



# Introduction

IS465: Data Management and Governance

# Outline

- Data Management and Governance: An Overview
- Brief overview of data governance frameworks and models
- Data Strategy
- Dama's Data Governance Wheel

# Data Management and Governance: An Overview

# Why Data Matters!

- FACT - Data is the most valuable asset in an organization after its people
- FACT - Data is critical to the running of business functions and processes
- FACT- Without constant vigilance and effort to maintain order data entropy or anarchy reins!

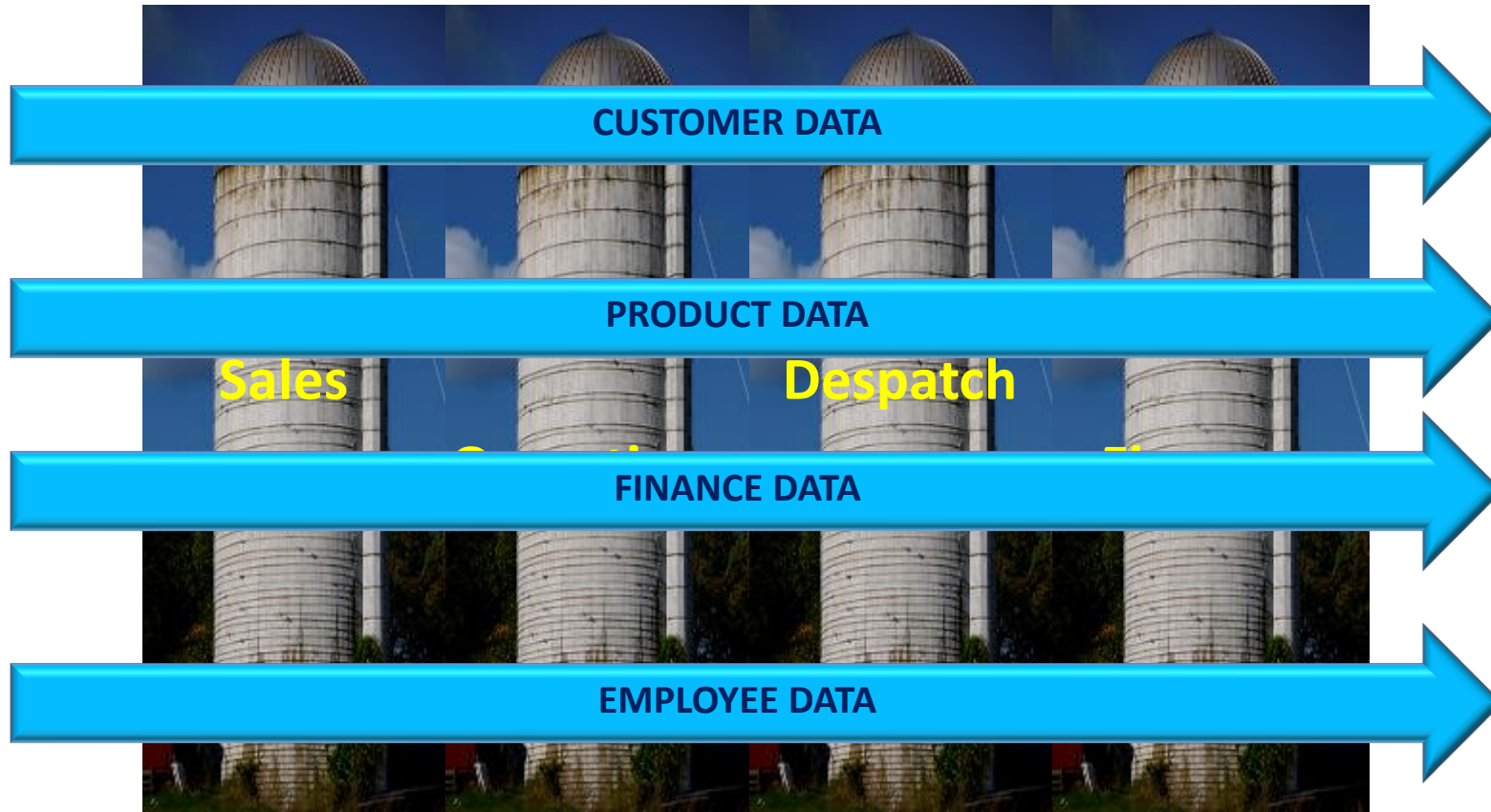
# Data as an Asset

- The global big data analytics market is valued at \$307.52 billion.
- Projections suggest that this market will reach \$745.15 billion by 2030, with a compound annual growth rate (CAGR) of 13.5%.
- In 2023, 91.9% of organizations achieved measurable value from data and analytics investments.
- Three in five organizations are using data analytics to drive business innovation.
- Data leaders are planning to increase their budgets, with 56% of them planning to do so.

