and Production Environment Preparations – solution hosting environments during and after development SS3. Development – Functional and non-functional requirements to be developed to meet the high-level design SS4. Testing – Scope and types of testing to be conducted SS5. Deployment and Schedule – Timeline for establishing a pilot and/ or delivery of the complete use case SS6. Required Resources – Key personnel within the Entity who have the needed skills, expertise and knowledge to successfully implement the use case SS7. Acceptance Criteria – Key criteria for measuring the successful implementation of the analytics use case, including legal, security, ethical and privacy criteria</p>	<p>Foundational</p>
<p>SA.11.4</p>	<p>Statistics and Analytics Use Case Data Sourcing Plan</p>	<p>The Entity shall identify data sources and develop a data sourcing plan for each Indicator / use case identified based on the use case implementation plan. Data Sources shall include, but are not limited to:</p> <p>SS1. Internal data to the Entity SS2. Data from surveys and census SS3. Data from other Entities SS4. Data from 3rd party suppliers SS5. Open Data from the National Open Data platform SS6. Big Data</p>	<p>Foundational</p>

Dimension	<input type="checkbox"/> Plan (SA.1) <input checked="" type="checkbox"/> Implement (SA.2) <input type="checkbox"/> Operate (SA.3)
Control ID & Name	SA.2.1: Statistics and Analytics Design
Control Description	As part of the Statistics and Analytics Design control, the Entity shall design and plan for an integrated fit-for-purpose statistics and analytics platform and toolset and develop standardized templates for reports and dashboards.
Control Dependencies	SA.1.1: Use Case Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
SA.2.1.1	Statistics and Analytics Platform Design	<p>The Entity shall design and plan for an integrated fit-for-purpose statistics and analytics platform and deployment of tools that are necessary to implement the planned statistics indicators and analytics use cases. The planned statistics and analytics platform and tools should allow for at a minimum:</p> <ul style="list-style-type: none"> SS1. The ingestion of data from various sources available on the private network within the Entity, on the government wide network with other government entities and on the internet with other organizations beyond the Qatar Government SS2. The ability to ingest structured and unstructured data in a batched manner SS3. The ability to store, process, organize and catalog and explore the ingested data, to be consumed for analytics purposes, in a scalable and secure manner SS4. The ability to develop statistics and analytics models (covering Descriptive, Diagnostic, Predictive & Prescriptive), and visualize its outcomes SS5. The ability to serve raw and transformed data to other parties, to be consumed in a prepackaged format and as self-service 	Foundational
SA.2.1.2	Reporting and Dashboards Design Principles	<ul style="list-style-type: none"> SS1. The Entity shall develop standardized templates for reports and dashboards to ensure consistency and accuracy in data presentation across the Entity. These templates shall adhere to the Entity's branding guidelines, including the color scheme, typography, and logo placement, to maintain a cohesive visual identity throughout all internal and external communications 	Foundational

Dimension	<input type="checkbox"/> Plan (DM.1) <input checked="" type="checkbox"/> Implement (DM.2) <input type="checkbox"/> Operate (DM.3)
Control ID & Name	SA.2.2: Statistics and Analytics Implementation
Control Description	As part of the Statistics and Analytics Implementation control, the Entity shall implement its statistics and analytics platform, and activate the Statistics and Analytics Use Case Implementation Plan in adherence to the national quality assurance framework (NQAF) and global statistics model GSBPM standards to ensure implementing best practices during statistics production.
Control Dependencies	SA.2.1: Statistics and Analytics Design
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
SA.2.2.1	Statistics and Analytics Platform Implementation	<p>SS1. The Entity shall implement its statistics and analytics platform in alignment with the Entity's roadmap, statistics and analytics platform architecture, as well as the defined use case implementation plan</p>	Advanced
SA.2.2.2	Statistics Indicators and Analytics Use Case Implementation	<p>The Entity shall adhere to GSBPM model to ensure following best practices for the statistical implementation processes during the Statistics Indicators and Analytics Use Case Implementation Plan activation defined in SA.1.1.3. The Entity shall, at a minimum:</p> <p>SS1. Demonstrate progress by adhering to the predefined milestones and timelines specified in the roadmap</p> <p>SS2. Document deviations from the planned milestones and timelines, if any, and submit to the Data Committee for approval</p>	Advanced

Dimension	<input type="checkbox"/> Plan (SA.1) <input type="checkbox"/> Implement (SA.2) <input checked="" type="checkbox"/> Operate (SA.3)
Control ID & Name	SA.3.1: Statistics and Analytics Operations
Control Description	As part of the Statistics and Analytics Operations control, the Entity shall establish and maintain a comprehensive KPI catalog, develop and maintain a use case user guides/ manuals, and implement use cases maintenance and reporting activities.
Control Dependencies	SA.2.2: Statistics and Analytics Implementation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
SA.3.1.1	Statistics and Analytics KPIs Portfolio	<p>SS1. The Entity shall establish and maintain a comprehensive statistics and Analytics (KPIs) portfolio that includes, at a minimum, definitions, technical documentation and comprehensive descriptions of KPIs, calculation methods, and reporting frequencies of all the implemented indicators / use cases.</p>	Advanced
SA.3.1.2	Statistics and Analytics User Guide	<p>SS1. The Entity shall develop and maintain a use case user guides/ manuals that detail the functionalities and operations of the use cases. Below is a non-exhaustive, indicative guideline of the contents that can be included in a user guide:</p> <ul style="list-style-type: none"> • Step-by-step instructions on how to access and navigate the analytics tools or platform • Detailed guidance on how to set up and run specific analyses, including screenshots and command descriptions • Explanation of various parameters that can be controlled by the user and their impacts on the analysis • Examples of how to interpret common outputs or results within the context of the use case • Support contact information (i.e.: how to get in touch with technical support or find further help) • Definitions of technical terms and jargon used throughout the guide 	Advanced

