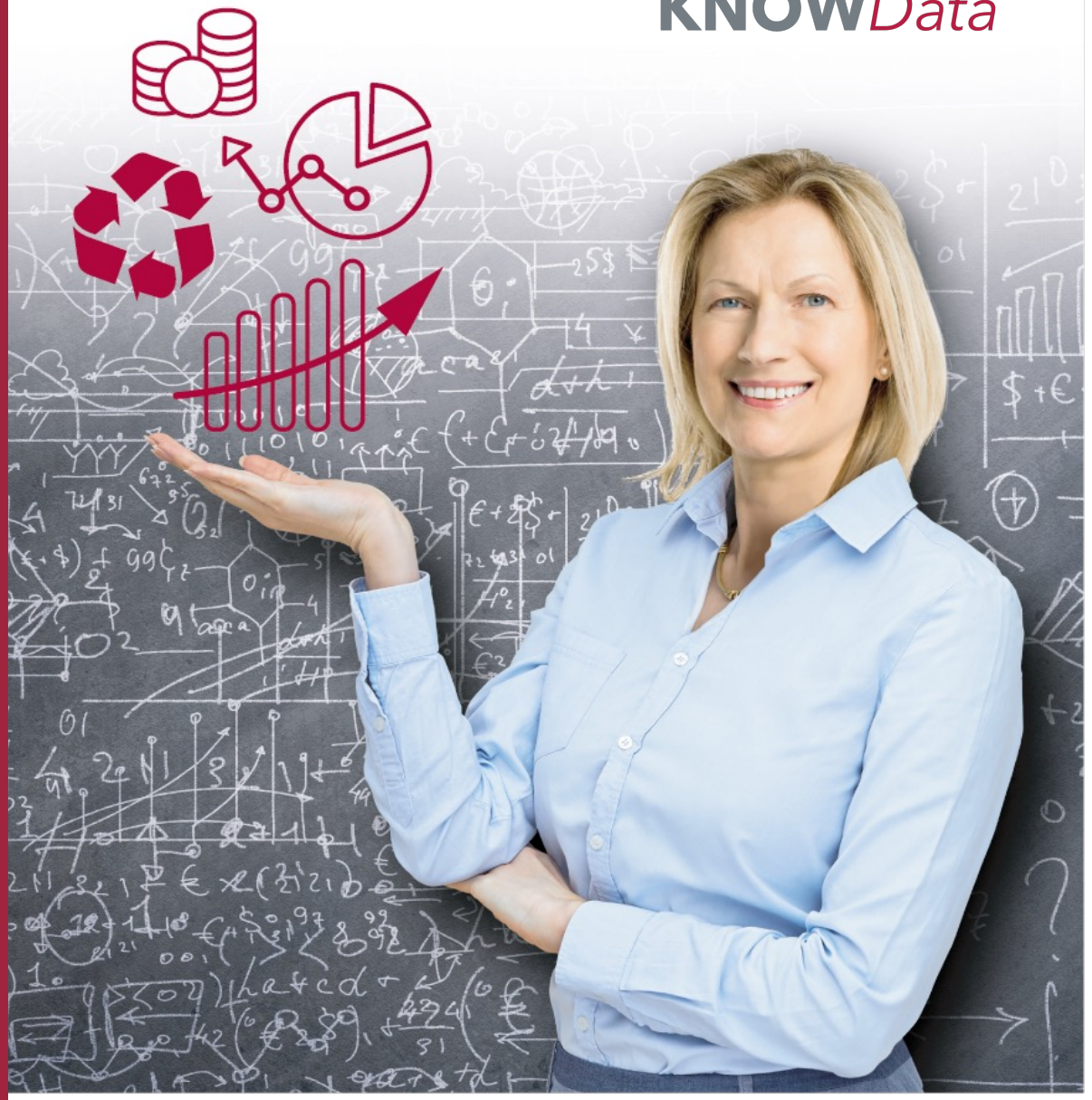
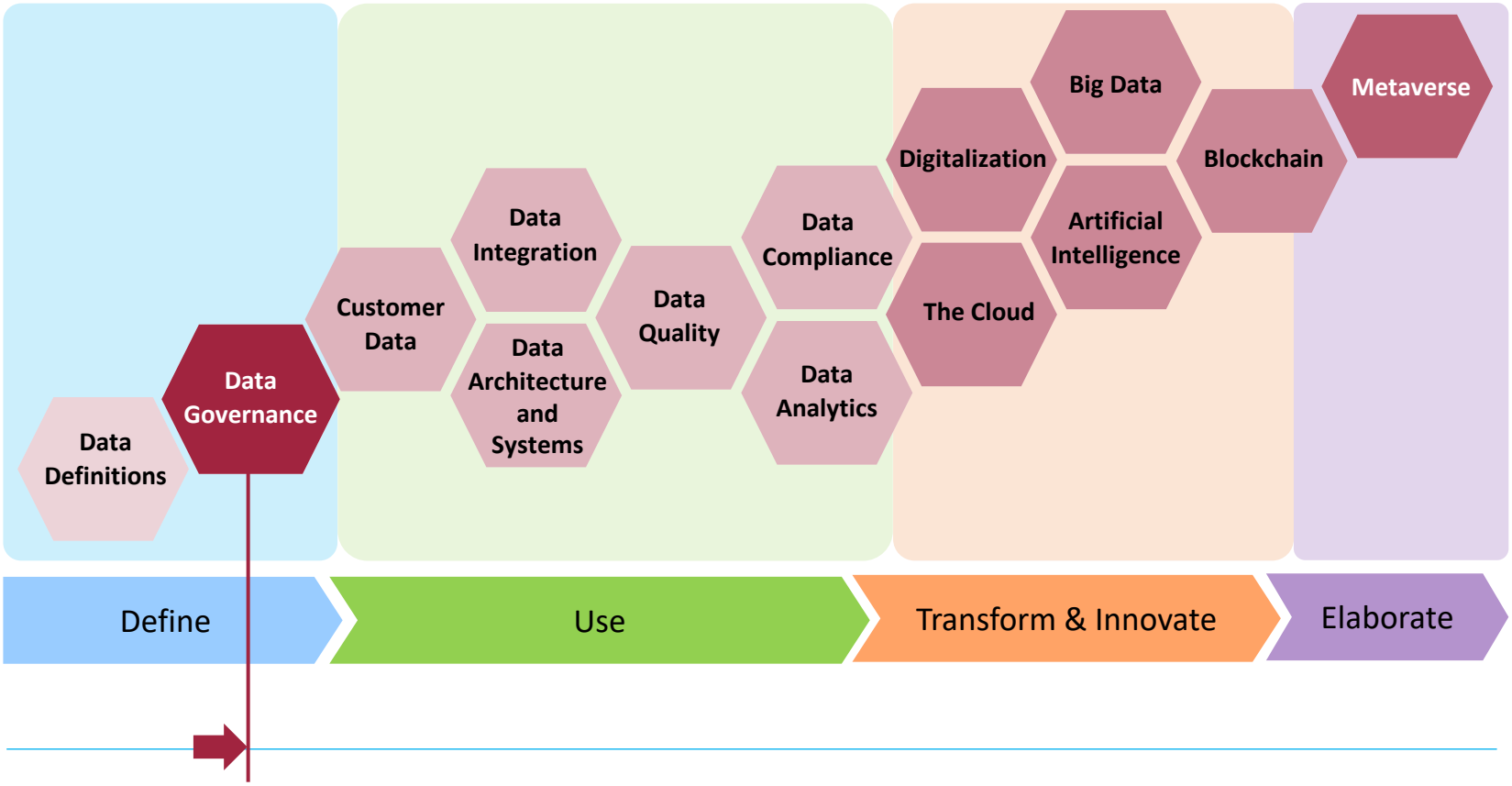
Data Governance

KNOWData



February 8, 2026

Lionel Pilorget


Data Definitions
Data Governance
Customer Data
Data Integration
Data Architecture and Systems
Data Quality
Data Compliance
Data Analytics
Digitalization
The Cloud
Artificial Intelligence
Big Data
Blockchain
Metaverse
Define
Use
Transform & Innovate
Elaborate

Structure of the presentation

Data Governance

Data Value Creation

- Data as an Asset → Value Creation → Data Value Creation

Frameworks

- Rationale → 5 References → 5 Examples

Implementation

- Enterprise Data Management → Critical Success Factors → Best Practices

What would be our World without Data?

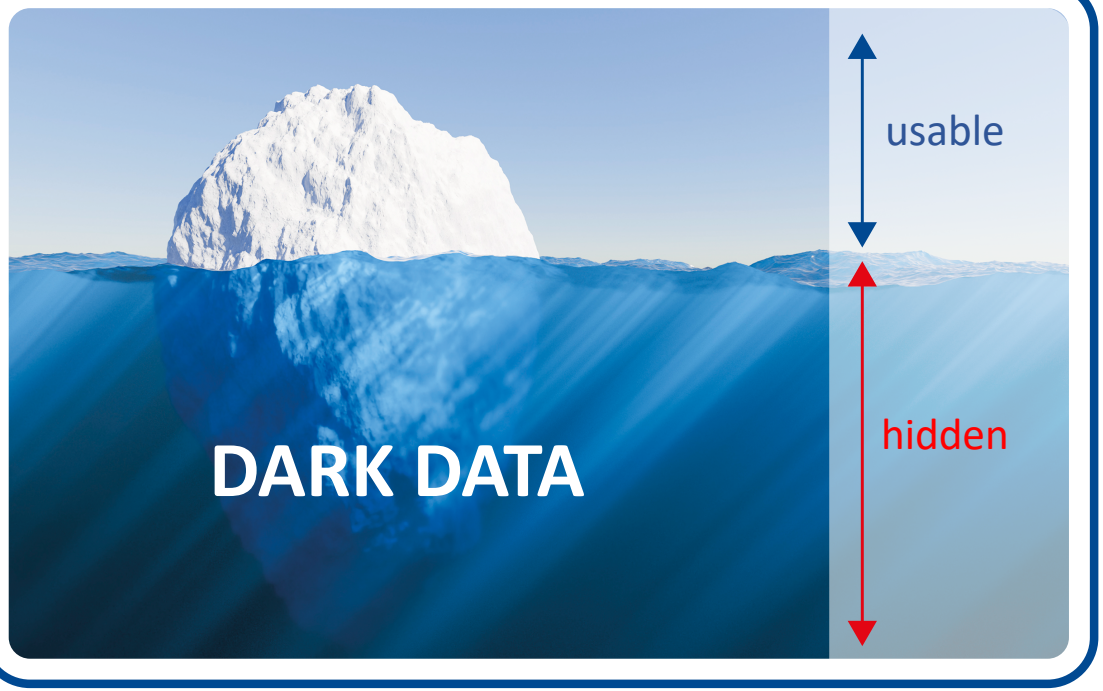
No internet, no data centers…

Big impact in the business and on our private life

Data as an Asset

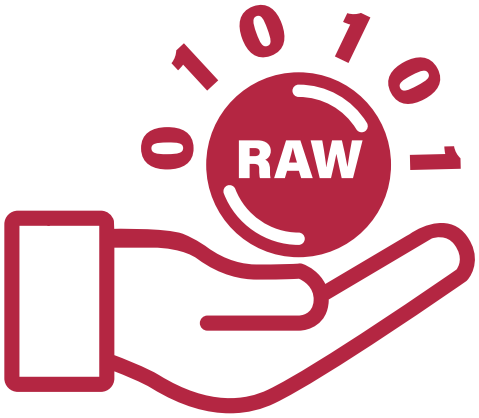
Asset or Liability?

- Manage customer satisfaction
- Ensure operation efficiency
- Assure compliance with industry standards, security policies, government laws and regulations
- Derive insights for decision-making



- Huge data volumes
- High complexity
- Increased cost
- Security and Privacy Risks
- Missed Opportunities
- Data Decay and Errors

Data are Assets if Value is created



clear utility

Raw Data

Value

What is Value Creation ?