# The Data Silo Problem

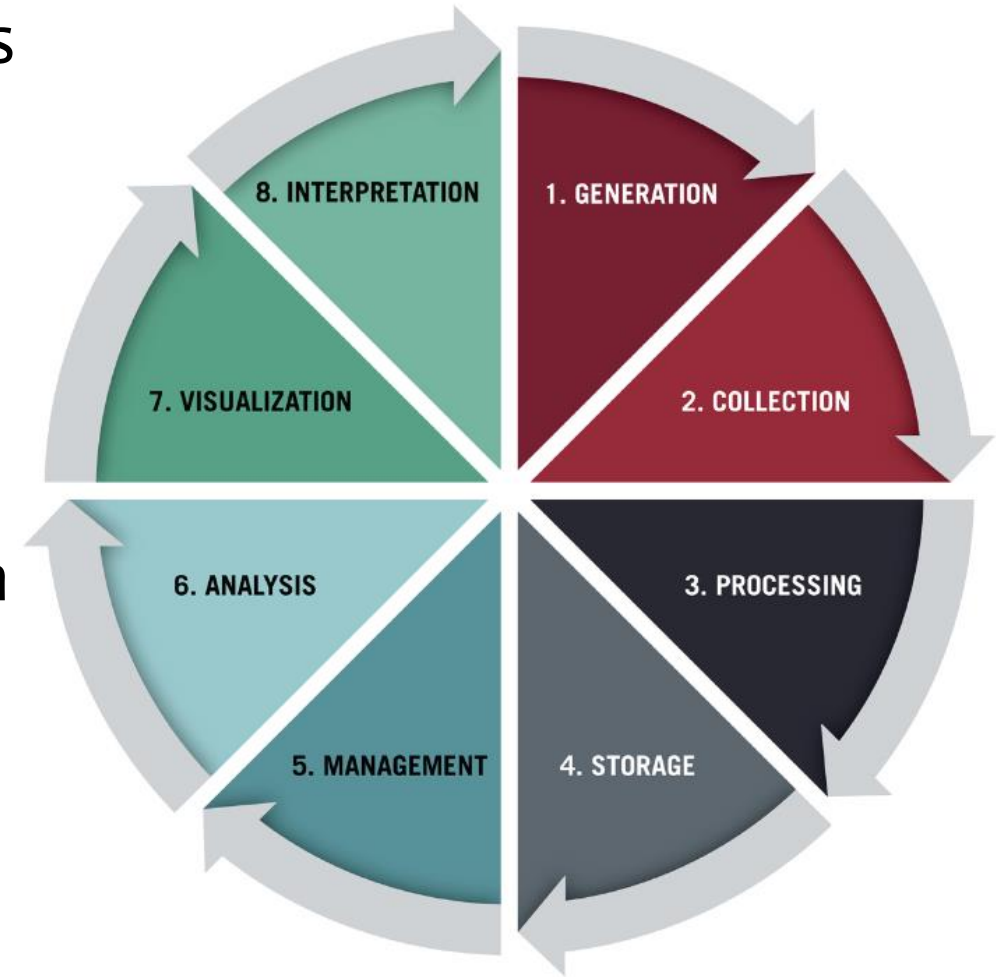


# The Data 'Centric' Solution



# Data lifecycles

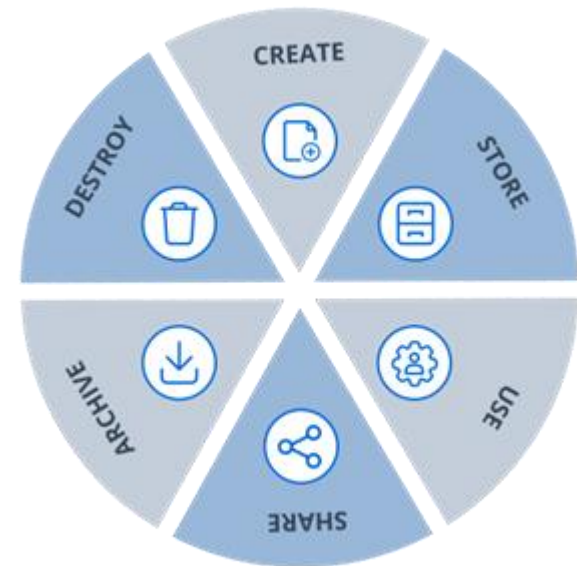
- A data lifecycle refers to the different stages a unit of data undergoes, from initial collection to when it's no longer considered useful and deleted.
- It's a continuous, policy-based process where each phase informs the next.
- The different stages of the data lifecycle can vary depending on the organization





# What is data lifecycle management?

- Data lifecycle management (DLM) refers to the policies, tools, and internal training that helps dictate the data lifecycle.
- It's essentially the framework for managing how data is collected, cleaned, stored, used, and eventually deleted.



# 6 crucial data lifecycle stages

- Though the stages in a data lifecycle can vary from one business to another, we outline six key phases you should see across the board.
  1. Collection
  2. Storage
  3. Processing
  4. Analysis
  5. Deployment
  6. Archiving

# Definition and Importance

- Data Management
  - The process of collecting, storing, organizing, and retrieving data.
- Data Governance
  - The overall management of the availability, usability, integrity, and security of an organization's data.
- Importance:
  - Data is a critical asset for organizations.
  - Data-driven decision-making is increasingly important.
  - Data privacy and security are critical concerns.
  - Data governance ensures data is accurate, complete, and accessible.

# Data Management

- The process of planning, organizing, and controlling the creation, storage, retrieval, sharing, and usage of data within an organization.
- It encompasses the development and implementation of policies, procedures, and systems to manage the flow of data across various business processes, ensuring that data is accurate, complete, and accessible to authorized personnel.

## Data Management

The development, execution, and supervision of plans, policies, programs, and practices that deliver, control, protect, and enhance the value of data and information assets throughout their lifecycles.

# The 5-second elevator definition

Data governance  
is ...

- a set of guidelines for how people behave and make decisions about data

# Master data management is often confused with data governance

## Master Data Management (MDM)

- Comprehensive method to link all critical data to a common point of reference