<p>SA.3.1.3</p>	<p>Statistics and Analytics Use Case Performance Monitoring</p>	<p>The Entity shall implement maintenance and reporting activities to ensure that the indicators and use cases portfolio are performing as expected. The frequency of the process shall be aligned with the operations team capacity. These activities shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Measuring and monitoring the value realization metrics for each Indicator / use case against projected values in the charters (refer to SA.1.1.2.SS3) SS2. Operational monitoring of the indicators / use cases such as monitoring of the production pipeline (e.g.: through dashboards) SS3. Implementing tools to gather feedback from feedback from end-users and monitoring adoption for the deployed indicator / use cases (e.g.: surveys) SS4. Creating change request documents to address change requirements based on the feedback received from end-users 	<p>Very Advanced</p>
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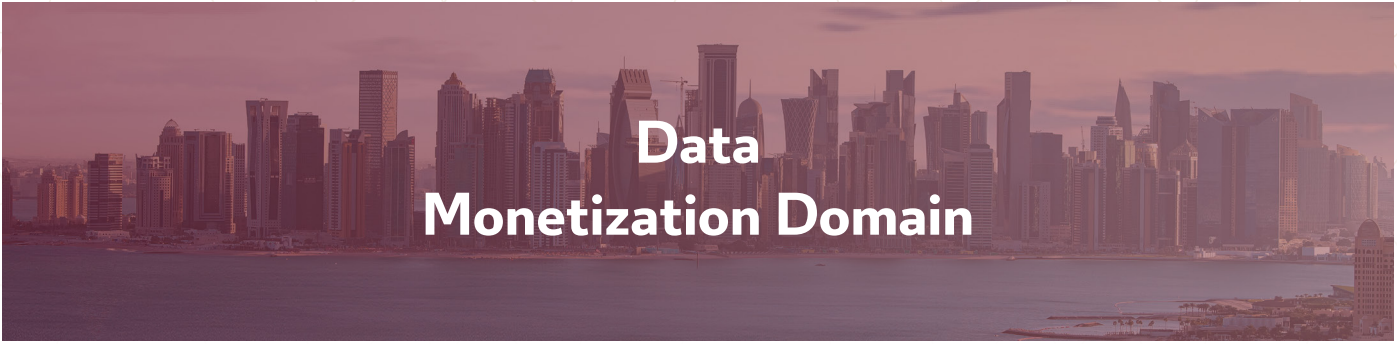


6.10 Data Monetization Domain

6.10.1 Domain Summary

The Data Monetization domain is structured across the 3 dimensions of Plan, Implement, and Operate, and includes 4 controls and 13 specifications, with some specifications divided into two or more specifications depending on the capability: Foundational, Advanced, or Very Advanced. Data monetization refers to the strategic utilization of data to generate economic value. This can be broadly achieved through three primary avenues: selling raw or processed data, providing insights derived from data, and offering data-driven services. These approaches range from direct sales of data to integrating data into products and services to enhance or create new value propositions. The goal of data monetization is to capitalize on the unique assets data represents, aligning these efforts with an Entity's broader business objectives while navigating challenges such as privacy concerns and adapting traditional business models to leverage data effectively.





Data Monetization Domain



Figure 12 - Standard Structure - Data Monetization domain

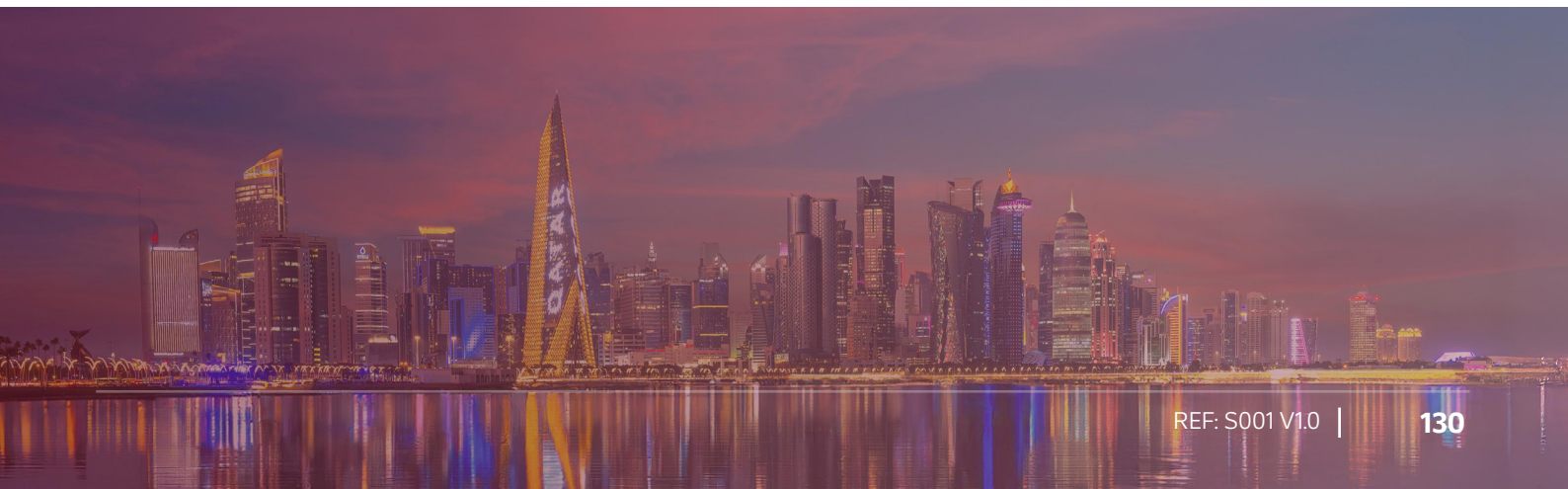
6.10.2 Controls & Specifications

Dimension	<input checked="" type="checkbox"/> Plan (DM.1) <input type="checkbox"/> Implement (DM.2) <input type="checkbox"/> Operate (DM.3)
Control ID & Name	DM.11: Data Monetization Assessment & Planning
Control Description	As part of the Data Monetization Assessment & Planning control, the Entity shall establish a data monetization vision, conduct a data monetization capability assessment, identify and prioritize data products, define and document a delivery and pricing model, develop a go-to-market strategy, and develop a data monetization roadmap.
Control Dependencies	<ul style="list-style-type: none"> Entity's Data Strategy Qatar National Data Management Policy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DM.1.1	Data Monetization Vision	<p>SS1. The Entity shall establish a data monetization vision to acts a guiding principle, shaping all related initiatives and decisions, ensuring alignment with the overarching goal of achieving tangible economic benefits from data and with the broader business goals and objectives.</p>	Foundational
DM.1.2	Data Monetization Capability Assessment	<p>The Entity shall conduct a capability assessment to evaluate the Entity's ability to monetize its data and identify the gaps that need to be addressed to achieve effective data monetization. The capability assessment exercise shall cover, at a minimum:</p> <p>SS1. Data management maturity report covering all the domains in the national data management framework</p> <p>SS2. Current state assessment report of existing technology and infrastructure</p>	Foundational