- High-quality products or services
- Better experiences or convenience than competitors
- Personalization and innovation

- Increased revenues and profits (financial value)
- Improved operational efficiency (cost-saving measures)
- Market positioning and long-term growth

- Sustainability practices
- Ethical operations and inclusivity
- Supporting community development

- Fulfilling work and opportunities for growth.
- Competitive salaries and benefits
- A positive company culture

Methods for Creating Value

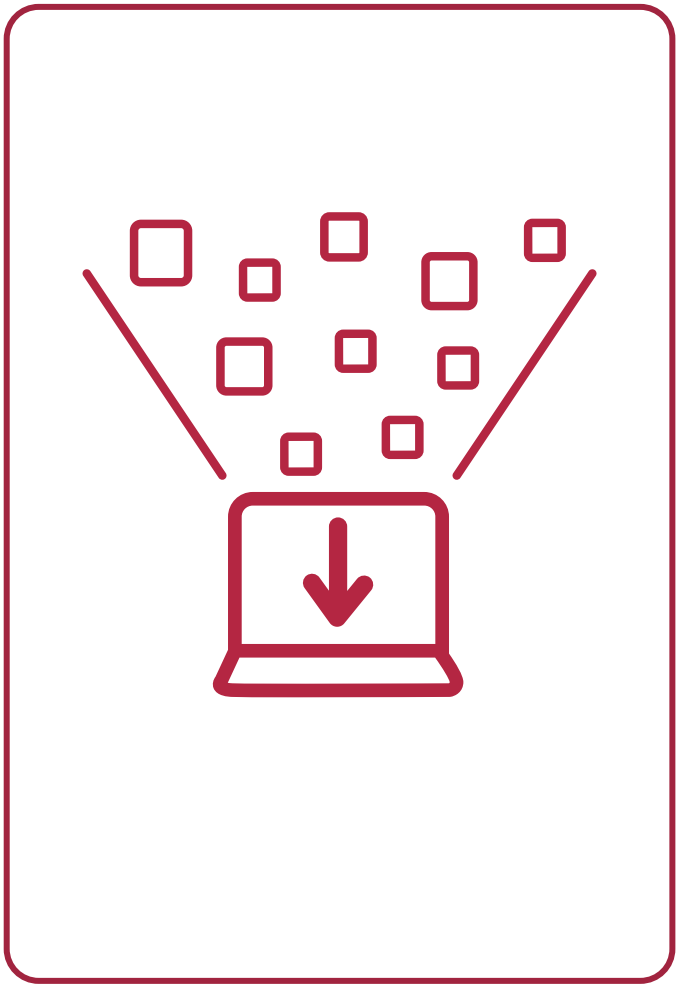
Innovation
Developing unique solutions, products, or services that solve customer problems or fill gaps in the market
Example: Apple revolutionized communication with the iPhone

Improving Processes
Enhancing efficiency and reducing costs through technology, automation, or operational improvements
Example: Toyota created value by pioneering lean manufacturing techniques

Building Brand Loyalty
Offering superior customer experiences and maintaining strong relationships, leading to repeat business
Example: Starbucks adds value by fostering a consistent and personalized experience

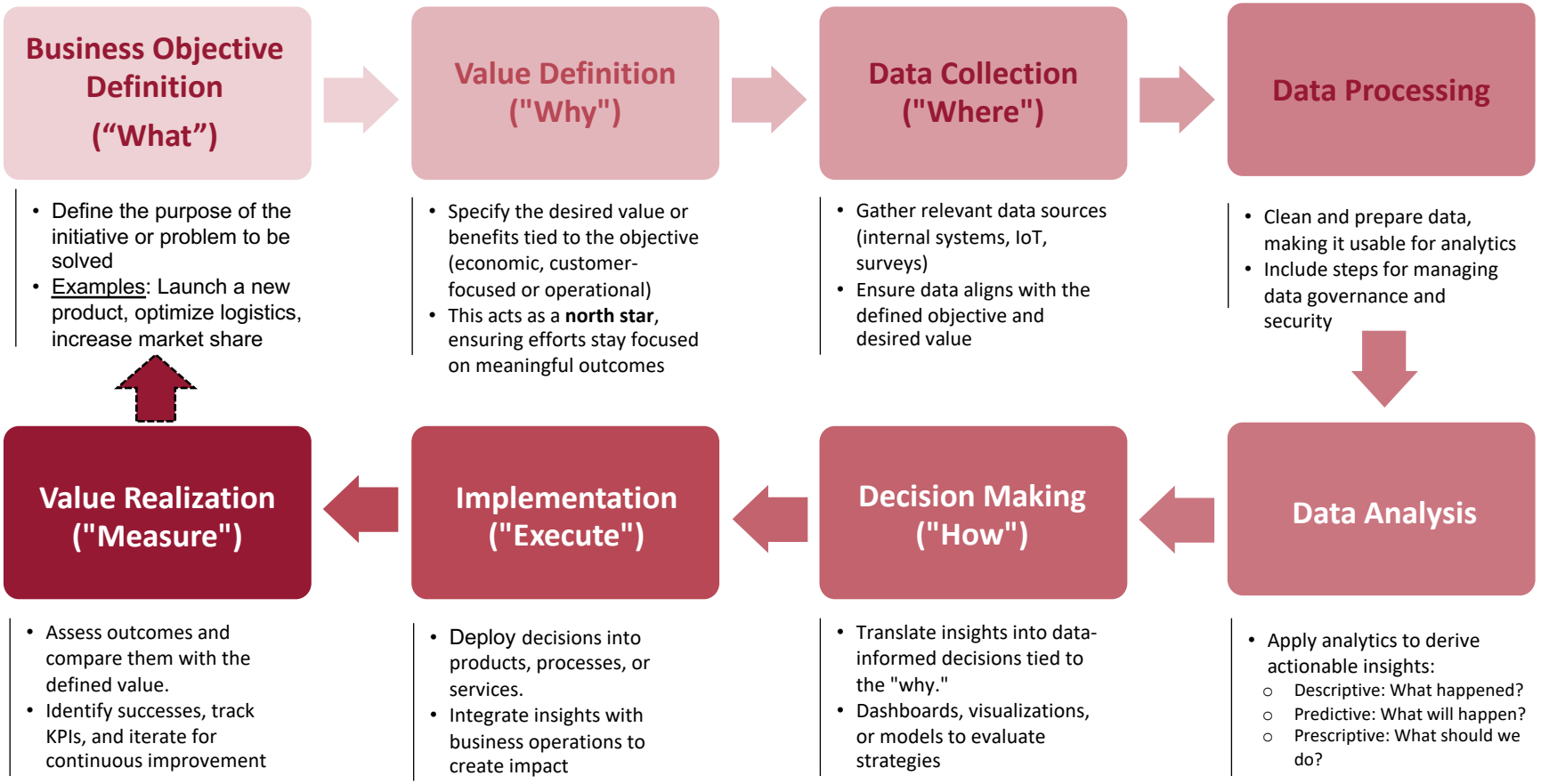
Utilizing Data
Collecting, analyzing, and leveraging data to predict trends, optimize decisions, and deliver better customer service
Example: Netflix uses data to suggest personalized content

Data can help creating value



- Streamlining Processes
- Tailoring Experiences
- Spotting Trends and Insights
- Improving Touchpoints
- Managing Risk
- Monitoring and reducing environmental impact
- Monetizing Data

Data value Creation Chain



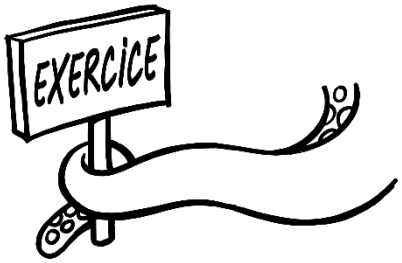
Examples of Data Value Creation

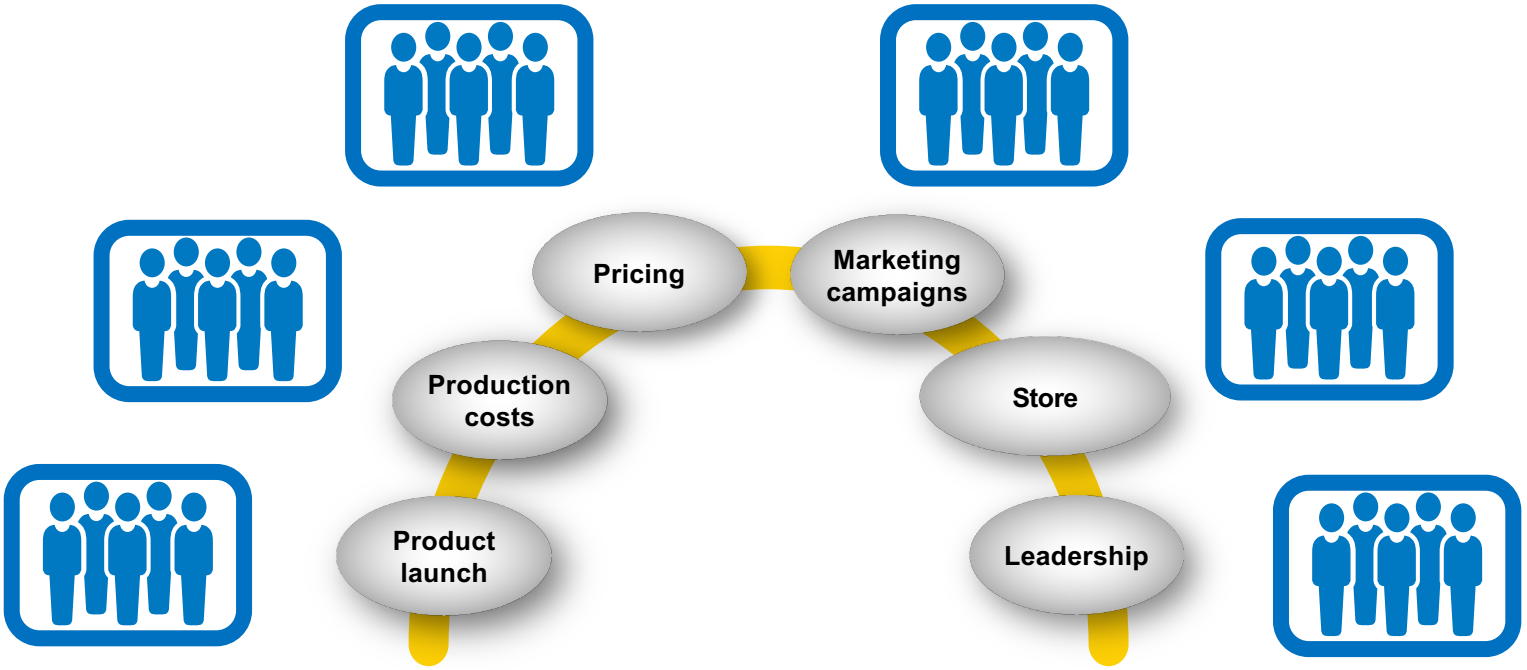
Business Area	Objective	Data	Value
Retail & E-commerce	Personalize customer experience and increase sales	• Purchase history • Browsing behaviour • Demographic data • Social media insights	• Create tailored product recommendations using machine learning algorithms • Optimize inventory through demand forecasting based on customer trends • Run targeted marketing campaigns using behavioural data
Healthcare	Improve patient outcomes and reduce costs	• Patient medical records • Health monitoring data • Population health statistics	• Anticipate potential health issues and intervene earlier • Optimize resource allocation in hospitals based on patient flow data • Create personalized treatment plans by analysing genetic and medical history data
Manufacturing	Enhance operational efficiency and reduce downtime	• Equipment sensor logs • Production line metrics • Supply chain data	• Implement predictive maintenance to prevent equipment failure • Streamline production schedules based on real-time analytics • Optimize the supply chain using real-time tracking and demand forecasts
Financial Services	Improve fraud detection and investment return	• Transaction history • Credit scores • Market data • Customer profiles	• Flag potentially fraudulent transactions • Provide personalized financial advice based on transaction patterns • Automate investment strategies using predictive algorithms for market trends
Logistics & Transportation	Reduce delivery times and enhance customer satisfaction	• GPS data • Weather reports • Vehicle sensor data • Package tracking	• Optimize delivery routes using real-time GPS and traffic data • Predict vehicle maintenance needs to avoid breakdowns • Enhance package tracking for transparency and customer trust
Energy Sector	Improve energy efficiency and predict usage patterns	• Consumption patterns • Weather data • IoT sensor data • Market prices	• Use smart meters to offer dynamic pricing based on demand • Predict power outages using historical and environmental data • Optimize energy grid loads to reduce waste and improve reliability

Which Data create Value?