- Example:
  - All screens, documents and systems showing a student's address derive from a common location.

## Data Governance

- Formalized system for how people make decisions about acquisition, production, storage, distribution, and analysis of data
- Example:
  - Group decides on a definition for home address and agrees on a common source field

# Important characteristics of DG definitions

Data governance IS	Data Governance IS NOT
<ul style="list-style-type: none"><li>• More about people and behavior than data</li><li>• A system that requires and promotes shared agreement</li><li>• Formal (i.e. written down)</li><li>• Adds value by supporting institutional mission/goals</li></ul>	<ul style="list-style-type: none"><li>• IT's responsibility</li><li>• Solved by technology</li><li>• Equally applied across all data assets</li></ul>

# Data Management vs. Data Governance

DATA MANAGEMENT	VS	DATA GOVERNANCE
Logistics or methods of how data is organized	WHAT	Policies, controls, or rules for how data is governed and data quality is achieved
Primarily the responsibility of IT to implement framework to manage data	WHO	Multiple members of an enterprise holistically build a framework (data stewards, data citizens, and more) for data management
An umbrella term, covering all aspects (including data governance) of how an enterprise uses and manages its data	PURPOSE	The first building block of data management, focusing on the framework to achieve business goals and reduce risk
Logistical, focused on technology	GOAL	Philosophical, focused on an overall business strategy



# Data governance vs. data management: The difference

Data Governance	Data Management
This involves policies, regulations, and procedures to manage data quality.	This refers to how the data is managed.
Refers to the application of knowledge, the development of procedures, and the formulation of theories.	Refers to the collection, organization, protection, processing, sorting, and preservation of data.
It aims to ensure the accuracy and integrity of stored data.	It aims to improve the overall quality and monetary value.
It's a data strategy for obtaining high-quality data.	It's a method for organizing facts in a logical way.
Philosophical and business-focused.	Logistical and tech-focused.

