

# **DATA GOVERNANCE AND ENTERPRISE INFORMATION SYSTEMS**

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# DATA GOVERNANCE

- Data governance refers to the exercise of authority and control over the management of data.
- The purpose of data governance is to increase the value of data and minimize data-related cost and risk.

# DATA GOVERNANCE COMPONENTS IN EIS

Human Capital Management  
(HCM)

Small and Medium-sized  
Enterprises (SME)

Enterprise Information  
Management (EIM)

Smart City Infrastructure

# HUMAN CAPITAL MANAGEMENT (HCM)



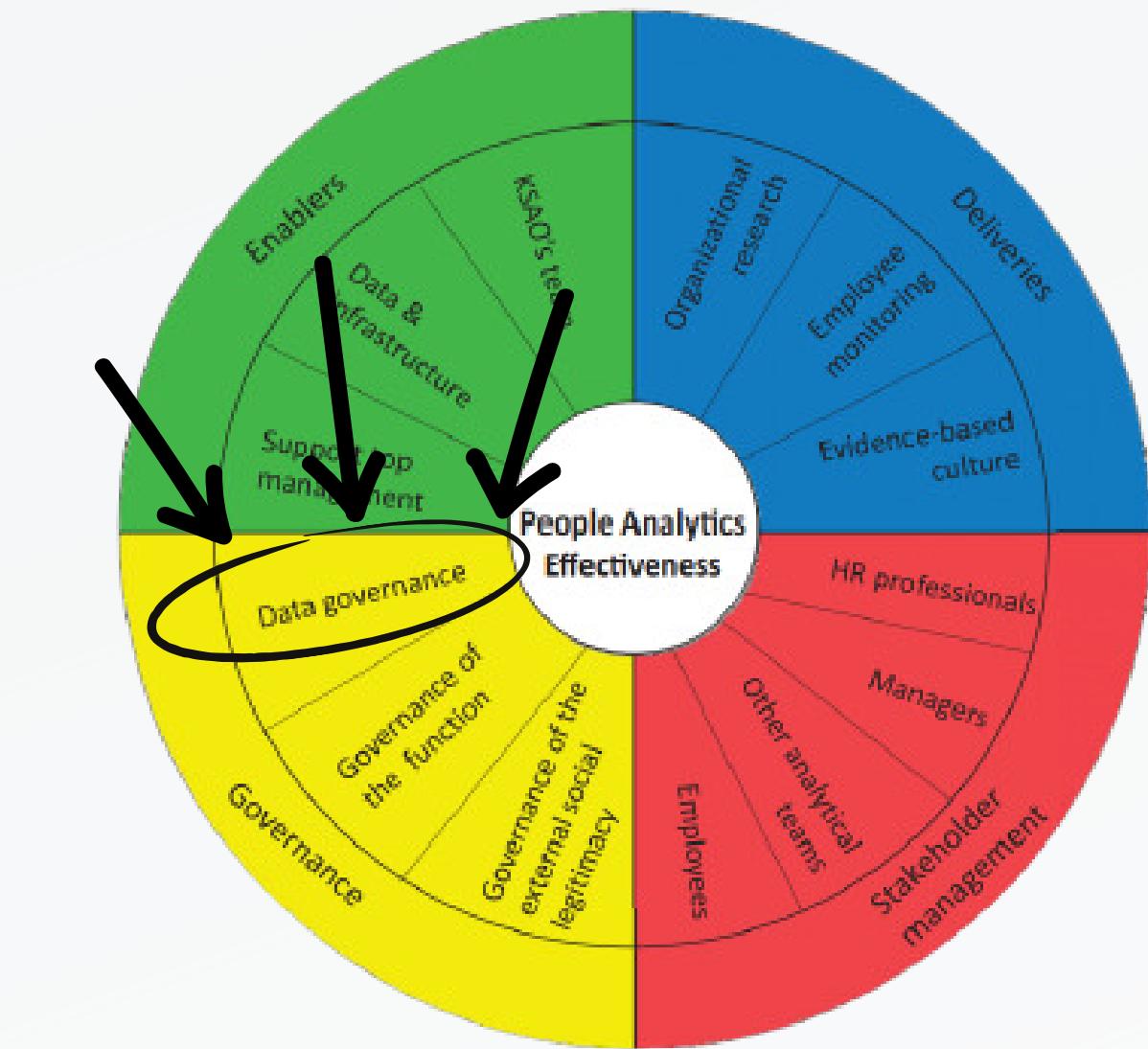
View employees as valuable assets or investments.