<p>DM.11.3</p>	<p>Data Products Identification & Prioritization</p>	<p>The Entity shall identify and prioritize the data products that are required to realize the Entity's data monetization vision and strategy. For the identified data products, the Entity shall develop detailed charters for the identified data products. The charters shall outline, at a minimum:</p> <p>SS1. Data product description and development rationale SS2. High-level data product development cost estimate SS3. Expected benefits and business value aimed to be derived (ROI) SS4. Expected timeline for development and deployment of the data product SS5. Data sources that would feed the data product and the required data fields SS6. Priority level assigned to the data product. The Entity may follow the product effort-value matrix to prioritize its products as outlined in SA.1.11.SS2 SS7. Stakeholders involved in the implementation of the data product, the owner that would lead the data product, and the target consumers that would benefit from the insights generated by the data product SS8. Dependencies that need to be overcome to initiate development of the data product (e.g.: technologies, resources, and capabilities required to implement the use cases) SS9. Indication if ethical, security and privacy components exist may exist and how they shall be addressed</p>	<p>Foundational</p>
<p>DM.11.4</p>	<p>Data Monetization Delivery Model</p>	<p>SS1. The Entity shall define and document the delivery model that it will adopt including in order to provide access to its data products including, but not limited to:</p> <ul style="list-style-type: none"> • Raw Data (i.e.: involves selling data in its unprocessed form, usually as bulk downloads or physical media transfers) • Data-as-a-Service (DaaS)/ API-based (i.e.: involves providing data through an API or online service, allowing customers to access up-to-date or real-time data directly through web services) • Data Platform (i.e.: a comprehensive platform that not only provides data but also tools and functionalities to analyze and visualize that data) • Data Marketplace (i.e.: an online platform where data providers can list and sell their data to interested buyers, & can include both raw data & APIs) 	<p>Advanced</p>
<p>DM.11.5</p>	<p>Data Monetization Pricing Model</p>	<p>SS1. The Entity shall define and document the pricing model that it will adopt to charge customers on accessing its data products including, but not limited to:</p> <ul style="list-style-type: none"> • One Time Flat Fee (i.e.: fixed price charged once for accessing the data product) • Pay As You Go (i.e.: usage based depending on the amount of data consumed by the customer) • Subscription Based (i.e.: recurring fee for accessing the data product) • Freemium Model (i.e.: basic services are offered for free, while advanced features or higher usage limits are available in paid versions) • Hybrid (i.e.: a combination of two or more pricing strategies) 	<p>Advanced</p>

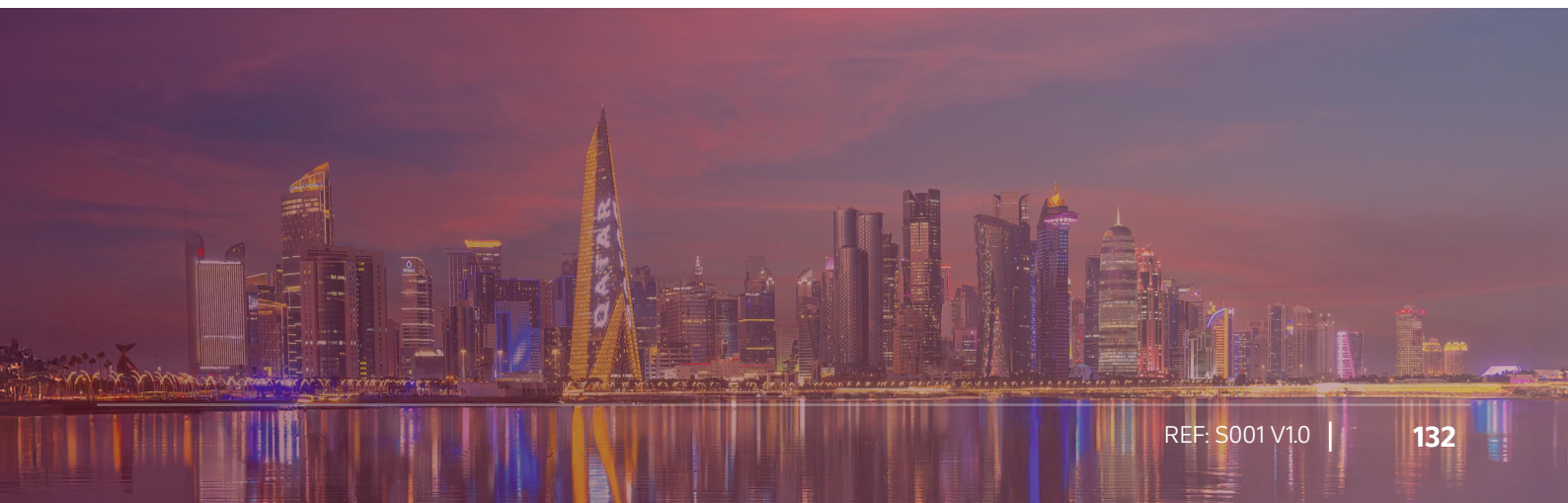
<p>DM.11.6</p>	<p>Go-To-Market Strategy</p>	<p>The Entity shall develop a go-to-market strategy to support the effective launch and promotion of its data products to the market. The strategy shall include, at a minimum:</p> <p>SS1. A list of identified target industries/ audience that can benefit the most from the Entity's data products</p> <p>SS2. A defined value proposition that may highlight how the Entity's data products can solve specific problems or add value to businesses</p> <p>SS3. A plan outlining the marketing and sales activities and the channels the Entity will use to reach its target audience effectively. This may include content marketing, social media campaigns, email marketing, webinars, or channel partnerships</p>	<p>Advanced</p>
<p>DM.11.7</p>	<p>Data Monetization Roadmap</p>	<p>The Entity shall develop a data monetization roadmap, in alignment with the Entity's data strategy, that will be used and monitored to implement and activate data monetization initiatives across the Entity. The roadmap shall include, at a minimum:</p> <p>SS1. List of initiatives required to:</p> <ul style="list-style-type: none"> • Rectify identified gaps based on the data monetization capability assessment conducted in DM.11.2 (e.g.: this could include data quality improvement, technology investments, etc.) • Develop, test and deploy the data products identified and prioritized in DM.11.3 <p>SS2. Sequencing of data monetization initiatives based on their impact, feasibility, and alignment with business priorities and sequence them to ensure a logical progression towards the goals</p> <p>SS3. Resource allocation outlining the budget, personnel, and technology resources required for each initiative</p>	<p>Advanced</p>