# The Point of DG

## Reporting & Compliance

- Internal Reporting
- Privacy Regulations
- Industry-specific Regulations
- ESG Reporting

## Analytics & Insights

- 360 view of the Customer
- AI\ML
- IOT
- Global Visibility
- Real Time Analytics

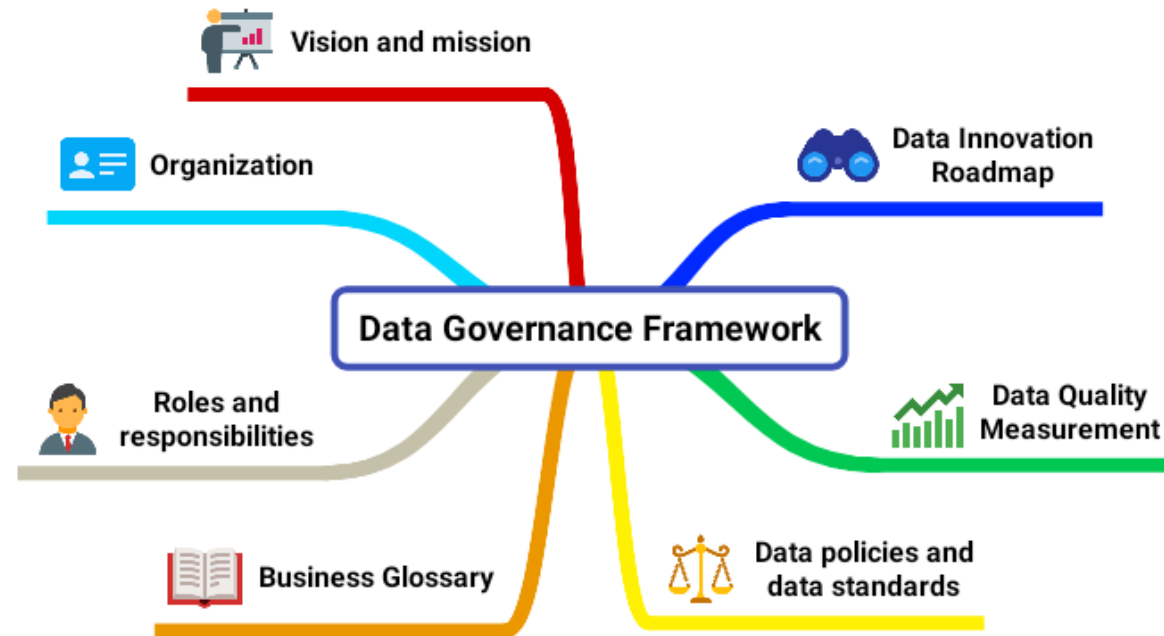
## Operational Excellence

- Enhance Customer Satisfaction
- Reduce Operating Costs
- Strategic Sourcing
- System Consolidation

# Data governance Frameworks and Models

# An Overview

- Data governance frameworks provide a structured approach to data governance.
- Data governance models provide a set of guidelines and best practices for data governance.