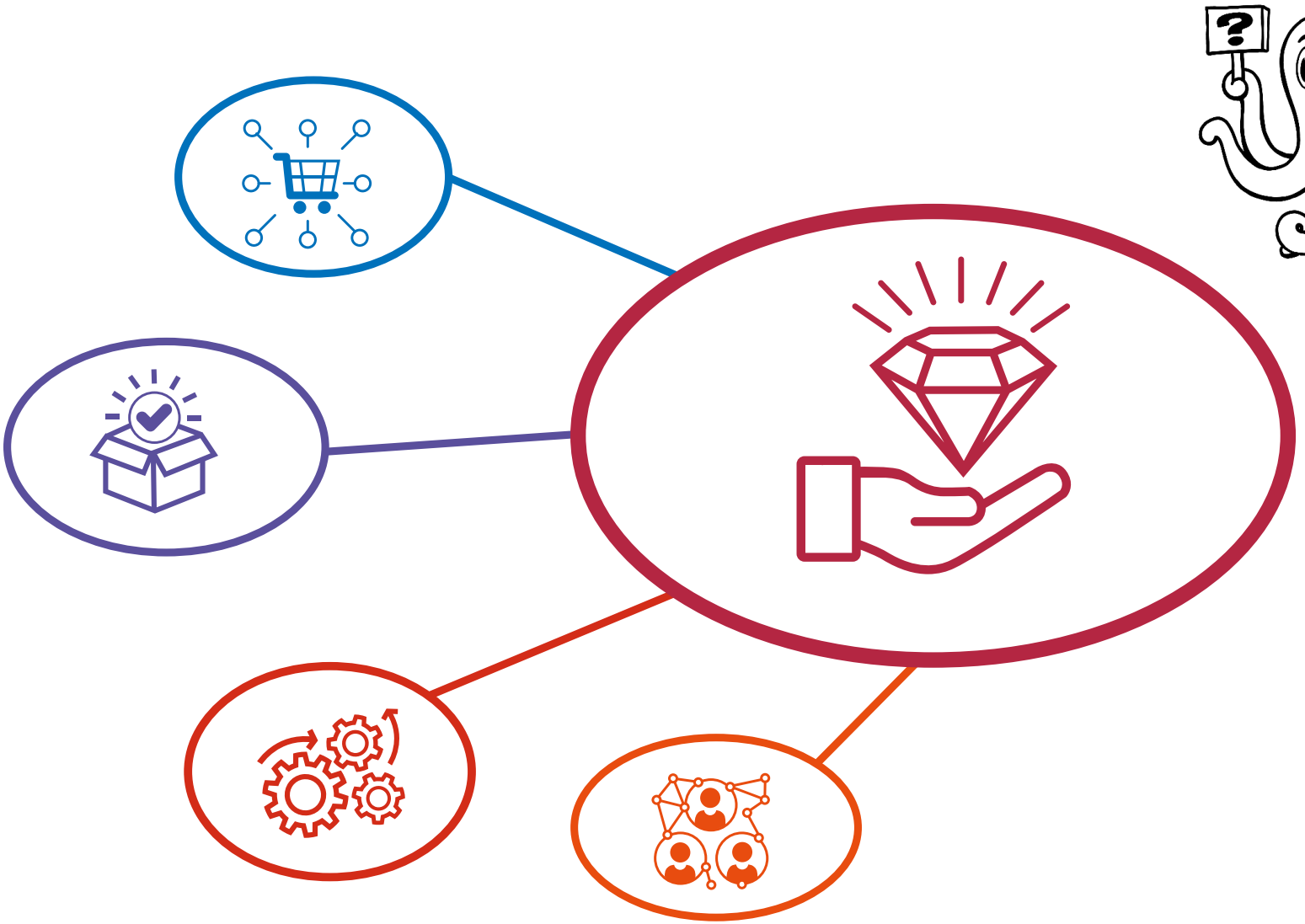
Identify the data needed to create value for the following functions

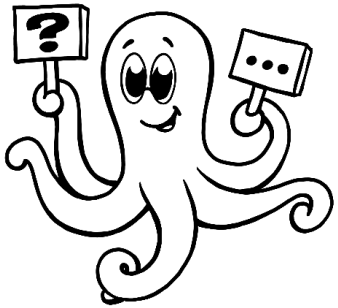
- Product launch
- Production cost reduction
- Pricing strategy
- Marketing campaign optimization
- New selling store
- Leadership best practices





What is needed for Data Value Creation overall?





Key Elements for Data Value Creation

- Strategic Alignment
- Data Infrastructure
- Analytical capabilities
- High-quality data

Data Governance forms the backbone of high-quality data, compliance, and cultural trust

1. Data Governance **aligns data with business goals** and establishes data policies and frameworks aligned with organizational goals, ensuring data initiatives support business value
2. Data Governance **enables reliable data value creation** and ensures data is accurate, consistent, and up-to-date
3. Data Governance **mitigates risks** in Value Creation and enforces rules to handle data securely and adhere to privacy laws (e.g., GDPR, CCPA), avoiding fines and reputational damage
4. Data Governance **facilitates scalability** of Data Value Creation and promotes interoperability and centralized data standards, reducing inefficiencies from data silos
5. Data Governance **supports trust in Data** and promotes accountability through clearly defined roles and quality controls, building trust in the data
6. Data Governance **optimizes costs in data usage** and minimizes duplication and redundant storage or processing of data, focusing resources where they generate the most value

Challenges without Data Governance

- **Unreliable Insights**: poor data quality which leads to bad decisions and reduced value
- **Regulatory Breaches and Penalties**: non-compliance risks lead to fines or shutdowns
- **Silos and Inefficiencies**: Lack of standardized data structures limits the potential for insights
- **Eroded Trust**: Employees and leadership may doubt the data's accuracy, hindering adoption
- **Security:** insufficient data security measures, increasing the risk of data breaches and unauthorized access
- **Accountability:** without defined roles & responsibilities it's challenging to ensure accountability for data management practices

Governance is a **Prerequisite**. It structures data to ensure it is accessible, secure, and useful.

In Summary

- ✓ Data governance acts as the backbone for data value creation
- ✓ Without governance, value creation efforts are chaotic, risky, and unsustainable
- ✓ With governance, data becomes a trustworthy, actionable, and strategic asset for driving business success

Definition of Data Governance

Data

Raw facts and figures that are collected and stored for analysis, structured (e.g., databases) or unstructured (e.g., text, images)

Governance

System of rules, practices, roles and processes by which organizations are directed and controlled to ensure accountability, transparency, and alignment with objectives

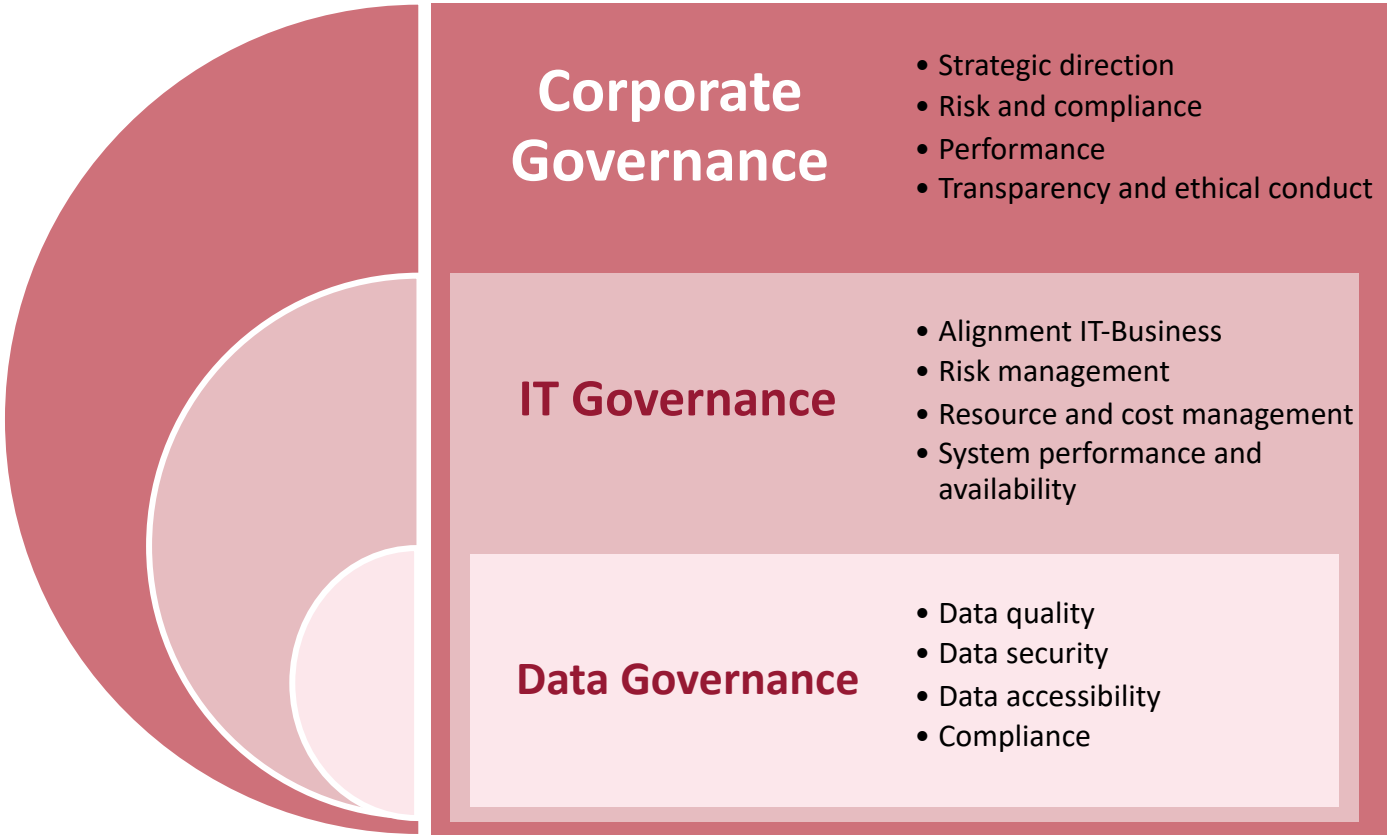
Data Governance

Framework of policies, procedures, rules, processes, responsibilities and standards that defines how an organization collects, organizes, stores, and uses its data to ensure that data is managed properly throughout its lifecycle. It focuses on ensuring data quality, security, compliance, and accessibility to maximize the value of data.

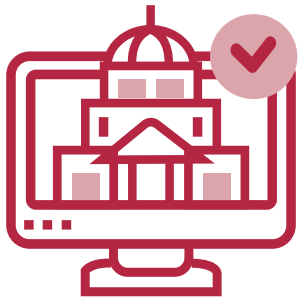
Key Components of a Data Governance

- **Data Policies:** Define how data should be collected, stored, accessed, and used
- **Roles and Responsibilities:** Assign ownership of data assets and responsibilities for data stewardship
- **Standards and Metadata:** Use consistent definitions, formats, and taxonomies for data
- **Data Integration:** Ensure that different data systems & sources can work together effectively
- **Access Management:** Implement role-based permissions to secure sensitive data
- **Monitoring and Auditing:** Track data usage and compliance regularly
- **Data Ethics:** Establish rules for ethical data collection and use to prevent misuse

Data Governance is part of the IT Governance which is part of the Corporate Governance



Data Governance Framework



A **data governance framework** is a structured set of policies, practices, and guidelines that help organizations manage and control their data assets effectively. It defines how data is collected, stored, used, protected, and shared, ensuring that data remains accurate, secure, and compliant with relevant regulations.

The framework typically includes:

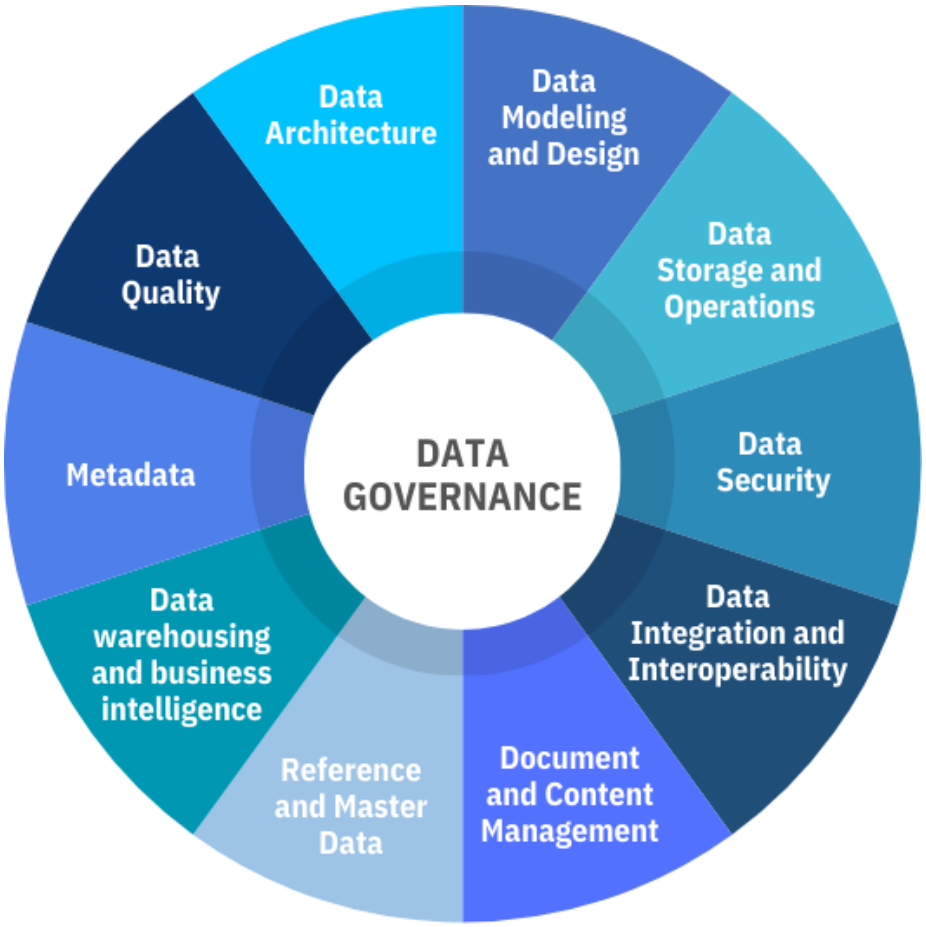
- **Responsibilities**: Define the high-level responsibilities, such as who owns the data, who ensures data quality, and who is accountable for compliance
- **Access Policy**: Define access policies, specifying who should have access to what data and under what conditions, in line with security and privacy regulations
- **Classification**: Process of defining data categories based on sensitivity and importance (e.g., public, internal, confidential)
- **Quality and Integrity Standards**: Define the quality and integrity standards for data, such as accuracy, completeness, consistency, and timeliness
- **Compliance Requirements**: outline the legal, regulatory, and internal standards that must be followed (e.g., GDPR, HIPAA)
- **Risks**: identifying and addressing potential risks related to data, such as security breaches, unauthorized access, and data corruption
- **Auditing**: refers to the establishment of audit policies and the framework to ensure that data usage and access are continuously monitored and compliant

In essence, a data governance framework provides the structure needed to maximize the value of data while minimizing risks and ensuring compliance.