Dimension	<input type="checkbox"/> Plan (DM.1) <input checked="" type="checkbox"/> Implement (DM.2) <input type="checkbox"/> Operate (DM.3)
Control ID & Name	DM.2.1: Data Monetization Design
Control Description	As part of the Data Monetization Design control, the Entity shall design the data product architecture, develop data contracts for its data products, and develop and test a proof-of-concept (POC) for each data product.
Control Dependencies	DM.1.1: Data Monetization Assessment & Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DM.2.1.1	Data Products Proof of Concept	<p>SS1. Aligned to the plan outlined in the Data Monetization Roadmap (refer to DM.1.1.7), the Entity shall develop and test a proof-of-concept (POC) for each data product on a sandbox/ non-production environment, prior to initiating full-scale development and deployment of the data product.</p>	Advanced

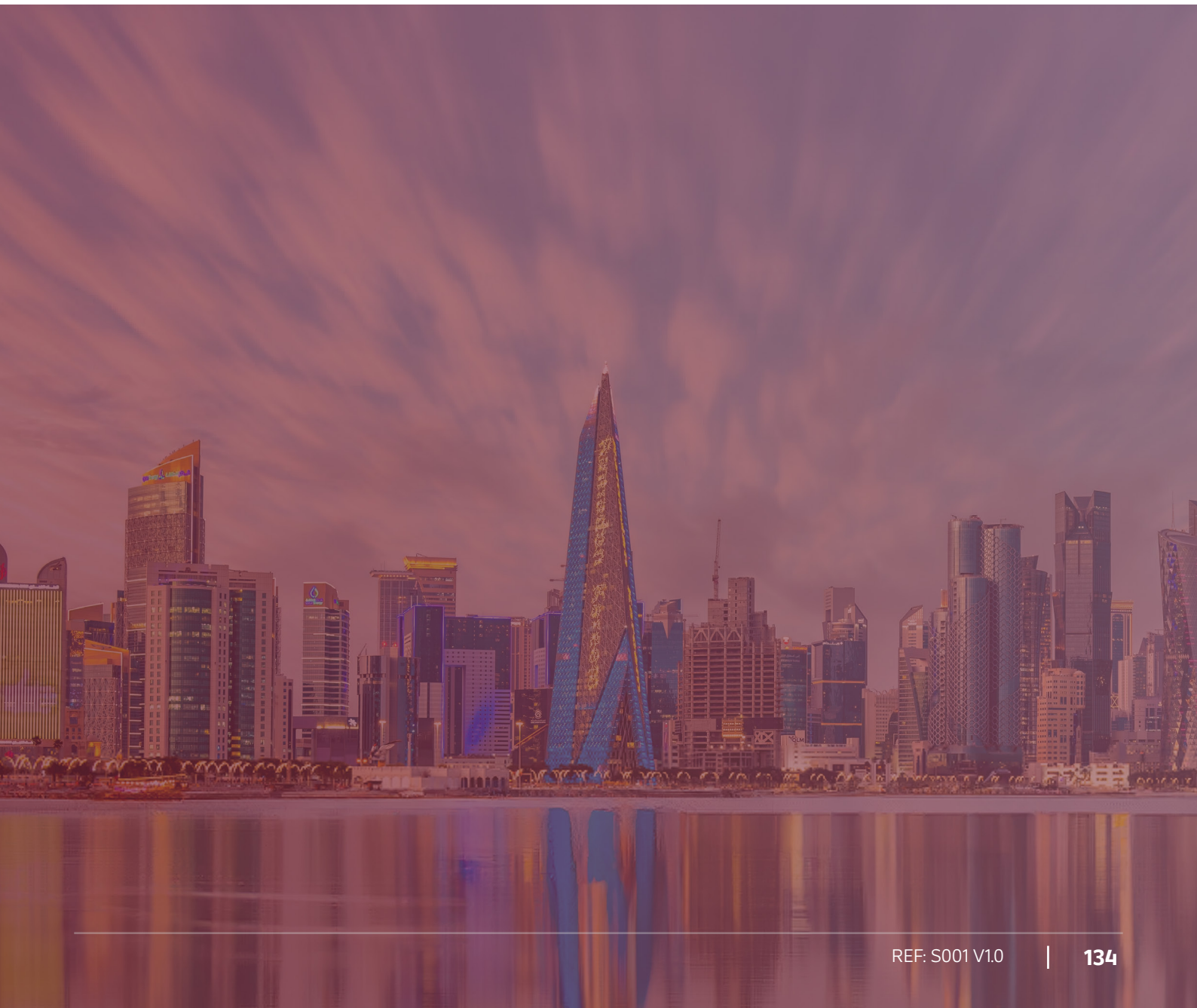
<p>DM.2.1.2</p>	<p>Data Product Architecture</p>	<p>The Entity shall design the data product architecture with a focus on scalability, security, and integration, and ensuring alignment with the national data architecture and modeling standards. This exercise shall include, at a minimum:</p> <p>SS1. Developing a high-level design document that includes the following indicative list of contents:</p> <ul style="list-style-type: none"> • Brief description of the data product • Business and technical requirements • High-level architecture diagram across the different layers (e.g.: integration layer, ingestion and storage layer, data processing layer, and presentation layer) • Associated business processes • User stories/ journeys • Data flow diagrams <p>SS2. Developing a low-level design document that includes the following indicative list of contents:</p> <ul style="list-style-type: none"> • Detailed design diagrams covering class diagrams, sequence diagrams, state diagrams, detailed module descriptions, database schema design • Algorithm design (e.g.: pseudocode, flowcharts) • User interface design (e.g.: screen layouts, user flows, navigation maps) • Security specifications (e.g.: security controls, encryption techniques) 	<p>Advanced</p>
<p>DM.2.1.3</p>	<p>Data Contracts</p>	<p>The Entity shall ensure that each data product provided or exchanged has an associated data contract/ data sharing agreement. The data contract shall be developed in alignment with the data sharing, integration & interoperability standards and shall outline, at a minimum:</p> <p>SS1. Parties Involved (i.e.: identification of all parties involved in the data exchange)</p> <p>SS2. Data Description (i.e.: detailed description of the data, including data type, format, and volume)</p> <p>SS3. Terms of Use (i.e.: specifications of the terms under which the data is provided or exchanged)</p> <p>SS4. Security and Privacy Requirements (i.e.: outline of security and privacy measures in compliance with applicable laws)</p> <p>SS5. Terms of Access (i.e.: details on access conditions, including duration, exclusivity, and renewal conditions)</p> <p>SS6. Customer Obligations (i.e.: mechanisms for ensuring customer adherence to the terms of the agreement)</p> <p>SS7. Termination Conditions (i.e.: specifications on how and when the contract can be terminated)</p> <p>SS8. Data Retention and Deletion (i.e.: obligations concerning the retention and deletion of data post-contract termination)</p>	<p>Advanced</p>



