SDAIA
الهيئة السعودية للبيانات والذكاء الاصطناعي
Saudi Data & AI Authority

National Data Index

Operational Excellence (OE)

Document Control

Version	Revision Date	Modification
1.0	Oct 2023	Final Version
2.0	June 2024	Updated OE score equation
3.0	March 2025	• Added two new metrics: DSI.OE.04 and OD.OE.05 • Added definitions of the national data platforms • Updated threshold and ranges of metric DO.OE.02
4.0	April 2025	• Updated the name of the metric DQ.OE.02
5.0	October 2025	• Added two metrics: DSI.OE.05 and DQ.OE.03 • Updated metric DSI.OE.01

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Important Note

This document “National Data Index - Operational Excellence (OE)” comes with an additional supporting document that provides general guidance, examples, and details about the OE metrics and their calculations methods. It is important to note that the supporting document must be treated as an official extension of this document.

1 Glossary

Term	Description
CDL	Collaborative Data Labs
DMP	Data Marketplace
GSB	Government Service Bus
NDB	National Data Bank
NDL	National Data Lake
NDC	National Data Catalog
NDI	National Data Index
NDMO	National Data Management Office
NIC	National Information Center
ODP	Open Data Platform
RDP	Reference Data Management Platform
SDAIA	Saudi Data & AI Authority

2 Introduction

The Saudi Data & AI Authority (SDAIA) is on a mission to develop a data-driven economy and enhance data literacy across government entities to drive operational efficiency and decision-making in the Kingdom of Saudi Arabia (KSA). To this end, SDAIA has launched the National Data Index (NDI) framework, which aims to measure the efforts and progress in transforming data into a vital economic resource for unlocking innovation, driving economic growth and transformation, and improving national competitiveness in an organized and accelerated manner.

NDI encompasses the domains prescribed in the National Data Management Office's (NDMO) Data Management and Personal Data Protection Framework[1] and is composed of three essential components: Compliance, Maturity, and Operational Excellence (OE). Each government entity will be measured on a regular basis across these three components.

This document introduces and elaborates on the Operational Excellence (OE) component of NDI. OE measures the real advancement and achievement of efficiency and effectiveness in the government entities' data management operation processes. It utilizes the required information captured from various national data platforms managed and operated by SDAIA to evaluate the efficiency and effectiveness of data management practices at the entities. The performance targets for these platforms are defined and set by SDAIA, while each participating entity is responsible for responding to and following up on these targets to ensure alignment and continuous improvement. Section 3 presents these national data platforms.

The OE component is built around measurable metrics that have been selected following various cycles of deliberations and are linked accordingly to the core objectives of NDI. This document describes the process and methodology of calculating the OE component, which is based on an empirical method focusing on identifying problems and improvement opportunities pertaining to the entities' data management journey.

3 National Data Platforms

A National Data Platform is a technology platform that government entities are required to use for data management, operational governance, and/or sharing of national data assets.

The following platforms are considered National Data Platforms:

- Government Service Bus (GSB): A central service bus that enables government entities in Saudi Arabia to integrate and interlink to share standardized transactional data on demand to facilitate government business processes.

- National Data Lake (NDL): A reliable central repository for preserving, processing, and cleansing national data and sharing it securely with beneficiaries to enable them to build decision-support systems and platforms.
- Collaborative Data Labs (CDL): Secure labs that enable employees of government entities to access the data hosted in the National Data Lake through an environment equipped with the latest data analytics and AI technologies to discover, explore, and analyze the data and generate the required insights and reports.
- Data Marketplace (DMP): A platform that offers automated data-sharing processes across entities in Saudi Arabia. It enables them to browse the data-sharing services and subscribe to what suits them in an automated manner in accordance with national data governance policies.
- National Data Catalog (NDC): A platform that serves as an inventory of the metadata of the government entities' systems, with the definitions of their Key Performance Indicators (KPIs) and metrics, and the list of business-critical data fields linked with their certified source entities, in addition to the data policies and standards.
- Reference Data Platform (RDP): A platform that offers features to support extensive curation capabilities for standardizing, classifying, and defining the certified source entities for the reference data at a national level, and ensures completeness, accuracy, and consistency of the available reference data.
- Open Data Platform (ODP): A platform that enables individuals, government, and non-government entities to publish their open data and make it available to end users, such as entrepreneurs, to enable them to develop innovative products that contribute to building a digital economy in Saudi Arabia.
- Tawakkalna: A national super app that unifies government services in one platform, organizing services, information, documents, and posts to make them easier to use and improve the quality of life in Saudi Arabia in line with the goals of Vision 2030.

