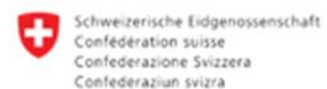# Data Analytics to Improve Decision-Making Process at the Directorate General of Treasury, Ministry of Finance, Indonesia

February 2025

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Overview

💡 **Background**

The Minister of Finance of the Republic of Indonesia has declared that the Ministry of Finance holds a significant amount of data, which can be considered a new type of resource in the digital era, often referred to as **data mines**. It is crucial that this data is processed and understood comprehensively.

Recognizing **the value of data-driven insights**, the Ministry has instructed its senior management **to utilize Artificial Intelligence (AI), Big Data, and Data Analytics for strategic purposes.**

In response, **senior management has acknowledged the transformative potential of these insights and initiated the development and implementation of a Data Analytics Readiness Assessment (DARA).** This assessment will serve as a reference for the Directorate General of Treasury and its subsidiaries, aiding in the creation of a data environment that effectively supports the Ministry's strategic objectives.

Data Analytics Readiness Assessment (DARA)

Data Analytics is the process of **collecting, processing, and analyzing various types of data** to uncover **insights** and drive **strategic decisions**. It helps organizations **understand complex patterns** and make **informed decisions**.

Data Analytics Readiness Assessment (DARA) is designed to review the readiness of an organization engage with data analytics. This assessment ensures that the organization has the right **infrastructure, skills, and governance** structures in place to effectively integrate data analytics into its operations.

By leveraging data analytics, organizations can **transform raw data into actionable insights** that guide **strategic decisions** and foster **continuous improvement.**

Objectives and Benefits

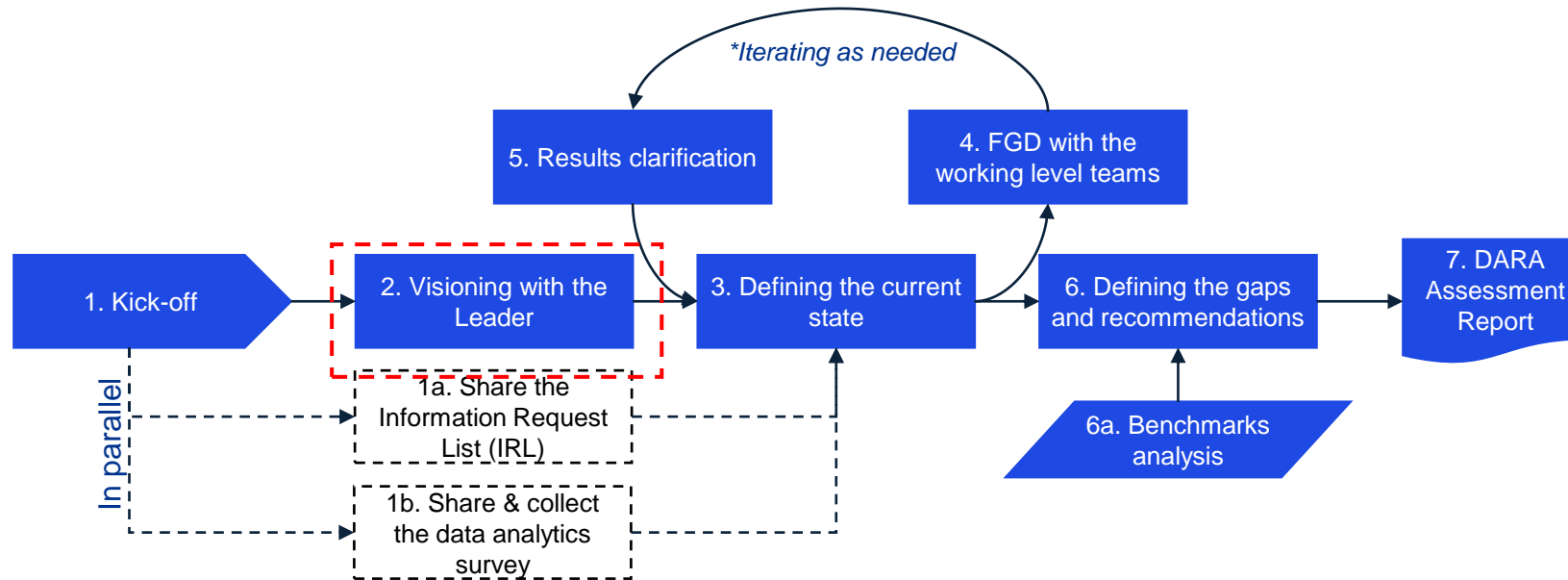| Understand the Current Condition of Data Analytics Demand and Supply	Identify Data Analytics Opportunities and Areas for Development	Provide Actionable Recommendations and Initiatives to Enhance Data Analytics
The DARA will help identify specific data analytics demands from senior management and evaluate the current capabilities and resources available for data analytics. DARA can lead to better alignment of data analytics efforts with the strategic objectives while revealing strengths and weaknesses for targeted improvements.	The DARA can inspire innovation and provide valuable initiatives for enhancing data analytics while also highlighting areas where additional data analytics capabilities should be developed to better support senior management decision-making.	The DARA aims to provide actionable recommendations tailored to the needs of the organization, ensuring that the assessment's benefits are translated into concrete actions that drive organizational improvement.