Dimension	<input type="checkbox"/> Plan (DM.1) <input checked="" type="checkbox"/> Implement (DM.2) <input type="checkbox"/> Operate (DM.3)
Control ID & Name	DM.2.2: Data Monetization Implementation
Control Description	As part of the Data Monetization Implementation control, the Entity shall conduct a full-scale development of the data product, deploy them, and activate the data monetization function.
Control Dependencies	DM.2.1: Data Monetization Design
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DM.2.2.1	Data Monetization Function Activation	The Entity shall activate the data monetization function to support data monetization efforts and initiatives effectively. The Entity shall, at a minimum: <ul style="list-style-type: none"> SS1. Implement the enabling systems/ technology to support data monetization operations (e.g.: CRM, billing, payment, finance, etc.) SS2. Build the relevant capabilities through hiring or upskilling the resources required to develop and deploy the identified data products (as outlined in DM.1.1.3.SS7) SS3. Implement marketing and sales activities as per the defined plan in DM.1.1.6.SS3 	Very Advanced

<p>DM.2.2.2</p>	<p>Data Product Development & Deployment</p>	<p>Based on the results of the proof of concepts and aligned to the plan outlined in the Data Monetization Roadmap (refer to DM.1.1.7), the Entity shall conduct a full-scale development of the data products. The Entity shall, at a minimum:</p> <ul style="list-style-type: none"> SS1. Ensure the developed data products are deployed on a production environment, ensuring alignment with the delivery and pricing models defined in DM.1.1.4 and DM.1.1.5 respectively SS2. Measure and publish the data quality score for each of the Entity's deployed data products across all the data quality dimensions outlined in DQM.1.1.1. An overall data quality score shall also be assigned for each data product by averaging the data quality scores for each data quality dimension SS3. Define and publish SLAs for the deployed data products (e.g.: service uptime/ availability, response time and resolution time in incidents where the data source is unavailable or degraded, etc.) SS4. Define and publish metadata information for each of the deployed data products covering, for example, temporal granularity, update frequency, etc. SS5. Implement versioning for each of the deployed data products, highlighting the version number and a description of the changes 	<p>Very Advanced</p>
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Dimension	<input type="checkbox"/> Plan (DM.1) <input type="checkbox"/> Implement (DM.2) <input checked="" type="checkbox"/> Operate (DM.3)
Control ID & Name	DM.3.1: Data Monetization Performance Management
Control Description	As part of the Data Monetization Performance Management control, the Entity shall monitor and maintain the deployed data products.
Control Dependencies	DM.2.2: Data Monetization Implementation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DM.3.1.1	Data Products Monitoring & Maintenance	<p>The Entity shall establish and implement processes for ongoing monitoring of its deployed data products. These processes shall act as a feedback loop to ensure continuous improvement to the data products and that the products remains aligned with user needs and market demands. These processes shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Measuring and monitoring the value realization metrics for each data product against projected values in the Data Product Charters (refer to DM.1.1.3.SS3) SS2. Implementing tools to gather feedback from feedback from end-users and monitoring adoption for the deployed data products, such as surveys or in-platform feedback forms SS3. Monitoring the data quality score established for each data product (refer to DM.2.2.1), ensuring that data quality thresholds are adhered to for the deployed data products (refer to the national data quality management standards for more information on data quality thresholds and data quality issue management and remediation) SS4. Tracking compliance to the established data product SLAs (refer to DM.2.2.1) through dashboards or reports SS5. Creating change request documents to address change requirements based on the feedback received from end-users 	Very Advanced

6.11 Data Security, Privacy, and Other Regulations Domain

Note: The National Cyber Security Agency (NCSA) is the government entity responsible for cybersecurity in Qatar. NCSA serves as the national authority on this topic from a regulatory perspective. Therefore, the data security, data classification, and data privacy controls and corresponding specifications for the Data Security, Privacy, and Other Regulations Domain will be detailed and addressed by NCSA. Standards regarding the operationalization of data classification will be detailed in this document (refer to the DSPO.2.4.1 specification on Data Classification Operations), and compliance to these specifications will be covered under the National Data Management Compliance Assessment by NPC.

