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A Practical Guide for Establishing Data Governance in Utilities

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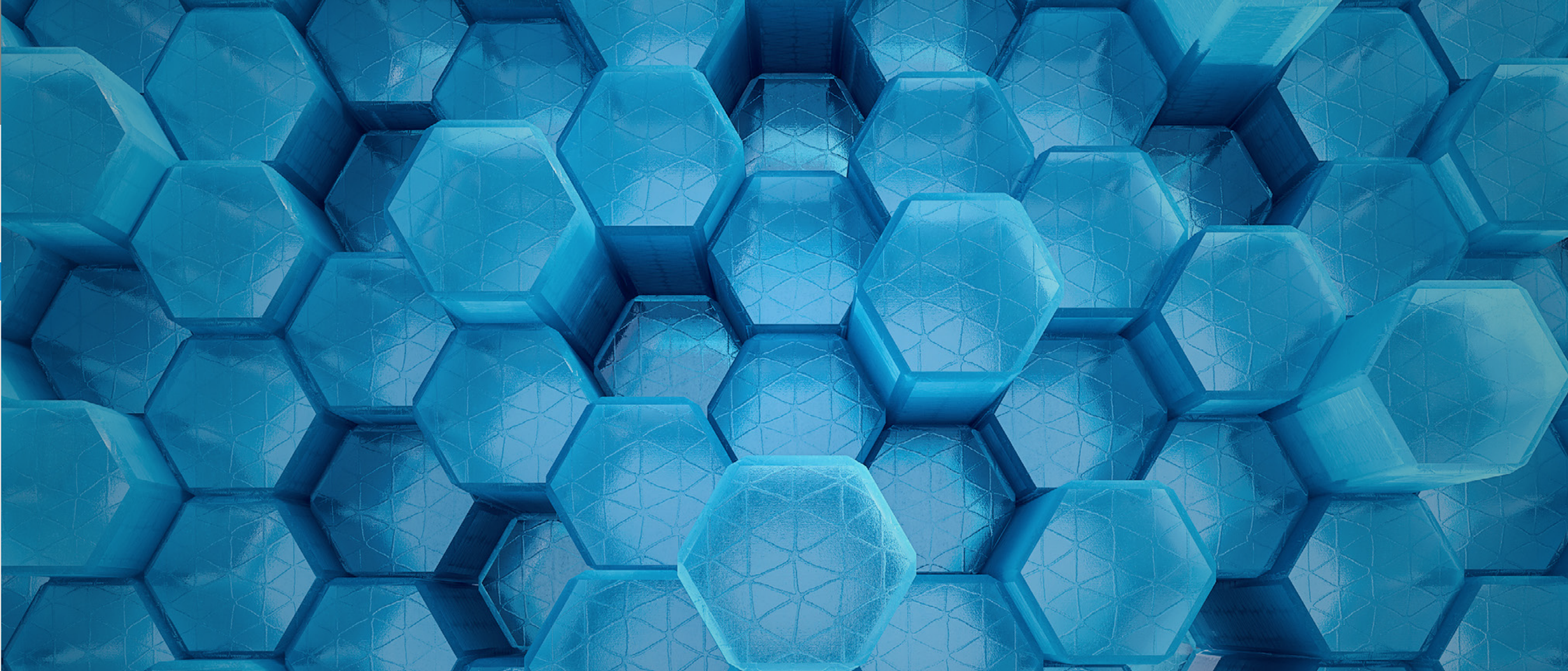
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1. Introduction

1.1. Purpose and Scope

This e-book provides a practical guide for establishing data governance in utility organizations. While numerous books have covered the topic of data governance, this guide consolidates widely accepted best practices within a utility industry context, as of the publication date. It offers a practical resource for individuals in the early stages of establishing data governance in their organization.

To provide clarity on the authors’ intentions and choices, it is helpful to outline some conceptual phases of establishing data governance. We choose not to associate these phases with specific maturity levels since the objectives of maturity assessments differ across organizations. This e-book focuses on the **planning** and **initiation** phases.

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Phases of Establishing Data Governance

01 PLANNING

This phase occurs prior to formalizing a data governance program. It primarily focuses on assessing readiness, developing business cases, securing initial funding, and creating a comprehensive plan. This might require 1-2 months with dedicated executive backing to progress.



02 INITIATION

During the first 6 months of the program, the emphasis is on establishing foundational elements (people, process, and technology), conducting one or more pilot projects, getting some quick wins, and initiating the execution of a communication plan. The objective of this phase is to get started and generate momentum and excitement (through communication).



03 IMPLEMENTATION

This phase spans 12-18 months following the initiation. The data governance organization expands, involving more business units. It is during this period that tangible benefits and value start to become apparent. Effective communication and enthusiastic support play a significant role.



04 EVOLUTION

Once the organization attains a given intended level of maturity or achieves the initial objectives that justified the program, with visibly strong leadership and broad adoption of data governance processes, it becomes self-sustaining. Adoption grows, processes advance, and the ability to tackle more complex data challenges is apparent.



In the e-book, the term “maturity” refers to the level of sophistication, effectiveness, and integration of various components within an organization, especially in areas like processes, technologies, and governance structures. When we talk about maturity in this light, particularly in the realms of data governance and management, it is about evolving an organization’s capabilities to manage its data assets in a way that maximizes value creation and competitive advantage, rather than achieving maturity for its own sake.



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1.2. Target Audience

This e-book is intended for individuals who are or will be actively involved in data governance in various capacities, including individuals who are:

- Implementing and sponsoring data governance during the planning phase.
- Holding official data governance roles, such as data stewards and data owners.
- Recruiting and nominating individuals for official roles and needing to clarify each role and overall objectives.
- Seeking a deeper understanding of data governance and how to leverage its capabilities.
- Contemplating the involvement of leaders and executives.
- Considering active participation and have a general interest in data governance.

1.3. Preliminary Perspectives

The following respected research and standards organizations have published their own viewpoints about data governance. These perspectives provide a useful introduction and starting point by highlighting the multifaceted nature of data governance. Elements such as decision-making authority, data quality, policy enforcement, and the strategic use of data to support business objectives are part of the puzzle. Numerous organizations rely on research by these trusted organizations to make decisions on strategic initiatives, making them a valuable resource for utilities.

Each group provides a unique viewpoint, influenced by its primary audience and objectives. These insights cover a range of topics, including managing data as an asset, ensuring data quality, compliance, and low-risk data usage. To help ensure no bias is reflected, we have listed these resources in alphabetical order.

DAMA INTERNATIONAL
(DAMA)

According to the DAMA Data Management Body of Knowledge (DAMA-DMBoK), data governance is the exercise of authority, control, and shared decision-making (planning, monitoring, and enforcement) over the management of data assets. DAMA emphasizes the role of data governance in ensuring data is managed as an asset and transformed into meaningful information (Early & Henderson, 2017, p.67).

DATA GOVERNANCE
INSTITUTE (DGI)

DGI defines data governance as a system of decision rights and accountabilities for information-related processes, executed according to agreed-upon models that describe who can take what actions with what information, when, under what circumstances, using what methods (Data Governance Institute, 2024).

EDM COUNCIL

The EDM council views data governance as the foundational element of data management, defining it as the organizational framework for developing and enforcing policies related to data management and usage. The council's focus is on creating a common data language, understanding data lineage, ensuring data quality, and managing data risk, particularly in the financial industry (EDM Council, 2024, p.9).

GARTNER

Gartner defines data governance as the specification of decision rights and an accountability framework to ensure appropriate behavior in the valuation, creation, consumption, and control of data and analytics. Gartner's definition highlights the strategic aspect of governance in supporting business outcomes through data management and analytics (Gartner, n.d.).



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1.4. Impact Within the Utility Industry

The utility industry faces many business and operational challenges and opportunities where data and analytics can provide valuable solutions. The ability to effectively govern data to enable these solutions is a core business imperative. The following examples describe areas where data governance can make a positive impact within the utility industry.

REGULATORY AND MANDATE COMPLIANCE

Better adherence to federal guidelines and mandates helps mitigate risk by reducing exposure to costly fines and legal liabilities. Following are some regulations and mandates that relate closely to how data is managed.

REGULATIONS

- o **North American Electric Reliability Corporation (NERC) standards**—These regulations provide detailed requirements of functional scopes for ensuring the reliability and security of the bulk power system (NERC, 2024).
- o **Federal Energy Regulatory Commission (FERC) regulations**—These regulations outline specific operational, financial, and reporting standards that utilities must follow (FERC, n.d.).
- o **Resource Conservation and Recovery Act (RCRA)**—These regulations concern the management of hazardous and nonhazardous waste, specifying requirements for handling, transporting, and disposing of such materials (EPA/RCRA, n.d.).
- o **Safe Drinking Water Act (SDWA)**—These regulations set the standards for water quality and safety by which public water systems must comply (EPA/SDWA, n.d.).

MANDATES

- o **Clean Water Act (CWA)**—These mandates require that discharges into water bodies meet specific standards to protect water quality (EPA/CWA, 2024).
- o **Energy Policy Act (EPA)**—These mandates relate to energy efficiency, renewable energy usage, and regulatory adjustments to promote energy conservation (EPA/EPA, 2024).

- o **Public Utility Regulatory Policies Act (PURPA)**—These mandates require utilities to purchase power from qualifying renewable energy providers (FERC/PURPA, 2021).

COMBINED REGULATIONS AND MANDATES

- o **National Environmental Policy Act (NEPA)**—NEPA acts as a mandate requiring federal agencies to evaluate the environmental impacts of their decisions, but the specific processes and requirements laid out under this act function as regulations (EPA/NEPA, 2024).

OPERATIONAL EFFICIENCY

Operational efficiency describes the ability to maximize output while minimizing input resources to improve the performance of delivering electricity, gas, or water. It involves streamlining processes, optimizing resource allocation, and leveraging technology and data analytics to improve reliability, reduce downtime, and enhance overall operational effectiveness. Success in this effort requires process data that is timely and trusted.

CYBERSECURITY

From protecting customer information to securing operational systems, utilities face diverse cyber threats. This includes hacking, malware, and ransomware attacks. By implementing robust data governance practices, risk is mitigated related to these threats. Access controls, encryption of sensitive information, and data usage monitoring are all aspects of implementing effective cybersecurity policies and procedures.

INNOVATION AND TECHNOLOGY INTEGRATION

Innovation and technology integration involves leveraging solutions to modernize operations, enhance efficiency, and meet evolving consumer demands. This includes embracing technologies such as smart grids, IoT devices, and advanced analytics to optimize energy distribution, monitor infrastructure health, and improve customer service. By integrating innovative technologies, utilities can enhance reliability, reduce costs, and enable a sustainable future.



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ASSET MANAGEMENT

Asset management entails strategically overseeing the life cycle of infrastructure assets such as power plants, substations, and transmission lines to ensure optimal performance and longevity. Through predictive maintenance, and investment planning, utilities aim to minimize downtime, maximize efficiency, and mitigate risks associated with aging infrastructure. Effective asset management strategies enable effective allocation of resources to maintain efficiency, enhance reliability, and uphold regulatory compliance standards.

CUSTOMER SERVICE, CARE, AND SATISFACTION

Customer service, care, and satisfaction require delivering reliable services, promptly addressing inquiries and concerns, and enhancing overall customer experiences. Utilities prioritize clear communication, proactive outreach, and personalized interactions to meet customer needs and expectations. This supports customer retention, builds the corporate brand, and enables sustainable operations.

SUSTAINABILITY AND ENVIRONMENTAL COMPLIANCE

Sustainability and environmental compliance are critical priorities for utilities, involving initiatives to minimize impact and adhere to regulatory standards. Utilities strive to implement efficient resource management practices, integrate renewable energy sources, and reduce emissions to mitigate environmental risks and promote long-term sustainable operations.

SAFETY

Safety management for utilities involves implementing proactive measures to ensure the well-being of employees, customers, and the surrounding communities while minimizing operational risks. By adhering to strict safety protocols, conducting regular inspections, and providing comprehensive training, utilities prioritize accident prevention and maintain operational integrity.

CAPITAL MANAGEMENT

Capital management involves allocating financial resources to support infrastructure development, maintenance, and upgrades while optimizing

return on investment. By strategically planning and controlling capital expenditures, utilities aim to ensure the reliability, efficiency, and sustainability of their operations while managing financial risks and maximizing shareholder value.

DATA ETHICS

Data ethics involves ensuring the responsible and fair use of data to benefit both society and individuals while minimizing potential risks and negative impacts. It encompasses principles such as transparency, accountability, privacy protection, and addressing biases in data collection, analysis, and decision-making processes.

1.5. Impacts of Standards and Regulations

Numerous standards have been developed that are not obligatory but can bring value if integrated into data governance as they aid in achieving certain objectives. Like everything in business, it ultimately becomes a cost-benefit choice on whether to embrace the standard or not. A standard can be selectively implemented for some data and not for others. Standards introduce procedural tasks and controls to deliver their benefits. When it comes to standards, it can also be beneficial to compare with industry peers to determine if a standard is typical in a sector. Following are some examples of nonobligatory standards.

ISO/IEC 27001: INFORMATION SECURITY MANAGEMENT

Utilities increasingly rely on digital infrastructure and data, making them targets for cyber threats. ISO/IEC 27001 helps utilities manage the security of assets such as financial information, intellectual property, employee details, and information entrusted by third parties. The data governance team plays a crucial role in ensuring the information security management aligns with data protection laws and regulations, which is critical for maintaining ISO/IEC 27001 certification. Because of security breach and ensuing reputation risks, it might make sense to adopt this standard and ensure the organization passes audit. The data governance processes would also support this audit process (ISO/27001, 2022).



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ISO 8000: DATA QUALITY MANAGEMENT

This standard focuses on data quality management. It provides guidelines on how to manage and improve the quality of data within an organization, covering aspects such as accuracy, completeness, reliability, and relevance.

Larger utilities rely heavily on accurate and reliable data for network management, regulatory compliance, customer service, and financial reporting. In scenarios where data integrity directly impacts operational efficiency and safety, implementing ISO 8000 is advisable. Also, if the regulatory environment requires stringent data management practices or if penalties for data mismanagement are severe, adhering to ISO 8000 can help to ensure compliance and reduce regulatory risks.