DARA Assessment Approach Consists of Four Elements

The following are the main assessment points of the Data Analytics Readiness Assessment (DARA), which are used as a reference in conducting assessments at DG Treasury.

DARA Assessment

DARA Indicator Readiness Level
Conduct observations by distributing an Information Request List (IRL) and asking questions based on the Information Request List (IRL) to obtain indicators in the form of procedures, documents, reports, etc. that follow the DARA methodology which can describe the conditions of data analysis in the DG Treasury environment.

Survey
Share a list of questions to get answers regarding employee profiles, employee aspirations, and employee satisfaction with data analysis at DG Treasury to find out the data analysis condition based on the employee's point of view

Use Case & Benchmark
Collecting use case of analytical data within DG Treasury from 9 directorates to identify possible improvements to existing use cases and recommend the implementation of new use cases that can improve DG Treasury performance.

Visioning
Conduct interviews with management level to get a clear picture from management's perspective regarding satisfaction with data analysis and hopes for future data analysis

How we approach our assessment to define the current state, gaps, and recommendations

Iterating as needed

5. Results clarification

4. FGD with the working level teams

1. Kick-off

2. Visioning with the Leader

3. Defining the current state

6. Defining the gaps and recommendations

7. DARA Assessment Report

In parallel

1a. Share the Information Request List (IRL)

1b. Share & collect the data analytics survey

6a. Benchmarks analysis

1 Conduct project kick-off meeting with Directorate General of Treasury (DG Treasury)

1a The IRL will be shared and prepared in conjunction with the visioning session and will be displayed during the FGD session.

1b A survey link will be distributed to collect information on current conditions.

2 Interviewed DG Treasury senior management related to data analytics and gathered their opinions and expectations,

3 Identify the current state with reference to the FGD iterations, leaders' vision, demonstrated IRLs, and survey results.

4 Bottom-up approach to collect real issues on the ground and confirm IRL fulfillment as readiness indicators

5 Presenting our findings regarding their current state and clarifying with directorates to ensure the right indicators are met.

6 Comparing current conditions with benchmarks, leader expectations, and other best practices to determine recommendations.

6a Looking for relevant benchmark use cases from other entities as one of the inputs in defining gaps and recommendations.

7 Group similar recommendations into a data analytics initiative.

The visioning exercise was conducted in parallel with activity 6. defining the gaps and recommendations, as it followed the schedule of the DG Treasury directors.

DARA Subtopics Measured by Readiness Level in a Directorate level
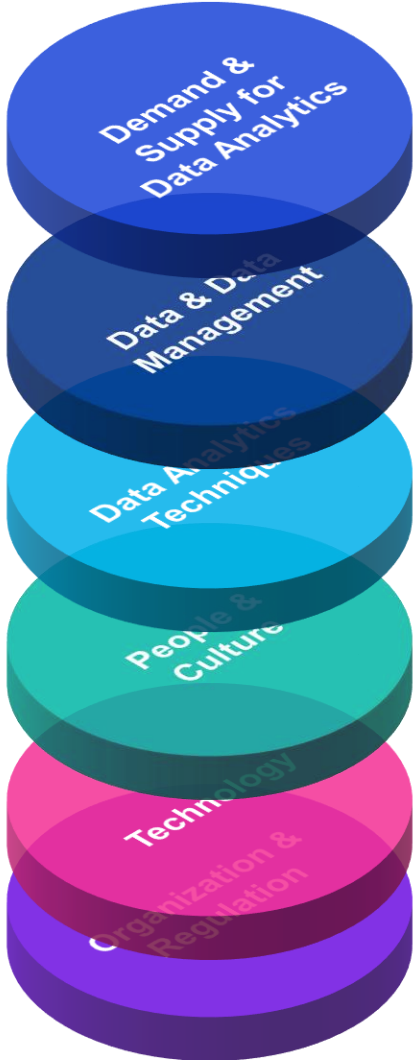
There are **six topics** with **twenty-three sub-topics identified**