4 Operational Excellence Calculation Approach

The OE component consists of a number of metrics that are divided across the NDMO's data management domains. Section 5.2 lists all the defined metrics, and one such example is *DSI.OE.01*, which is defined to measure the percentage of attributes shared by each entity on the Government Service Bus (GSB) that are not officially produced by the entity or delegated to it from the producer entity of those attributes. This metric is categorized under the Data Sharing and Interoperability (DSI) domain of NDMO.

In order to measure each metric, the national data platforms need to provide the necessary metadata. For example, the required metadata from the Government Service Bus (GSB) and the National Data Catalog (NDC) will be acquired and subsequently used to calculate the metric *DSI.OE.01* according to its defined calculation method.

Since metric scores have different measurement units (e.g., time and percentage), a single numerical OE score is required for calculating the OE score of each entity. In order to normalize the measurement units, each metric output is mapped to a predefined scale that ranges in value from 0 to 5, where 0 signifies “Unacceptable” and 5 represents "Leader”. The complete list of scale levels and values is as follows:

Scale Level	Scale Value
Unacceptable	0
Low	1
Fair	2
Good	3
Excellent	4
Leader	5

Once the metric scores are mapped to the unified scale, the OE score of an entity is calculated using the following weighted sum equation:

$$OE\ Score = \sum_{i=1}^{|L|} w_i * s_i$$

Wherein $L = \{m_1, m_2, \dots\}$ is the list of metrics defined in Section 5.2, s_i represents the score of the entity for metric m_i, and w_i represents the weight of that metric. The rationale for introducing weights in the calculation is to administer the role of the metrics based on their importance, priority, and the dynamic nature of the data management landscape.

5 Operational Excellence Metrics

This section explains the structure of the OE metrics and the metrics that have been defined under each applicable domain of the NDMO’s Data Management and Personal Data Protection Framework. Note that a number of NDMO domains are not covered due to their nature and significance, and the unavailability of the quantitative metadata for the empirical observation and measurement of the related metrics.

5.1 Metric Structure

The metric structure consists of several elements discussed in the table below.

ID	Element Name	Description
1	Metric ID	A unique identifier of the metric using the following format [DomainID.OE.NUMBER] where NUMBER is an ordering number of the metric within the NDMO domain and OE. For example, MCM.OE.01 is the first OE metric within the Data Catalog and Metadata domain of NDMO
2	Metric Name	The name of the metric, e.g., response time of GSB APIs
3	Metric Description	A high-level description with a detailed explanation and rationale for the metric
4	Domain Name	The name of the NDMO domain, e.g., Data Catalog and Metadata (MCM)
5	Data Platforms	The name of the national data platforms that will support the metric calculation
6	Definitions	The constituents of each metric required to calculate the output of the metric
7	Calculation	The process that transforms the metric's constituents into one output value using a predefined equation
8	Measurement Unit	The definite magnitude of the metric output
9	Acceptable Threshold	The acceptable value beyond which the metric output will not be acceptable
10	Scale Intervals	The intervals that correspond to the unified scale levels
11	Version History	The version history allowing versioning control of changes following the release of the document
12	Dependencies	The prerequisites for calculating the metric output

5.2 List of Metrics

This section details the list of metrics for the OE component.

5.2.1 Data Sharing and Interoperability (DSI)

Element Name	Element Details
Metric ID	DSI.OE.01
Metric Name	Adherence to the Data Sharing Policy
Metric Description	This metric assesses the adherence of the entity's GSB APIs to the Data Sharing Policy according to two main criterions. For each API, the first criterion measures the percentage of the API attributes where the publisher is the source/authorized entity (as defined in NDC) against the total number of the API attributes, whereas the second criterion checks the existence of the API classification.