Smaller utilities or community operations with minimal data handling might find the standard too rigorous and not cost effective. Additionally, if a utility has simple, straightforward data needs with low risks associated with data quality issues, the cost and effort of implementing ISO 8000 may not be justified.

Finally, utilities often operate complex data systems with integration across various platforms (for example, customer information systems, asset management systems, and smart grid technologies). ISO 8000 can standardize data quality across these systems (ISO/8000, 2022).

ISO 15489: RECORDS MANAGEMENT

This standard provides guidelines and best practices for the effective management of records within an organization. It covers various aspects including the creation, maintenance, retrieval, and disposition of records, ensuring their authenticity, reliability, integrity, and usability over time (ISO/15489, 2016).

1.6. Summary

As we conclude this introductory section, we have laid the groundwork by outlining the pressing need for data governance within the utility sector, highlighted by the diverse challenges and opportunities that data presents. The role of data governance in navigating these complexities cannot be overstated. With a clear understanding of its purpose, scope, and the preliminary perspectives that shape our approach, we now turn our attention to the intricate details of data governance itself.

In the following section, Understanding Data Governance, we delve deeper into the mechanisms, frameworks, and strategic implementations that transform the theoretical underpinnings of data governance into practical, actionable strategies. Here, we explore the deliverables, outcomes, roles, and responsibilities that constitute the backbone of effective data governance, setting the stage for a transformative journey toward achieving operational excellence and strategic agility in the utility industry.

QUESTIONS TO PONDER

- 1. Does your organization have a data strategy? How well does it align with the utility industry’s unique regulatory and operational challenges as outlined in this chapter?
- 2. Reflect on your organization’s current data management practices. How effectively are they integrated with your overall business objectives? Are they tied to the delivery of real business outcomes?

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2. Understanding Data Governance

2.1. Introduction to Data Governance

As the benefits of using data and analytics are pursued, organizations soon realize that sharing data beyond its original location is essential. New stakeholders need to access it and repurpose it in novel ways. Data sharing creates new challenges related to trust, accessibility, quality, compliance, privacy, understanding, integration, and literacy.

Successful analytics depends on transforming data into a cross-functional, integrated environment. This enables new stakeholders with different levels of experience to access it and adopt new analytics use cases. Changes are necessary to the data content and how stakeholders interact with it. Data governance is the key enabler for driving these changes.

2.2. Deliverables and Outcomes from Data Governance

As a driver of change, data governance can be considered as a two-sided coin. The first side addresses stakeholder changes related to skills, literacy, and culture. The second side addresses changes to the data content to support productive, safe, and compliant data usage.

Outcomes impacting people and processes produced by data governance include the following:

- **Accountabilities**—Defined responsibilities for data governance.
- **Authority levels**—Power to enforce data governance policies and standards.
- **Policies**—Guidelines for managing data across the organization.
- **Procedures**—Detailed steps to implement data governance policies.
- **Guidelines**—Recommendations for best practices in data governance.
- **Standards**—Established criteria for data quality and management.
- **Rules of engagement**—Protocols for interaction and data sharing among stakeholders.

Stakeholder-related outcomes include the following:

- **Business value definition**—Clarification of how data governance adds value to the business.
- **Collaborative culture**—Promotion of teamwork and cooperation in data governance.
- **Data literacy skills**—Development of competencies in understanding and using data.
- **Productive and low-risk access to data assets**—Ensuring safe and efficient data utilization.
- **Data quality improvement processes**—Processes to ensure the accuracy, completeness, and reliability of data.
- **Data-driven decision-making capabilities**—Trusted and available data that enables new insights to enhance business and operational decisions.

Outcomes impacting the data content produced by data governance are as follows:

- Data becoming a managed, trusted, available, and reusable asset.
- Searchable data inventory that is classified and catalogued.
- Data definitions and descriptions.
- Integrated data supporting broad analysis.
- Data lineage mapping.
- Protected, secured, and compliant data.
- Measured and managed data quality.
- Retained and purged data content.

2.3. The Role of Data Governance in the Enterprise

Data governance is a cross-functional initiative that blends strategic intent with operational execution. It enables safe and productive data access and usage while mitigating risks from misuse and noncompliance.

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The impact of data governance is achieved in the stakeholder community by implementing and developing rules of engagement, accountabilities, collaboration, and data literacy.

Positive results of data governance are achieved within the data content by enhancing data quality, implementing data integration, providing metadata, and enforcing security, privacy, and other forms of compliance.

When considering how data governance connects to and aligns with other areas of governance within the enterprise, it is important to identify areas of synergy to avoid duplication of effort and areas of conflict to proactively develop alignment and team-building strategies. Examples of this in utilities include governance of records, safety, security, operational excellence, and compliance.

2.4. Alignment with Business Objectives

Goals for data governance are developed to align with business objectives. The goals ensure that all data projects, activities, and decisions will support key business objectives such as innovation, growth, and operational efficiency.

It is recommended that goals and related efforts are prioritized based on business value to ensure necessary funding is received and meaningful results are produced.

Effective data governance provides the foundation for achieving business objectives through coordination, alignment, and enforcement.

2.5. Data Governance vs Data Management

Data governance creates policies, standards, and procedures, along with accountability and oversight, to align with the principles of safe data sharing and effective collaboration. New data and analytics capabilities are enabled that create and manage an environment where data can be accessed and analyzed productively at low risk.

Data management executes activities related to planning, architecture, design, development, maintenance, operations, analysis, and reporting. These activities must align with the goals and principles of data sharing.

In simple terms, data governance provides policies and standards that enable data analysis and insight generation. It defines and coordinates what work is needed to achieve this. Data management executes this work to achieve these objectives.

The Big Picture

Data governance and data management are two interlocking pieces of the same puzzle, each essential for a complete and effective data strategy.

Data governance establishes the policies, standards, procedures, and accountability frameworks that ensure data integrity and compliance.

Data management applies architecture, platforms, and processes to operationalize data governance, turning policies and standards into actionable, scalable solutions.

Data consumption is the complete picture—where access, analysis, reporting, and collaboration bring data to life, enabling better decision-making.

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2.6. Roles and Responsibilities

Data governance organizations allocate functional responsibilities across defined roles who work together in a collaborative manner.

BUSINESS EXECUTIVES AND MANAGERS

- Organizational leaders responsible for vision, strategy, execution, and results.
- Understand the value proposition of governed data on business results.
- Play a key role in formulating and executing data-driven business strategies.
- Provide priorities for improving data characteristics that link to new sources of business value.
- May also be called partners or business partners.

DATA OWNERS

- Managers whose functional areas generate data content that would benefit others by sharing it to support analytics use cases.
- Develop policies that enable effective, efficient, and low-risk sharing of data to other groups and departments.
- Responsible for the quality and integrity of data within their domain.
- Should work closely with data stewards to ensure data meets organizational standards and compliances.
- May also be called data producers. Some organizations prefer this title because it implies the true “owner” of the data is the enterprise.

DATA STEWARDS

- Business and operational staff with a deep understanding of the principles and needs of sharing data across the organization to enable reporting and analytics.
- Collaborate with data owners to translate policies into procedures and standards.

- Work with data custodians and practitioners to ensure the procedures and standards are understood and followed in practice.
- Maintain the data quality and manage metadata.
- Facilitate communication between data owners and technical teams to ensure data usability and consistency.

DATA CUSTODIANS AND PRACTITIONERS

- Technical and business staff working on diverse data management and data analytics projects and activities.
- Adhere to the governance procedures and standards in carrying out their work.
- Implement technical solutions to enforce data governance policies, such as data storage, security, and access controls.
- Play an important role in supporting data stewards by providing technical expertise and data reports.

CHIEF DATA OFFICER

- Executive with accountability for generating data value by governing data content as data assets to ensure effective, efficient, and low-risk data access and enable data-driven processes and decisions.
- Accountable for data-sharing capabilities at the organizational level.

SUBJECT MATTER EXPERTS

- Possess deep knowledge in the domains of data, systems, processes, operations, technology, and business performance.
- Aid and advise on data-related issues to other staff working in data governance.
- Play an important advisory role in developing data governance policies, standards, and best practices specific to their expertise areas.
- Contribute to training and awareness programs to enhance data literacy across the organization.



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ANALYSTS AND DECISION-MAKERS

- Perform various types of data analysis that generate insights to support decision-making practices.
- Make data-driven decisions to improve operational and business performance.
- Seek and execute opportunities for carrying out analytics and data science techniques to enable decisions based on governed data.
- Apply insights in their data-driven decision-making process.
- Use governed data to drive business strategies and outcomes.
- Promote a culture of evidence-based decision-making and continuous improvement.

2.7. Data Governance Framework

A successful initiative needs a strong foundation to build on. We refer to this foundation as the data governance framework. It is built on an interwoven structure of ideas, tools, and standards that hold each other in place as data opportunities and obstacles present themselves, creating a value chain to maximize data assets. These building blocks center around the established roles, which may overlap at times. Leadership and other roles comprising various aspects of data expertise grow together to form a culture that shapes the way business gets done.

This framework starts from the ground up with strong leadership, then builds on data strategy that aligns with strategic goals and objectives. Enterprise projects and services stand on the foundation of the privacy, security, and ethics embraced and supported by leadership. Policies and procedures erected within data management tools standardize outcomes. Feedback mechanisms, communication, and accountability cultivate trust across the organization, data literacy increases, and the return on data investment grows.

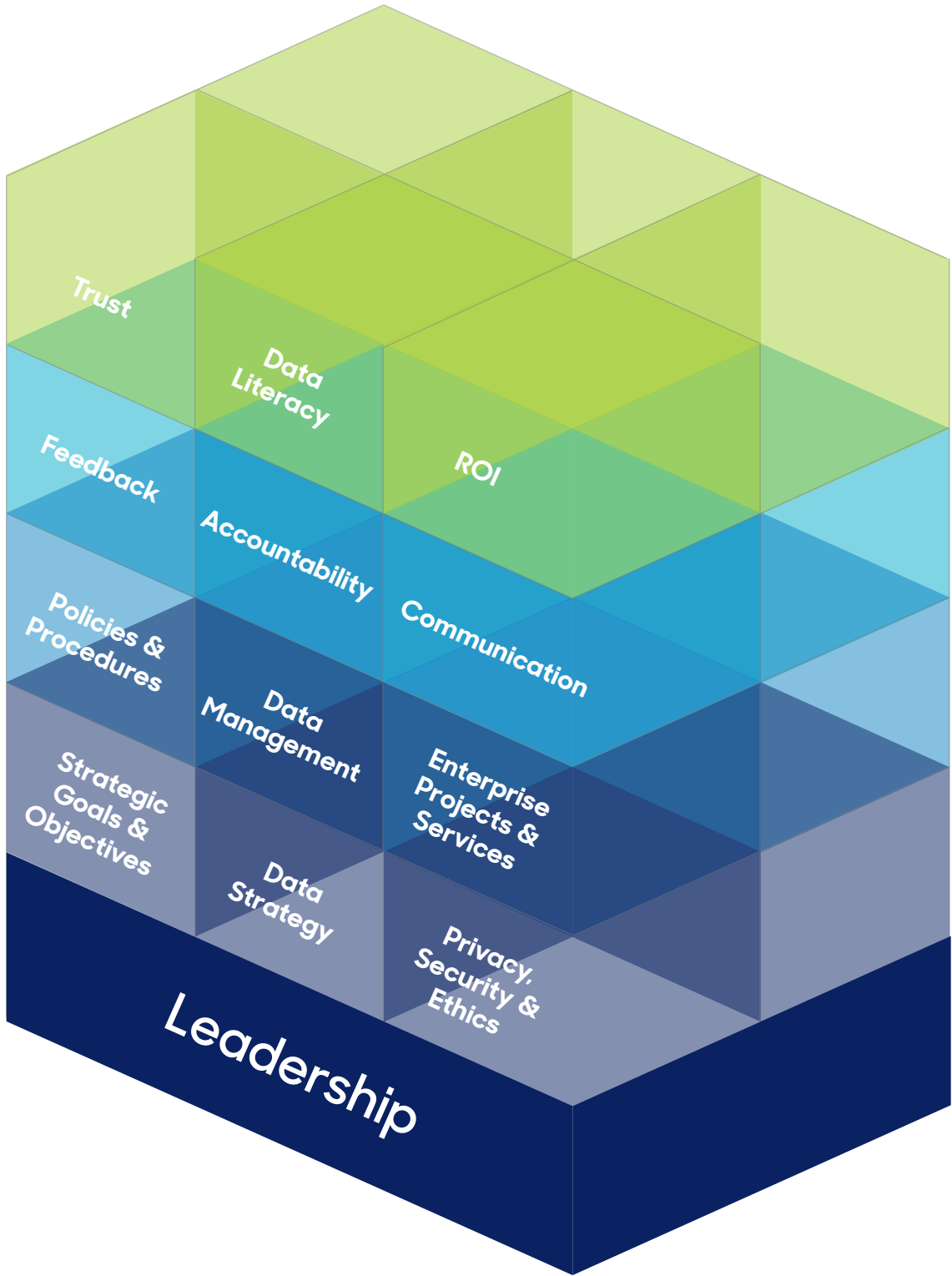


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2.8. Success Factors and Organizational Readiness

The following factors are critical for enabling successful data governance.

- Leadership commitment.
- Clear business value propositions.
- Clear understanding how data contributes to the value propositions.
- Data-driven culture in place.
- Dedicated team with cross-functional structure.
- Collaboration across technical and project teams.
- Communication and training.
- Change management.
- Continuous improvement with measurement and feedback.
- Trust and collaboration.
- Motivated staff.

Readiness for implementing data governance can be described using a checklist and workshop techniques to measure areas of strength and weakness related to factors such as leadership support, data literacy, and the maturity of existing data management practices.

The assessment results are used to identify challenges that need to be addressed through change management and process improvement techniques. These include resistance to change, skill deficiencies, data issues, and lack of motivation. It is important to decide if you are ready to proceed with data governance based on the readiness assessment.

Implementing data governance is challenging and has many risks associated with achieving success. The success factors **listed above** provide a set of ingredients necessary for achieving success. However, experience has shown the following factors are the most significant in terms of failed attempts at data governance.

- Lack of leadership commitment.
- Lack of clear business value propositions.
- Poor collaboration across departments.
- Lack of trust among the stakeholder groups.
- Staff resistant to change.