Opportunity Identification	Usage Evaluation Review	

01 **Demand & Supply for Data Analytics**

Identifies and assesses specific senior management demands and the quality of the data analytics supply to improve decision-making.

Data Management Strategy	Data Quality Framework	Data Quality Assurance
Data Collection	Data Access & Sharing	

02 **Data & Data Management**

Identifies new opportunities to leverage existing data and acknowledges gaps for current and future use cases.

Organize Structured Data	Organize Unstructured Data	Data Analysis
Data Visualization	Reporting and Distribution	

03 **Data Analytics Techniques**

Identifies and maps the techniques currently used by operational teams, as well as the level of Readiness.

Career and Learning Development	Workforce and Performance Management
Community	

04 **People & Culture**

Identifies and produces a detailed mapping and profile of staff directly producing data analytics.

Planning Review	Physical Resources	Data Repository
Analytics Services	Visualization Tools	

05 **Technology**

Identifies existing infrastructure (usage and potential gaps) and core data management issues.

Policies and Procedures	Leadership	Organizational Design

06 **Organization & Regulation**

Identifies potential organizational constraints and enablers for data analytics, as well as informal structures that have fostered this work.

Demand & Supply for Data Analytics

Data & Data Management

Data Analytics Techniques

People & Culture

Technology

Organization & Regulation

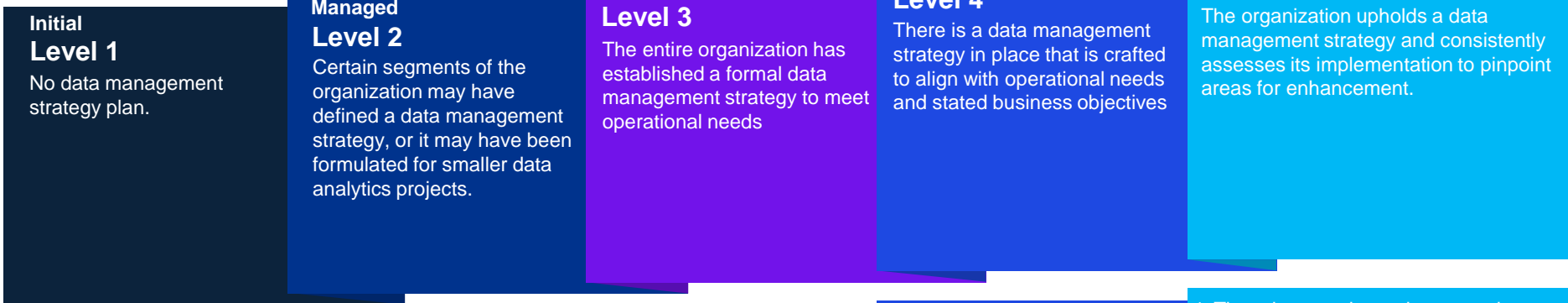# Data & Data Management: Data Management Strategy (Example)