The controls highlighted below provide entities with a perspective on the Data Security, Privacy, and Classification topics that will be managed by NCSA. Compliance with Data Security and Privacy specifications will be overseen by NCSA, according to their requirements and methodology, and not as part of the National Data Management Compliance Assessment. Below is an overview of the Data Security, Privacy, and Other Regulations controls and specifications:



<p>Dimension</p>	<p> <input checked="" type="checkbox"/> Plan (DSPO.1) <input type="checkbox"/> Implement (DSPO.2) <input type="checkbox"/> Operate (DSPO.3) </p>
<p>Control ID & Name</p>	<p>DSPO.1.1: National Regulation Alignment</p>
<p>Control Description</p>	<p>The Entity shall review and align to the latest version of the approved National Information Assurance Standard, Personal Data Privacy and Protection Law, National Data Classification Policy, Cloud First Policy, and Right to Access Information Law before implementing other domain specifications. In case of any conflict, these documents shall take precedence over the National Data Standards.</p>

<p>Dimension</p>	<p> <input type="checkbox"/> Plan (DSPO.1) <input checked="" type="checkbox"/> Implement (DSPO.2) <input type="checkbox"/> Operate (DSPO.3) </p>
<p>Control ID & Name</p>	<p>DSPO.2.1: Data & Information Security</p>
<p>Control Description</p>	<p>This control is covered in the National Information Assurance Standard which helps entities in implementing a robust information security management system within their organization.</p>



Dimension	<input type="checkbox"/> Plan (DSPO.1) <input checked="" type="checkbox"/> Implement (DSPO.2) <input type="checkbox"/> Operate (DSPO.3)
Control ID & Name	DSPO.2.2: Personal Data Privacy
Control Description	This control is covered in the Personal Data Privacy Protection Law (PDPPL) which regulates data privacy in the State of Qatar. It offers advice and guidance, promotes good practice, carries out audits and advisory visits, considers complaints, monitors compliance and supports enforcement action where appropriate.

Dimension	<input type="checkbox"/> Plan (DSPO.1) <input checked="" type="checkbox"/> Implement (DSPO.2) <input type="checkbox"/> Operate (DSPO.3)
Control ID & Name	DSPO.2.3: Other Regulations
Control Description	This control is covered in the Cloud First Policy and the Right to Access Information Law. The Cloud First Policy requires that entities, when embarking on projects involving new IT systems or technology refreshes, first consider and evaluate cloud solutions from cloud service providers. The Right to Access Information Law grants a general right to access information held by ministries, government agencies, public bodies, institutions affiliated with them, and other types of organizations and bodies.

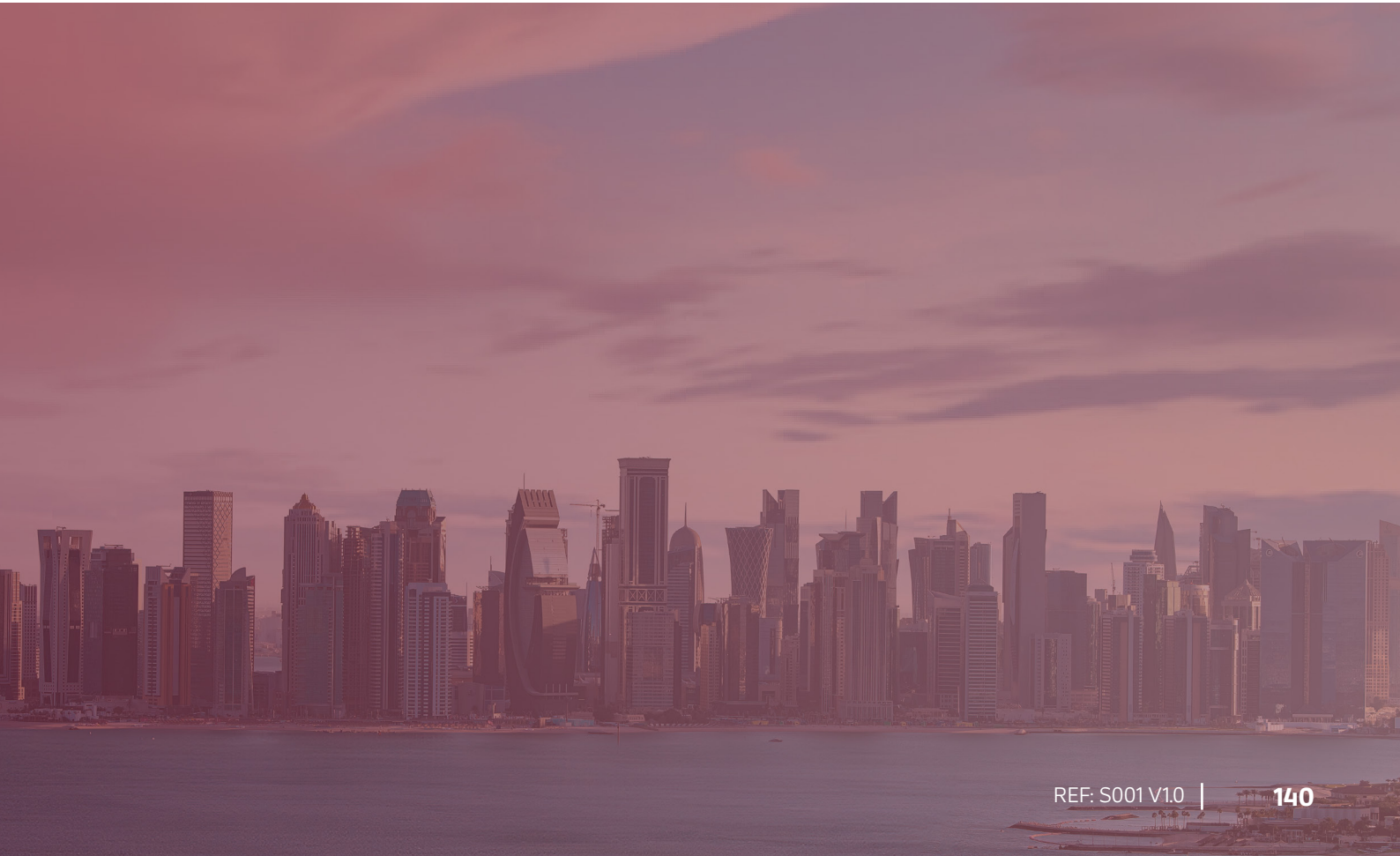


Dimension	<input type="checkbox"/> Plan (DSPO.1) <input checked="" type="checkbox"/> Implement (DSPO.2) <input type="checkbox"/> Operate (DSPO.3)
Control ID & Name	DSPO.24: Data Classification
Control Description	This control mandates that the Entity shall classify its data assets in alignment with the National Data Classification Policy, and comply to the additional sub-specifications on Data Classification Operations outlined below.