The biggest risk factors for failure are related to leadership, people, and culture. These need to be addressed as part of establishing the readiness to proceed with data governance implementation.



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2.9. Organizational Structure and How to Choose

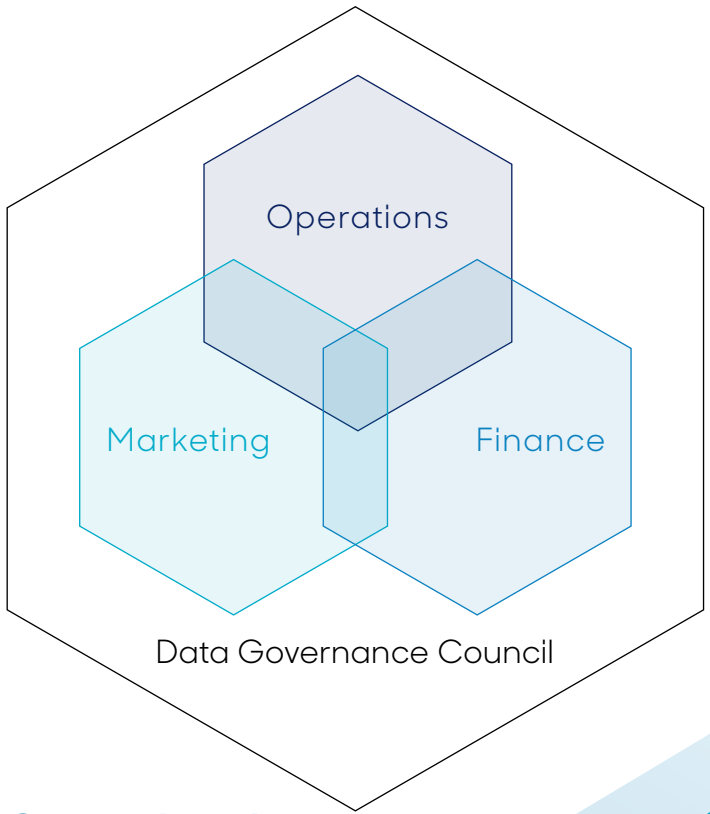
Data governance can be implemented using different organizational structures.

- **Centralized structure**—Accountabilities, decisions, and control are maintained within a single leadership team.
- **Decentralized structure**—Accountabilities, decisions, and control are maintained and distributed across multiple leadership teams.
- **Federated structure**—Distributed teams operate with common standards to enable collaboration. Accountabilities, decisions, and control are defined using a hub and spoke model.
- **Hybrid structures**—Elements of each are combined.

Items influencing the choice of governance structure include the following:

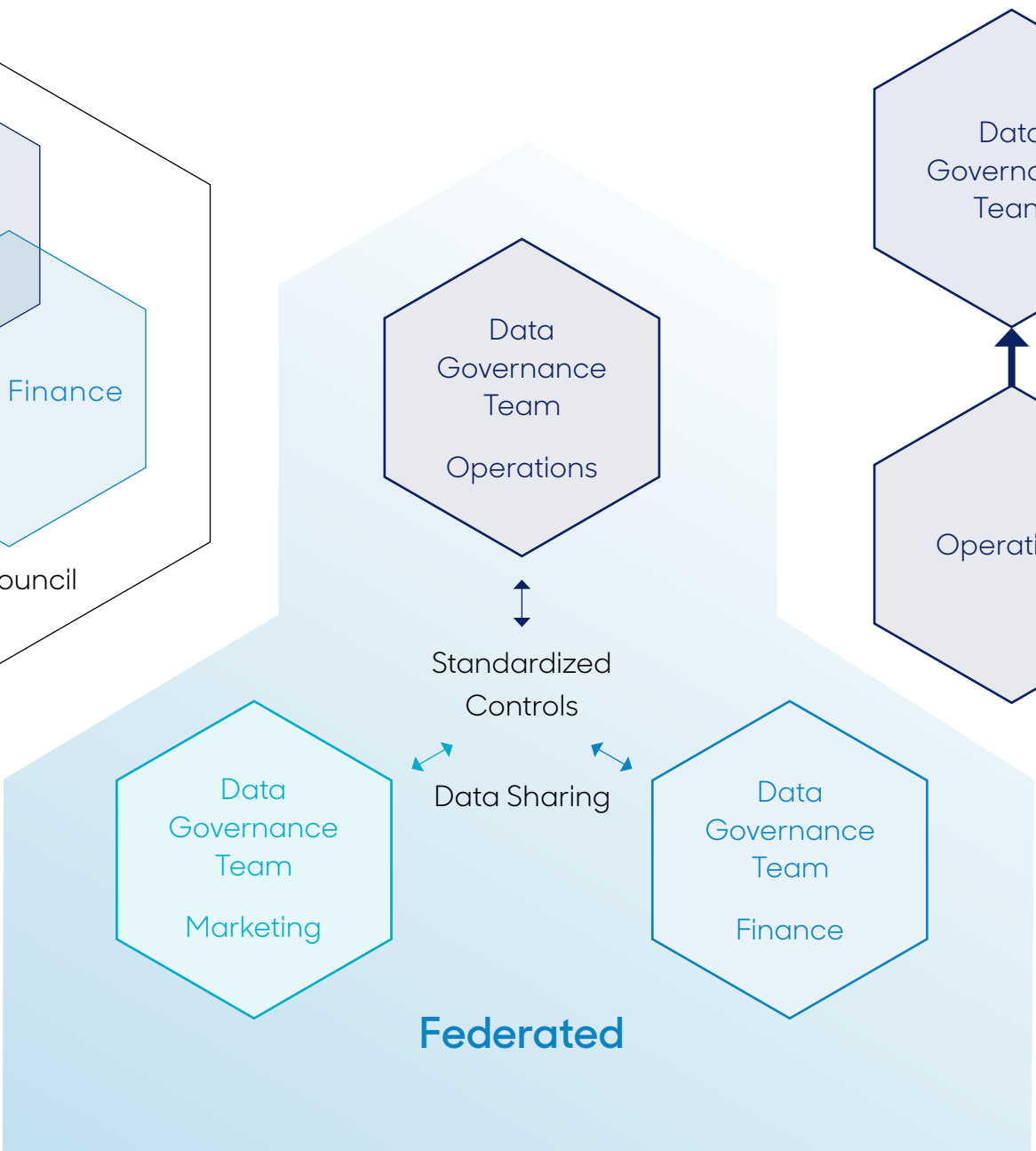
- Business strategy.
- Assessed readiness.
- Data strategy.
- Business and technical urgency.
- Organizational culture and politics.
- Organization size and complexity.
- Industry regulations.

It is recommended to implement the chosen structure incrementally, evaluating its effectiveness on a regular basis and adapting it as necessary.

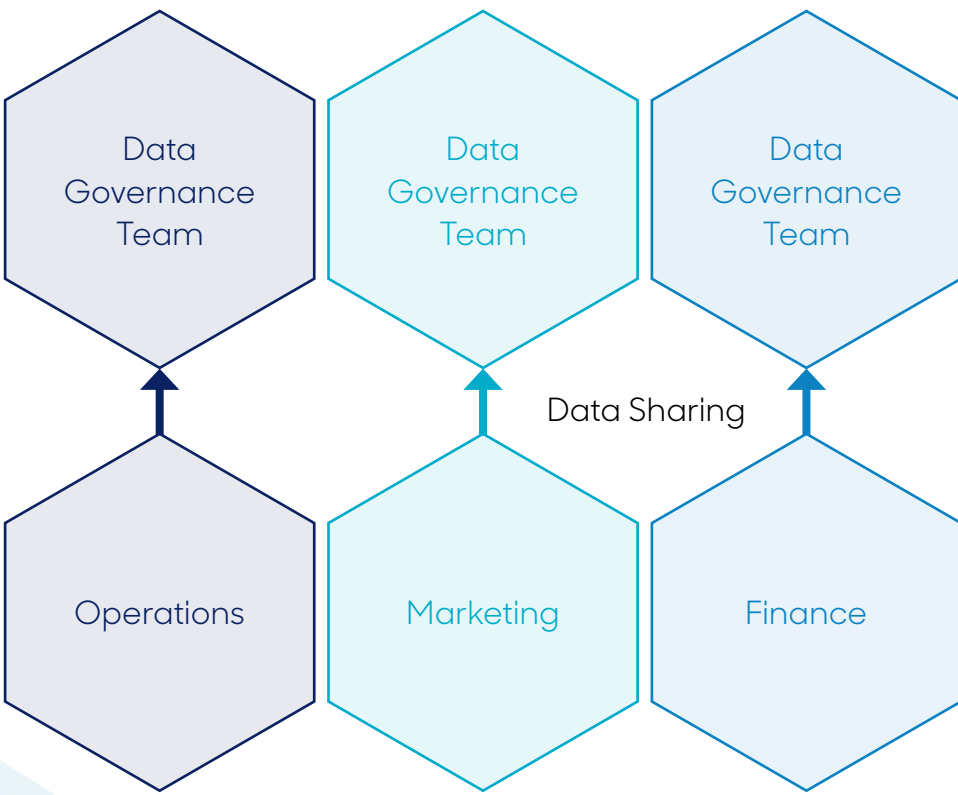


Centralized

Overlap = Data Sharing



Federated



Decentralized

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Comparison of Organization Structures

Attributes	Centralized	Decentralized	Federated
Consistent Standards & Practices	X		X
Efficient Use of Shared Resources	X		X
Reduced Duplication of Effort	X		X
Strong Governance & Oversight	X		X
Clear Decision-Making Authority	X		X
Fosters Collaboration Across Functions	X		X
Alignment of Local & Enterprise Priorities			X
Local Ownership & Accountability		X	X
Agility in Decision-Making		X	X
Empowerment of Individual Teams		X	X

2.10. Definitions of Key Data Governance Terms

The following terms describe many of the building blocks of data governance from the perspectives of organizational structure, teams, processes, and data scope. These terms are used throughout this document as a basis for describing data governance in more detail. It is recommended you refer to these definitions while reading this e-book to ensure you develop a consistent understanding of the material presented.

DATA DOMAIN

A data domain is a category of data within an organization that defines its content scope from a governance perspective. Each domain requires distinct governance and management practices based on its characteristics and usage. The following are common ways to define a data domain.

- **Subject area domain**—Based on the business subject the data represents and describes, such as customer data, product data, financial data, employee data, or asset data.
- **Business capability domain**—Based on the capabilities needed to execute the organization’s business model. Capabilities describe what needs to be done to deliver value to the stakeholders. A capability is made up of people, processes, technologies, resources, and standards. It presents an operational view of what data is needed to deliver value and be successful. Examples include maintaining safety, delivering customer service, enabling grid reliability, and managing capital investments.
- **Business function domain**—Based on the business processes or functions that are carried out such as marketing data, supply chain data, or human resources data.
- **Organizational domain**—Based on the department or business unit responsible for its creation and/or use, such as data related to the departments of finance, operations, or compliance.
- **Data characteristics domain**—Based on common attributes, data types, time periods, and format types, such as structured data, unstructured data, transactional data, or reference data. This can also be applied to historical data vs current data.

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DATA GOVERNANCE BUSINESS STAKEHOLDER GROUP

This stakeholder group represents business units or functional groups impacted by data governance policies and objectives. It may include business leaders, department heads, and process managers. They provide input and feedback on priorities, strategies, and policies.

DATA GOVERNANCE CAPABILITY

This capability refers to the capacity of an organization to effectively govern its data as assets. This includes the assurance that governed data is available, accessible, trusted, accurate, relevant, useful, compliant, and protected throughout its life cycle.

DATA GOVERNANCE COMMITTEE

This committee is a subset of the data governance council responsible for specific aspects of data governance oversight and decision-making. The committee may focus on specific tasks such as policy development, compliance monitoring, or addressing data quality issues.

DATA GOVERNANCE COUNCIL

This council is made up of stakeholders from various business units or departments tasked with providing oversight, guidance, and decision-making authority for data governance initiatives and results. It sets data governance priorities, approves policies, resolves data-related issues, and ensures alignment with business objectives.

DATA GOVERNANCE DEPARTMENT

This department is a dedicated unit in the organization responsible for executing data governance functions and initiatives.

DATA GOVERNANCE FRAMEWORK

This framework provides guidelines, building blocks, and best practices for implementing and executing data governance initiatives.

DATA GOVERNANCE OFFICE

This term describes a centralized team or department responsible for overseeing and managing the organization’s data governance program. It

defines data governance policies, standards, and processes, coordinates data governance activities, and provides guidance and support to data stewards and stakeholders. This term is a synonym for the data governance department.

DATA GOVERNANCE OPERATING MODEL

This operating model defines the structure, roles, responsibilities, and workflows for data governance activities. It also addresses decision-making, authority levels, and accountabilities for results.

DATA GOVERNANCE PARTNER GROUP

This term is a synonym for the business stakeholder group.

DATA GOVERNANCE PROCESS

A data governance process involves the activities and practices required to plan and execute data governance initiatives. This includes defining policies, roles, and responsibilities to ensure data management activities are effective. An example is establishing a data governance council to create policies, define roles, and monitor compliance.

DATA GOVERNANCE PROGRAM

This program is a strategic initiative designed to establish and maintain policies and oversight to ensure data management practices are effective and align with the organization’s objectives. It coordinates the activities and projects aimed at improving data quality, security, compliance, and usability across the organization.

DATA GOVERNANCE PROGRAM TEAM

This team is a dedicated group of individuals responsible for overseeing and implementing data governance initiatives within an organization, often comprising stakeholders from IT, business units, compliance, and data management roles.

DATA GOVERNANCE PROJECT

This is a focused initiative bound by start and end dates with defined objectives aimed at establishing or enhancing data governance practices

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within an organization. Data governance projects are initiated and sponsored by the data governance team and executed by data management teams. They may include data quality profiling, data quality assessment, implementing a data catalog, and cleansing the content of data sources.

DATA GOVERNANCE PROJECT TEAMS

This is a cross-functional structure tasked with implementing specific data governance tasks using start and end dates with agreed-upon scope and deliverables. The team may include business analysts, data architects, and IT developers focusing on tasks such as data classification, rationalizing data definitions, consolidating reports, and developing data lineage views.