5 Generic Data Governance Frameworks

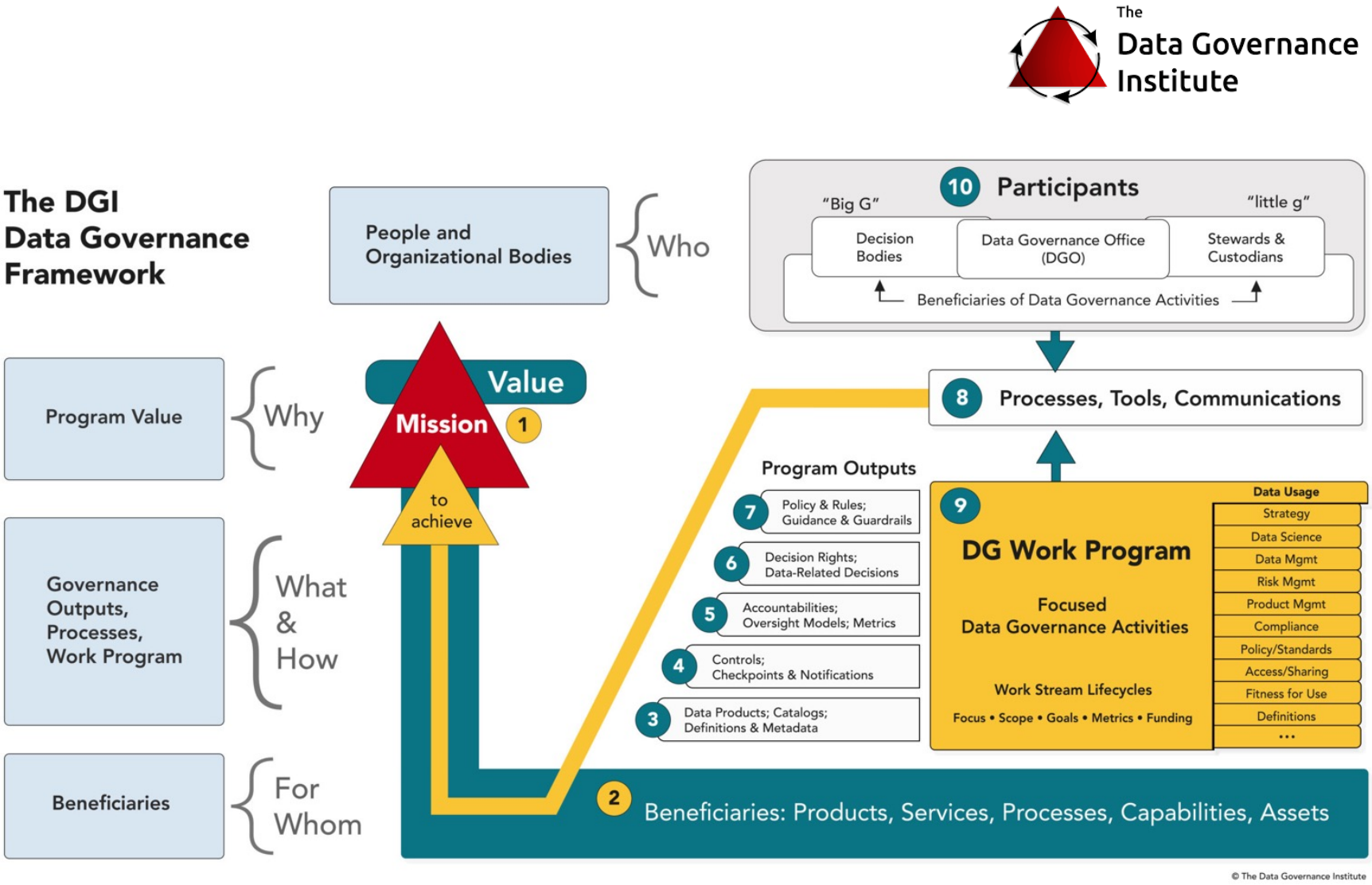
1. **DAMA-DMBOK** (Data Management Body of Knowledge): Provides a broad set of guidelines for managing and governing data across industries
2. **The DGI Framework**: Provides a framework for establishing data governance processes that can be adapted to any business setting
3. **COBIT** (Control Objectives for Information and Related Technologies): Focuses on IT governance, including data governance, and can be applied across various industries for managing IT resources
4. **ISO/IEC 38500**: Offers principles for governance of IT and data management that can be applied to any organization
5. **CMMI for Data Governance** (Capability Maturity Model Integration): Focuses on continuous improvement and maturity, applicable to any organization looking to mature its data governance processes.

DAMA-DMBOK



Source: www.dama.org/cpages/dmbok2r-wheels

The DGI Framework



COBIT 5: Data Governance

Source: www.isaca.org/resources/news-and-trends/industry-news/2016/unearthing-and-enhancing-intelligence-and-wisdom-within-the-cobit-5-governance-of-information-model

ISO/IEC 38505-1

The objective of this document is to provide principles, definitions and a model for governing bodies to use when evaluating, directing and monitoring the handling and use of data in their organizations.

This document is a high level, principles-based advisory standard. In addition to providing broad guidance on the role of a governing body, it encourages organizations to use appropriate standards to underpin their governance of data.

All organizations use data, and the major proportion of this data is stored electronically across IT systems. With the advent of cloud computing, the realization of the potential of the "internet of things" and the increasing use of "big data" analytics, data is becoming easier to generate, gather, store and mine for useful information. This flood of data brings with it an urgent requirement and responsibility for governing bodies to ensure that valuable opportunities are leveraged and sensitive data is protected and secured.

This document has been prepared to provide guidelines to the members of governing bodies to apply a principles-based approach to the governance of data so as to increase the value of the data while decreasing the risks associated with this data. ISO/IEC 38500 provides principles and model for the governing bodies of organizations to guide their current and to plan for their future use of Information Technology (IT), and it is that standard that is applied here.

As with ISO/IEC 38500, this document is addressed primarily to the governing body of an organization – and will equally apply regardless of the size of the organization or its industry or sector. Governance is distinct from management and thus we are concerned with evaluating, directing and monitoring the use of data – rather than the mechanics of storing, retrieving or managing the data. That being said, an understanding of some data management and techniques is outlined in order to enunciate the possible strategies and policies that could be directed by the governing body.

Source: www.iso.org/obp/ui#iso:std:iso-iec:38505:-1:dis:ed-1:v1:en

5 Stages of Gartner's Maturity Model for data governance

Level 1 Basic	Level 2 Opportunistic	Level 3 Systematic	Level 4 Differentiating	Level 5 Transformational
▪ Data is not exploited, it is used ▪ D&A is managed in silos ▪ People argue about whose data is correct ▪ Analysis is ad hoc ▪ Spreadsheet and information firefighting ▪ Transactional	▪ IT attempts to formalize information availability requirements ▪ Progress is hampered by culture; inconsistent incentives ▪ Organizational barriers and lack of leadership ▪ Strategy is over 100 pages; not business-relevant ▪ Data quality and insight efforts, but still in silos	▪ Different content types are still treated differently ▪ Strategy and vision formed (five pages) ▪ Agile emerges ▪ Exogenous data sources are readily integrated ▪ Business executives become D&A champions	▪ Executives champion and communicate best practices ▪ Business-led/ driven, with CDO ▪ D&A is an indispensable fuel for performance and innovation, and linked across programs ▪ Program mgmt.. mentality for ongoing synergy ▪ Link to outcome and data used for ROI	▪ D&A is central to business strategy ▪ Data value influences investments ▪ Strategy and execution aligned and continually improved ▪ Outside-in perspective ▪ CDO sits on board

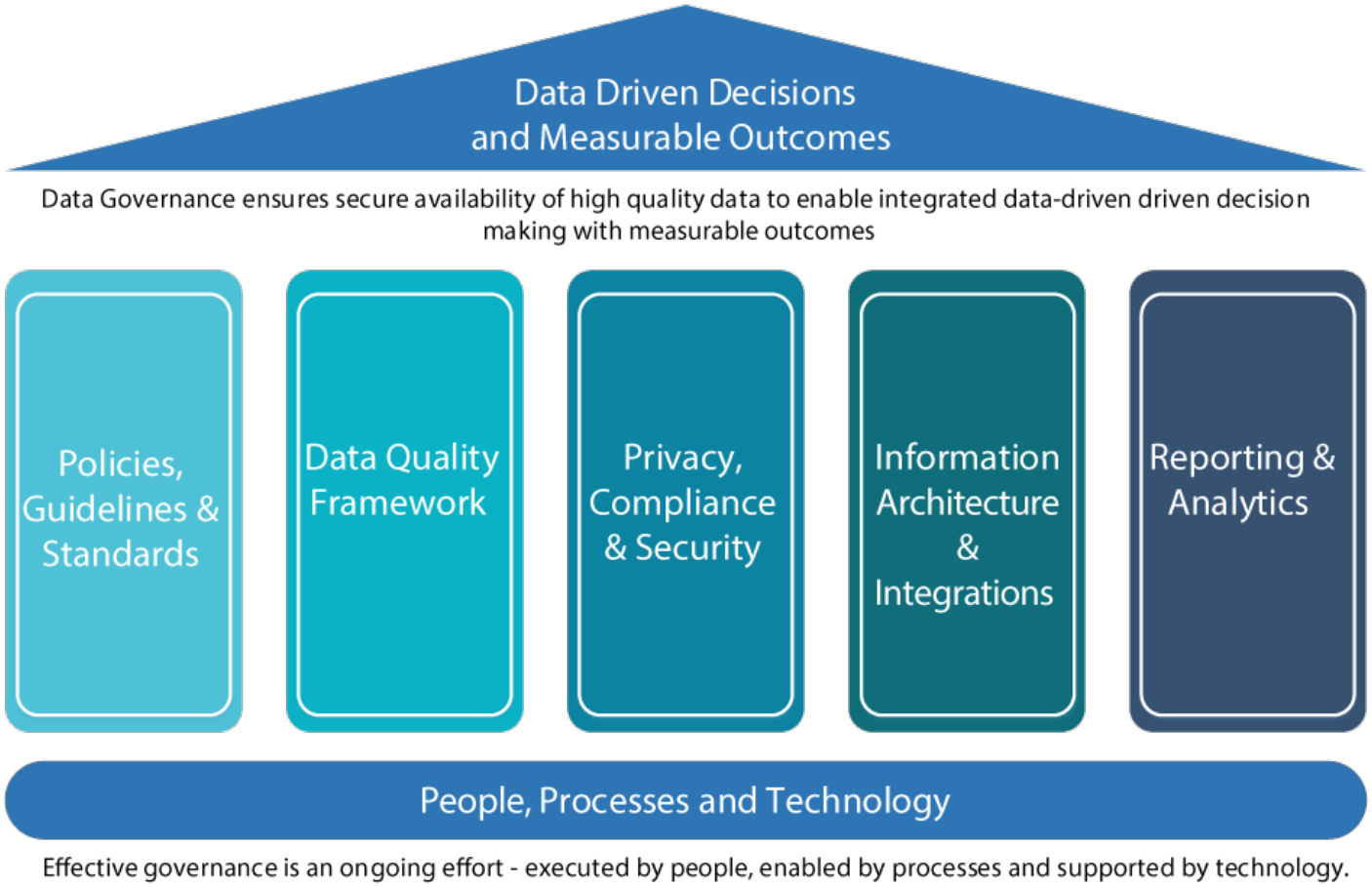
D&A = data and analytics; ROI = return on investment