Specification Number	Specification Name	Control Specification	Capability Level
DSPO.24.1	Data Classification Operations	<p>To operationalize the National Data Classification Policy, the Entity shall, at a minimum, do the following:</p> <ul style="list-style-type: none"> SS1. Include in its documentation templates fields for information classification on the cover sheet and header/footer to support the application of classification labels SS2. Automatically apply a watermark indicating the relevant classification for documentation not generated from the Entity's templates SS3. Use standard color coding for classified documents to visually reinforce the classification and handling expectations: <ul style="list-style-type: none"> • Dark Red for "C4" (Top Secret) Data • Red for "C3 (Secret) Data • Orange for "C2" (Restricted) Data • Blue for "C1" (Internal) Data • Green for "C0" (Public) Data SS4. Publish the classification levels assigned to its datasets and artifacts as metadata attributes registered within the Data Catalog. The metadata population should follow the process defined in the Data Catalog and Metadata Management Domain. SS5. Appoint a third party to review and audit data classification activities. SS6. Develop an escalation and resolution process for issues and complaints related to data classification, and the misuse of collected data that does not comply with relevant national and international regulations. This process must be approved by the Data Committee and key relevant stakeholders, and it should be published and communicated to all key stakeholders involved. The process should include, at a minimum, the following: <ul style="list-style-type: none"> • Channel for identifying and cataloging potential issues • Workflow for investigation, analysis, and resolution that can be tracked, monitored, and historically logged (In the event of compromised private data, the Entity's data controller or data processor must notify the Data Committee and the National Data Governance Office within 72 hours) 	Foundational

Dimension	<input type="checkbox"/> Plan (DSPO.1) <input type="checkbox"/> Implement (DSPO.2) <input checked="" type="checkbox"/> Operate (DSPO.3)
Control ID & Name	DSPO.31: Regulation Monitoring
Control Description	This control is covered in the National Information Assurance Standard which helps entities in implementing a robust information security management system within their organization.

Dimension	<input type="checkbox"/> Plan (DSPO.1) <input type="checkbox"/> Implement (DSPO.2) <input checked="" type="checkbox"/> Operate (DSPO.3)
Control ID & Name	DSPO.3.2: Regulation Audit & Improvement
Control Description	This control is covered in the National Information Assurance Standard which helps entities in implementing a robust information security management system within their organization.



6.12 Data Culture & Literacy Domain

6.12.1 Domain Summary

The Data Culture & Literacy domain is structured across the 3 dimensions of Plan, Implement, and Operate, and includes 4 controls and 12 specifications, with some specifications divided into two or more specifications depending on the capability: Foundational, Advanced, or Very Advanced. Data Culture & Literacy focuses on the structured development and promotion within an Entity of the capabilities required to effectively interpret, analyze, and leverage data. This domain ensures that entities are equipped with the necessary knowledge and skills to effectively understand, interpret, and utilize data. Data literacy specifically encompasses proficiency in reading, understanding, creating, and communicating data as information. It includes the acquisition of skills to question the sources of data, understand the context and methodology used in data collection, interpret the results appropriately, and make informed decisions. This literacy fosters a data-driven culture where data is not only valued as a critical asset but is also effectively utilized across the entity to support strategic objectives.



Data Culture & Literacy Domain



Figure 13 - Standard Structure - Data Culture & Literacy domain

6.12.2 Controls & Specifications

Dimension	<input checked="" type="checkbox"/> Plan (DCL.1) <input type="checkbox"/> Implement (DCL.2) <input type="checkbox"/> Operate (DCL.3)
Control ID & Name	DCL.1.1: Data Culture & Literacy Assessment & Planning
Control Description	As part of the Data Culture & Literacy Assessment & Planning control, the Entity shall conduct a current state data literacy skills assessment, and develop a data culture & literacy roadmap.
Control Dependencies	Entity's Data Strategy
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCL.1.1.1	Current State Data Literacy Skills Assessment	The Entity shall conduct a current state assessment of data literacy skills across all organizational domains. The current state assessment exercise shall, at a minimum: <ul style="list-style-type: none"> SS1. Conduct a data literacy assessment survey across all the data roles in the different organizational archetypes recommended for Qatar government entities. The skills assessment shall be aligned to the SFIA skills assessment framework SS2. Document a list of all existing educational tools within the Entity used for data literacy training including online courses, workshops, and in-house training materials SS3. Identify and document gaps in data literacy and prioritize areas that require enhancement based on the results of the data literacy skills assessment and existing educational tools 	Foundational
DCL.1.1.2	Data Culture & Literacy Program Roadmap	The Entity shall develop a data culture & literacy program roadmap, in alignment to the Entity's data strategy and the data literacy survey assessment findings, that will be used to implement and activate data culture initiatives across the Entity. The roadmap shall include, at a minimum: <ul style="list-style-type: none"> SS1. List of initiatives and programs to be implemented to rectify the identified gaps from DCL.1.1.1 SS2. Prioritization and sequencing of initiatives based on their impact, feasibility, and alignment with business priorities and sequence them to ensure a logical progression towards the goals SS3. Resource allocation outlining the budget, personnel, and technology resources required for each initiative 	Foundational

Dimension	<input type="checkbox"/> Plan (DCL.1) <input checked="" type="checkbox"/> Implement (DCL.2) <input type="checkbox"/> Operate (DCL.3)
Control ID & Name	DCL.2.1: Data Culture & Literacy Program Design
Control Description	As part of the Data Culture & Literacy Program Design control, the Entity shall establish a program framework, and define and implement learning paths tailored to the given personas.
Control Dependencies	DCL.1.1: Data Culture & Literacy Assessment & Planning
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCL.2.1.1	Program Framework	The Entity shall establish a data culture & literacy framework. The framework shall, at a minimum, include: <ul style="list-style-type: none"> SS1. List of defined personas (the Entity can refer to the data operating model templates published by NPC for guidelines), outlining specific data roles and responsibilities tailored to varying functional areas within the Entity SS2. Training modes of delivery (e.g.: Online, In Person, Hybrid) to cater to different learning preferences and logistical needs SS3. Structured certification schemes designed to validate and recognize the data competencies acquired by employees 	Foundational
DCL.2.1.2	Learning Paths	The Entity shall define and implement structured learning paths for enhancing data culture & literacy, tailored to the defined personas. The Entity shall, at a minimum: <ul style="list-style-type: none"> SS1. Identify learning path durations and stages for each persona SS2. Develop a detailed curriculum for each learning path, ensuring alignment with the persona's specific roles and responsibilities within the data management lifecycle SS3. Cover all training modes of delivery identified in the program framework SS4. List relevant certifications (if any) to be awarded after completing a learning path 	Foundational