🔑 Key Points

1. Identifies new opportunities to leverage existing data and acknowledges gaps for current and future use cases.
2. Provides insights into the data pipeline aspect of the data management.
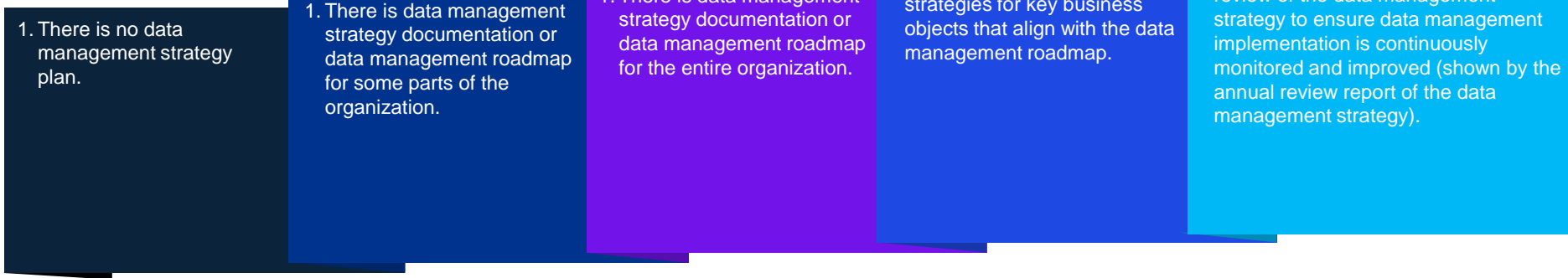
💡 Subtopic Definition

The targets, aims, and fixed procedures for prioritizing data management within the organization's data governance structure.
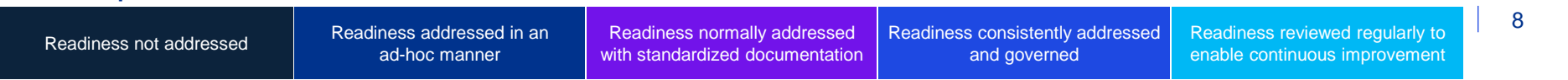
Readiness Levels

Initial **Level 1**	Managed **Level 2**	Defined **Level 3**	Quantitively Managed **Level 4**	Optimizing **Level 5**
No data management strategy plan.	Certain segments of the organization may have defined a data management strategy, or it may have been formulated for smaller data analytics projects.	The entire organization has established a formal data management strategy to meet operational needs	There is a data management strategy in place that is crafted to align with operational needs and stated business objectives	The organization upholds a data management strategy and consistently assesses its implementation to pinpoint areas for enhancement.

Indicator

1. There is no data management strategy plan.	1. There is data management strategy documentation or data management roadmap for some parts of the organization.	1. There is data management strategy documentation or data management roadmap for the entire organization.	1. There are data management strategies for key business objects that align with the data management roadmap.	1. There is a regular and systematic review of the data management strategy to ensure data management implementation is continuously monitored and improved (shown by the annual review report of the data management strategy).

General Explanation of The Levels

Readiness not addressed	Readiness addressed in an ad-hoc manner	Readiness normally addressed with standardized documentation	Readiness consistently addressed and governed	Readiness reviewed regularly to enable continuous improvement

DARA Readiness Level Result

The DARA Readiness Level is assessed on **subtopic levels** to get a detailed understanding of existing conditions.

Important things for *Readiness Level*

This highlights the necessity for standardization and ongoing reviews, which will be addressed in the gaps and recommendations.	This area shows the need for attention in the implementation of data analytics, highlighting for improvement in this area so that it can improve Data analytics capabilities in the D.G. Treasury's environment.

Data Topics	DARA Subtopics Need to Improve
Demand & Supply for Data Analytics	Opportunity Identification
	Usage Evaluation Review
Data & Data Management	Data Quality Framework
	Data Quality Assurance
Data Analytics Techniques	Organize Unstructured Data
	Data Visualization
Technology	Physical Resource
	Data Repository

Recommendation

DARA Assessment Topic	Recommendation
Demand & Supply for Data Analytics	• Establish and enforce **standard operating procedures (SOPs)** to **improve governance in identifying data analytics opportunities** • Establish and enforce **standard operating procedures (SOPs) to manage user feedback**.
Data & Data Management	• **Align data management strategies with organizational goals** by establishing clear **standard policies and procedures(SOP)** • **Implementing** standardized **procedure** to **manage data integration,** including **managing supporting tools** such as **ETL Tools** • **Implementation of Data Quality and catalog tools,** then **developing access policies** according to **the roles created.**
Data Analytics Techniques	• To enhance data analytics in organizations by identifying and aligning prescriptive data analysis use cases with organizational objectives and governing **the evaluation of data analytics within the** data science lifecycle. • Conduct **hands-on training** for the team on analytics techniques and technologies for unstructured data and organize workshops for management to raise awareness of the benefits of using **unstructured data**. • **Establish standards and user guides for data visualization** to streamline the development process, promote best practices, and **manage reports and distribution** for **automation**.