Element Name	Element Details
	We use the term certified attributes to refer to the attributes where the publisher is the source/authorized entity. This metric helps in achieving the required governance on data sharing and interoperability and ensures that only source/authorized entity can share the data on GSB, hence improving the quality of data in Saudi Arabia.
Domain Name	Data Sharing and Interoperability (DSI)
Data Platforms	Government Service Bus (GSB) and National Data Catalog (NDC)
Definitions	• Number of API certified attributes • Total number of API attributes
Calculation	= Average adherence score for all entity's APIs, where the adherence score of one API is calculated as follows: = (w_1 * Number of the API certified attributes / Total number of API attributes + w_2 * c) * 100 where w_1 is the weight assigned to first criterion, w_2 is the weight assigned to second criterion, and c is 1 if the API is classified or 0 otherwise.
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	

Element Name	Element Details
Metric ID	DSI.OE.02
Metric Name	Systems integrated with NDL
Metric Description	This metric measures the percentage of systems shared by the entity with the National Data Lake (NDL) against the total number of the entity's systems requested by the NDL team. Note that a system will be considered integrated only if all required dimensions of its data are fully sourced to NDL. This metric aims to accelerate the efforts to enrich NDL with high-value and wide-spectrum data assets generated by various government entities. It also helps in

Element Name	Element Details
	achieving the goal of making NDL the unified single source of truth for analytical data assets.
Domain Name	Data Sharing and Interoperability (DSI)
Data Platforms	National Data Lake (NDL)
Definitions	• Number of systems integrated with NDL by the entity • Total number of the entity's systems requested by NDL
Calculation	= Number of systems integrated with NDL by the entity / Total number of the entity's systems requested by NDL * 100
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	

Element Name	Element Details
Metric ID	DSI.OE.03
Metric Name	Data sharing agreement processing
Metric Description	This metric measures the amount of time taken by the data producer to process the data sharing requests raised by the consumer entities. This metric considers the time taken for either approving or rejecting the requests as part of the processing time. This metric aims to improve data sharing and accessibility by optimizing the overall data sharing agreement approval lifecycle. It also helps accelerate data consumption by lowering the barriers to accessing the data required for decision-making and insight generation.
Domain Name	Data Sharing and Interoperability (DSI)
Data Platforms	Data Marketplace (DMP)
Definitions	• Time taken by the data producer entity to approve or reject all received data sharing agreements (in days) • Total number of data sharing agreements received by the producer entity
Calculation	= Time taken by the data producer entity to approve or reject all received data sharing agreements (in days) / Total number of data sharing agreements received by the producer entity
Measurement Unit	Days
Acceptable Threshold	10 Days

Element Name	Element Details
Scale Intervals	Unacceptable: > 10 days Low: (8 days, 10 days] Fair: (6 days, 8 days] Good: (4 days, 6 days] Excellent: (2 days, 4 days] Leader: <= 2 days
Version History	
Dependencies	

Element Name	Element Details
Metric ID	DSI.OE.04
Metric Name	Published APIs on GSB
Metric Description	This metric measures the percentage of APIs published by the entity on GSB against the total number of APIs required to be published by the entity. Note that an API will be considered published only if all required requirements are fully implemented in GSB. This metric aims to accelerate the efforts to enrich GSB and achieve the goal of making GSB the unified single source of truth for operational data assets.
Domain Name	Data Sharing and Interoperability (DSI)
Data Platforms	Government Service Bus (GSB)
Definitions	• Number of APIs published on GSB by the entity • Total number of APIs required to be published on GSB by the entity
Calculation	= Number of APIs published on GSB by the entity / Total number of APIs required to be published on GSB by the entity * 100
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	The total number of APIs to be published by each entity will be determined based on the size and nature of the business of that entity.

Element Name	Element Details
Metric ID	DSI.OE.05
Metric Name	Attributes published in Tawakkalna

Element Name	Element Details
Metric Description	This metric measures the percentage of attributes published by the entity on the 'Personal' page in Tawakkalna, under the relevant sections (Info, Cards, or Docs) depending on the attribute type against the total number of attributes required to be published by the entity on the 'Personal' page in Tawakkalna. This metric aims to accelerate the efforts in enriching Tawakkalna with comprehensive and diverse user attributes published by various government entities, and also seeks to strengthen the platform's role as the unified reference for government services and data.
Domain Name	Data Sharing and Interoperability (DSI)
Data Platforms	National Super App (Tawakkalna)
Definitions	• Number of attributes published by the entity on the 'Personal' page in Tawakkalna, under the relevant sections • Total number of attributes required to be published by the entity on the 'Personal' page in Tawakkalna, under the relevant sections
Calculation	= Number of attributes published by the entity on the 'Personal' page in Tawakkalna, under the relevant sections / Total number of attributes required to be published by the entity on the 'Personal' page in Tawakkalna, under the relevant sections * 100
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	The total number of attributes to be published by each entity will be determined based on the size and nature of the business of that entity.