Integration with Data Analytics (DA) - People Analytics (PA) optimizes HR initiatives.



Rise in data management challenges.



People Analytics Effectiveness Wheel

# WHY DAMA-DMBOK 2 FRAMEWORK IS CHOSEN?

## 1. COMPREHENSIVE COVERAGE

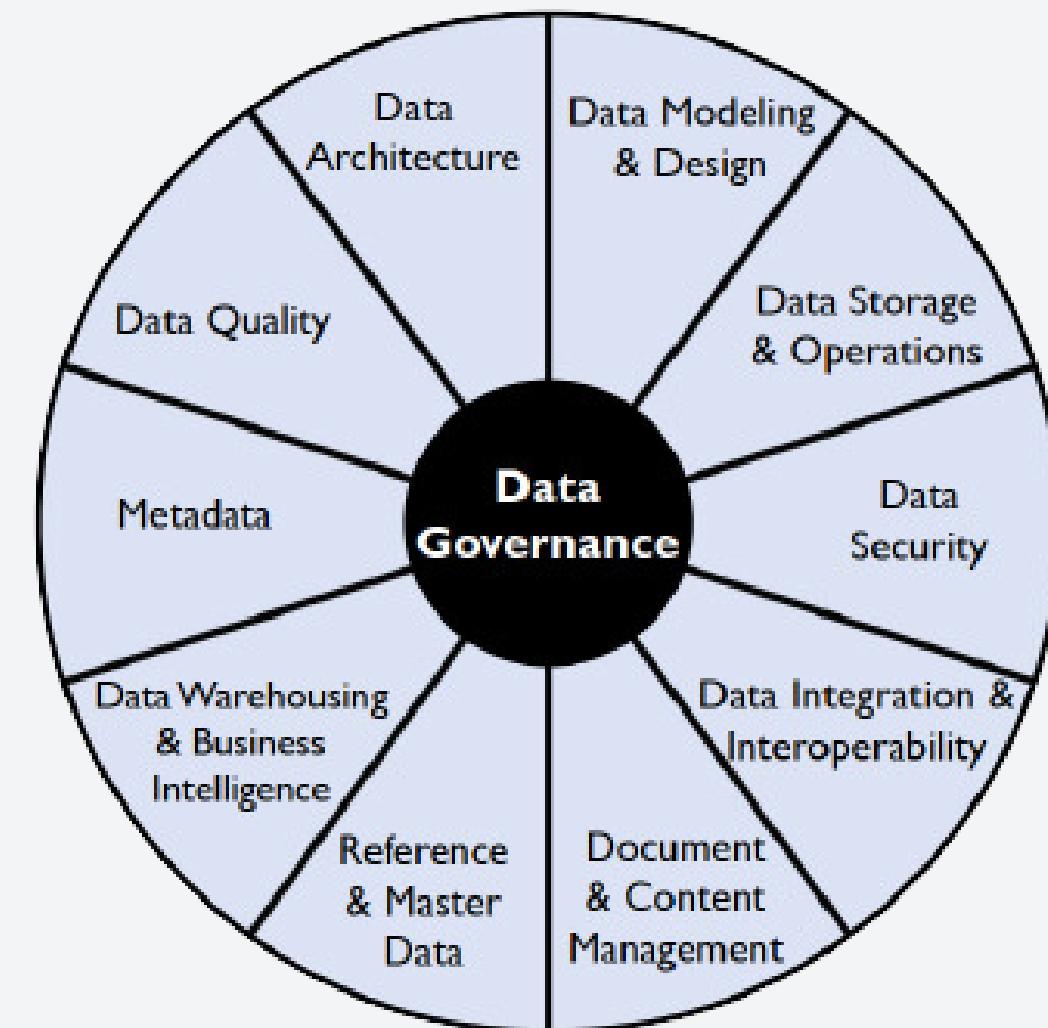
Encompasses 10 distinct data management perspectives specified for HCM.