Recommendation (cont'd)

DARA Assessment Topic	Recommendation
People and Culture	• **Establish standard procedures and policies for career development** for data analysis roles and **periodically review adjustment procedures.** • **Established a formal data analyst community specific within the DG Treasury** to exchange experiences and increase collaboration through **activities and programs aimed at improving the implementation of data analytics** within the DG Treasury more massively.
Technology	• Evaluate and **develop technology development plans** that include **data analysis technology.** • **Develop standard documentation for physical resources** related to data technologies • **Establishing a centralized data repository with appropriate design.** • **Invest in standardized tools and resources** for effective data visualization, data analytics, and data integration coupled with staff training and the establishment of guidelines for each tools
Organization & Regulation	• Standardizing all policies and procedures regarding data analytics within DG Treasury is recommended to address gaps in organization and regulations for data analytics readiness. • **Set standards related to data-driven decision-making for consistency.** • **Establish a clear organizational structure for data analytics** in each directorate of DG Treasury.

The Data Analytics development roadmap consists of 30 projects (example)

The improvement of data analysis in the future focuses on 4 Directorates, which are the main business processes of DG Treasury in accordance with the direction of the Secretariat of the Directorate General.

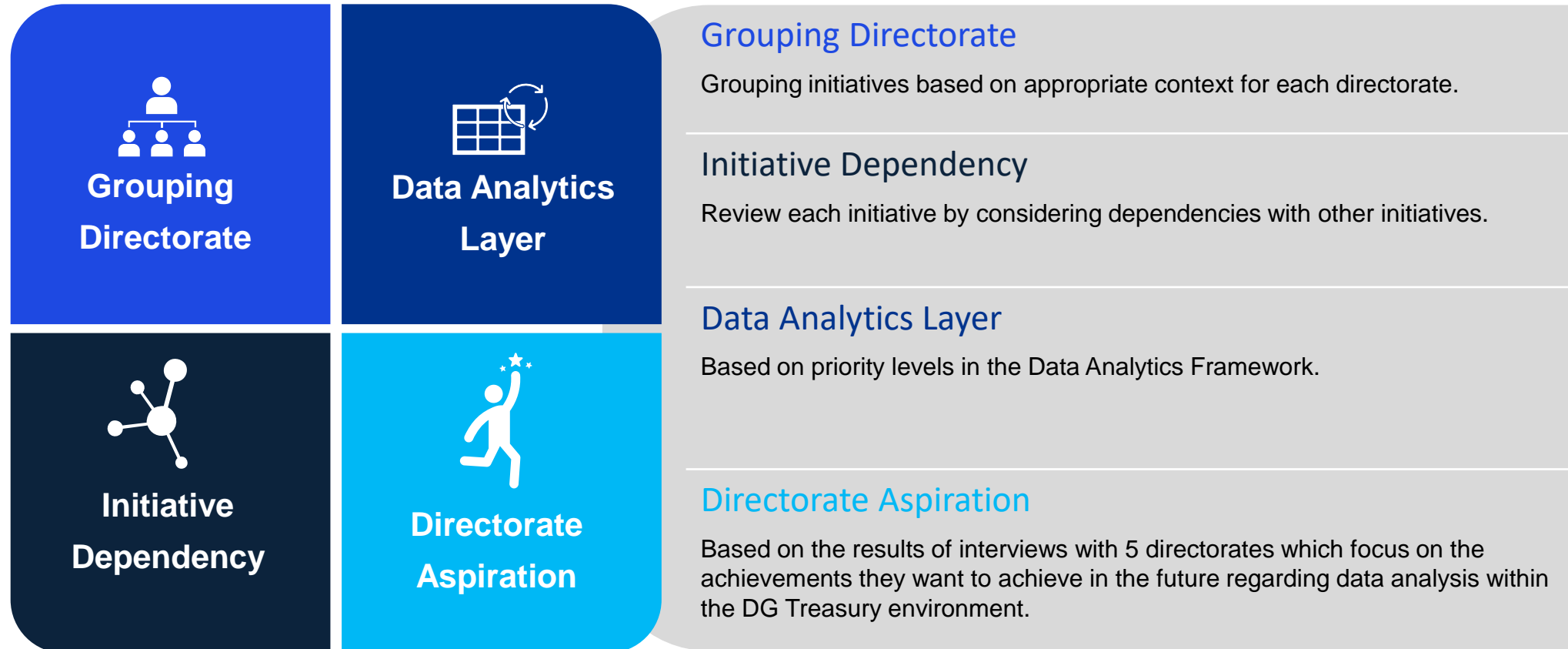**A** Based on the Assessment Results Report, Gap Analysis, and **Recommendations**

30

Total Project Initiatives from Recommendation Grouping Results

B **A total of 30 project initiatives have been identified** from the categorization of 78 initial recommendations based on the context of activities.