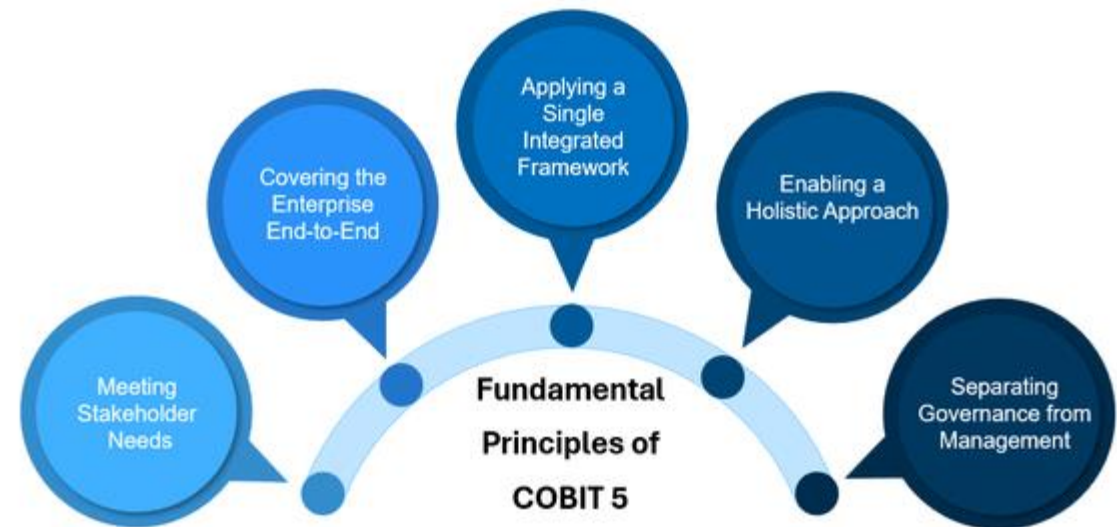


# Data Governance Frameworks

- A framework provides a structured approach to data governance.
- Examples:
  - COBIT (Control Objectives for Information and Related Technology)
  - ITIL (Information Technology Infrastructure Library)
  - CMMI (Capability Maturity Model Integration)
  - ISO/IEC 27001 (International Organization for Standardization/International Electrotechnical Commission 27001)

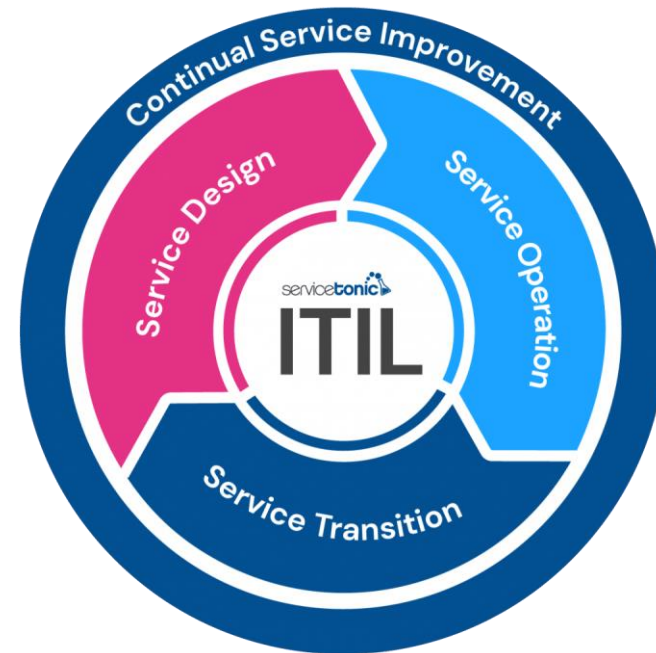
# COBIT

- COBIT is a framework for data governance and management.
- It provides a set of best practices and guidelines for data management and governance.
- COBIT is widely used and recognized globally.



# ITIL

- ITIL is a framework for IT service management.
- It provides a set of best practices and guidelines for IT service management.
- ITIL includes data governance as a critical aspect of IT service management.



# CMMI

- CMMI is a framework for process improvement.
- It provides a set of best practices and guidelines for process improvement.
- CMMI includes data governance as a critical aspect of process improvement.





# ISO/IEC 27001

- ISO/IEC 27001 is a standard for information security management.
- It provides a set of best practices and guidelines for information security management.
- ISO/IEC 27001 includes data governance as a critical aspect of information security management.