## 2. CUSTOMIZABLE

Tailored to meet the unique requirements and challenges of HCM.

## 3. BENEFITS

Enhances employee data security, consistency, reliability, and supports data-driven decision-making.



Data Governance DAMA-DMBOK 2	
Data Management	Focus in General Policy on corporate IT Architecture masterplan in developing a data-driven ecosystem.
Data Modelling & Design	The data is model based on the nature and condition of Human Capital Management.
Data Storing & Operational	Data storing will have its own mechanism based on how HC function Operates.
Data Security	The policy on data security must be expanded to the scope of HC Managers to their employees themselves.
Data Integration & Interoperability	As HC Data grows following with the expanding size of the organization, it will need a Standard Procedure for data integration.
Document & Content Management	Digitalized HC Documents (PDFs, Images, etc) should be managed carefully as it can be used for evidence during audit practices.
Reference & Master Data Management	The scope of HC data authority for sharing practices and stewardship must be defined appropriately with HC business processes since it can affect data quality.
Data Warehousing & Business Intelligence	Data driven HC practices will need a clear and concise Business Intelligence which is supported by developing Data Warehouse specialized for HC.
Metadata Management	Metadata for HC arises from the nature of HC business processes which generates time dependent data.
Data Quality Management	Maintaining HC Data quality will need contribution from not only data stewards but also with HC data users since perceived quality differs on both sides.

# Determinants of Framework Effectiveness

## ORGANIZATIONAL SIZE

### a) Large scale

- Well-suited due to structured data management practices and resources.

### b) Smaller scale

- May find full adoption challenging but can benefit from individual components with modifications.

## MATURITY LEVEL

Organizations with **mature data management practices** can more readily adopt the framework.

## ADAPTABILITY

The ability to modify and tailor the framework to meet specific needs and limitations.



# **Enterprise Information Management (EIM)**

Strategy, practices, and tools used to manage an organization's information assets.

Ensure the data availability, usability, integrity, and security.

# Challenges with Data Governance ('Governance via Stewardship')

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## ✓ LACK OF MANDATE

Absence of senior executive support leads to a lack of authority.