Source: www.gartner.com/en/newsroom/press-releases/2018-02-05-gartner-survey-shows-organizations-are-slow-to-advance-in-data-and-analytics

5 Applied Data Governance Frameworks

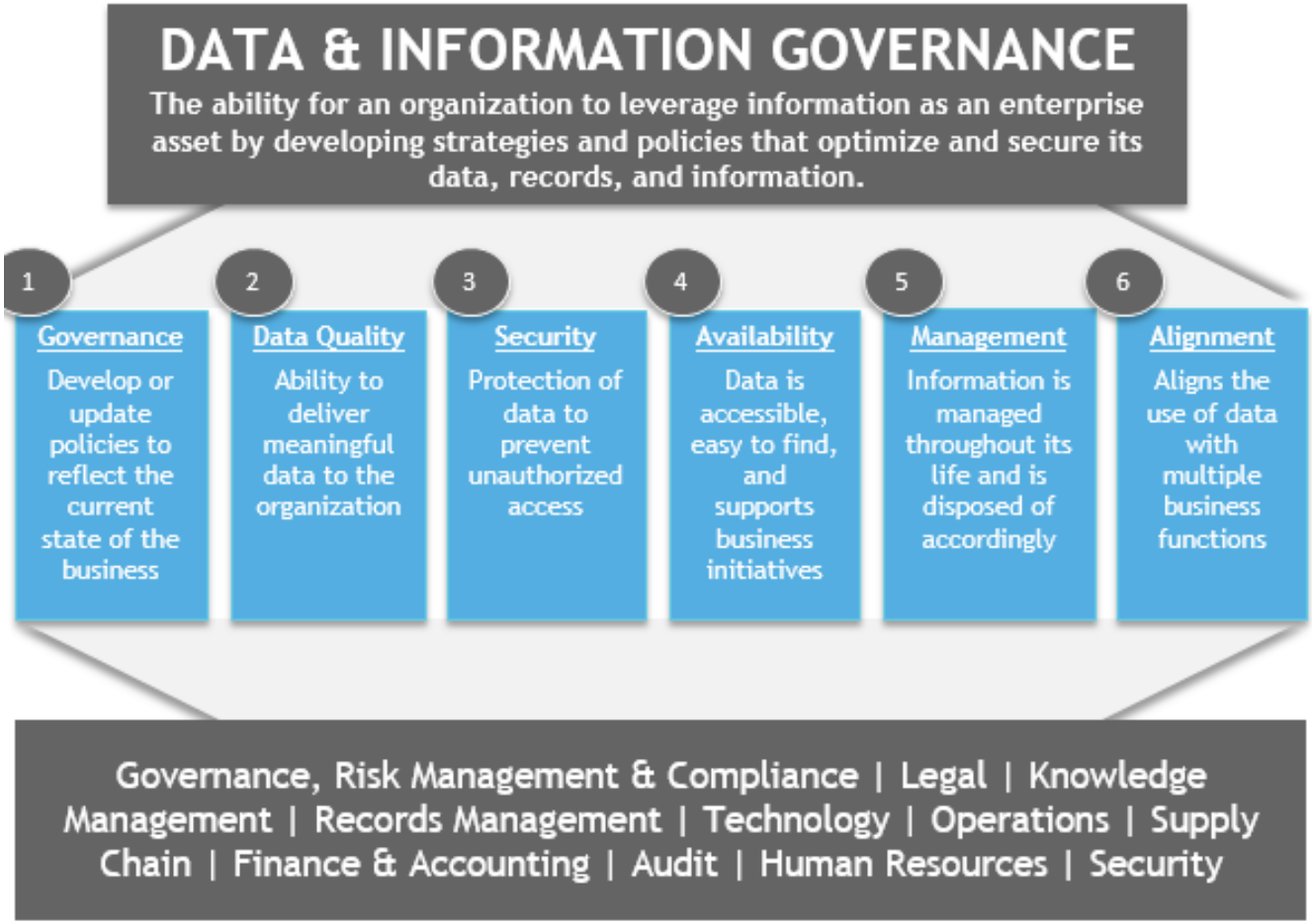
1. **The University of British Columbia**
2. **BDO** (BDO stands for Binder, Dijker, and Otte, the original founders of the firm as an international network of public accounting, tax, consulting and business advisory firms)
3. **PwC** (Consulting)
4. **Big Cube** (SAP Consulting)
5. **Kanton Zürich**

Example 1 : the University of British Columbia



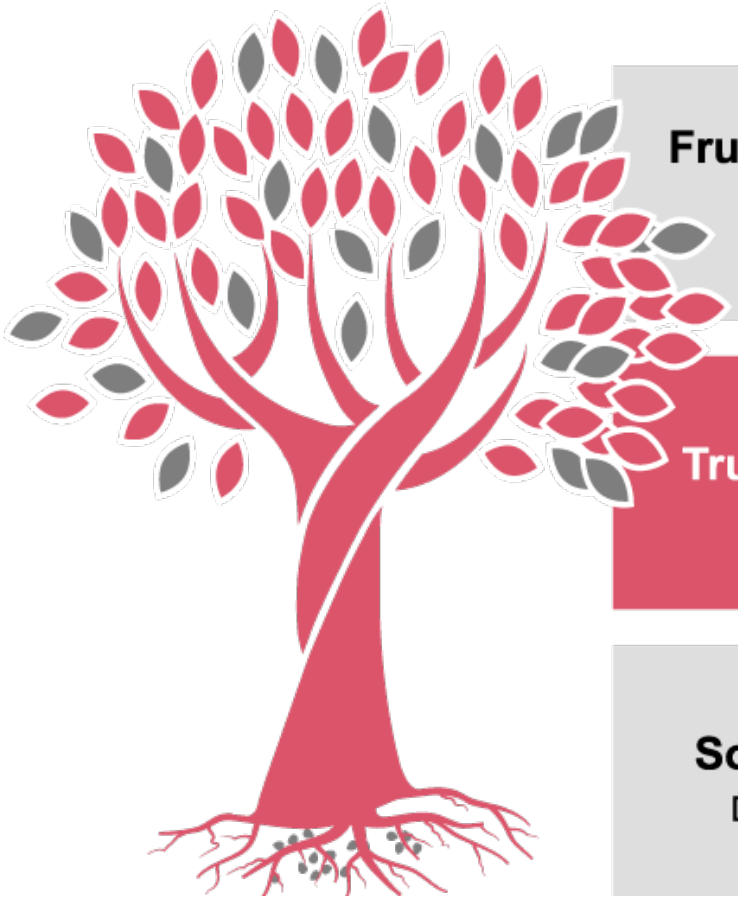
Source: cio.ubc.ca/data-governance/data-governance-program

Example 2 : BDO USA



Source: www.bdo.com/insights/blogs/nonprofit-standard/the-integration-of-data-privacy-into-a-data-governance-program

Example 3 : PwC



Fruits and leaves
Outcomes

Trunk and roots
Managing data

Soil and seeds
Data foundation

Revenue uplift	Cost reduction	Risk management

Data and AI outcomes

Data strategy	AI and ML
Analytics enablement	Data monetisation
Insights automation	

Data management and governance

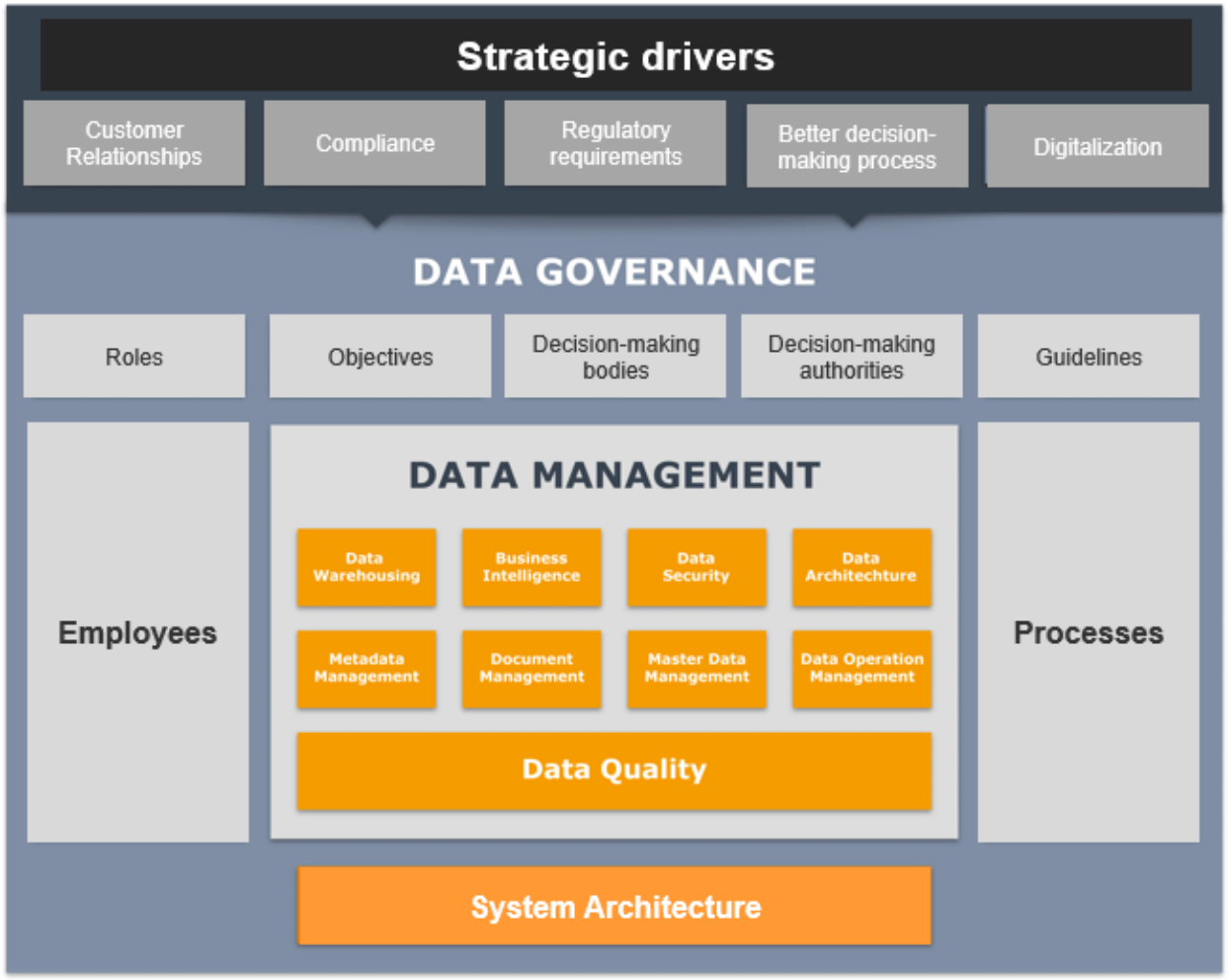
Data sharing	Data mesh / fabric
Data management	Data governance
Data architecture	Data and application modernisation

Data foundations

Responsible AI	Data privacy and security
Controls and risk management	Data literacy and change management
Operating model	

Source: www.pwc.com/sg/en/services/risk/digital-solutions/data-management-and-governance.html