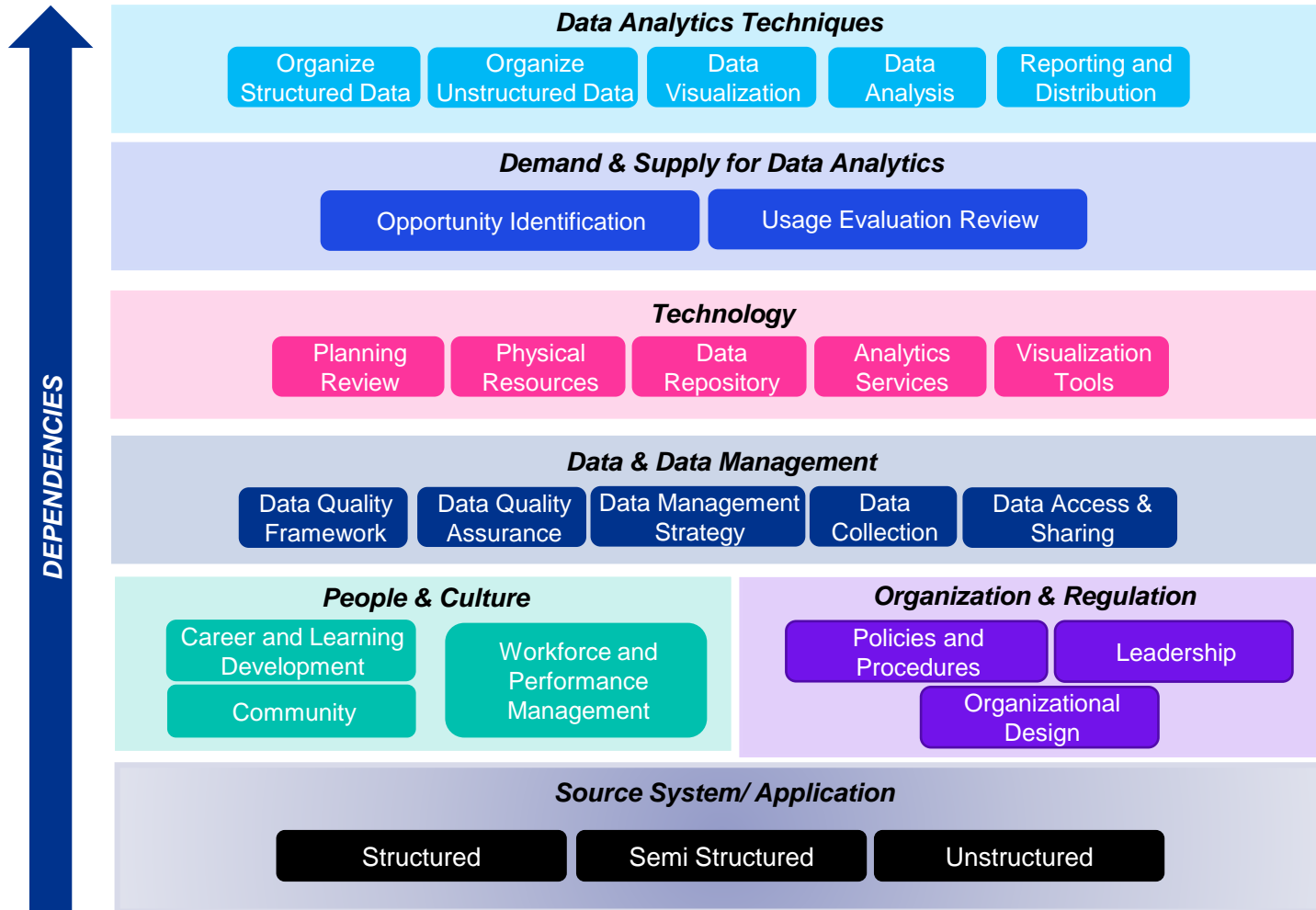| Code	Project Initiatives
PC-1	Development and Implementation of Data Analytics Governance
PC-2	Data Warehouse Enhancement
PC-3	Implementation of Data Quality and Data Catalog Tools
PC-4	Implementation of Identity and Access Management (IAM) Tools or Systems
PC-5	Big Data Platform Enhancement
PC-6	Data Analytics Tools Standardization
PC-7	Improvement of Machine Learning Models for Government Financial Distress
PC-8	Enhancement of Fraud Detection Capabilities in Village Fund Distribution
PC-9	Improvement of the Incrima Early Warning System (EWS) Dashboard
PC-10	Development and Application of Machine Learning to Detect Anomalies in the Government Payment Platform (PPP)
PC-11	Enhancement of Simulation Capabilities for State Budget (APBN) Realization Projections
PC-12	Data Analytics Training and Certification
PC-13	Development of Data Analytics in DG Treasury Organizational Management