5.2.2 Open Data (OD)

Element Name	Element Details
Metric ID	OD.OE.01
Metric Name	Datasets published in ODP
Metric Description	This metric measures the percentage of datasets published by the entity in ODP against the total number of datasets required to be published in ODP by the entity. This metric aims to expedite the efforts in enriching ODP with high-impact and wide-spectrum open datasets generated by various government entities. It also aims to increase the contribution of the platform towards the development of innovative services, applications, and new business ideas.
Domain Name	Open Data (OD)
Data Platforms	Open Data Platform (ODP)
Definitions	• Number of datasets published in ODP by the entity • Total number of datasets required to be published in ODP by the entity
Calculation	= Number of datasets published in ODP by the entity / Total number of datasets required to be published in ODP by the entity * 100
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	The total number of open datasets to be published by each entity will be determined based on the size and nature of the business of that entity.

Element Name	Element Details
Metric ID	OD.OE.02
Metric Name	Delay/Lag in refreshing open datasets
Metric Description	This metric measures the delay in refreshing the published datasets in ODP by the entity. It helps entities adhere to the refresh schedule (update frequency) for the published datasets. The prime focus of this metric is to improve data freshness by ensuring that datasets are updated according to the expected update frequency. This helps in providing data consumers with the most up-to-date data for various forms of consumption.
Domain Name	Open Data (OD)

Element Name	Element Details
Data Platforms	Open Data Platform (ODP)
Definitions	• Delay in refreshing a dataset (in days) by the entity according to the update frequency of the dataset • Update frequency of the dataset (in days) • Total number of datasets that have been published in ODP by the entity
Calculation	= Average delay percentage for all the entity's datasets, where the delay percentage of one dataset is calculated as: = Sum of the delay in refreshing the dataset (in days) by the entity according to its update frequency / (number of expected refreshes * update frequency of the dataset) * 100
Measurement Unit	Percentage
Acceptable Threshold	10%
Scale Intervals	Unacceptable: > 10% Low: (8%, 10%] Fair: (6%, 8%] Good: (4%, 6%] Excellent: (2%, 4%] Leader: <= 2%
Version History	
Dependencies	

Element Name	Element Details
Metric ID	OD.OE.03
Metric Name	Reported issues for the published datasets
Metric Description	This metric measures the average number of issues reported by the end users on the entity's published datasets in ODP. This metric aims to improve the overall quality of published datasets, given their far-reaching impact on the services, research, applications, and business models developed on top of them.
Domain Name	Open Data (OD)
Data Platforms	Open Data Platform (ODP)
Definitions	• Number of issues reported on the entity's published datasets in ODP • Total number of datasets published in ODP by the entity
Calculation	= Number of issues reported on the entity's published datasets in ODP / Total number of datasets published in ODP by the entity
Measurement Unit	Number of issues
Acceptable Threshold	5

Element Name	Element Details
Scale Intervals	Unacceptable: > 5 Low: (4, 5] Fair: (3, 4] Good: (2, 3] Excellent: (1, 2] Leader: <= 1
Version History	
Dependencies	

Element Name	Element Details
Metric ID	OD.OE.04
Metric Name	Delay in resolving reported issues on published datasets
Metric Description	This metric measures the delay in resolving the issues reported on the entity's published datasets in ODP. This metric aims to optimize the time for remediating the reported issues as the affected datasets have a far-reaching impact on the services, research, applications, and business models developed on top of them.
Domain Name	Open Data (OD)
Data Platforms	Open Data Platform (ODP)
Definitions	• Time taken by the entity to resolve an issue reported on a dataset (in days) • Expected resolution time (in days)
Calculation	= Average delay percentage for fixing all the issues reported on the entity's datasets, where the delay percentage associated with one issue is calculated as: = (Time taken by the entity to resolve an issue reported on a dataset – Expected resolution time of that issue) / Expected resolution time of that issue * 100
Measurement Unit	Percentage
Acceptable Threshold	10%
Scale Intervals	Unacceptable: > 10% Low: (8%, 10%] Fair: (6%, 8%] Good: (4%, 6%] Excellent: (2%, 4%] Leader: <= 2%
Version History	
Dependencies	Issues on ODP will be categorized based on their expected resolution time.