DATA GOVERNANCE USE CASE

This is a specific example that demonstrates how data governance practices can address a business challenge or opportunity, illustrating the value of effective data management within an organization. The use case is used to scope a project or workflow and typically requires a subset of data governance capabilities.

DATA GOVERNANCE WORKFLOW

This workflow is a structured set of steps designed to manage and improve the quality, availability, integrity, and security of organizational data throughout its life cycle. Examples of workflows include approving data access requests, addressing data quality issues, monitoring data quality, approvals for data sharing, and managing data catalog content. Workflows are ongoing and support the functional requirements of the data governance program.

DATA GOVERNANCE WORKING GROUP

This working group is task oriented, focusing on specific assigned issues such as data quality remediation, metadata management, developing meaningful measures and metrics, or creating data standards. The working group may be a temporary structure dealing with a specific issue or it may be a long-term structure focusing on solving ongoing issues.

GOVERNED DATA SCOPE

This is defined by the selected data domains. This data is subject to the policies, standards, objectives, accountabilities and enforcement rules of the data governance program.

2.11. Summary

With a comprehensive understanding of data governance—its deliverables, outcomes, roles, and the frameworks necessary for its successful implementation—we are now poised to explore the human element that underpins the entire initiative.

In section 3, Motivation, Participation, and Collaboration, the focus shifts from the structural to the personal, examining how data governance transcends organizational charts to become a catalyst for professional growth, collaboration, and innovation. This section delves into the tangible benefits data governance offers to individuals across various roles, from executives to data practitioners. It highlights how active participation not only enhances data management practices but also empowers individuals, fosters a culture of collaboration, and drives the organization toward its strategic goals.

By understanding what is in it for them, stakeholders at all levels are more likely to buy into the data governance program, contributing to its success and sustainability.

QUESTIONS TO PONDER

- 1. Can you find your organization’s data governance framework? What are its strengths and what areas need improvement?
- 2. How does your organization ensure data governance aligns with and supports business objectives?
- 3. Consider the roles and responsibilities related to data governance in your organization. Are there clear definitions and sufficient support for these roles?

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3. Motivation, Participation, and Collaboration

This section describes how different roles in an organization can personally benefit by engaging in various ways with data governance activities. The intent is to help answer: What is in it for me? This understanding can be useful in recruiting, developing, motivating, and building collaborative teams.

It is important to remember that data governance is ultimately about people who are motivated and engaged. Active and enthusiastic participation is critical for success.

3.1. Leadership

Leadership in an organization plays a pivotal role in the success of data governance initiatives. It serves as the foundation for the entire framework. Without committed leadership, the strategic, operational, and cultural shifts required for effective data governance are unlikely to materialize. This principle mirrors the adage: If it is not important to the boss, it is not important to the employee. This underscores the critical need for both executive endorsement and involvement.

Leaders not only set the vision and priorities for data governance but also model the values and behaviors that underline its importance, thereby embedding data governance principles into the organizational culture. Committed leadership is essential for ensuring data integrity, security, and compliance, which are crucial as data becomes more important to maintaining the reliability of utility services. Leaders set the tone for a culture that values data-driven decision-making to optimize operations and improve service delivery.

It is important for anyone interested in getting involved to have a solid understanding of executive commitment to data governance. This commitment plays a significant role in determining if the benefits outlined can truly be realized.

3.2. Personal Benefits for Executives

Providing this leadership brings significant personal benefits to executives. For example, by ensuring data accuracy and compliance, executives can enhance public trust in the organization’s ability to provide reliable services, leading to improved reputation and stakeholder confidence. Additionally, positioning the organization as forward-thinking in data management can attract investment and support for infrastructure upgrades and innovation projects.

It enhances their reputation both within and outside the organization, as they are seen as champions of innovation and responsible data management. This leads to increased trust from stakeholders, improved job satisfaction, and greater opportunities for career advancement.

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3.3. Personal Benefits for General Roles

Since data initiatives are always business-aligned, professionals will contribute and have a tangible impact on business objectives, such as improving energy efficiency, reducing waste, and enhancing environmental sustainability through effective data management practices. For instance, ensuring data accuracy in billing and customer service directly influences customer satisfaction and retention in competitive utilities markets. The following benefits apply to individuals at a general level in diverse roles across the organization.

PROFESSIONAL DEVELOPMENT

- Acquire specialized knowledge in data management and governance.
- Enhance analytical and strategic thinking skills.
- Gain expertise in compliance, data privacy, and security standards.

CAREER ADVANCEMENT

- Create opportunities for leadership roles within data governance initiatives.
- Increase visibility and recognition within the organization.
- Improve job prospects with higher earning potential in the growing field of data governance.

PERSONAL SATISFACTION

- Contribute to the creation of a data-driven culture.
- Make a tangible impact on the organization’s success and efficiency.
- Participate in ethical data practices that respect privacy and fairness.

NETWORKING AND COLLABORATION

- Build professional relationships across different departments.
- Engage with a community of data governance professionals.
- Learn from peers and share best practices.

INNOVATION AND CREATIVITY

- Contribute to innovative projects that leverage data for new insights.
- Encourage the exploration of new tools, technologies, and methodologies.
- Participate in solving complex data-related challenges.

RISK REDUCTION

- Understand and mitigate risks associated with data mismanagement.
- Contribute to the organization’s compliance with laws and regulations.
- Enhance the organization’s reputation by ensuring data quality and security.

INFLUENCE AND ADVOCACY

- Shape data policies and practices within the organization.
- Advocate for ethical data use and the protection of sensitive information.
- Influence the culture around data to be more transparent and accountable.

EMPOWERMENT THROUGH KNOWLEDGE

- Gain insights into how data is used and its impact on business outcomes.
- Understand the data life cycle and the importance of quality data management.
- Be equipped to make informed decisions based on data insights.

RECOGNITION AND REWARDS

- Receive acknowledgment for contributions to data quality and governance.
- Be part of award-winning teams and projects.

SKILLS DIVERSIFICATION

- Develop a diverse skill set that combines technical, legal, and business insights.
- Learn to use data governance tools and software.
- Enhance communication skills through cross-functional collaboration.

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3.4. Personal Benefits for Specific Roles

Roles such as data owners, data stewards, data custodians, and analysts play crucial roles in ensuring the reliability, security, and regulatory compliance of utility data. For instance, data stewards may focus on ensuring accurate metering data for billing purposes, while data custodians are responsible for safeguarding sensitive customer information to prevent privacy breaches. The following benefits apply to specific, defined data governance roles.

DATA OWNERS AND DATA PRODUCERS

- **Strategic influence**—Directly influence the strategic use of data assets they own, ensuring alignment with business objectives.
- **Decision-making power**—Have a significant say in how data is managed, shared, and protected, enhancing the quality and value of organizational data.
- **Recognition**—Gain visibility as accountable leaders for the performance and quality of specific datasets.

BUSINESS PARTNERS

- **Improved data usability**—Provide key requirements for data use cases, ensuring the continued flow of governed data throughout the organization is improved and sustained.
- **Enhanced business operations**—Receive the benefits of governed data in terms of enhanced quality, controls, metadata, and compliance.

DATA STEWARDS

- **Expertise development**—Develop and enhance expertise in data management practices, data quality, and governance principles.
- **Cross-functional collaboration**—Work across departments, gaining a broad understanding of the organization and building a vast professional network.
- **Policy influence**—Play a crucial role in developing and implementing data policies and standards, shaping the data culture of the organization.

DATA CUSTODIANS AND PRACTITIONERS

- **Technical mastery**—Gain deep technical expertise in data storage, security, and management technologies and practices.
- **Operational efficiency**—Drive improvements in data handling processes, contributing to the operational efficiency of data systems.
- **Risk mitigation**—Directly contribute to the security and compliance posture of the organization, reducing risks associated with data breaches and loss.

CHIEF DATA OFFICER (CDO)

- **Leadership and vision**—Shape the organization’s data strategy, establishing a vision of the digital transformation.
- **Organizational impact**—Have a profound impact on the organization’s culture, steering it toward being more data-informed and data-driven.
- **Industry recognition**—Often serve as the public face of the organization’s data initiatives, gaining recognition and influence in the wider industry.

SUBJECT MATTER EXPERTS (SMEs)

- **Knowledge sharing**—Enhance organizational understanding of specific domains, contributing to better data definitions and usage.
- **Influence on data quality**—Ensure data in their area of expertise is accurate, complete, and reliable, thereby improving decision-making and streamlining workflows.
- **Professional growth**— Be seen as an indispensable resource within their domain, enhancing professional stature and opportunities for advancement.

ANALYSTS AND DECISION-MAKERS

- **Strategic alignment**—Ensure data governance initiatives align with business unit goals, driving value creation and competitive advantage.
- **Improved decision-making**—Benefit from higher-quality data, leading to more informed decision-making and better business outcomes.
- **Leadership development**—Develop leadership skills in a data-centric business environment, preparing for broader roles within the organization.

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3.5. Summary

As we conclude the exploration of this section on motivation, participation, and collaboration within the utilities industry, it becomes clear a well-engaged and motivated workforce is indispensable for the success of data governance initiatives. In an industry where reliability, safety, and compliance are paramount, the human element plays a central role in navigating the complexities of data management.

From executives championing strategic initiatives to frontline staff ensuring data accuracy in billing and service provision, every role contributes to the resilience and efficiency of utility operations. By fostering a culture that values data-driven decision-making and continuous improvement, utility organizations can enhance critical areas like safety, compliance, operations, resilience and adaptability, service reliability, customer satisfaction, and environmental sustainability. Where there is data, data governance can have a direct impact.

Moving forward, the cultivation of a data-centric culture within the utilities industry is not just beneficial but essential. Through collaborative efforts and a commitment to excellence, which can be incorporated in the data governance charter, utility organizations can harness the power of data to meet the evolving needs of their customers, navigate regulatory challenges, and drive innovation in the provision of essential services.

QUESTIONS TO PONDER

- 1. How can leadership more effectively promote and model the values of data governance within your organization?
- 2. In what ways can you improve participation and collaboration in data governance initiatives across different departments?
- 3. Reflect on the personal benefits for specific roles within your organization. How can these benefits be better communicated to enhance engagement and compliance?

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4. Building a Data Governance Framework

4.1. Operationalizing Data Governance

At a high level, operating models are developed to describe and explain stakeholder value and how it is delivered. The details of an operating model show how processes and initiatives are designed, implemented, connected, resourced, managed, and executed.

It is common for utilities to manage a variety of initiatives in different domains using an operating model that is customized for each one. Following are examples of cross-functional initiatives requiring an operating model for implementation.

- Environmental compliance program.
- Asset performance management.
- Safety management.
- Operational risk management.
- Customer experience improvement.
- Operational excellence program.
- Workforce productivity improvement.

Common components of operating models are as follows.

- Stakeholder value.
- Governance and decision-making.
- Processes.
- Organization structure.
- Roles and responsibilities.
- Technology.
- Change management.
- Ethics.
- Regulations and standards.

It is important to note an operating model designed specifically for data governance must integrate and align with other operating models that are in place within the organization serving other functional areas. Areas of shared components across operating models need to be identified to avoid duplication and maintain alignment.

4.2. Structuring Data Governance and Major Processes

In the context of data governance, descriptions of the required components are shown below.

STAKEHOLDER VALUE

- Objectives and goals are defined for value creation. This includes areas of improvement in data quality, data security, regulatory compliance, and enabling data-driven use cases.
- Establish key performance indicators (KPIs) to measure the effectiveness of data governance efforts in delivering value. Examples include data accuracy, compliance defects, and data-driven business results.

GOVERNANCE AND DECISION-MAKING

- Define the authority levels and decision-making processes within the data governance framework, specifying who has the authority to make decisions regarding data management, access, and usage.

PROCESSES

- Define the processes and workflows for data governance foundational work, including metadata management, data stewardship, data access control, and data life-cycle management.
- Map out how data will flow through the organization, from data acquisition and ingestion to analysis, reporting, and archival, ensuring consistency, transparency, and traceability throughout the data life cycle.

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ORGANIZATIONAL STRUCTURE

- Identify and define roles for data stewards, data owners, data custodians, data practitioners, and data consumers, specifying their respective accountabilities and responsibilities within data governance.
- Clarify reporting lines and escalation paths to ensure accountability and effective communications.
- Establish governance structures, such as a data governance council or steering committee, responsible for setting data governance policies, standards, and priorities.

ROLES AND RESPONSIBILITIES

- Assess the skills and knowledge required for individuals occupying various roles within the data governance framework, such as data management expertise, understanding of regulatory requirements, proficiency in data analysis and interpretation, and communication skills.
- Develop training programs and competency frameworks to enhance the skills and knowledge of personnel involved in data governance initiatives, ensuring they have the capabilities needed to perform their roles effectively.

TECHNOLOGY

- Implement automation tools and technologies to streamline data governance processes, improve efficiency, and reduce manual effort.
- The requirement for technology in the initial phases of data governance is low; however, technology is critical for scaling the data governance program to an enterprise level.
- Examples of technology include metadata management tools, data quality assessment tools, data cataloging solutions, and data lineage tracking systems, which automate tasks such as data profiling, data lineage mapping, and data governance policy enforcement.

CHANGE MANAGEMENT

- Embrace this component for data governance success.
- Develop strategies to facilitate adoption of the data governance operating model across the organization and comply with its standards, guidelines, and rules.
- Shape the corporate culture to embrace principles of data sharing, critical thinking, data literacy, and data-driven decision-making. This includes sharing responsibilities and accountabilities across the organization to embrace data as a valuable corporate asset.
- Conduct stakeholder analysis, communicating the benefits of data governance, addressing resistance to change, providing training and support, and monitoring progress to ensure successful implementation and sustainability of data governance initiatives.

ETHICS

- Develop guidelines about the collection, storage, usage, sharing, and publishing of data that conforms to ethical principles and standards of the organization.
- Provide data use cases to stakeholders that illustrate ethical considerations in a business context.

REGULATIONS AND STANDARDS

- Develop a registry of external and internal regulations and standards that must be followed from a data usage perspective.
- Implement procedures and controls to ensure the regulations and standards are followed and compliance is maintained across the organization.

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4.3. Identifying Key Stakeholder Groups

The term “stakeholder” describes individuals or group of individuals who participate in, are impacted by, have an interest in, or interact with an organization’s policies or operations. The design and implementation of an operating model must address the needs and comply with the constraints of the identified stakeholders.