## ✓ ROLE AMBIGUITY

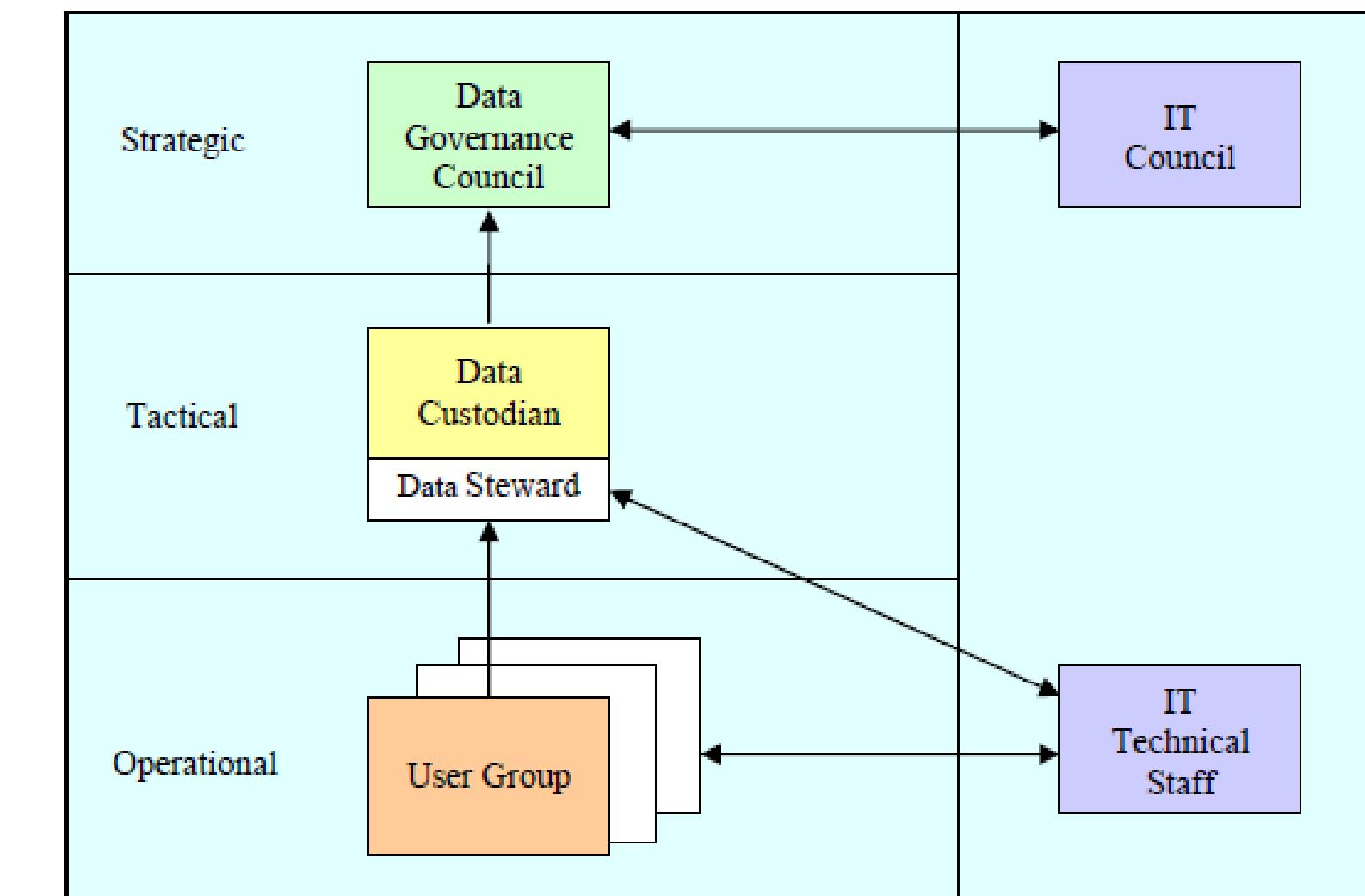
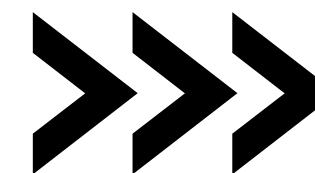
Undefined roles and responsibilities create confusion about data stewardship and ownership.

## ✓ PRIORITY ISSUES

Senior executives may not prioritize projects, missing their significance.

# 'Governance via Governance' Model

Organisational Bodies and Policies	Standards and Processes	Data Governance Technology
<ul style="list-style-type: none"><li>- Governance Structure</li><li>- Data Custodianship</li><li>- User Group Charter</li><li>- Decision Rights</li><li>- Issue Escalation Process</li></ul>	<ul style="list-style-type: none"><li>- Data Definition and Standard (Meta data management)</li><li>- Third Party Data Extract</li><li>- Metrics Development and Monitoring</li><li>- Data Profiling</li><li>- Data Cleansing</li></ul>	<ul style="list-style-type: none"><li>- Metadata Repository</li><li>- Data Profiling tool</li><li>- Data Cleansing tool</li></ul>



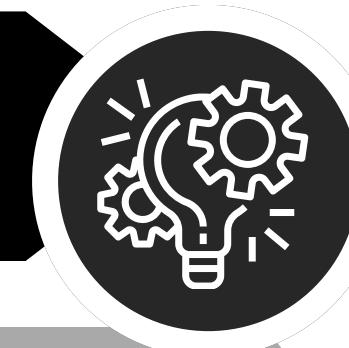
# 'Governance via Governance' Model



## Standards and Processes

- Ensures data quality and mitigates risks.
- Optimizes value from data assets with clear guidelines and procedures.

## Data Governance Technology



- Enhances data insights for informed decision-making.
- Supports EIM strategies, ensuring data understanding and accountability.