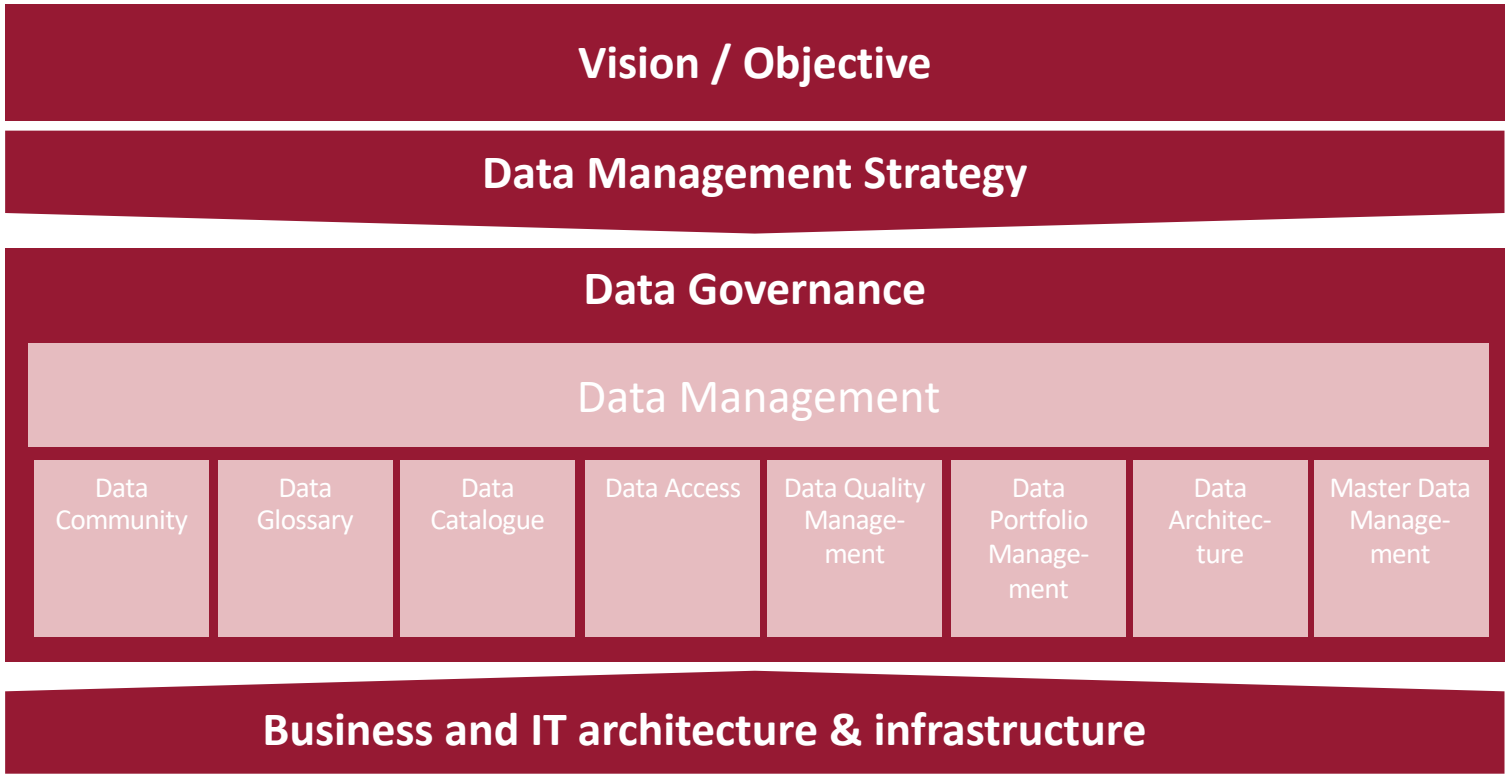
Example 4 : Big Cube



Source: www.big-cube.com/wp-content/uploads/Data-Governance.png

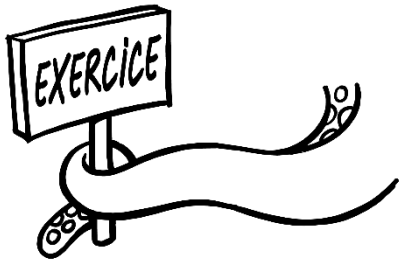
Example 5 : Kanton Zürich

Translated from German

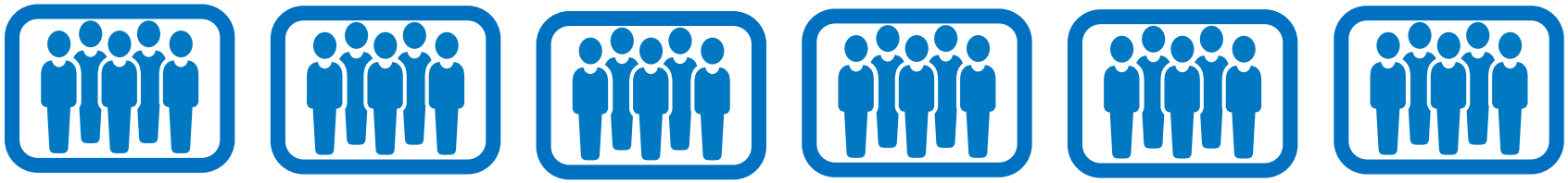


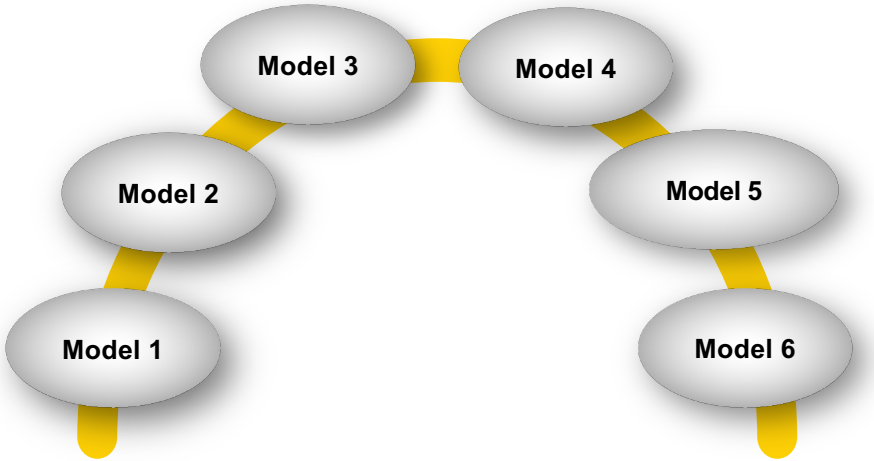
Source: www.zh.ch/content/dam/zhweb

Data Governance Framework

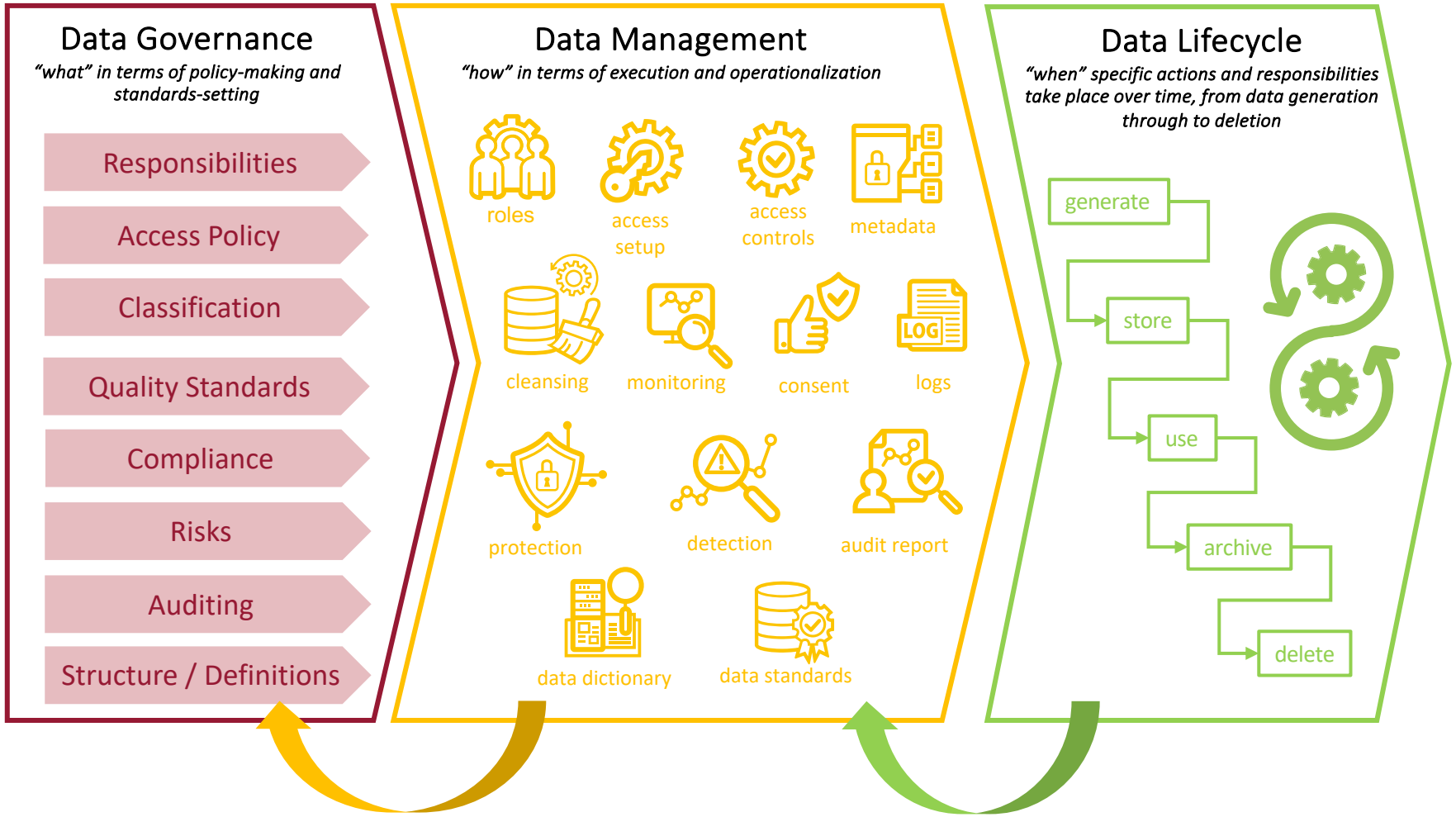


- Give the common elements of the different models presented
- Show the differences
- Design and visualize your own Data Governance Framework





Data Governance > Data Management > Data Lifecycle

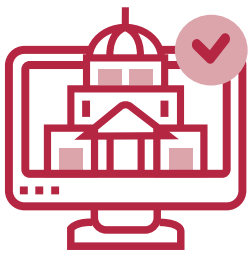


Enterprise Data Management (EDM)

Corporate Governance

Data Strategy & Roadmap

Data Governance Framework



Enterprise Data Management

- Data Integration & Interoperability
- Data Lifecycle Management
- Data Quality Management
- Policies and Standards
- Metadata Management
- Automation & Tools
- Data Architecture
- Data Ownership & Accountability
- Data Security & Privacy

- Data Analytics & Business Intelligence (BI)
- Data Collaboration & Sharing

Roles needed for Data Governance

Name	Description
Chief Data Officer (CDO)	Leads the data governance program. Aligns the organization's data strategy with business objectives and ensures data initiatives are prioritized.
Data Governance Committee	A group of stakeholders that sets policies, standards, and guidelines for data management. Often includes representatives from IT, legal, and business units.
Data Architect	Designs data models and ensures data infrastructure supports governance policies, including integrity and scalability
Data Owner	Responsible for the overall lifecycle of a dataset, including defining access policies, ensuring compliance, and addressing risks
Data Steward	Ensures the quality, integrity, and usability of data. Acts as a liaison between technical teams and business users to ensure data standards.
Data Custodian	Manages the technical environment where data is stored, processed, and transmitted. Responsible for infrastructure, security, and backups
Data Consumer	Users (analysts, developers, and business staff) who consume data for various purposes. Advocates for their needs in governance framework
Legal/Compliance Advisor	Ensures data practices meet regulatory and legal obligations, providing guidance on potential legal and compliance risks

Data Dictionary

Centralized repository that provides detailed definitions, descriptions, and metadata for an organization's data

Field Name	Description	Data Type	Allowed Values/Format	Example
Product_ID	Unique identifier for a manufactured product	Integer	Numeric, 6 digits	100001
Product_Name	Name of the product	Text	Up to 50 characters	Stainless Steel Bolt
Batch_Number	Identifier for a batch of products	Alphanumeric	Prefix B followed by numbers	B2023005
Production_Date	Date when the product was manufactured	Date	YYYY-MM-DD	2025-01-19
Quantity_Produced	Total number of items produced in a batch	Integer	Positive numbers only	500
Material_Code	Unique code for the raw material used	Text	Alphanumeric, up to 10 chars	MAT00123
Supplier_ID	Unique identifier for the supplier	Integer	Numeric, 5 digits	54321
Cost_Per_Unit	Production cost per unit of the product	Decimal	Up to 2 decimal places	5.25
Factory_Location	Name of the factory where manufacturing occurred	Text	List of valid locations	Plant A