Stakeholder objectives and constraints provide input information to the operating model design. It is important to recognize different stakeholders could have different objectives that may conflict with each other. Understanding who the data governance stakeholders are and how to serve their needs is critical for success.

SPONSORS

Sponsors include individuals who allocate resources to data governance initiatives and provide corporate leadership promoting the value of data governance across the organization. They believe data that is effectively governed will return value to the organization in the form of an uptick in business performance. This is a key role. It is critical to have the right sponsor(s) and they perform their role by providing support, resources, and advocacy for the vision and goals of data governance. Applying data governance will become very difficult without the support of a sponsor.

PARTICIPANTS

This group includes all the individuals who actively work in various data governance roles to define, shape, organize, and manage policies, standards, and rules that must be followed by the practitioner group. Participants develop policies, create standards, manage data quality, and ensure metadata is generated. This group ensures the data practitioner groups follow the relevant data standards and policies.

Stakeholder analysis is the key step in developing an operating model to ensure alignment with current ambitions and capabilities regarding data governance. The analysis determines the major categories of stakeholders to provide structure to operating model design.

Data governance stakeholder groups are listed below. They describe groupings of individuals and departments to understand the current landscape skills, knowledge, motivations, and objections that must be addressed by the operating model.

PRACTITIONERS

The practitioner group includes all individuals who are impacted by new standards, policies, and rules developed and implemented by the core participants team. Examples of these stakeholders include data management professionals such as architects, designers, developers, analysts, data scientists, and data engineers. Also included in this group are business professionals such as functional analysts, process improvement analysts, power users, shadow IT developers, and self-service report developers. This group includes all individuals who impact how data is eventually consumed by decision-makers, either directly or indirectly.

BUSINESS PARTNERS

The business partners group includes all individuals in the organization who depend on data for decision-making, analysis, model building, compliance, and performance management. This group receives the benefits of governed data as it performs at a higher level than in the pre-governance era. This group includes executives, managers, and operational staff who depend on data to help them carry out their job responsibilities.



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4.4. Personas and Roles—
The People Who Make It Happen

Each stakeholder category includes multiple roles that must be coordinated and facilitated to help them collaborate and align to achieve the goals of data governance.

The common roles within data governance were introduced in section 2, Understanding Data Governance. They are listed again below for reference.

- Business executives and managers.
- Data owners.
- Data stewards.
- Data custodians and practitioners.
- Chief data officer.
- Subject matter experts.
- Analysts and decision-makers.

4.5. Defining Responsibilities and Accountabilities

The data governance operating model requires the following items to be defined and clearly communicated.

- Roles, responsibilities, accountabilities, and authority levels for each data governance role.
- Metrics to measure performance and accountability.
- Mechanisms for resolving conflicts and disputes related to data governance responsibilities.

The operating model is dynamic and must quickly adapt to changing business priorities and regulatory requirements. The assigned responsibilities and accountabilities need to be adjusted as conditions dictate on a regular basis.

4.6. Summary

Operationalizing data governance involves developing operating models that explain stakeholder value and outline the processes and initiatives necessary for delivering that value. Operating models deliver data improvement use cases across different domains, such as environmental compliance, asset performance management, and customer experience improvement.

Key components of operating models include stakeholder value, decision-making, processes, organizational structure, roles and responsibilities, technology, change management, ethics, and regulations and standards. A data governance operating model must align with other organizational operating models to avoid duplication and ensure cohesion.

Objectives and goals must be set for value creation, with KPIs established to measure effectiveness. Clear decision-making processes, defined roles, and responsibilities ensure accountability. Technology plays a role in automating and scaling data governance processes, while change management strategies facilitate the adoption and integration of data governance practices across the organization. Ethical guidelines and compliance with regulations are also essential components.

Identifying key stakeholder groups and understanding their objectives and constraints is critical for successful data governance. Stakeholders include sponsors who provide resources and advocate for the program, participants who shape and manage data governance policies, practitioners who are impacted by these policies, and business partners who rely on governed data for decision-making. Effective stakeholder analysis and engagement ensure alignment with organizational goals and the successful implementation of the data governance operating model. Clearly defined roles, responsibilities, and accountability mechanisms are necessary to adapt to changing business priorities and regulatory requirements.

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5. Creating a Data Governance Program

5.1. Introduction

In this section, we delve into the strategic process of creating a data governance program designed specifically for utilities. This initiative entails a long-term dedication to establishing the operational structures, policies, and technologies necessary for effective data governance.

The program’s objectives are to put in place these capabilities required for data governance to operate effectively and guide the organization in operationalizing the first few use cases. A program can be delivered using a variety of organizational models. This can include a virtual structure or a departmental structure. The key concept is that data governance represents a long-term journey requiring collaboration across multiple groups in an organization. Successful programs enable the capabilities to govern data from an organizational perspective rather than from a departmental perspective.

The primary emphasis in this section is on program definition and initiation. We also frame the program structure to ensure it can be scaled to tackle key objectives.

5.2. Defining the Program’s Objectives and Scope

ALIGNING WITH BUSINESS STRATEGY

The initial stage of launching a data governance program is to outline its goals and scope. However, utilities must go beyond merely creating the capabilities that make for good data governance by also putting these capabilities into practice in high-priority, real-world situations.

By making solving real business problems a key objective, utilities can ensure efforts are better focused, an example is set for others to emulate, and stakeholders can develop the skills needed to use data governance for delivering tangible business benefits. This is crucial for achieving traction and making an impact.

EXAMPLE

Often, organizations kick off their data catalog journey by attempting to ingest all data and displaying available data to data stewards. While this is a crucial capability, it lacks tangible business value and can take a long time to achieve.

A more effective approach could involve focusing the initial data catalog release on showcasing data and lineage for the specific subset involved in a vital regulatory report, aiding data stewards in enhancing accuracy. This would be a much faster way to show tangible results and help stakeholders see how to use data governance to create real business outcomes.

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Throughout the program, utilities choose which capabilities to establish; a utility cannot do everything at once, for many reasons. A guideline to live by is to avoid generic approaches. Always tailor decisions to drive business value, address specific problems, and focus on real outcomes that meet the business needs of stakeholders.

PRIORITIZING PROBLEMS BASED ON IMPACT AND FEASIBILITY

Given the broad range of potential areas that data governance can cover, it is crucial to establish clear scope boundaries and prioritize initiatives. Prioritization involves assessing each potential business problem or initiative based on its impact on the organization’s goals and its feasibility. Impact considers the value and benefits of governing specific data assets, while feasibility takes into account the existing capabilities, resources, and data maturity level. This prioritization helps to focus efforts on areas that offer the most value and are realistic to achieve within the program’s time frame.

The recommendation is to start small and grow. This approach is described in section 6, Suggested Approach to Data Governance.

DETERMINING DATA DOMAINS

A data domain describes a category of data that is independent of functions and organizational structure. Domains describe the key categories of subjects that make up a business. Decoupling domains from functions and structures provides stability over time to ensure each domain can serve multiple functions and groups.

Long-term stability of the data classification scheme can be achieved because domains are more consistent and stable when compared to the volatile nature of systems or processes. As utilities create new value

streams based on governed data, the domain concept provides a solid foundation for repurposing and sharing data across the organization as a true asset.

Identifying and defining domains early in the program helps with organizing governance activities around coherent categories of data to classify and prioritize data issues and value generating use cases. Domains can also be used in assigning ownership responsibilities and accountabilities more effectively.

The selection of data domains should reflect the prioritized objectives and focus on areas with the highest impact on business strategy and operational efficiency. With data ownership allocated on a domain basis, it is easier to develop cohesive policies across complete domains. This helps to ensure the content can be shared to support different use cases on a consistent basis.

In the context of utilities, examples of data domains include customer, assets, power network, workers, work, supply chain, energy, capital, finance, regulations, rates, and environment. Sub-domains describe functions carried out within the domain. For example, customer attachment and customer care are sub-domains within the customer domain.

Not all data requires governance—keep in mind the principle of diminishing returns. Every data domain contains critical data elements (CDEs), typically linked to the specific business challenges utilities aim to resolve with data governance. The focus of a data governance program should be limited to those CDEs. Data that remains local within its domain and is not shared across domains may not require governance.

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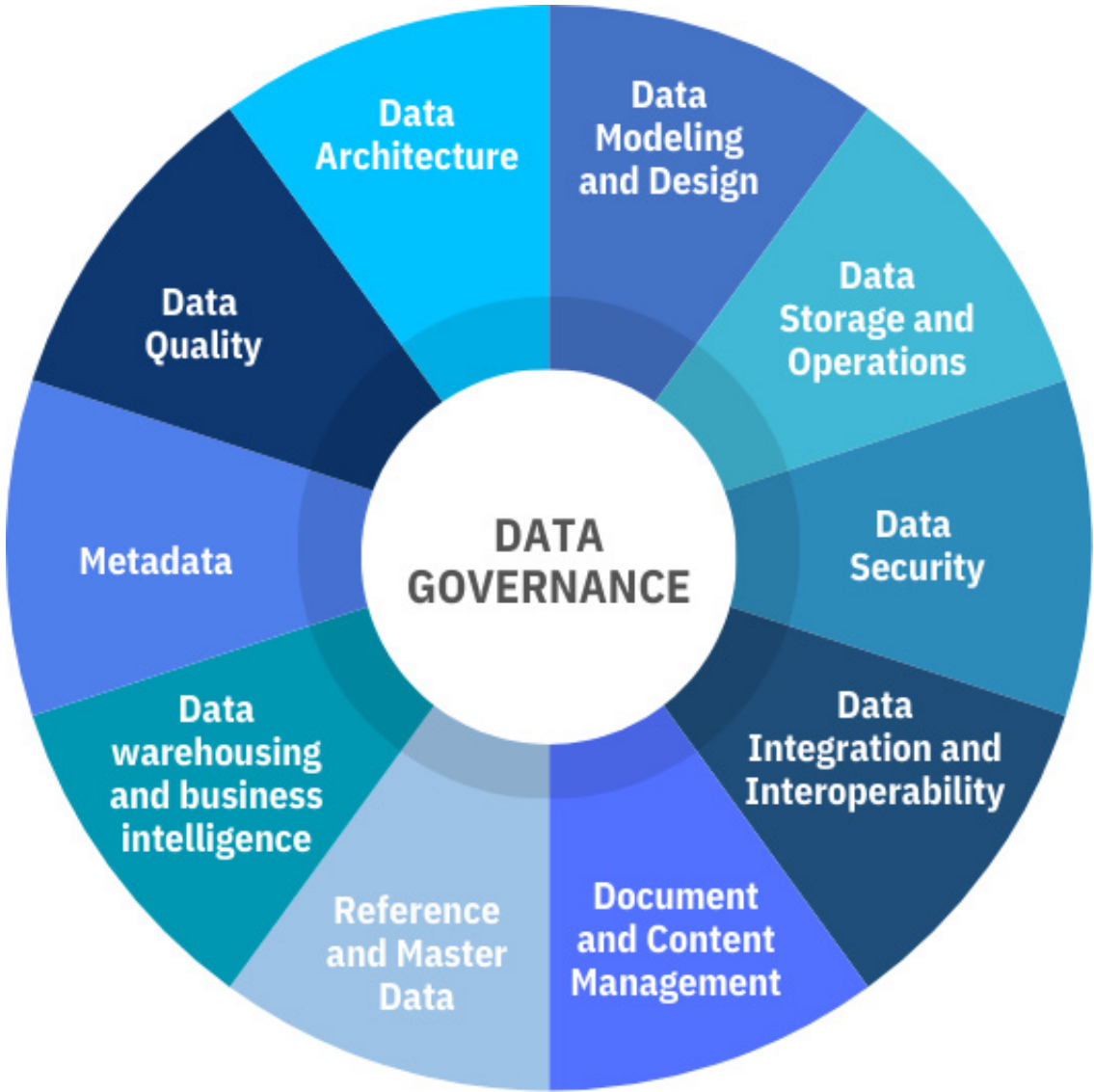
IDENTIFYING KEY DATA MANAGEMENT PROCESSES

Many different frameworks and models are available for data management processes. As an example, the DAMA Wheel enjoys broad acceptance and application. The DMBoK framework illustrates the many diverse data management processes that contribute to the potential scope of data governance. Numerous processes can be included in data governance.

It is important to note that this e-book’s emphasis on solving real business challenges serves as a guide in selecting which of these processes and resulting capabilities to establish first. For instance, if the initial business use case for data governance involves supporting a new, high-quality regulatory reporting project, then the data warehousing and business intelligence management process in the DAMA framework may not be immediately necessary. This decision depends on each organization’s circumstances. It is like constructing a house in stages.

SETTING MEASURABLE GOALS

The objectives of the data governance program must translate into specific, measurable goals. These goals could range from reducing the error rate in customer data, decreasing the time required for regulatory reporting, improving the accuracy of asset data, or enhancing customer satisfaction through better data-driven services. Setting measurable goals enables the organization to track progress, make adjustments, and demonstrate the value of the data governance program. It also facilitates communication about the program’s benefits and achievements to stakeholders across the organization.



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5.3. Establishing Program Structures

The following outline presents a systematic approach utilities can use to establish the organizational structure responsible for overseeing data governance initiatives.

INTEGRATING WITH EXISTING GOVERNANCE STRUCTURES

To ensure the data governance program is not operating in isolation, it should be integrated with the utility’s existing governance structures. This integration ensures alignment with broader corporate governance, risk management, and compliance (GRC) frameworks. Leveraging existing resources, roles, processes, and authority structures can facilitate a smoother implementation, fostering a culture of governance across the utility.

The recommendation is to assess current governance structures and frameworks within the organization and identify key points of alignment, integration, and potential conflict.

Plans should be developed to integrate and align data governance structures into other governance frameworks to reduce duplicate efforts and maintain alignment across multiple groups.

The establishment of data governance committees is critical for providing leadership, oversight, and strategic direction. Typically, this includes a data governance council, sponsorship or executive level, data governance steering committee, and operational data working groups.

Composed of senior leaders (director, vice president levels), the steering committee sets the strategic priorities, policies, and objectives for data governance, ensuring alignment with business goals.

The working groups, on the other hand, are responsible for the operational aspects of data governance, such as data quality, metadata management, and issue resolution, within specific data domains.