Element Name	Element Details
Metric ID	OD.OE.05

Element Name	Element Details
Metric Name	Response effectiveness to new open dataset requests
Metric Description	This metric measures the time taken to process the new open dataset requests raised to the entity on ODP. Note that a request process should result in either publishing the requested dataset on ODP or rejecting it in case of the unavailability of data at the entity, with the reasoning and justification. This metric measures the entity's responsiveness and efficiency in addressing user data requests, aiming to improve the overall user satisfaction and enrich the platform with high-impact and wide-spectrum open datasets.
Domain Name	Open Data (OD)
Data Platforms	Open Data Platform (ODP)
Definitions	• Time taken by the entity to process the request (in days) • Expected processing time (in days)
Calculation	= Average effectiveness for all the entity's requests, where the effectiveness of one request is calculated as: = (1 – ((Time taken by the entity to process the request – Expected processing time) / Expected processing time)) * 100
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	Expected processing time for different levels of request complexity will be determined by NDMO.

5.2.3 Data Catalog and Metadata (MCM)

Element Name	Element Details
Metric ID	MCM.OE.01
Metric Name	Systems cataloged in NDC
Metric Description	This metric measures the percentage of systems cataloged by the entity in NDC against the total number of the entity's critical systems. Note that a system is considered cataloged if its technical metadata is fully scanned and uploaded to NDC. This metric aims to accelerate the documentation of national data assets, allowing consumers to explore the business context of those assets with appropriate technical details, and improving data accessibility and discovery.
Domain Name	Data Catalog and Metadata (MCM)
Data Platforms	National Data Catalog (NDC)
Definitions	• Number of critical systems that have been cataloged in NDC by the entity • Total number of the entity's critical systems
Calculation	= Number of critical systems that have been cataloged in NDC by the entity / Total number of the entity's critical systems * 100
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	The number of critical systems that need to be cataloged by the entity will be determined based on the size and nature of the business of that entity.

Element Name	Element Details
Metric ID	MCM.OE.02
Metric Name	Business attributes defined and linked in NDC
Metric Description	This metric measures the percentage of business attributes that are defined and linked by the entity to technical columns in NDC against the total number of business attributes that the entity is required to define in NDC. This metric aims to accelerate the documentation of national data assets, allowing consumers to explore the business context of those assets with appropriate technical details, improving data accessibility and discovery.
Domain Name	Data Catalog and Metadata (MCM)

Element Name	Element Details
Data Platforms	National Data Catalog (NDC)
Definitions	• Number of system business attributes defined and linked by the entity to technical columns in NDC • Total number of system business attributes required to be defined by the entity
Calculation	= Average score for all the entity's systems, where the score of one system is calculated as: = Number of system business attributes defined and linked by the entity to technical columns in NDC / Total number of system business attributes required to be defined by the entity * 100
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	The total count of required business attributes for a system is determined based on the quantity and complexity of the business functions implemented in that system.

Element Name	Element Details
Metric ID	MCM.OE.03
Metric Name	Reporting assets defined in NDC
Metric Description	This metric measures the percentage of reporting assets (KPIs/metrics) that are defined in NDC by the entity against the total number of reporting assets that the entity is required to document in NDC. This metric helps in documenting the important analytics assets that will be made discoverable for other consumers to leverage for their analysis and decision-making. This, in turn, promotes the reusability of those authentic and verified assets to reduce the time to market for consumers.
Domain Name	Data Catalog and Metadata (MCM)
Data Platforms	National Data Catalog (NDC)
Definitions	• Number of reporting assets defined in NDC by entity • Total number of required reporting assets to be defined in NDC by entity
Calculation	= Number of reporting assets defined in NDC by the entity / Total number of required reporting assets to be defined in NDC by the entity * 100
Measurement Unit	Percentage
Acceptable Threshold	70%

Element Name	Element Details
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	The total number of required reporting assets to be defined is determined upon onboarding the entity to NDC based on its size and the number of its critical systems.

Element Name	Element Details
Metric ID	MCM.OE.04
Metric Name	Business attributes linked to attribute class standards in NDC
Metric Description	This metric measures the percentage of business attributes linked to attribute class standards in NDC by the entity against the total number of business attributes that are defined by that entity. This metric aims to accelerate the efforts for standardizing national data assets, improving the overall quality of data. It will ultimately help in achieving seamless data sharing and interoperability with full trust across business processes, applications, and systems.
Domain Name	Data Catalog and Metadata (MCM)
Data Platforms	National Data Catalog (NDC)
Definitions	• Number of business attributes linked to attribute class standards in NDC by the entity • Total number of business attributes defined in NDC by the entity
Calculation	= Number of business attributes linked to attribute class standards in NDC by the entity / Total number of business attributes defined in NDC by the entity * 100
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	