Dimension	<input type="checkbox"/> Plan (DCL.1) <input checked="" type="checkbox"/> Implement (DCL.2) <input type="checkbox"/> Operate (DCL.3)
Control ID & Name	DCL.2.2: Data Culture & Literacy Program Implementation
Control Description	As part of the Data Culture & Literacy Program Implementation control, the Entity shall activate the data culture & literacy program, and develop a plan to integrate data culture & literacy upskilling into Human Resources processes.
Control Dependencies	DCL.2.1: Data Culture & Literacy Program Design
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCL.2.2.1	Program Activation	<p>The Entity shall activate the data culture & literacy program based on the established roadmap, program framework, and learning paths, leveraging the data literacy assets provided by the State of Qatar. The Entity shall, at a minimum:</p> <ul style="list-style-type: none"> SS1. Deploy the program in accordance with the personas, modes of delivery and certification schemes identified in the framework, and the initiatives detailed in the roadmap SS2. Coordinate and document training schedules and certification processes to match the identified learning paths SS3. Specify and allocate the necessary human and physical resources to support the effective execution of the program across the Entity 	Foundational
DCL.2.2.2	Organizational Capability Integration	<p>The Entity shall develop a plan to integrate data culture and literacy upskilling into Human Resources processes to enhance organizational capabilities. The Entity shall, at a minimum, do the following:</p> <ul style="list-style-type: none"> SS1. Develop an integration plan that aligns data literacy achievements with HR processes, including promotions, annual performance reviews, and capability assessments SS2. Establish a list of incentives for employees to engage in data literacy upskilling, linking successful completion of training and certification to advancement opportunities or other rewards as deemed appropriate 	Foundational

Dimension	<input type="checkbox"/> Plan (DCL.1) <input type="checkbox"/> Implement (DCL.2) <input checked="" type="checkbox"/> Operate (DCL.3)
Control ID & Name	DCL.3.1: Performance & Change Management
Control Description	As part of the Performance & Change Management control, the Entity shall design a communication and awareness plan, establish and monitor data culture & literacy KPIs, and continuously review and improve learning path designs.
Control Dependencies	DCL.2.2: Data Culture & Literacy Program Implementation
Version	1.0 (October 2024)

Specification Number	Specification Name	Control Specification	Capability Level
DCL.3.1.1	Communication & Awareness	<p>The Entity shall design and implement a communication and awareness plan to promote the benefits of the data culture and literacy program. The Entity shall, at a minimum:</p> <p>SS1. Design and execute the communication plan to raise awareness about the data literacy program across the organization. The plan shall, at a minimum, cover the following:</p> <ul style="list-style-type: none"> • Objectives of the plan • Target audience within the Entity in alignment to the defined personas • Key messages tailored to the target audience to be delivered • Timeline and implementation of plan <p>SS2. Utilize multiple communication channels, including internal newsletters, intranet, pilot workshops, and other channels, to disseminate information about the program's goals, benefits, and opportunities for employee participation</p> <p>SS3. Publish regular updates on the progress and success stories of the data literacy initiatives to maintain engagement and demonstrate the impact of ongoing educational efforts</p>	Foundational

<p>DCL.3.1.2</p>	<p>Data Culture & Literacy KPIs</p>	<p>The Entity shall establish key performance indicators (KPIs) to measure and report on the Data Culture & Literacy Program. KPIs shall include, at a minimum, the following:</p> <ul style="list-style-type: none"> SS1. Percentage satisfaction with the program among participants SS2. Percentage improvement of data culture & literacy within the Entity, guided by the periodic skills assessment SS3. Percentage of participants who fully complete their respective learning path 	<p>Foundational</p>
<p>DCL.3.1.3</p>	<p>Data Culture & Literacy Monitoring & Reporting</p>	<p>The Entity shall monitor and report on the Entity's data culture and literacy program at a pre-defined frequency based on the defined KPIs. This shall include, at a minimum:</p> <ul style="list-style-type: none"> SS1. Reports detailing performance against the established KPIs and tracking any issues 	<p>Foundational</p>
<p>DCL.3.1.4</p>	<p>Learning Path Review & Continuous Improvement</p>	<p>The Entity shall review and continuously improve on the designed learning paths. The Entity shall, at a minimum:</p> <ul style="list-style-type: none"> SS1. Establish a review schedule for evaluating the effectiveness and relevance of current learning paths to organizational goals and evolving business needs SS2. Implement a structured feedback system to gather input from participants and trainers on the quality and applicability of training materials and instruction methods SS3. Define procedures for timely updates to learning content and methods based on feedback and technological advancements 	<p>Foundational</p>
<p>DCL.3.1.5</p>	<p>Learning Path Review & Continuous Improvement</p>	<ul style="list-style-type: none"> SS1. Create a centralized online portal where all training materials, recordings, and additional resources are available on demand 	<p>Advanced</p>
<p>DCL.3.1.6</p>	<p>Learning Path Review & Continuous Improvement</p>	<ul style="list-style-type: none"> SS1. Incorporate interactive elements and gamification into the training programs, such as quizzes and scenario-based learning 	<p>Very Advanced</p>

7. Reference List

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8. Document Control

Version	Date	Amendments	Author
1.0	October 2024	Release of the National Data Standards	NPC

This document will be reviewed and updated when changes to the Data Standards are required. These amendments may relate to changes in roles and responsibilities, technical infrastructure, or new or changed requirements for the Data Standards. Amendments will be approved by NPC (in consultation with related parties).

When approved, a new version of the National Data Management Policy will be issued, and specialized personnel in the entities will be advised of the changes.