Define the objectives, scope, and responsibilities of each committee and working group. Determine meeting schedules and communication channels for efficient collaboration.

MANAGING AND EXECUTING DATA GOVERNANCE

The primary roles that make up a data governance team were introduced in section 2 of this e-book. Now, this section expands on these roles and adds more context about roles needed to manage the data governance program and execute data improvement use cases. Two categories of roles are needed: program roles and operational roles.

The first category includes the roles to plan, develop, and manage data governance as a program. The second category includes the roles to execute activities and processes to deliver data improvement use cases. The two categories are called Program Roles and Operational Roles.

Roles, responsibilities, and accountabilities for these role types are provided in the following tables; however, every program must define and clarify the roles required for their unique needs. The specific duties, levels of authority, responsibilities, and accountabilities must be defined and clearly communicated. It is also essential team members understand and agree to descriptions of their roles.



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Data Governance Team Roles, Responsibilities, and Accountabilities

Program Roles <i>Developing and managing the operating model</i>		
ROLE	RESPONSIBILITIES	ACCOUNTABILITIES
Program sponsor	- Funding and resources. - Mediation. - Promoting the value of data governance.	Providing program resources and funding.
Program manager	Building and implementing the operating model.	Program goals and results.
Program planners and analysts	- Scope prioritization, decisioning, and enforcement models. - Measuring program performance.	
Project managers	Executing projects in support of the program.	Scope, schedule, budget, and deliverable.
Recruiting and developing staff	Recruiting members to work within the operating model.	
Administrative staff	Commercial components of the operating model.	
Communications staff	Promoting motivation and engagement in all program activities and results.	
Change management staff	Developing and leading change management initiatives.	

Operational Roles <i>Executing projects and processes within the operating model</i>		
ROLE	RESPONSIBILITIES	ACCOUNTABILITIES
Business stakeholders	- Supporting data improvement priorities. - Providing oversight and feedback to the data governance program. - Enabling business value created by the data improvement projects.	Enabling business value.
Data owners	Developing policies for data in their assigned domains.	Policy compliance of the data in their domains.
Data stewards	- Translating owner’s policies into standards and procedures. - Influencing changes in the behavior of staff and motivating their participation. - Forming, leading, participating on, and administering working groups that address implementation, change management, standards, and technical issues.	Compliance with standards and procedures.
Data custodians and practitioners	- Participating in data management projects within the operating model as assigned by the program. - Participating in non-program data projects and activities as required.	Compliance with data governance standards and procedures.

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DETERMINING DATA DOMAIN OWNERSHIP

Data ownership is a key element for data governance. The ownership process includes segmenting the in-scope data into domains, as discussed previously, and assigning ownership to each domain to create consistent policies that move the program toward its goals.

Decisions at the program level are made to define the inventory of data domains and the criteria used to define a domain. Decisions are also made at the program level to recruit and educate data owners for each domain. The owners carry out their responsibilities to develop relevant policies aligned with the program goals.

The following steps are carried out.

- Identify data domains based on organization capabilities.
- Assign ownership of each data domain to accountable individuals.
- Establish clear lines of responsibility for managing and maintaining data within each domain by developing relevant policies that data stewards will operationalize.
- Ensure data owners have the necessary authority and resources to fulfill their responsibilities.
- Hold data owners accountable for data in their domains complying with management and usage policies that align with program goals.

ESTABLISHING DECISION RIGHTS AND ESCALATION PROCESSES

Levels of authority, including decision rights and enforcement, are developed by the program team and operationalized in the operating model for execution. The following steps are carried out at the program level.

- Define decision-making authority for all data governance activities, such as data access, quality standards, and policy enforcement.
- Establish clear escalation paths for resolving conflicts or making decisions that exceed individual or working group authority.
- Document decision rights and escalation processes to ensure consistency and transparency in governance practices.

LEVERAGING TECHNOLOGY FOR GOVERNANCE EFFICIENCY

It is important to recognize that data governance is not a technical problem. It is an organizational problem as describe in this e-book. However, technology plays an important role to scale and operationalize many of the processes defined in the operating model. Technology solutions could be implemented to improve productivity and efficiency in areas such as data cataloging, metadata management, data quality monitoring, and policy enforcement. When technology is being implemented, the following steps should be followed.

- Evaluate data governance tools and platforms that can support governance activities.
- Integrate data governance tools with existing IT infrastructure to streamline processes and improve efficiency.
- Provide training and support for stakeholders to effectively utilize data governance technology solutions.

5.4. Creating a Data Governance Charter

A data governance charter defines vision, mission, guiding principles, and scope of the data governance program. It outlines what aspects of data management will be addressed, including data quality, data security, data privacy, metadata management, data life cycle management, and more. Additionally, it clarifies the organizational units, processes, systems, and data assets that fall under the jurisdiction of the data governance program.

Its purpose is to formalize and articulate content of the operating model. This includes the objectives, principles, policies, and procedures guiding the management and governance of data throughout the organization. It is a foundational document that communicates the strategic importance of data governance, aligning it with the organization’s goals and objectives.

DOCUMENT EXECUTIVE SPONSORSHIP AND SUPPORT

Because executive sponsorship and support are critical for success, the charter describes these details.

- Identify the executives and stakeholders to champion the data governance program.
- Articulate the strategic importance of data governance to the organization in terms of business value.

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- Describe the commitment and resources available from senior leadership to support data governance efforts.
- Communicate the alignment and gaps between data governance objectives and organizational goals.
- Describe regular communication channels to be used with executive sponsors to provide updates and address concerns.

DOCUMENT VISION, MISSION, AND PRINCIPLES

The program team will carry out the following activities to define and share the vision, mission, and principles of data governance. These items serve as a north star to keep the program aligned to its core purpose and to motivate all stakeholder groups.

- Define the overall vision for data governance, highlighting its role in driving organizational success.
- Articulate the mission statement, outlining the program’s purpose and scope.
- Develop a set of guiding principles that reflect the organization’s values and priorities.
- Ensure the vision, mission, and principles are communicated clearly and widely across the organization.
- Develop and communicate success criteria and how different stakeholder groups should contribute.

DEFINE STRUCTURE AND GOVERNANCE MECHANISMS

The program team defines the structure and mechanisms for governance as part of the operating model. The following details are included as part of this process.

- Design the organizational structure of the data governance program including management and operating components.
- Describe how the program will integrate to and align with other corporate governance and support groups.
- Establish mechanisms for governance including rules of engagement for steering committees and working groups.
- Develop and define escalation processes and enforcement models.
- Define the decision-making authority and accountability framework within the program structure.

- Document the roles and responsibilities of key stakeholders involved in data governance.

DEFINE PERFORMANCE METRICS AND REPORTING FRAMEWORKS

It is essential to measure various aspects of the governance program to provide feedback to all stakeholders. A well-designed measurement framework will inform the stakeholders about the performance of the governance program. Questions about value creation, enhanced data usage, improved data characteristics, regulatory compliance, progress per data domain, and the impact of modified data management activities can be objectively answered. This is critical to maintain enthusiasm and motivation across the organization. The following steps will be carried out at the program level.

- Identify effectiveness metrics to measure the outcomes of the program.
- Identify efficiency metrics to measure the engagement levels and activities managed within the program.
- Establish benchmarks and targets for success metrics to track progress over time.
- Develop a reporting framework that outlines the frequency, format, and audience for data governance reports.
- Ensure that reporting mechanisms provide actionable insights for continuous improvement.

CLARIFY THE CHARTER’S EVOLUTION PROCESS

The governance program must be adaptive to changing business and technical requirements. This implies the charter is a living document that will evolve over time. The following steps should be followed to ensure the evolution is visible and well managed.

- Define a process and structure for reviewing and updating the charter as needed.
- Establish criteria for evaluating the charter’s effectiveness and relevance over time.
- Identify triggers for charter revision, such as changes in organizational priorities or regulatory requirements.
- Ensure that the evolution process is transparent, inclusive, and aligned with other organizational governance procedures.



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5.5. The First Six Months—Building Readiness

Launching a successful data governance program requires long-term thinking complemented with short-term planning. The first six months define the initial phase where various activities are carried out that create the capabilities for longer-term growth. This section provides guidance on the activities that should be carried during the first six months of the program to build organizational readiness after it has received endorsement and approval from executive sponsors.

IDENTIFY CRITICAL DATA ISSUES

The initial activity should be to determine the current pain points from a data perspective. This will lay the groundwork for creating short-term wins the stakeholders will be excited about.

- Determine the initial and critical data domains that are causing business pain points.
- Conduct data quality assessments to identify inaccuracies, inconsistencies, and gaps in the initial critical data domains.
- Perform privacy assessments to ensure compliance with relevant regulations and identify areas of risk.
- Prioritize data issues based on their impact on business operations, regulatory compliance, and organizational goals.
- Initiate quick wins for urgent fixes to address critical data issues promptly and demonstrate the value of the data governance program.

ASSESS CURRENT DATA MANAGEMENT PRACTICES

The next activity in this initial phase is to determine some quick wins in the areas of data management processes and practices in the identified data domains.

- Review data management policies and procedures to evaluate their effectiveness and alignment with organizational goals.
- Identify gaps and areas for improvement in data management practices by analyzing current data handling processes.
- Benchmark current practices against industry standards to identify areas of strength and areas needing improvement.
- Engage stakeholders from different departments to gather insights and perspectives on current data practices and challenges.

DEVELOP A ROADMAP

Use the results from the initial data and process assessments to provide input to an initial roadmap showing timelines and critical milestones that will engage and motivate stakeholders. The initial use cases should be linked to value creation and focused on data issues that are impactful to the organization.

- Define initial roles, responsibilities, and accountabilities across the core and extended team.
- Establish a data governance committee for decision-making and a working group for executing the first data improvement initiative.
- Carry out planning and assessment activities to identify possible data improvement initiatives.
- Define the scope of the first data improvement initiative so it can be completed within the first 12 months to demonstrate sufficient business value and develop momentum for the data governance program.
- Develop and expand the data capabilities that are necessary for the initial use case.
- Develop timelines and milestones for additional use cases, indicating activities, resources, and value delivery.

BUILD AWARENESS AND ALIGNMENT

Critical success factors for data governance are employee motivation, understanding, and engagement. It is essential for employees to understand the business benefits and technical challenges of governing data. It is also essential for all governance priorities and activities to be aligned with the strategic business priorities.

- Define short-term initiatives such as data quality controls, data integration improvements, and privacy controls that are linked to business value creation.
- Align the data governance roadmap with strategic business initiatives to ensure synergy and support organizational goals.
- Establish milestones and key performance indicators (KPIs) to track progress and measure the success of the initiatives.
- Incorporate feedback loops into the roadmap to allow for adaptation and adjustments, based on evolving organizational needs and changing business priorities.

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5.6. Monitoring and Scaling the Program

Following the initial planning and assessment phase of approximately six months, the data governance program should begin to implement its operating model using sustainable processes. For example, onboarding services might be offered by the program to business units that include full project plans with clear steps and costs for anyone wishing to take advantage of the capabilities being stood up. The following areas of improvement are indicative of a maturing program.

MEASURING, MONITORING, AND REPORTING PROGRESS

To support the growth of the program, a robust measurement and reporting process provides a foundation to maintain alignment. The following steps are recommended.

- Implement regular monitoring processes to track key performance indicators (KPIs) and milestones defined in the data governance roadmap.
- Generate comprehensive reports that provide insights into progress, successes, challenges, and areas needing improvement for stakeholders at all levels.

ADAPTING THE PROGRAM—FEEDBACK AND EVOLVING NEEDS

To support program evolution and driven by changing requirements and stakeholder feedback, the following steps are recommended.

- Solicit feedback from stakeholders and participants to identify areas for improvement and modifications to the governance strategy.
- Adjust data governance strategies and initiatives based on evolving organizational needs, industry trends, and feedback received from stakeholders.

SCALING THE PROGRAM BREADTH

Scaling the governance program requires horizontal growth to include new data domains, stakeholders, requirements, and capabilities. The following steps are recommended.

- Assess opportunities to expand data governance scope to include new data domains and data governance capabilities.
- Scale the program based on resource allocation, stakeholder engagement, and technology infrastructure enhancements.

EXPANDING DATA LITERACY ACROSS THE ORGANIZATION

Managing change in the organization is critical for expanding data literacy capabilities. Coaching and advising staff on the opportunities enabled by governed data to improve their processes and decision-making is the basis for growing the demand for data and creating new efficiencies and other value streams.

Part of data governance’s mandate is to ensure data can generate more value to the organization. This is partially served by increasing the demand for data and analytics use cases. Developing and enhancing data literacy across the organization is essential for developing growing demand. The following steps are recommended.

- Design and implement training programs and resources to enhance data literacy among employees at all levels of the organization.
- Foster a culture of data-driven decision-making by promoting the understanding and utilization of data across departments and functions.
- Implement change management activities to unlock the potential of innovative use cases for data.

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PREPARING FOR EMERGING REGULATIONS AND STANDARDS

Organizations operate in a dynamic environment based on evolving regulations, markets, technologies, and standards. The following steps should be followed to become proactive by anticipating new drivers of change that may impact the scope and objectives of data governance.

- Stay abreast of emerging regulations and standards in data privacy and security to ensure compliance and mitigate risks.
- Proactively adapt data governance policies, procedures, and technologies to meet evolving regulatory requirements and industry best practices.

5.7. Summary

Creating a data governance program for utilities involves establishing organizational structures, policies, procedures, and processes to enhance data and business value. The program should align with business strategy, focusing on high-priority use cases that demonstrate tangible benefits in order to gain traction. Initial efforts should prioritize initiatives based on their impact and feasibility, identifying key data domains and management processes that address business challenges and opportunities. Setting measurable goals helps to track progress and communicate the program’s value to stakeholders.

Integrate the program with existing corporate governance structures and establish a data governance committee for leadership and oversight. Clearly define roles, responsibilities, and accountabilities; segment data into domains; and assign ownership to ensure results. Implement decision rights and escalation processes to maintain consistency, and leverage technology to streamline governance activities. Creating a data governance charter is essential for formalizing the program’s vision, mission, principles, and structure, securing executive sponsorship, and aligning it with organizational goals.