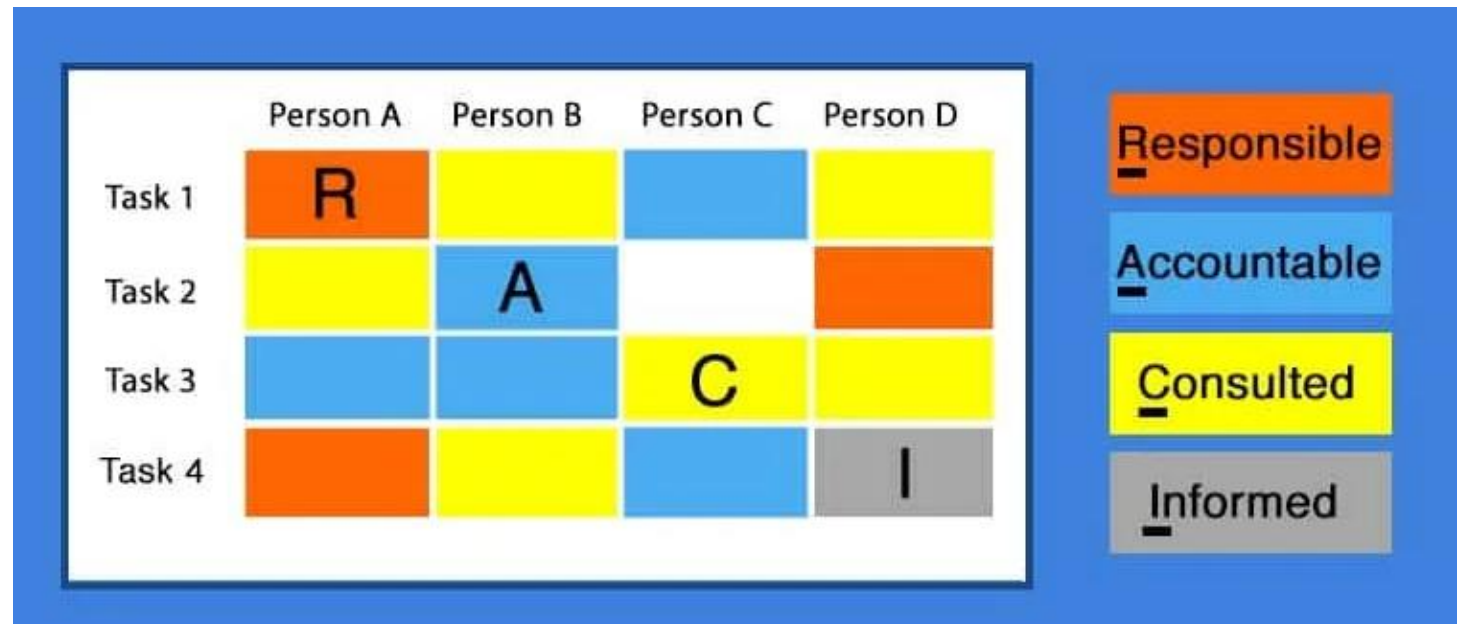


# Data Governance Models

- A model provides a set of guidelines and best practices for data governance.
- Examples:
  - RACI (Responsibility Assignment Matrix)
  - DACI (Data Governance Model)
  - CIDM (Data Management Maturity Model)

# RACI (Responsibility Assignment Matrix)

- A Tool for Data Governance
- RACI is a tool used in data governance to assign responsibilities and clarify roles.
- It helps to ensure that data is accurately, completely, and consistently managed.



# How RACI Works

- RACI is a matrix that lists all the roles and responsibilities for data management.
- Each role is assigned a level of responsibility (R, A, C, or I) for each data element.
- R stands for Responsible, A stands for Accountable, C stands for Consulted, and I stands for Informed.
- The matrix helps to ensure that there is no confusion about who is responsible for what.

# Benefits of RACI

- RACI helps to clarify roles and responsibilities for data management.
- It ensures that data is accurately, completely, and consistently managed.
- RACI promotes collaboration and communication among data stakeholders.
- It helps to identify and address data governance gaps.
- RACI is a simple and effective tool for data governance.

# DACI (Data Governance Model)

- DACI is a data governance model that provides a structured approach to data management.
- It helps organizations ensure that data is accurate, complete, and accessible.