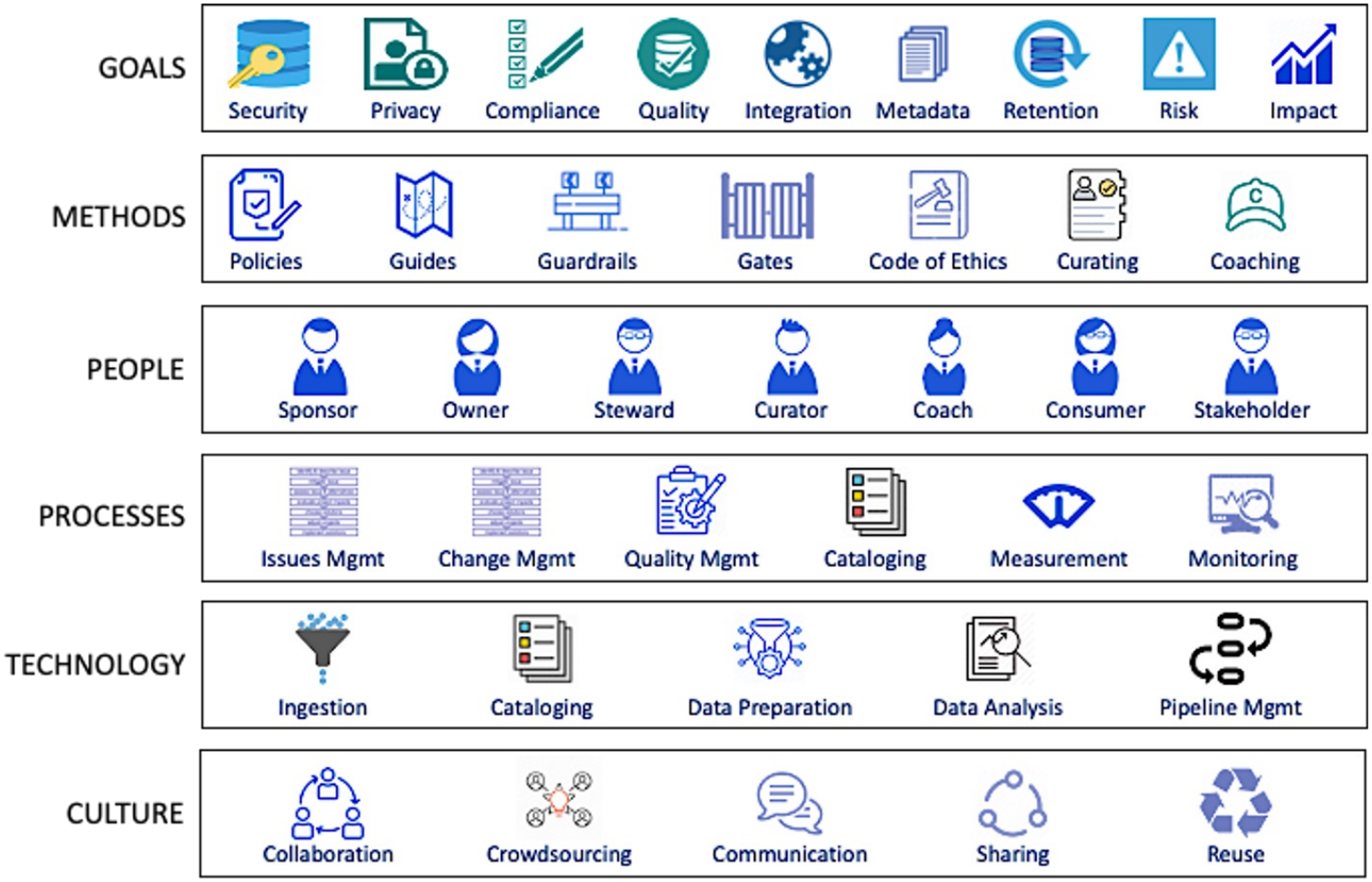
Data Classification

Organizing data into categories based on its sensitivity, importance, or relevance

Classification	Description	Examples from Banking
Restricted (C4)	most sensitive information that requires the highest level of security	Employee data, employee salary accounts, strategic data such as marketing plans, nominative data of number customers, combination of data within the privacy of customers, unpublished financial figures and audit reports, detailed IT system documentation
Confidential (C3)	Sensitive information requiring protection due to potential harm if disclosed	Direct Client Identifying Data (CID) such as name and address information, account deposit and card numbers, financial status and insurance information as well as indirect and potentially indirect CID in identifying combination
Internal (C2)	Information meant for internal use within the organization	Regulations, directives, process descriptions, work instructions, HR newsletters, collection of indirect CID without identifying combinations
Public (C1)	Information available to the public with no confidentiality concerns	Product brochures, newsletter, annual report of the bank after publication

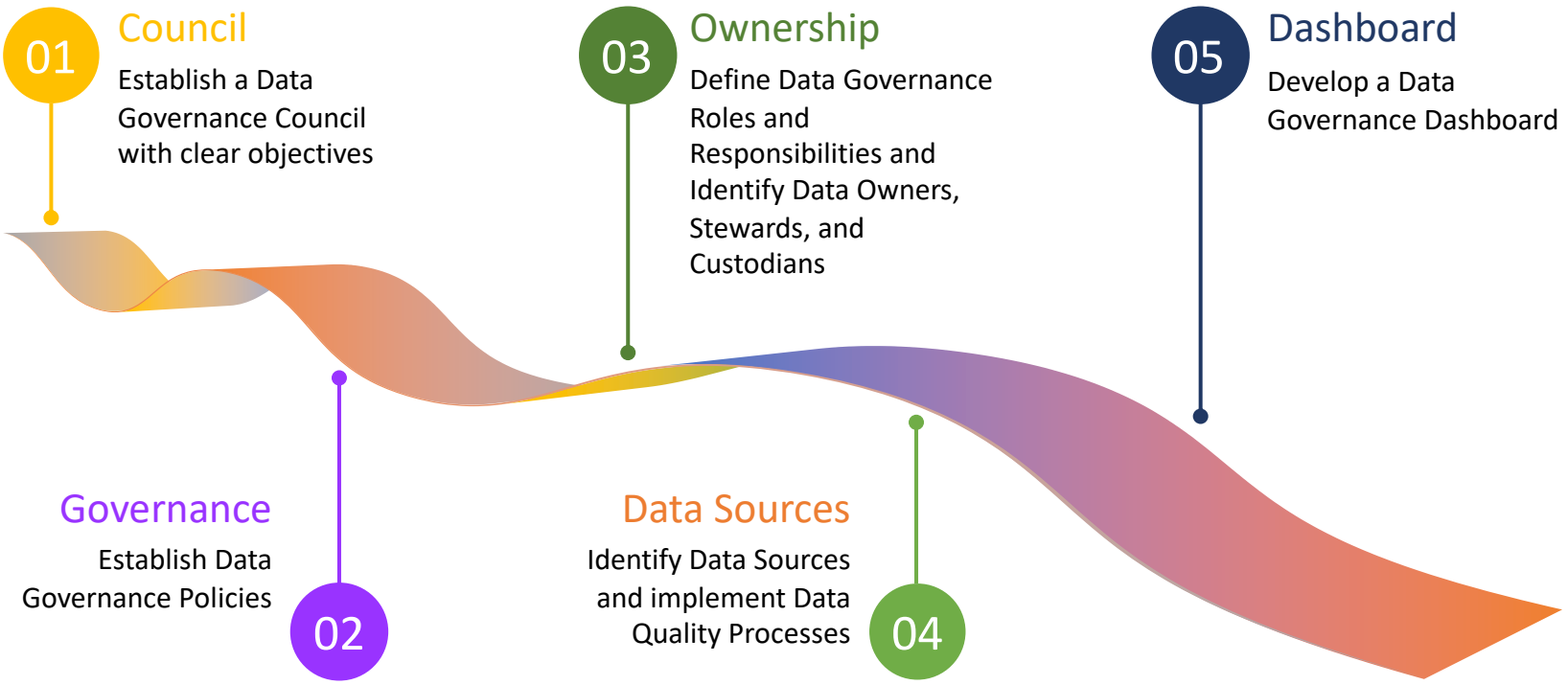
A Modern Data Governance Framework

"Governance modernization isn't quick and easy. It is a journey, not an event."



Source: www.eckerson.com/articles/modern-data-governance-problems

Implementing Enterprise Data Management (EDM)



CSFs for Implementing Data Governance

1. **Provide clear guidance on data classification**: Establish a set of guidelines for classifying data that outlines the sensitivity and value of different types of data and how it should be used.
2. **Foster strong communication between stakeholders**: Ensure that all stakeholders involved in data governance are communicating effectively to ensure that everyone understands the importance of data governance.
3. **Create a single source of truth**: Designate one authoritative source of truth to ensure accuracy and consistency across data systems.
4. **Establish data governance policies**: Develop policies that govern the sharing, use, and security of data across the organization.
5. **Monitor data use**: Monitor and assess the usage of data to ensure that it is being used in an appropriate manner.
6. **Establish data access controls**: Establish access control policies to ensure that only authorized users are able to access certain data.
7. **Encourage data stewardship**: Encourage employees to take ownership of the data they are responsible for by regularly monitoring it and making sure it is up-to-date.
8. **Invest in data quality**: Implement processes and tools to ensure that data is accurate and complete.
9. **Use data governance tools**: Utilize data governance software to improve organizational visibility into data use and access.
10. **Adopt a culture of data responsibility**: Educate employees on their responsibilities when it comes to data governance and create an environment that fosters data responsibility.

Challenge for Data Governance

Cultural Resistance to Change

- **Inertia**: Organizations without a data-driven culture may struggle to adapt to the mindset required for governance and will not give priority for data governance
- **Ownership Conflicts**: Teams may resist losing control over "their" data or being held accountable for its governance
- **Lack of Awareness**: Employees may not understand the importance of data governance or how it benefits them and the organization
- **Human Factor**: Data governance introduces new processes, roles, and rules that many employees may see as restrictive or as extra work. Overcoming this resistance requires a cultural shift, which can take time

buy-in from the entire organization

Managing cultural, political and organizational challenges

Cultural: Different departments in an organization may have different views on the value of data and how it should be used. This can lead to tension between departments or individuals and can impede data governance implementation.

1. Resistance to changing processes and procedures that have been established for many years
2. Language barriers when working with colleagues in other countries
3. Different levels of understanding of data governance and its implications
4. Lack of alignment between departments or teams concerning the importance of data governance or its implementation.

Political: Data governance implementation may be met with resistance from senior leaders who may feel their power is being threatened by the implementation of data governance processes.

1. Political and legal pressure from government and regulatory agencies
2. Pressure from shareholders or investors to implement data governance policies that may not be beneficial to the organization.
3. Competition from other organizations, who may have better data governance policies in place.

Organizational: Data governance implementation can require significant resources and reorganization of existing processes and systems. This can be difficult for organizations to manage and may lead to delays in implementation.

1. Lack of resources or budget to implement data governance initiatives
2. Difficulty in finding and training personnel who possess the necessary skills to implement data governance
3. Difficulty in developing and enforcing policies and procedures that are accepted by all stakeholders
4. Lack of a unified system or platform to store and manage data.

How big are the chances of success?

Gartner®

By 2027, for example, 60% of organizations will fail to realize the anticipated value of their AI use cases due to incohesive data governance frameworks.

Source: www.gartner.com/en/data-analytics/topics

What do you think?

What can be done?

Food for Thought

Focusing

- *Identify use cases with high priority (see Functional Framework Wheel)*

Integrating

- *Improve Business Processes*
- *Automate*
- *Leverage Technologies*

Securing

- *Protect High Value Assets (HVA)*

Steering

- *Improve Business Decisions*
- *Establish Data Governance Policies*

Data Management Functional Framework Wheel

A Functional Framework Wheel or spider map is a graphical representation often used to visually structure information, relationships, or processes in a circular, interconnected format

Let's take an example. A healthcare organization has prioritized consumer engagement as a major strategic initiative. The current state environment presents with the following data management challenges:

- a, sitting outside nascent data governance program with a small team and a recently formed cross-functional task force to support the development of enterprise policies, processes and standards for consumer engagement
- no master data management
- a meta data repository that is being implemented
- no enterprise data models, conceptual or logical
- not enterprise data dictionary
- no inventory of data assets
- data quality efforts underway in the enterprise data warehouse only
- enterprise security policies in place but not tied to data assets except in an excel spreadsheet
- a newly formed initiative for enterprise content management tied to lifecycle governance of the company's data management efforts

The following spider map was created for the organization to help delineate the actual work activities that are important to the strategic consumer engagement objectives. You'll see that this spider map has as its center circle the use case, Consumer Engagement. The surrounding seven circles are the functional framework components and activities that are *most important* to supporting this business priority.

Source: datatrending.wordpress.com/2012/12/04/the-data-management-framework-from-conceptual-to-tactical/#jp-carousel-195

Integrating Data Governance within Business Processes

Data integration with business processes is the process of combining data from multiple sources into a single, unified view to support a business process. It can include combining structured data from databases and unstructured data from documents, emails, social media, text messages and other sources.

Examples of data integration with business processes

- **customer 360**: practice of combining customer data from multiple sources and channels into a single view of the customer. This unified view can provide a more comprehensive understanding of the customer, including their purchase history, preferences, and lifetime value. This data can then be used to make better decisions on which products to offer, how to market to customers, and how to personalize experiences.
- **customer segmentation**: can be used to target specific marketing campaigns or sales strategies
- **predictive analytics**: by integrating data from multiple sources and applying advanced analytics techniques, organizations can predict customer behavior and outcomes, helping them make better decisions about how to maximize their return on investment

Enhancing Data Governance Through Automation

- Human errors can occur—leading to incomplete, duplicated, or erroneous data
- Manual tracking of access logs, privacy reviews, and security audits is both time-consuming and error-prone, leading to increased risk of non-compliance
- Data silos are more likely to develop. These silos reduce the overall accessibility and coherence of data across the organization.
- Manually controlling who has access to sensitive data is inefficient and error-prone.
- Employees may gain unauthorized access or forget to revoke access when roles change, increasing the risk of data breaches.