Element Name	Element Details
Metric ID	MCM.OE.05
Metric Name	Accuracy of business attribute relationships in NDC
Metric Description	This metric measures the percentage of issues reported on the business attributes that are incorrectly linked to other metadata objects in NDC (e.g., business attributes linked to incorrect attribute class standards, incorrect technical columns, or incorrect measures). This metric aims to enhance the accuracy of the metadata, which in turn increases the quality and reliability of consumer analyses and decision-making.
Domain Name	Data Catalog and Metadata (MCM)
Data Platforms	National Data Catalog (NDC)
Definitions	• Number of incorrectly linked business attributes defined in NDC by the entity • Total number of business attributes defined in NDC by the entity
Calculation	= Number of business attributes incorrectly linked by the entity in NDC / Total number of business attributes defined in NDC by the entity * 100
Measurement Unit	Percentage
Acceptable Threshold	10%
Scale Intervals	Unacceptable: > 10% Low: (8%, 10%] Fair: (6%, 8%] Good: (4%,6%] Excellent: (2%, 4%] Leader: <= 4%
Version History	
Dependencies	

5.2.4 Reference and Master Data Management (RMD)

Element Name	Element Details
Metric ID	RMD.OE.01
Metric Name	Publishing reference entities
Metric Description	This metric measures the percentage of standardized reference entities (tables) that are published by the entity on the GSB against the number of reference entities (produced by that entity) that are required by government entities to perform their business functions. This metric aims to accelerate the standardization of reference values, which is required by different business processes for trusted reference data interoperability.
Domain Name	Reference and Master Data Management (RMD)
Data Platforms	Government Service Bus (GSB) and Reference Data Management Platform (RDP)
Definitions	• Number of published reference entities by the entity on GSB • Total number of reference entities that are expected to be published by the entity
Calculation	= Number of published reference entities by the entity on GSB / Total number of reference entities that are expected to be published by the entity * 100
Measurement Unit	Percentage
Acceptable Threshold	90%
Scale Intervals	Unacceptable: <= 90% Low: (90%, 92%] Fair: (92%, 94%] Good: (94%, 96%] Excellent: (96%, 98%] Leader: > 98%
Version History	
Dependencies	

Element Name	Element Details
Metric ID	RMD.OE.02
Metric Name	Time taken to publish new reference entities
Metric Description	This metric measures the average time it takes for the entity to publish new reference entities requested by other entities on GSB. This metric aims to improve the overall availability of reference values, fostering agility for building accurate business services, analysis, and reference data interoperability.
Domain Name	Reference and Master Data Management (RMD)

Element Name	Element Details
Data Platforms	Government Service Bus (GSB) and Reference Data Management Platform (RDP)
Definitions	• Total time taken by the entity to publish a reference entity on GSB (in days) • Total number of reference entities that are published by the entity
Calculation	= Sum of total time taken by the entity to publish its reference entities on GSB (in days) / Total number of reference entities that are published by the entity
Measurement Unit	Days
Acceptable Threshold	30 Days
Scale Intervals	Unacceptable: > 30 days Low: (25 days, 30 days] Fair: (20 days, 25 days] Good: (15 days, 20 days] Excellent: (10 days, 15 days] Leader: <= 10 days
Version History	
Dependencies	

Element Name	Element Details
Metric ID	RMD.OE.03
Metric Name	Time taken to fix reported issues in reference entities
Metric Description	This metric measures the average time it takes for the entity to resolve an issue reported on its reference entities that are published on GSB. This metric aims to minimize and contain data quality issues across government systems and applications. It also helps maintain the quality of the outcomes pertaining to analyses, business processes, and data interoperability, as incorrect or missing reference values will negatively impact consumer experience and trust.
Domain Name	Reference and Master Data Management (RMD)
Data Platforms	Government Service Bus (GSB) and Reference Data Management Platform (RDP)
Definitions	• Time taken by the entity to resolve a reported issue related to its reference entities (in days) • Total number of reported issues related to the entity's reference entities published on GSB
Calculation	= Sum of time taken by the entity to resolve a reported issue related to its reference entities (in days) / Total number of reported issues related to the entity's reference entities published on GSB
Measurement Unit	Days
Acceptable Threshold	5 Days
Scale Intervals	Unacceptable: > 5 days Low: (4 days, 5 days] Fair: (3 days, 4 days]

Element Name	Element Details
	Good: (2 days, 3 days] Excellent: (1 days, 2 days] Leader: <= 1 day
Version History	
Dependencies	