# Key Components of DACI

- Data Governance Body: A group of stakeholders responsible for overseeing data governance.
- Data Governance Officer: A person responsible for implementing and maintaining data governance policies.
- Data Stewards: People responsible for managing data on a day-to-day basis.
- Data Users: People who use data to perform their job functions.
- Data Governance Policies: Documents that outline the rules and procedures for data management.

# Benefits of DACI

- DACI helps organizations ensure that data is accurate, complete, and accessible.
- It provides a clear framework for data governance roles and responsibilities.
- DACI promotes collaboration and communication among data stakeholders.
- It helps to identify and address data governance gaps.
- DACI is a flexible and adaptable model that can be customized to fit the needs of any organization.



# Data Management Maturity Model

- A Framework for Assessing Data Management Maturity
- A maturity model that assesses an organization's data management capabilities.
- It helps organizations identify areas for improvement and optimize their data management practices.

# Five Levels of Data Management Maturity

- Level 1: Initial (Ad Hoc)
- Level 2: Basic (Standardized)
- Level 3: Intermediate (Structured)
- Level 4: Advanced (Integrated)
- Level 5: Optimized (Enterprise-Wide)
- Description:
  - Each level represents a higher level of maturity and capability in data management.
  - Organizations can assess their current level of maturity and identify areas for improvement.

# Benefits

- Improving Data Management Maturity
- Improved data quality and accuracy
- Enhanced data security and compliance
- Increased efficiency and productivity
- Better decision-making through data-driven insights
- Competitive advantage through data-driven innovation
- Description:
  - Helps organizations optimize their data management practices, leading to various benefits.

# Data Strategy

# Data Strategy: Why It Matters

- A data strategy is a comprehensive plan that outlines how an organization will collect, store, manage, and use data to achieve its business objectives.
- It encompasses the entire data lifecycle, from data creation and collection to data storage and analysis, and provides a roadmap for how data will be used to support business decision-making and drive business success.



# Data Strategy

- A well-defined data strategy should consider the following key elements:
  - Data Governance
  - Data Architecture
  - Data Management
  - Data Analysis and Reporting
  - Data Integration and Interoperability
  - Data Security and Privacy
  - Data Lifecycle Management
  - Data Quality and Metrics
  - Data-Driven Culture
  - Continuous Improvement

# Managing the Deluge of Data

- The rapid growth of data in recent years
- The challenges and opportunities presented by this growth
- The need for a strategy to manage and make sense of the data



# Benefits of a Well-Defined Data Strategy

- Improved data quality and integrity
- Enhanced decision-making capabilities
- Increased efficiency and productivity
- Better customer insights and engagement
- Competitive advantage and innovation