In the first six months, focus on building organizational readiness by identifying critical data issues, assessing current data management practices, and developing an initial roadmap with clear milestones. Building awareness and alignment among employees is crucial for motivating engagement and ensuring governance activities support business needs.

As the program matures, continuously measure progress, solicit feedback, adapt strategies, and scale the program to include new data domains and capabilities, fostering a culture of data-driven decision-making and preparing for emerging regulations and standards.

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6. Suggested Approach to Data Governance

GUIDING PRINCIPLES

This section provides a practical approach for initiating data governance in your organization, aiming to achieve tangible outcomes swiftly without requiring substantial upfront investments. Despite the content covered in this e-book, we acknowledge the challenges in aligning senior management and data leaders to establish data governance for the first time in any organization. Therefore, it is important to know how to demonstrate the business value of data governance.

Two guiding principles drive the practical approach outlined in this section. By adhering to these principles, you will be equipped to initiate data governance initiatives that not only demonstrate immediate value but also lay the foundation for sustained, long-term success.

1. REPEATABLE PROCESS

A clear and repeatable process, supported by a real example, offers significant value to the business. By showcasing a structured and replicable approach, utilities can better understand how to start data governance effectively.

2. TECHNOLOGY-AGNOSTIC

Because people and process are more critical than any specific technology, data governance should remain technology-agnostic. Emphasizing the roles, responsibilities, and workflows over specific technical solutions ensures the governance framework can be adapted to various technological environments and organizational cultures.

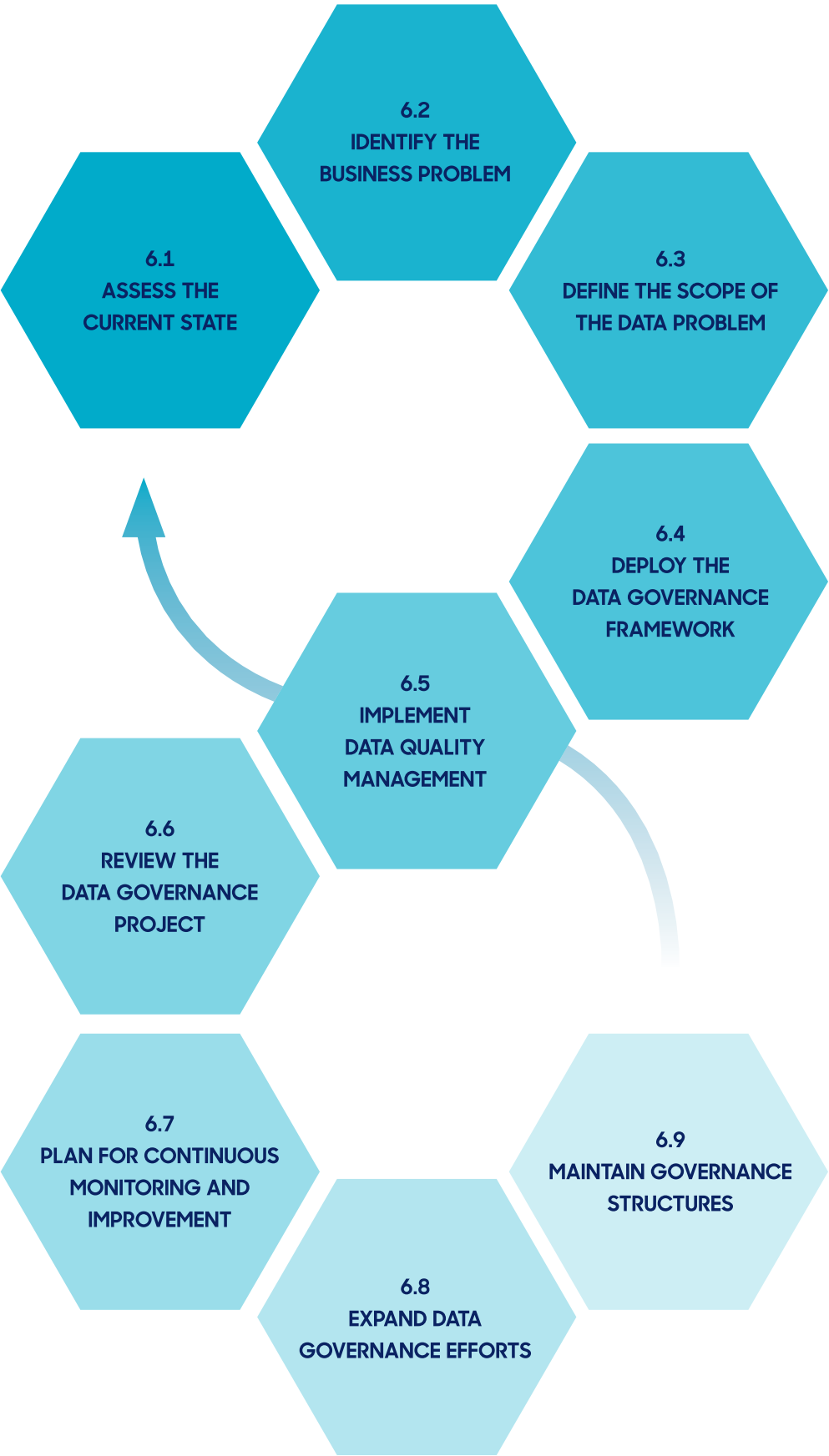


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A DATA GOVERNANCE PILOT

It is essential to understand data governance alone does not automatically generate business value. Rather, it functions as a toolbox that, when used correctly, enables a utility to address specific data issues and solve business problems efficiently. Demonstrating the value of this toolbox and delivering real business benefits are crucial. To achieve this, consider launching a data governance pilot focused on resolving a particular business issue by addressing its data challenges. This pilot will activate a subset of the processes found in a formal enterprise data governance program and serve as a practical demonstration.

Taking a pilot approach provides a blueprint for implementing data governance in practical business scenarios. Additionally, it results in a tangible case study to back it up, complete with valuable insights gained within the organization’s unique culture. It presents a fantastic learning experience from various angles. The pilot is not merely a proof of concept or a disposable trial; it represents a partial development of capabilities and effectively addresses a genuine issue.

The pilot should be managed like a project, incorporating a well-thought-out communication plan. After the pilot concludes and efforts progress toward establishing an enterprise data governance program, components of the pilot’s communication plan can be integrated into a thorough change management strategy and plan. As data governance is about people working together on data, the significance of change management cannot be overstated.

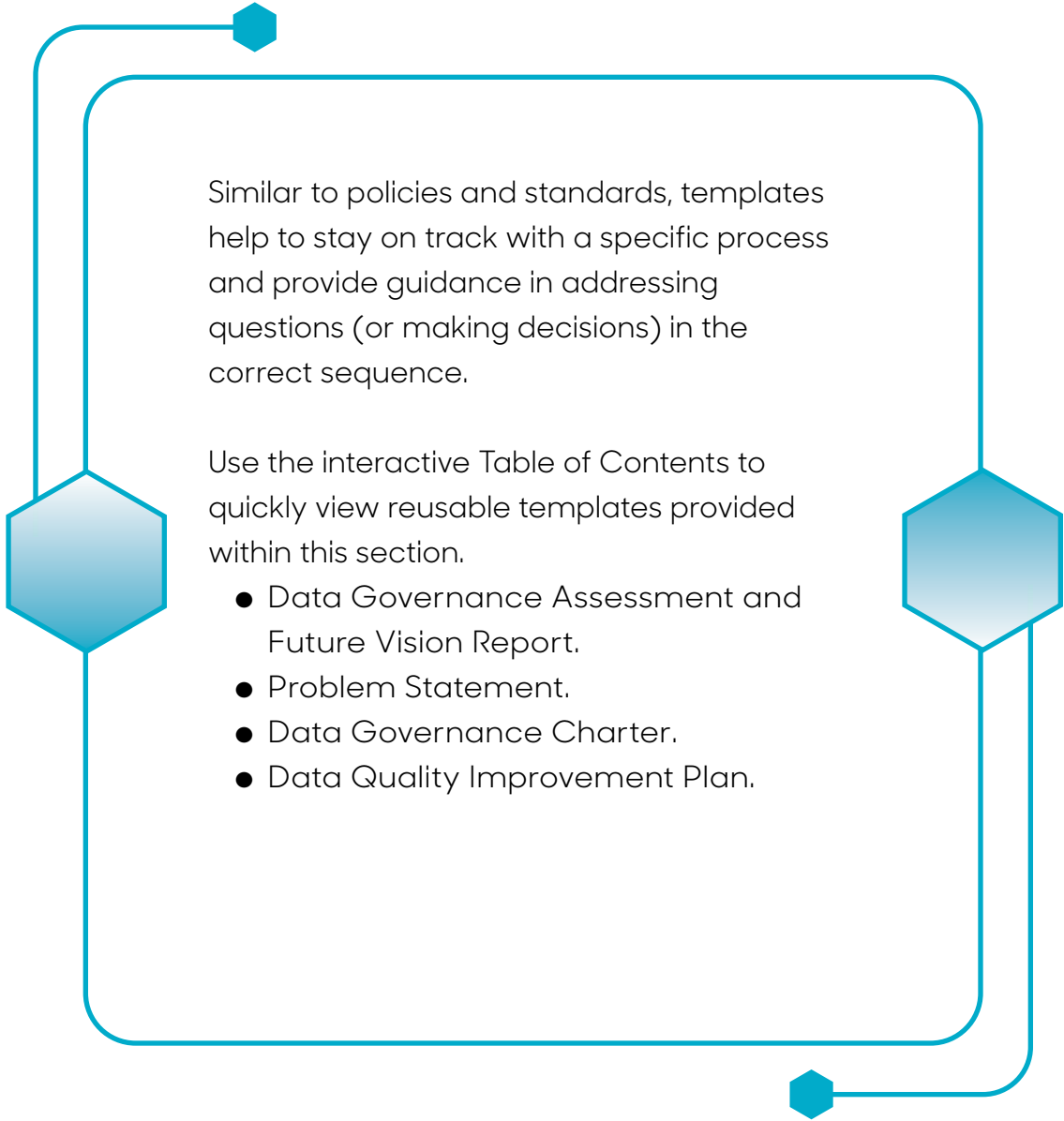


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6.1. Assess the Current State

Before defining a specific problem to serve as a pilot, it is crucial to establish a foundational understanding of the current state. A structured data governance program is essential for effectively addressing any business issues. To gain a clearer picture of what this entails, conduct an initial assessment.

This assessment involves evaluating the organization to identify any hidden barriers within its current state and culture. Thoroughly assess available resources and identify gaps or deficiencies. This lays the groundwork for a robust data governance program. The initial sections of this e-book detail the fundamental aspects of an effective data governance program, which can serve as guidance for this initial assessment.

DATA GOVERNANCE ASSESSMENT AND FUTURE VISION REPORT

Before tackling each problem individually, it is crucial to have a comprehensive understanding and vision of the entire landscape. Conducting an initial assessment helps to identify problems and use cases at a high level. Creating a **data governance assessment and future vision report** provides a holistic view of the challenges and opportunities a utility may face when the program extends beyond the pilot phase. Although a snapshot of a point in time, it serves well in forming a

backlog of high-level problem statements, pain points, and use cases. The data governance program will eventually have an intake and prioritization process, but an initial project is needed to get started. With a well-defined vision of data governance’s future, this can be incorporated into a communication strategy and progress to addressing a particular issue the pilot will solve. A strategic outlook enables effective engagement with executives and the ability to outline plans for program expansion after a successful pilot.

FOCUS ON THE GOAL

One of the core principles of successful data governance is to focus on real business outcomes. This means starting with a clear understanding of the business problem that needs to be solved and ensuring data governance efforts are directed toward addressing this issue. By doing so, you ensure the data collected, managed, and analyzed is relevant and valuable to the organization’s strategic objectives.

The data governance program will eventually comprise repeatable processes to help decision-making around data, and over time, they will become more efficient and effective. The pilot will serve as an example of how such a process can be applied in the context of one problem.

APPLY THE PROCESS

PROCESS

- Conduct an initial assessment to evaluate resources, pinpoint gaps or deficiencies, and understand barriers within the current state and culture. Use the assessment to inform a structured data governance program.

PILOT APPLICATION

- The utility assesses its current data management practices and identifies gaps in data quality and consistency, especially in regulatory reporting. The utility recognizes the need for a structured data governance program to address these issues because they are likely not isolated.



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6.2. Identify the Business Problem

To find a solution, we must first define the problem. The **problem statement** is useful because it provides a structured approach to clearly and concisely articulating the issues an organization faces, ensuring all relevant aspects—such as the background, specific problem, and its impact—are comprehensively addressed. This clarity facilitates a shared understanding among stakeholders, aids in identifying root causes, and guides the development of effective solutions. It defines the success criteria, what success looks like, when it is considered done, and what the goal of completion is. Additionally, a well-defined problem statement serves as a foundation for aligning efforts, resources, and strategies toward resolving the issue and achieving organizational goals.

For example, consider the utility facing inconsistencies in a set of critical regulatory reports and a long preparation time. **The specific business problem is to reduce the time to prepare these reports and eliminate the inconsistencies.** While compliance issues are clear and easy to understand, making them straightforward for a pilot, it is important to choose pilot projects judiciously. Selecting a problem that excites people and garners broader support can be more impactful. For instance, utilities often send reports to end customers. A pilot project that enhances these

reports could address a real problem that resonates more strongly with stakeholders, potentially increasing engagement and enthusiasm for the data governance program.

Our pilot project problem is a particularly good problem to solve showcasing data governance for the following reasons.

- It is about data.
- It likely touches more than one business unit or data domain, thus requiring some collaboration between them, a major benefit provided by the constructs of data governance.
- There is a data quality dimension to the problem; data quality is a particularly clear and easy process for people to rally around—and one that can be reused over and over in the organization. Thus, it is a great showcase.
- If the scope remains focused on one set of reports, it probably can be solved without the need for major investments. However, if the problem of quality and time to prepare analytics is rampant across the organization, the scope can be expanded and—because of the value of time saved and opportunity costs—a return on investment could be a great business case.

APPLY THE PROCESS

PROCESS

- Begin with a problem statement to ensure a clear understanding of the business problem to be solved. Direct data governance efforts toward addressing this issue.