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# Advantage

- **Transferability:**

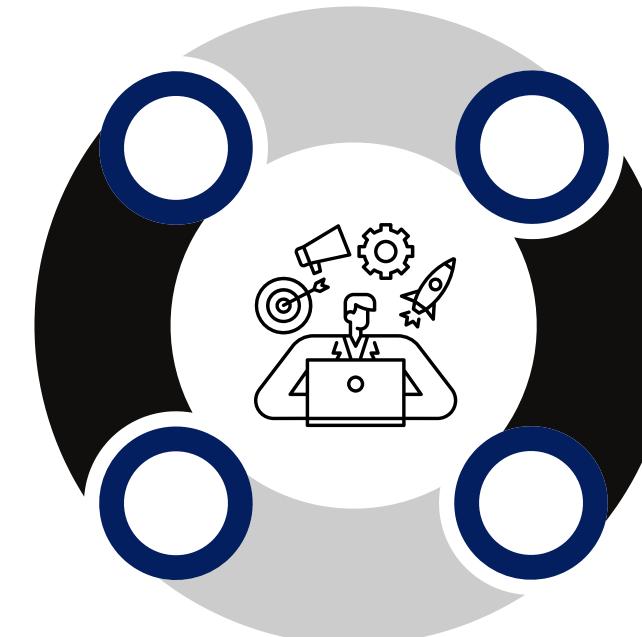
EIM principles and practices can be adapted to benefit other domains such as Customer Relationship Management (CRM).

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# Considerations

## Cost Constraints

Over-reliance on technology can pose financial challenges.



## Maintenance

Investments required for technology updates and continuous maintenance

# SME

- Large enterprises are better equipped to handle the resource demands of data governance.
- SMEs, however, face significant challenges due to limited resources.
- Despite challenges, investing in data governance is critical for SMEs in the digital business environment.

# SMALL & MEDIUM ENTERPRISE (SME)

## Challenge 1

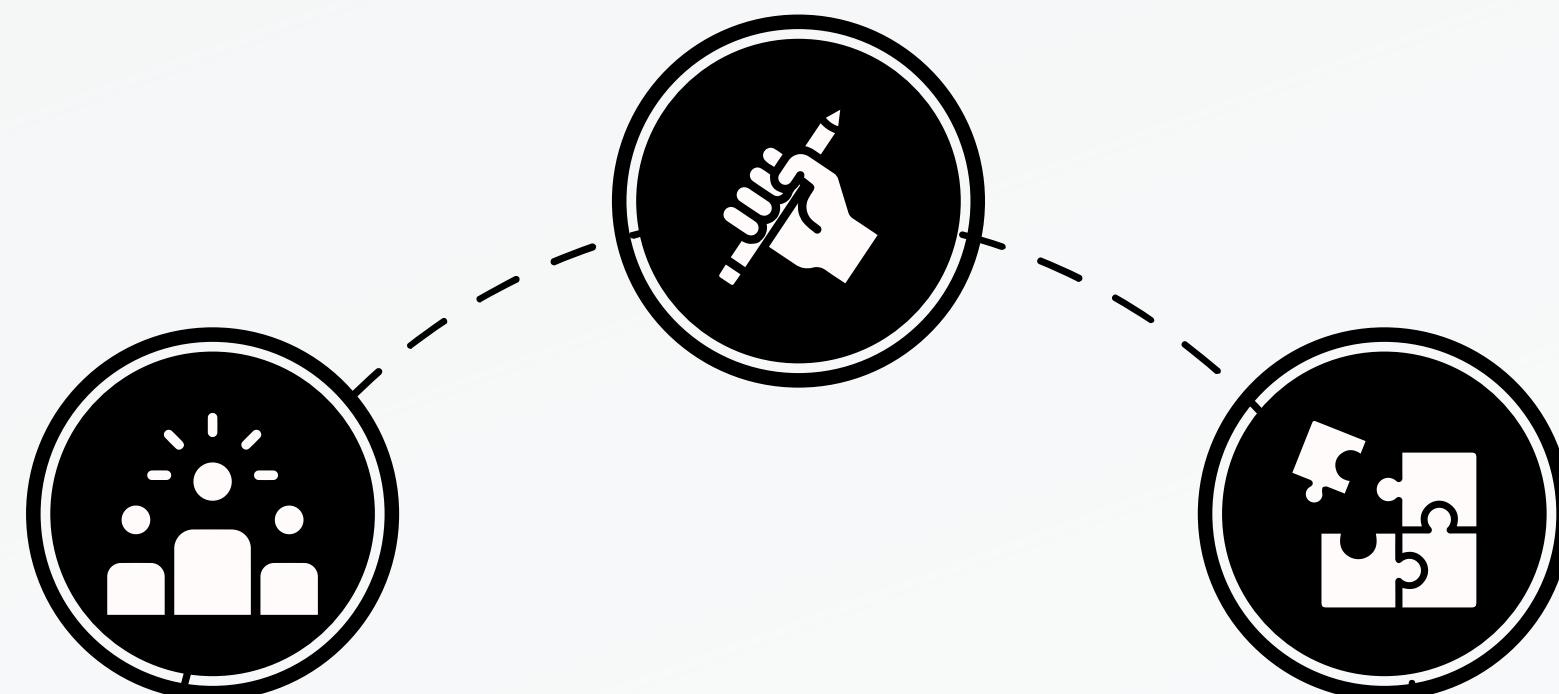
- Perceived effort is a major deterrent for SMEs in implementing data governance.
- Concerns include gaining control over IT systems.
- Managing externally sourced data adds to the hesitancy.