Project Initiative for The Directorate of Treasury Information Systems and Technology

Project Initiative for The Secretariat of the Directorate General

Project Initiative for The Directorate of State Cash Management

Project Initiative for The Directorate of Investment Management System

C As output: **proposed implementation roadmap** for each proposed project

The Prioritization was made by considering the Output and Dependencies of Each Directorate's Initiatives, Management Aspirations, and Data Management Layer Priority Levels

Grouping Directorate

Data Analytics Layer

Initiative Dependency

Directorate Aspiration

Grouping Directorate

Grouping initiatives based on appropriate context for each directorate.

Initiative Dependency

Review each initiative by considering dependencies with other initiatives.

Data Analytics Layer

Based on priority levels in the Data Analytics Framework.

Directorate Aspiration

Based on the results of interviews with 5 directorates which focus on the achievements they want to achieve in the future regarding data analysis within the DG Treasury environment.

The Data Analytics Layer Framework as a basis for prioritizing DARA initiatives (example)

DEPENDENCIES

Data Analytics Techniques
- Organize Structured Data
- Organize Unstructured Data
- Data Visualization
- Data Analysis
- Reporting and Distribution

Demand & Supply for Data Analytics
- Opportunity Identification
- Usage Evaluation Review

Technology
- Planning Review
- Physical Resources
- Data Repository
- Analytics Services
- Visualization Tools

Data & Data Management
- Data Quality Framework
- Data Quality Assurance
- Data Management Strategy
- Data Collection
- Data Access & Sharing

People & Culture
- Career and Learning Development
- Community
- Workforce and Performance Management

Organization & Regulation
- Policies and Procedures
- Leadership
- Organizational Design

Source System/ Application
- Structured
- Semi Structured
- Unstructured

Prioritization looks at the level of dependence of layers with other layers.

Where the resource for data management is the data itself which has various types of data including structured, semi-structured, and unstructured.

The People & Culture and Organization and Regulation layers are the main layers for managing data sources to produce good data analytics results.

The Data & Data Management layer ensures that the data managed has good data quality, is integrated, and is accessed by users who have been determined.

The Technology and Demand & Supply for Data Analytics layer is a layer to identify data analytics opportunities, develop data analytics plans, analyze and process the data that has been obtained, and review the use of data analytics.

The Data Analytics Techniques layer ensures how to manage and present the right data as needed.

Proposed Roadmap to Realize Data Analysis Readiness in the DG Treasury Environment – Treasury Information System &Technology Directorate (example)

Project Code	Project Categories	Project Initiative	Work Estimations	Dependencies	Remarks	2025	2026	2027
PC-1	Consultancy Services	Development and Implementation of Data Analytics Governance	12 Months			■		
PC-2	Implementation	Data Warehouse Enhancement	12 Months			■		
PC-3	License, Implementation	Implementation of Data Quality and Data Catalog Tools	6 months	PC-1		■		
PC-5	Implementation	Big Data Platform Enhancement			Aligning with Treasury Big Data Project	■	■	■
PC-6	Consultancy Services	Data Analytics Tools Standardization	4 months	PC-1		■		
PC-7	Implementation	Improvement of Machine Learning Models for Government Financial Distress	4 months	PC-2, PC-6			■	

■ Main Focus Initiative