5.2.5 Data Quality (DQ)

Element Name	Element Details
Metric ID	DQ.OE.01
Metric Name	Data Quality (DQ) index in GSB
Metric Description	This metric calculates the average DQ index of the entity's data that is shared on GSB by applying DQ rules that span across the various DQ dimensions on all of the entity's GSB attributes. Note that DQ rules and attributes have a many-to-many relationship. That is, a DQ rule can be applied to more than one attribute and there can be more than one rule associated with the same attribute. The notation "Rule, Attribute" will be used to refer to a pair of DQ rules applied to an attribute. A record is considered clean with regards to a DQ rule only if the attribute on which the DQ rule is applied passes the logic implemented within that rule. This metric aims to improve the quality of the data required for business process integration and ensure trust and seamless interoperability of data in Saudi Arabia.
Domain Name	Data Quality (DQ)
Data Platforms	Government Service Bus (GSB)
Definitions	• Total number of clean records for an attribute checked by a DQ rule • Total number of records checked by the DQ rule
Calculation	"Attribute, Rule" index = (Total number of clean records for the attribute checked by the DQ rule / Total number of records checked by the DQ rule) * 100 The "Attribute, Rule" index is subsequently rolled up using weightages applied to both attributes and DQ rules to calculate the DQ index of the entity.
Measurement Unit	Percentage
Acceptable Threshold	90%
Scale Intervals	Unacceptable: <= 90% Low: (90%, 92%] Fair: (92%, 94%] Good: (94%, 96%] Excellent: (96%, 98%] Leader: > 98%
Version History	
Dependencies	

Element Name	Element Details
Metric ID	DQ.OE.02
Metric Name	Conformance to data standards in NDL
Metric Description	This metric calculates the conformance value of the entity's data that is integrated in NDL by applying DQ rules that measure the degree of conformity of that data against the data standards published in the National Data Catalog (NDC). Entities have a large number of attributes integrated in NDL. However, only a sample of these attributes will be considered in the calculation of this index. Note that a DQ rule can be applied to more than one attribute. The notation "Rule, Attribute" will be used to refer to a pair of DQ rules applied to an attribute. A record is considered clean with regards to a DQ rule if the attribute on which the DQ rule is applied passes the logic implemented within that rule. This metric aims to improve the quality of the data within NDL, providing consumers with high-fidelity data for their decision-making needs. It also supports identifying and prioritizing the key areas of focus for improving the overall quality of national data assets.
Domain Name	Data Quality (DQ)
Data Platforms	National Data Lake (NDL)
Definitions	• Total number of clean records for an attribute checked by a DQ rule • Total number of records checked by the DQ rule
Calculation	"Attribute, Rule" index = (Total number of clean records for the attribute checked by the DQ rule / Total number of records checked by the DQ rule) * 100 The score for one system is calculated by rolling up the "Attribute, Rule" index scores for all the system's attributes using weightages applied to both attributes and DQ rules. The final score for the entity is the average score of all the entity's systems.
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	

Element Name	Element Details
Metric ID	DQ.OE.03
Metric Name	Attributes Availability for Correction in Tawakkalna
Metric Description	This metric measures the percentage of user attributes published by the entity on the 'Personal' page in Tawakkalna under the respective sections that can be corrected through the platform, relative to the total number of attributes eligible for correction. The objective of this metric is to enhance data accuracy and user control by enabling individuals to correct their personal information through a unified, secure, and user-friendly interface. It supports the broader goal of improving service quality and advancing the digital transformation by promoting transparent and user-centric data management.
Domain Name	Data Quality (DQ)
Data Platforms	National Super App (Tawakkalna)
Definitions	• Number of attributes made available by the entity for correction on the 'Personal' page in Tawakkalna, under the relevant sections • Total number of the entity's attributes eligible for correction on the 'Personal' page in Tawakkalna, under the relevant sections
Calculation	= Number of attributes made available by the entity for correction on the 'Personal' page in Tawakkalna, under the relevant sections / Total number of the entity's attributes eligible for correction on the 'Personal' page in Tawakkalna, under the relevant sections * 100
Measurement Unit	Percentage
Acceptable Threshold	70%
Scale Intervals	Unacceptable: ≤ 70% Low: (70%, 75%] Fair: (75%, 80%] Good: (80%, 85%] Excellent: (85%, 90%] Leader: > 90%
Version History	
Dependencies	The total number of attributes eligible for correction by each entity will be determined based on the size and nature of the business of that entity.