## Challenge 2

- Existing data governance frameworks are often too complex for SMEs.
- SMEs typically have limited technical expertise and resources.
- Even simpler frameworks like Khatri & Brown (2010) are inadequate for SMEs.
- Complexity and resource limitations are key reasons for framework inadequacy.

## Challenge 3

- SMEs, despite their significant economic contribution, are often overlooked by the data governance community.
- This oversight may lead to regulatory challenges for SMEs.
- Data governance is increasingly important in the digital landscape.
- Lack of attention to SMEs may exacerbate regulatory compliance issues.



# FRAMEWORK KHATRI & BROWN

## 5 DECISION DOMAIN

### *Data Principles*

- Clarifying the role of data as an asset

### *Data Quality*

- Establishing the requirements of intended use of data

### *Metadata*

- Establishing the semantics or “content” of data so that it is interpretable by the users

### *Data Access*

- Specifying access requirements of data

### *Data Lifecycle*

- Determining the definition, production, retention and retirement of data

# SUMMARY OF RESPONSES TO ORGANISATIONAL AWARENESS AND UNDERSTANDING OF DECISION DOMAIN TERMINOLOGY

- All enterprises struggled to explain this term.
- Most associated it with external regulatory or compliance frameworks.

## DATA PRINCIPLES

- None of the enterprises could provide an explanation for this term.

## METADATA

- All enterprises identified this term with the accuracy and integrity of their electronic data

- Only one of the enterprises provided an explanation for this term.

## DATA LIFECYCLE

- Enterprises offered differing explanations, with some relating it to security and others explaining it in relation to the variety of ways a dataset can be accessed.

## DATA QUALITY

## DATA ACCESS

# FRAMEWORK KHATRI & BROWN

## 5 DECISION DOMAIN

**From the summary, we can know that SMEs need to recognise the value of their data and the importance of data governance for their survival in an increasingly digital business environment.**

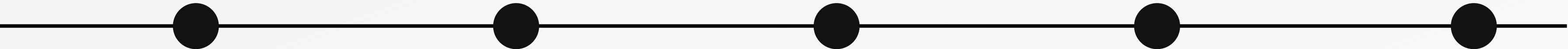
Table 1: Framework for data decision domains.