- Automation can perform regular data validation checks, correcting errors like missing values or formatting discrepancies
- Automation can classify data based on predefined criteria like sensitivity (personal or financial data), retention policies, or usage rights
- Automated workflows can ensure that the right individuals have the proper access to sensitive data by controlling and logging access permissions
- Automation can map the data flow and provide visibility into how data moves across systems and is transformed
- Regular automated checks for compliance with security and privacy rules can save time and reduce human error

Leveraging technologies throughout the Data Lifecycle (1/2)

Data Lifecycle	Technologies & Tools	Examples	Use
Data Creation & Collection	Data Capture and Integration Tools	- Apache Kafka - Informatica - Talend	Automates data ingestion from various sources and systems, reducing manual errors in data entry and ensuring standardized data collection
	Data Entry Standards & Validation	- FormAssembly - Trifacta	Validates data upon entry, ensuring quality by preventing mistakes such as duplicates or incorrect formats during collection
Data Storage	Data Management Platforms	- Microsoft Azure Data Lake - Amazon S3	Ensures proper, structured storage of data while facilitating management at scale
	Metadata Management	- Alation - Collibra	Tracks the metadata associated with data, ensuring effective cataloguing and discoverability, along with governance over metadata itself
Data Usage & Integration	Data Access Management and Role-Based Access Control (RBAC)	- Okta - Azure Active Directory	Controls and monitors user access, ensuring that only authorized individuals can access sensitive or critical data
	Data Integration Platforms	- MuleSoft - Talend Data Fabric	Allows data from disparate systems to be integrated and shared while applying governance rules

Leveraging technologies throughout the Data Lifecycle (2/2)

Data Lifecycle	Technologies & Tools	Examples	Use
Data Quality & Cleansing	Data Quality Management Tools	- IBM InfoSphere Information Governance - Ataccama	Validates, cleanses, and enriches data to ensure consistency, accuracy, and completeness for reporting and operational use
	Master Data Management (MDM)	- Informatica MDM - SAP Master Data Governance	Creates a single source of truth by managing critical business data consistently and accurately across systems
Data Security & Privacy	Data Encryption	- Vormetric Data Security - Thales CipherTrust	Protects data by applying encryption and secure access controls, reducing unauthorized access and ensuring data confidentiality
	Data Masking & Tokenization	- Delphix - Protegrity	Masks or tokenizes sensitive data to make it unreadable for unauthorized users, thereby safeguarding privacy and security
	Data Privacy Compliance Tools	- OneTrust - TrustArc	Helps organizations maintain compliance with privacy laws such as GDPR and CCPA by automating tasks like consent management and data subject requests
Data Archiving & DisposalData Archiving & Disposal	Data Archiving	- NetApp Data Management - Iron Mountain	Provides scalable and compliant storage options for long-term data archiving and ensures controlled data retention
	Data Disposal Tools	- Blancco - Ontrack	Securely erases or sanitizes data that is no longer required, reducing risk and ensuring compliance with data disposal policies

Protecting High-Value Assets (HVAs)

Identify HVAs as these assets have significant impact on the organization's bottom line, competitive edge, and operational effectiveness

HVAs may contain sensitive controls, instructions, data used in critical Federal operations, or unique collections of data (by size or content), or support an agency's mission essential functions, making them of specific value to criminal, politically motivated, or state sponsored actors for either direct exploitation or to cause a loss of confidence in the U.S. Government.
(from NIST-DHS High Value Asset Control Overlay)

- Customer Data & Information
- Customer Relationships & Contracts
- Supply Chain and Vendor Data
- Production Assets and Infrastructure
- Trade Secrets
- Employee Data
- Financial Assets
- Confidential Corporate Communications
- Reputation and Brand Value
- Software, Databases, and IT Systems
- Cloud Assets and Data
- Business Continuity Plans & Strategic Plans
- Intellectual Property (IP)
- Legal Assets

Utilizing Data Governance to Improve Business Decisions

Data Driven Decision Making (DDDM) is the process of using data to make informed and verified decisions to drive business growth.
By using the right KPIs and tools, companies can overcome biases and make the best managerial rulings that are aligned with their strategies.

Examples

⇒ Take decisions which new products to launch
⇒ Improve customer services, based on reported customer issues
⇒ Personalize customer services and provide more tailored experiences to customers
⇒ Increase the impact of a marketing campaign
⇒ Understand how operations are running and make improvements to increase efficiency
⇒ Understand customer demand and pricing elasticity, and use that to set more effective pricing strategies

Establishing Data Governance Policies

In the race to control COVID-19, the world is facing new demands for data: to track the spread of the virus, trace contacts and develop vaccines. Health systems need partnerships and data sharing arrangements with different stakeholders. (from the World Bank)

Source: wdr2021.worldbank.org/stories/governing-data/

Improve your Chances of Success

1. Use Best Practices
2. Go step-by-step => see Maturity Levels
3. Don´t underestimate the organizational changes needed

Some Data Governance Best Practices

1. **Establishing a data governance board**
   A data governance board is a group of individuals who are responsible for overseeing the organization's data governance strategy. This board should be composed of members from different departments, such as IT, finance, legal, and operations.

2. **Developing data policies and procedures**
   Organizations should develop policies and procedures for data management, including rules for data access, storage, and use. These policies should be communicated to all employees and enforced consistently.

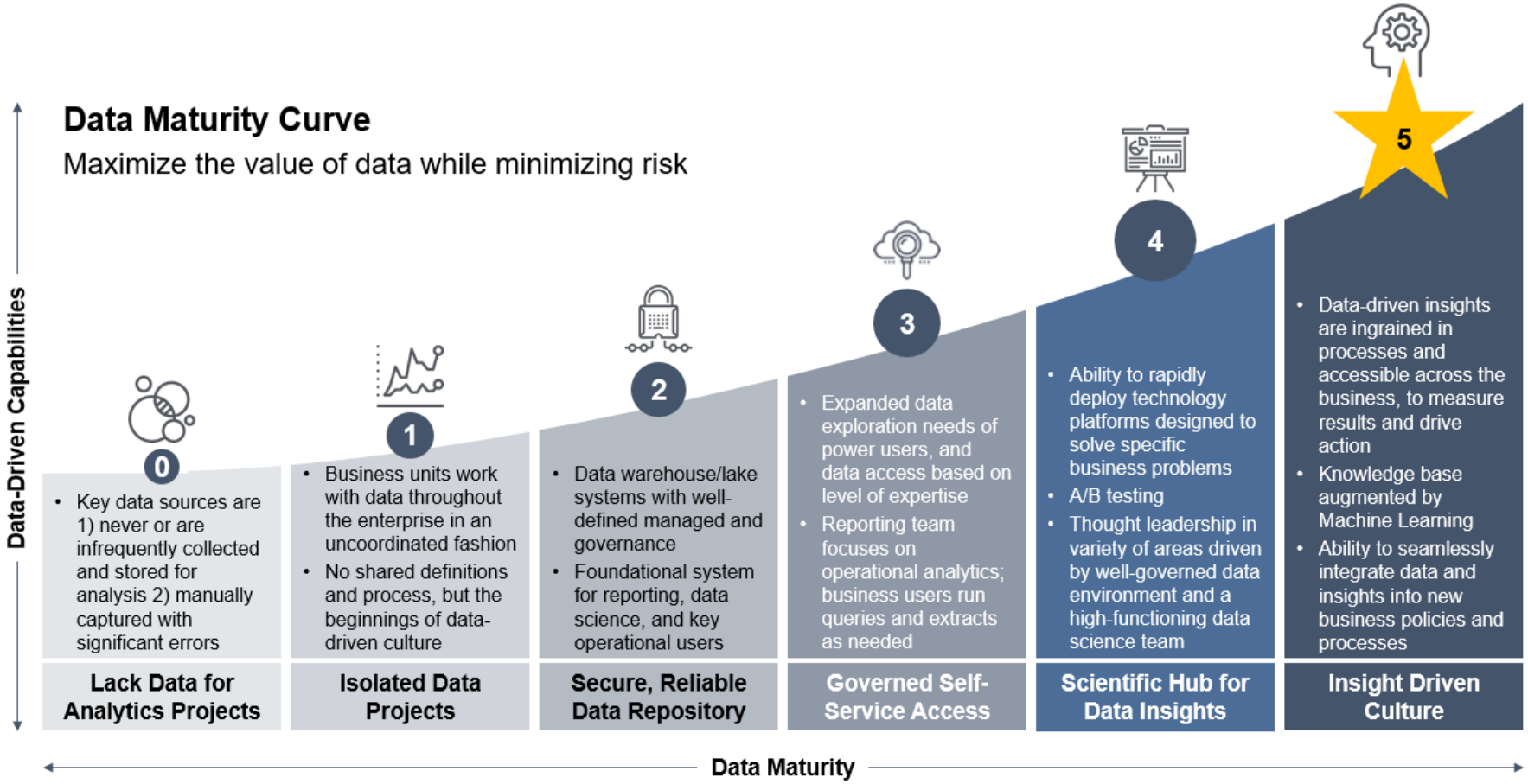
3. **Implementing data security measures**
   Organizations should implement appropriate data security measures to protect their data from unauthorized access, such as encryption, user authentication, and data backups.

4. **Creating a data dictionary**
   Organizations should create a data dictionary, which is a document that defines the different data elements used in the organization and their associated data types. This document helps to ensure that data is consistent across the organization

5. **Auditing data usage**
   Organizations should regularly audit their data usage to identify any potential misuse or unauthorized access. Audits can help organizations identify potential issues and take corrective action

6. **Training employees in data governance**
   Organizations should ensure that all employees are trained in data governance best practices. Training employees can help to ensure that data is managed and used appropriately.

Maturing Data Quality



Source: www.wwt.com/case-study/implementing-data-governance-for-business-results

Managing Organizational Changes

How to persuade CEOs to sponsor Data Governance?

The Coolest Data Management and Big Data CEOs of 2021

Posted on **September 17, 2021** by **Timothy King** in **Best Practices**

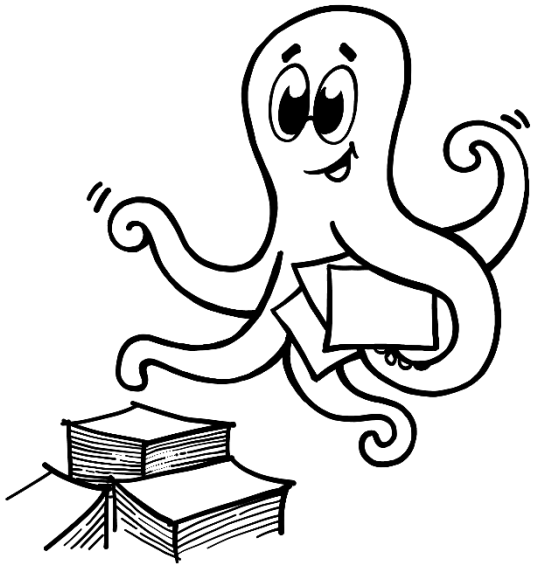
See: solutionsreview.com/data-management/the-coolest-data-management-and-big-data-ceos-2021/

Some Arguments…

- Illustrate the Impacts of Poor Data Quality
- Focus on the Risks Around Data Retention Policies and Discuss Security
  Explain the importance of data governance to protect the company from data breaches, cyber-attacks, and other security threats
- Highlight Regulatory Compliance
  Explain the importance of data governance to meet regulatory requirements and to avoid hefty fines and other penalties
- Showcase Innovative Ideas
  Show the CEOs how data governance can help the company innovate and stay ahead of the competition
- Demonstrate ROI
  Show the CEOs how data governance can help the company meet its goals and objectives, such as increased revenue, cost savings, and improved customer satisfaction

Take away and must know!

- What is value creation
- How can data generate value creation
- Definition of Data Governance and Examples of Data Governance Frameworks
- Difference between Data Governance and Data Management
- Some Critical Success Factors to have Data Governance in place
- Some Best Practices for Data Management



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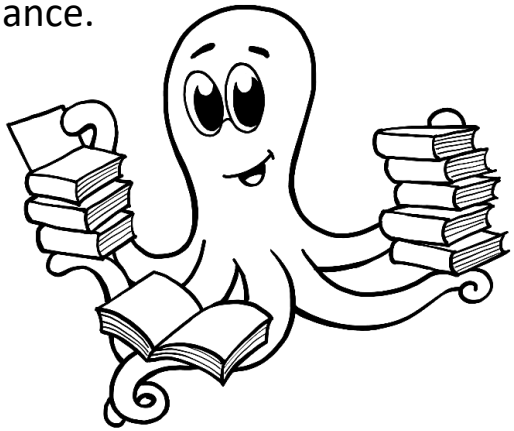

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