5.2.6 Data Operations (DO)

Element Name	Element Details
Metric ID	DO.OE.01
Metric Name	Delay in response time of GSB APIs
Metric Description	This metric measures the delay in the response time of the entity's GSB APIs after subtracting the time taken by the GSB platform. This metric only considers the actual processing time incurred by the entity after receiving a request from the consumer. This metric aims to improve business process integration and interoperability, and hence enhance the consumer experience and application resilience.
Domain Name	Data Operations (DO)
Data Platforms	Government Service Bus (GSB)
Definitions	• Response time of an API, which is the amount of time (in milliseconds) taken by the API to process a request and generate a response • Expected response time of the API (in milliseconds) • Number of calls for an API
Calculation	= Average delay percentage for all the entity's APIs, where the delay percentage of one API is calculated as: = Sum of delay in response time of all API's calls / (Number of calls for an API * expected response time of the API) * 100 where the delay in response time of an API call is calculated as follows: = Response time of the API – GSB latency – expected response time of the API
Measurement Unit	Percentage
Acceptable Threshold	10%
Scale Intervals	Unacceptable: > 10% Low: (8%, 10%] Fair: (6%, 8%] Good: (4%, 6%] Excellent: (2%, 4%] Leader: <= 2%
Version History	
Dependencies	The expected response time of an API will be determined based on its processing complexity and payload size. Prior to measuring this metric, all APIs of each entity will need to be categorized into a defined set of categories in order to determine their expected response time.

Element Name	Element Details
Metric ID	DO.OE.02

Element Name	Element Details
Metric Name	Responsiveness of GSB API calls
Metric Description	This metric measures the responsiveness of the entity APIs that are published on GSB by calculating the percentage of failed API calls invoked by the consumer applications on the APIs against the total number of API calls. Note that a failed API call refers to the scenario where the consumer application receives an error of any type from the called API. This metric aims to improve the resilience of GSB APIs, hence increasing the efficiency of business functions and processes, and enhancing the consumer experience.
Domain Name	Data Operations (DO)
Data Platforms	Government Service Bus (GSB)
Definitions	• Total number of API calls • Number of API calls failed due to operational issues from the entity
Calculation	= Average responsiveness score for all entity's APIs, where the responsiveness of one API is calculated as follows: = (Total number of the API calls – Number of the API calls failed due to operational issues from the entity) / Total number of the API calls * 100
Measurement Unit	Percentage
Acceptable Threshold	94%
Scale Intervals	Unacceptable: <= 94% Low: (94%, 95%] Fair: (95%, 96%] Good: (96%, 97%] Excellent: (97%, 98%] Leader: > 98%
Version History	
Dependencies	

Element Name	Element Details
Metric ID	DO.OE.03
Metric Name	Responsiveness of the integration solution with NDL
Metric Description	This metric measures the responsiveness of the integration solution implemented by the entity by calculating the percentage of operational issues encountered by NDL against the number of data pipeline executions with the respective entity. Note that an execution is considered failed only if it is caused by an operational issue from the entity. This metric will be measured by NDL for each source entity with which NDL has operated data pipelines.

Element Name	Element Details
	The prime focus of this metric is to improve data currency by reducing recurring errors and issues. This will help in providing consumers with the most up-to-date data for various forms of consumption.
Domain Name	Data Operations (DO)
Data Platforms	National Data Lake (NDL)
Definitions	• Number of failed pipeline executions caused by operational issues from the entity • Total number of data pipeline executions with the entity
Calculation	= Average responsiveness score for all entity's systems, where the responsiveness score of one system is calculated as follows: = (Total number of the system's data pipeline executions - Number of failed pipeline executions caused by operational issues from the entity) / Total number of the system's data pipeline executions * 100
Measurement Unit	Percentage
Acceptable Threshold	94%
Scale Intervals	Unacceptable: <= 94% Low: (94%, 95%] Fair: (95%, 96%] Good: (96%, 97%] Excellent: (97%, 98%] Leader: > 98%
Version History	
Dependencies	

6 Measurement Approach

Each government entity will be measured against these metrics on an annual basis. Each year/round will have a different prioritization based on various factors such as importance, availability of required metadata, and criticality of the metrics. These factors will be translated into the weights of the metrics.

7 References

[1]. National Data Management Office – Data Management and Personal Data Protection Standards (https://sdaia.gov.sa/ndmo/Files/PoliciesEn001.pdf)