Data Governance Domains	Domain Decisions	Potential Roles or Locus of Accountability
<b>Data Principles</b> <ul style="list-style-type: none"><li>Clarifying the role of data as an asset</li></ul>	<ul style="list-style-type: none"><li>What are the uses of data for the business?</li><li>What are the mechanisms for communicating business uses of data on an ongoing basis?</li><li>What are the desirable behaviors for employing data as assets?</li><li>How are opportunities for sharing and reuse of data identified?</li><li>How does the regulatory environment influence the business uses of data?</li></ul>	<ul style="list-style-type: none"><li>Data owner/trustee</li><li>Data custodian</li><li>Data steward</li><li>Data producer/supplier</li><li>Data consumer</li><li>Enterprise Data Committee/Council</li></ul>
<b>Data Quality</b> <ul style="list-style-type: none"><li>Establishing the requirements of intended use of data</li></ul>	<ul style="list-style-type: none"><li>What are the standards for data quality with respect to accuracy, timeliness, completeness and credibility?</li><li>What is the program for establishing and communicating data quality?</li><li>How will data quality as well as the associated program be evaluated?</li></ul>	<ul style="list-style-type: none"><li>Data owner</li><li>Subject matter expert</li><li>Data quality manager</li><li>Data quality analyst</li></ul>
<b>Metadata</b> <ul style="list-style-type: none"><li>Establishing the semantics or "content" of data so that it is interpretable by the users</li></ul>	<ul style="list-style-type: none"><li>What is the program for documenting the semantics of data?</li><li>How will data be consistently defined and modeled so that it is interpretable?</li><li>What is the plan to keep different types of metadata up-to-date?</li></ul>	<ul style="list-style-type: none"><li>Enterprise data architect</li><li>Enterprise data modeler</li><li>Data modeling engineer</li><li>Data architect</li><li>Enterprise Architecture Committee</li></ul>
<b>Data Access</b> <ul style="list-style-type: none"><li>Specifying access requirements of data</li></ul>	<ul style="list-style-type: none"><li>What is the business value of data?</li><li>How will risk assessment be conducted on an ongoing basis?</li><li>How will assessment results be integrated with the overall compliance monitoring efforts?</li><li>What are data access standards and procedures?</li><li>What is the program for periodic monitoring and audit for compliance?</li><li>How is security awareness and education disseminated?</li><li>What is the program for backup and recovery?</li></ul>	<ul style="list-style-type: none"><li>Data owner</li><li>Data beneficiary</li><li>Chief information security officer</li><li>Data security officer</li><li>Technical security analyst</li><li>Enterprise Architecture Development Committee</li></ul>
<b>Data Lifecycle</b> <ul style="list-style-type: none"><li>Determining the definition, production, retention and retirement of data</li></ul>	<ul style="list-style-type: none"><li>How is data inventoried?</li><li>What is the program for data definition, production, retention, and retirement for different types of data?</li><li>How do the compliance issues related to legislation affect data retention and archiving?</li></ul>	<ul style="list-style-type: none"><li>Enterprise data architect</li><li>Information chain manager</li></ul>

# SMART CITY

1. The potential applications of data governance in smart cities are significant
2. Opening local government data to the public
3. Meaningful data creation considering context and objectives
4. Leverage data governance
5. Connectivity and collaboration

# DATA GOVERNANCE SURVEY



- Gather insights from ongoing discussions about data generation, collection, management, sharing, and use, and make tentative recommendations.

- Understand the collaborative approach to monitoring and data collection, supporting the needs and capacities of local partners.

- Identify key challenges for Lighthouse cities in data monitoring during and after the project ends.

- Support the development of sustainable data processes and structures during and beyond the Triangulum project.

- Highlight barriers to creating a data-driven sustainable smart city.

# CONCEPTUAL FRAMEWORK

- The diagram shows three main dimensions: data collection, use, and management.
- Additional dimensions include project context, data identification, generation, sharing, and data legacy.
- These dimensions are organized into six clusters.
- The Data Governance Survey focused on key decision domains identified in the initial case studies.



# FINDING FROM ANALYSIS

- Collaborating in Data Collection
- Barriers to Data Collection
- Data Management Practices
- Barriers to Data Sharing
- Data Use
- Legacy Issues
- Data Development and Project Working

# CONCLUSION

- *Data governance components are tailored to industry-specific requirements and regulatory environments.*
- *Core principles of data governance remain consistent across contexts.*
- *Ultimate objective: Ensuring data security, integrity, and alignment with organizational goals.*



# **THANK YOU**