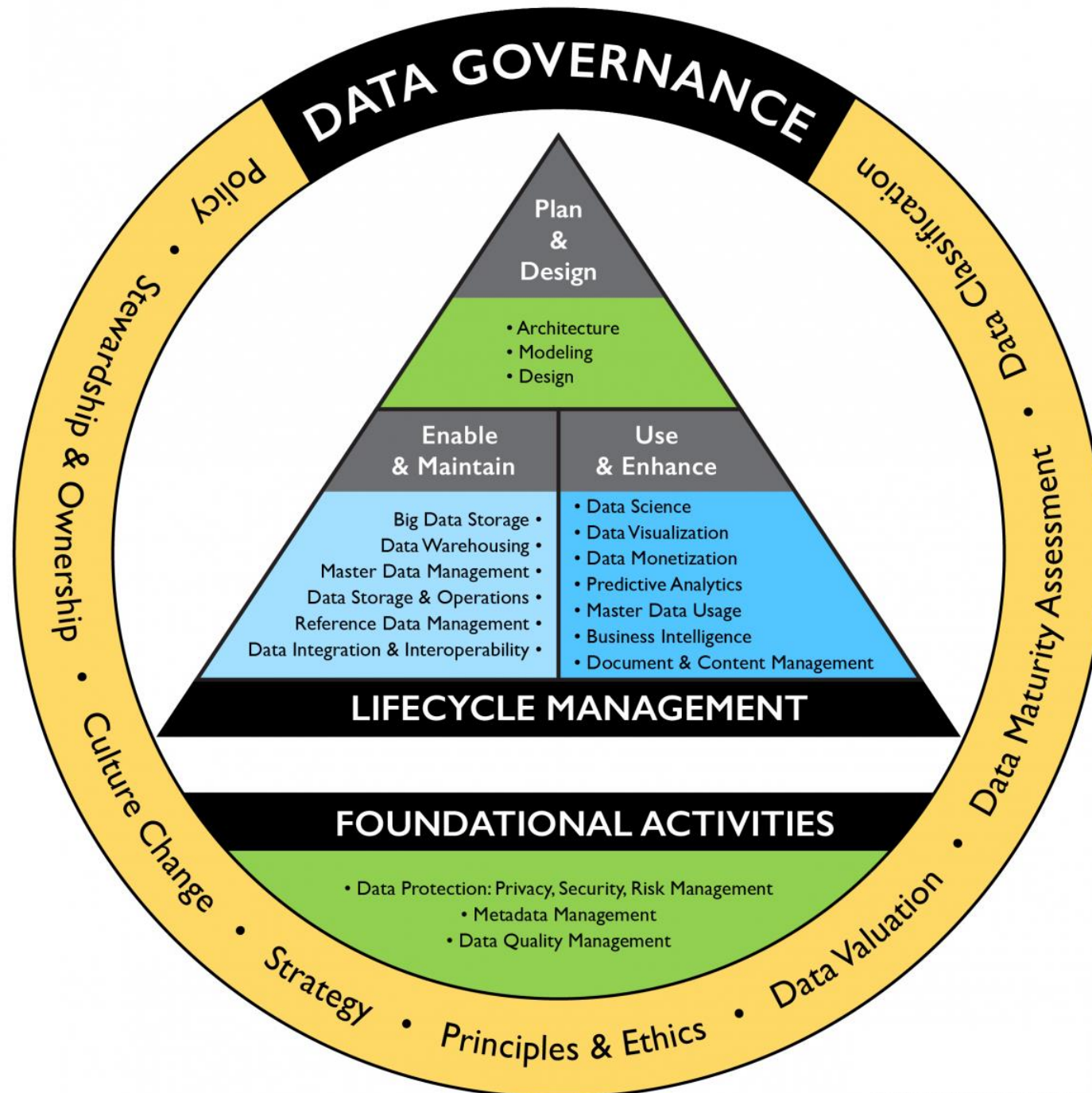
# Data-Driven Decision Making: The Key to Success

- The importance of data-driven decision making
- Examples of successful data-driven decision making in business
- The benefits of using data to inform decision-making

# Data Quality: The Pursuit of Accuracy and Completeness

- The importance of data quality
- Data quality dimensions
- Data validation and cleansing
- Data quality metrics and monitoring

# Dama's Data Governance Wheel



# DAMA

- The Data Management Association (DAMA)
- DAMA International publishes the Data Management Body of Knowledge (DMBoK®).
- The latest version is V2.
- They offer certification:
  - CDMP® Certification (Certified Data Management Professional®)!

# A Framework for Effective Data Governance

- Provides a structured approach to data management
- Covers the entire data lifecycle
- Offers a common language and framework for data management professionals

# A Framework for Effective Data Governance

- Dama's Data Governance Wheel is a framework for effective data governance.
- It provides a structured approach to data governance, with 8 key components.
- The wheel is divided into 8 segments, each representing a different aspect of data governance.

# 8 Components of DG

- Policy
- Stewardship and Ownership
- Culture Change
- Strategy
- Principles and Ethics
- Data Valuation
- Data Maturity Assessment
- Data Classifications



# Lifecycle Management

- Plan & Design
  - Architecture
  - Modeling
  - Design
- Enable & Maintain
  - Big Data Storage
  - Data Warehousing
  - Master Data Management
  - Data Storage and Operations
  - Reference Data Management
  - Data Integration and Interoperability
- Use & Enhance
  - Data Science
  - Data Visualization
  - Data Monetization
  - Predictive Analytics
  - Master Data Usage
  - Business Intelligence
  - Document and Content Management

# Foundational Activities

- Data Protection: Privacy, Security, Risk Management
- Metadata Management
- Data Quality Management