PILOT APPLICATION

- The utility is encountering discrepancies in crucial regulatory reports and prolonged preparation periods. The utility’s objective is to trim down report preparation time and eradicate discrepancies. Historically, it has required 12 hours of collective effort to generate this report, and the team has struggled to swiftly and effortlessly replicate the responses during audits. The absence of uniformity has led to an extra 12 hours spent on reproducing the report and clarifying discrepancies to auditors, ultimately compromising the credibility of all past reports.

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6.3. Define the Scope of the Data Problem

As previously discussed, the business issue must involve a data management aspect that necessitates consideration if we intend to use data governance to help resolve it. The scope of a data problem will be part of the first iteration of a **data governance charter**. This serves as a crucial document to inform individuals about your actions and rationale.

In a general data governance program, a data governance charter is essential for establishing authority, accountability, and clear objectives within an organization’s data governance framework. It aligns data management practices with business goals, supports regulatory compliance, promotes data quality and integrity, enhances security and privacy, and encourages a data-driven culture.

The charter also facilitates decision-making, supports risk management, and drives accountability and performance by defining roles and responsibilities, setting policies and standards, and ensuring continuous monitoring and improvement. Engaging stakeholders and clearly articulating goals are crucial for creating an effective charter that supports the organization’s strategic direction and fosters responsible data management.

The data governance charter can adapt and evolve. It may be modified to initially stand in as the data governance pilot charter and later progress to the enterprise charter once the pilot demonstrates success and gathers business allies who will help to expand the program. The only difference between a pilot charter and an enterprise charter is their focus. The pilot charter is focused on a particular business objective, and the enterprise charter is geared more toward the organization’s strategic plan or initiatives.

Comprehending the data scope is crucial for defining the subsequent steps in the process. When we refer to the data scope, we are considering the following.

- What are the data domains involved? This could include customer data, operational data, financial data, etc.
- From which systems? Clarify the sources of the data, whether internal (for example, databases or a customer relationship management [CRM] system) or external (for example, third-party data providers or regulatory bodies).
- Which business units own the processes that create, delete, or update the data domains involved in the reports? (For example, who the data producers are.)
- Which business units are affected by the problem? (For example, who the data consumers are.)

APPLY THE PROCESS

PROCESS

- Define the data scope.
 - Data domains involved (customer data, operational data, financial data, etc.).
 - Systems from which data is sourced (internal systems like databases, CRM, or external sources like regulatory bodies).
 - Business units owning the processes that create, delete, or update data.
 - Business units affected by the problem.

PILOT APPLICATION

- The utility identifies the data involved, including customer data and operational data from internal CRM and databases. The business units involved are regulatory compliance and customer service.

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6.4. Deploy the Data Governance Framework

Just like a chef might first perfect a few dishes before creating an entire menu for a new restaurant grand opening, a similar approach can be taken with the data governance program by establishing a basic version (or a subset of the target capabilities) of the program to meet a particular business goal.

Revisit the business issue to identify specific parts of the data governance framework needed to address the pilot project. This includes detailing the roles and responsibilities (and assigning people to them), establishing necessary policies and standards, and implementing a data quality framework or a temporary solution. By focusing on these elements, a clear plan can be developed to solve the problem effectively.

Given the focus on resolving a particular business issue, when contemplating the data scope, the initial individuals involved will be limited to those essential for addressing the problem. However, the roles and structures should be consistent with those used in the enterprise data governance vision to implement the processes and establish an initial team of individuals to grasp and serve as early leaders in facilitating the broader application of the principles.

ESTABLISHING ROLES AND RESPONSIBILITIES

Once the scope of the data problem is defined, identify who will play the following roles.

- 1. Who should act as data stewards?
- 2. Who are the report owners?
- 3. Who are the data owners or the subject matter experts who can assist?
- 4. What other stakeholders should be consulted or informed?
- 5. Which data governance committees will be needed?

The roles and responsibilities defined for the pilot project can serve as a foundational framework for enterprise-wide implementation. By clearly outlining the specific duties and accountability measures during the pilot phase, the model created is scalable and can be expanded and adapted to fit the broader needs of the entire organization. This approach ensures that when transitioning from pilot to full-scale deployment, there is a seamless integration of roles and responsibilities into the enterprise data governance program, promoting consistency, clarity, and alignment across all levels of the organization. To ensure roles and responsibilities are well understood, consider putting together a responsibility-accountability-consulted-informed (RACI) matrix and creating a short training video.

CREATE POLICIES AND STANDARDS

Data policies and standards are crucial for improving data management, which is essential for solving business problems and keeping them that way. They ensure data quality by enforcing consistent entry, validation, and maintenance rules, reducing errors, and providing reliable insights. Unified data formats and criteria enhance integration and interoperability, supporting comprehensive analysis across systems.

Policies and standards, along with their enforcement, serve as valuable tools to steer the organization in responsibly creating, handling, and accessing data and to guarantee the effective operation of data solutions once implemented. Once more, the data stewardship committee will be responsible for formulating these policies, while the data governance council will review and sanction them, granting them authority and executive backing.

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DATA GOVERNANCE COUNCIL

The data governance council is the highest-level committee, responsible for the overall strategy, policy, and oversight of data governance across the organization. This council may not need to meet as often once the program is well underway and highly functioning.

Key members typically include the following.

- Business executives and managers.
- Chief Data Officer (CDO).

Core responsibilities are as follows.

- Define and approve data governance policies and standards.
- Align data governance initiatives with organizational goals.
- Monitor compliance with data governance policies.
- Resolve high-level data-related issues and conflicts.

DATA STEWARDSHIP COMMITTEE

The data stewardship committee focuses on the operational aspects of data governance, ensuring data policies and standards are implemented effectively. The members of this committee eventually oversee the finding of, and agreement on, the solution. They will present this solution to the data governance council for approval and oversee its implementation.

Key members typically include:

- Data stewards.
- Data custodians and practitioners.
- Information Technology (IT) subject matter experts.

Core responsibilities are as follows.

- Implement and enforce data governance policies and standards.
- Coordinate data stewardship activities across departments.
- Identify and address data quality issues, or any other data issues.
- Develop data management best practices.

APPLY THE PROCESS

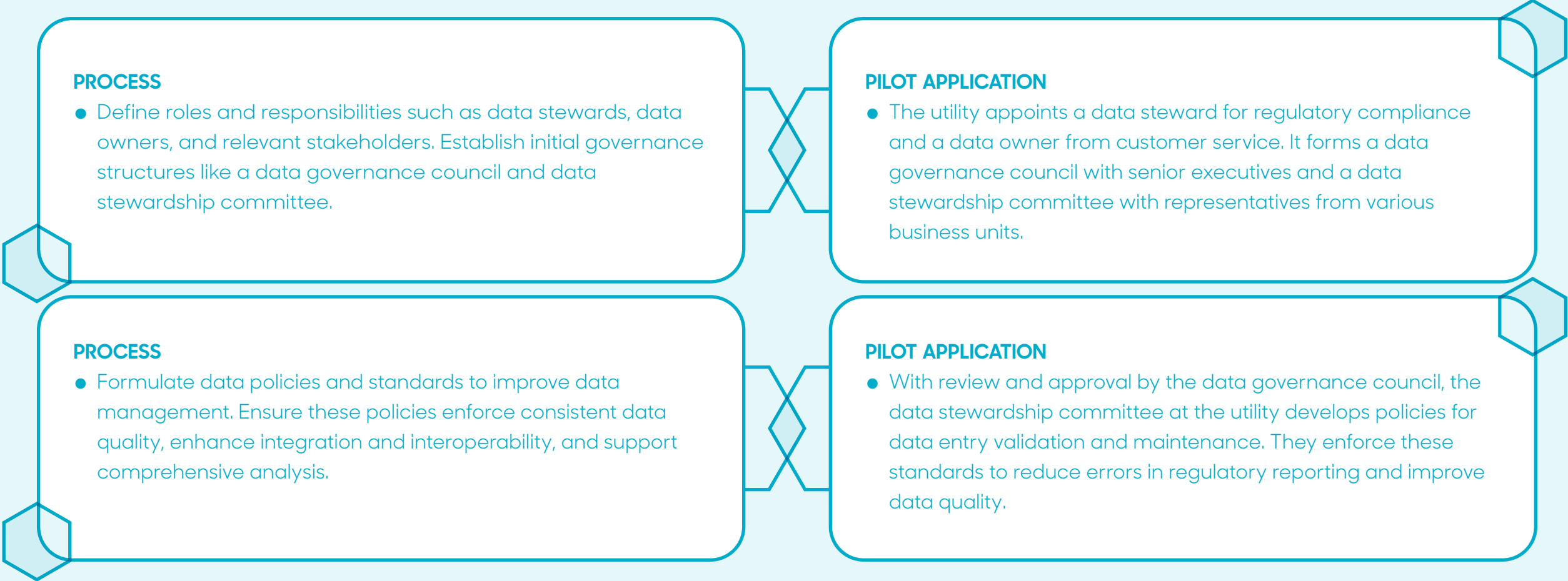


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6.5. Implement Data Quality Management

Data quality is the degree to which data meets requirements. Because there are a lot of requirements or use cases for data, data quality management tends to be a key area managed by data governance. It also applies to the example business problem and pilot.

A **data quality improvement plan** serves as a comprehensive documentation tool for capturing critical project results and information throughout various phases of a data quality initiative. Its primary purpose is to systematically address and resolve data quality issues by documenting findings, assessing the current data environment, and establishing objectives for improvement. The plan facilitates continuous improvement and supports effective communication of progress to stakeholders, ensuring alignment and transparency in data quality efforts. It is typically focused on a specific business outcome, like the one in the pilot example.

Without getting too detailed, using the example business problem and pilot, the data stewardship committee mandates, with approval from the data governance council, a quality assessment of the data involved in creating the regulatory reports. This can be done internally by members of the data stewardship committee or their designates.

A data quality assessment always includes interviews with the business users who are experiencing the problems and pains; their perspectives on the issues are what should be addressed. Data stewards have an important role to play in facilitating these conversations. The outcomes of the assessment will outline the necessary tasks.

The subsequent actions could follow this sequence:

- 1. Review the findings with the data stewardship committee members.
- 2. Convene a dedicated meeting of the committee to deliberate on the findings and devise a course of action.
- 3. Obtain approval for the action plan from the data governance council.

The result typically necessitates establishing an additional structure, a data governance working group assigned to implement the data quality improvement plan.

DATA GOVERNANCE WORKING GROUP

The data governance working group is responsible for executing specific data-related projects and decisions, ensuring that data governance policies and standards are applied effectively.

- Key members typically include the following.

 - Program or project manager.
 - Data stewards.
 - Data quality analysts.
 - IT subject matter experts.
 - Business analysts.
- Core responsibilities are as follows.

 - Project execution.
 - Policy implementation (for example, developing a workflow for approval).
 - Issue resolution.
 - Coordination.
 - Monitoring and reporting.

POTENTIAL FOUNDATIONAL WORK

The intricacy of the plan may necessitate preliminary groundwork, such as acquiring a data quality management and observability tool and setting it up, using our problem as its first pilot. As mentioned earlier, large data initiatives will depend on technology for implementation, so the key factors to consider are either the scope of the issue to address or acknowledging the issue is widespread and investing in a more lasting solution that can be cost-effective in the long run.

APPLY THE PROCESS

PROCESS

- Conduct a data quality assessment of the data involved in the business problem. Review findings, deliberate on them, and devise a course of action. Establish a data governance working group to implement the data quality improvement plan.

PILOT APPLICATION

- The utility’s data stewardship committee conducts a data quality assessment of customer and operational data. They review the findings, develop an action plan, and form a data governance working group to improve data quality in regulatory reports.

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6.6. Review the Data Governance Pilot

REVIEW AND EVALUATE THE PROJECT OUTCOMES

DATA GOVERNANCE COUNCIL RESPONSIBILITIES

- **Strategic review**—Review the strategic impact of the project’s success. Understand how improved data quality contributes to broader business objectives and compliance requirements.
- **Communicate success**—Communicate the success and benefits of the project to the wider organization. Highlight the importance of data governance and its positive impact on business operations and regulatory compliance.

DATA STEWARDSHIP COMMITTEE RESPONSIBILITIES

- **Evaluate success**—Assess the outcomes of the project against the predefined objectives and key performance indicators (KPIs). Determine if the data quality improvements meet regulatory and business requirements.
- **Feedback gathering**—Collect feedback from all stakeholders involved, including the working group members, data users, and regulatory bodies.
- **Lessons learned**—Document lessons learned during the project. Identify what worked well and what could be improved for future initiatives.

APPLY THE PROCESS

PROCESS

- Evaluate the project outcomes against predefined objectives and key performance indicators. Gather feedback and document lessons learned from all stakeholders. Communicate success to the wider organization.

PILOT APPLICATION

- The utility evaluates the pilot project’s success in reducing report preparation time and inconsistencies. They gather feedback from involved stakeholders, document lessons learned, and communicate the project’s success to the broader organization.

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INSTITUTIONALIZE BEST PRACTICES

Initially implemented during the pilot phase, best practices can be seamlessly integrated into the enterprise data governance program change management plan to ensure ongoing consistency and continuous improvement across the organization.

DATA GOVERNANCE COUNCIL RESPONSIBILITIES

- **Governance framework**—Ensure the updated policies and standards are aligned with the overall data governance framework. Maintain oversight to guarantee ongoing adherence.
- **Training and awareness**—Promote training programs and awareness campaigns to educate stakeholders on new best practices and updated policies. Encourage a culture of continuous data quality improvement.

DATA STEWARDSHIP COMMITTEE RESPONSIBILITIES

- **Policy update**—Update data governance policies and standards based on successful practices identified during the project. Ensure these updates are communicated and enforced across the organization. This may be more difficult early in the program or right after the pilot, and that is why change management is an important aspect of making data governance work.
- **Process integration**—Integrate successful data quality improvement processes into the regular data management workflows. Ensure these processes are sustainable and repeatable.
- **Templates**—Ensure the documents developed and approved by the data governance council are saved somewhere and can be reused.

APPLY THE PROCESS

PROCESS

- Update data governance policies based on successful practices identified during the project. Integrate these processes into regular data management workflows and ensure they are sustainable.

PILOT APPLICATION

- The utility updates its data governance policies to reflect best practices from the pilot project. They integrate these updated processes into regular workflows to maintain data quality improvements in regulatory reporting.

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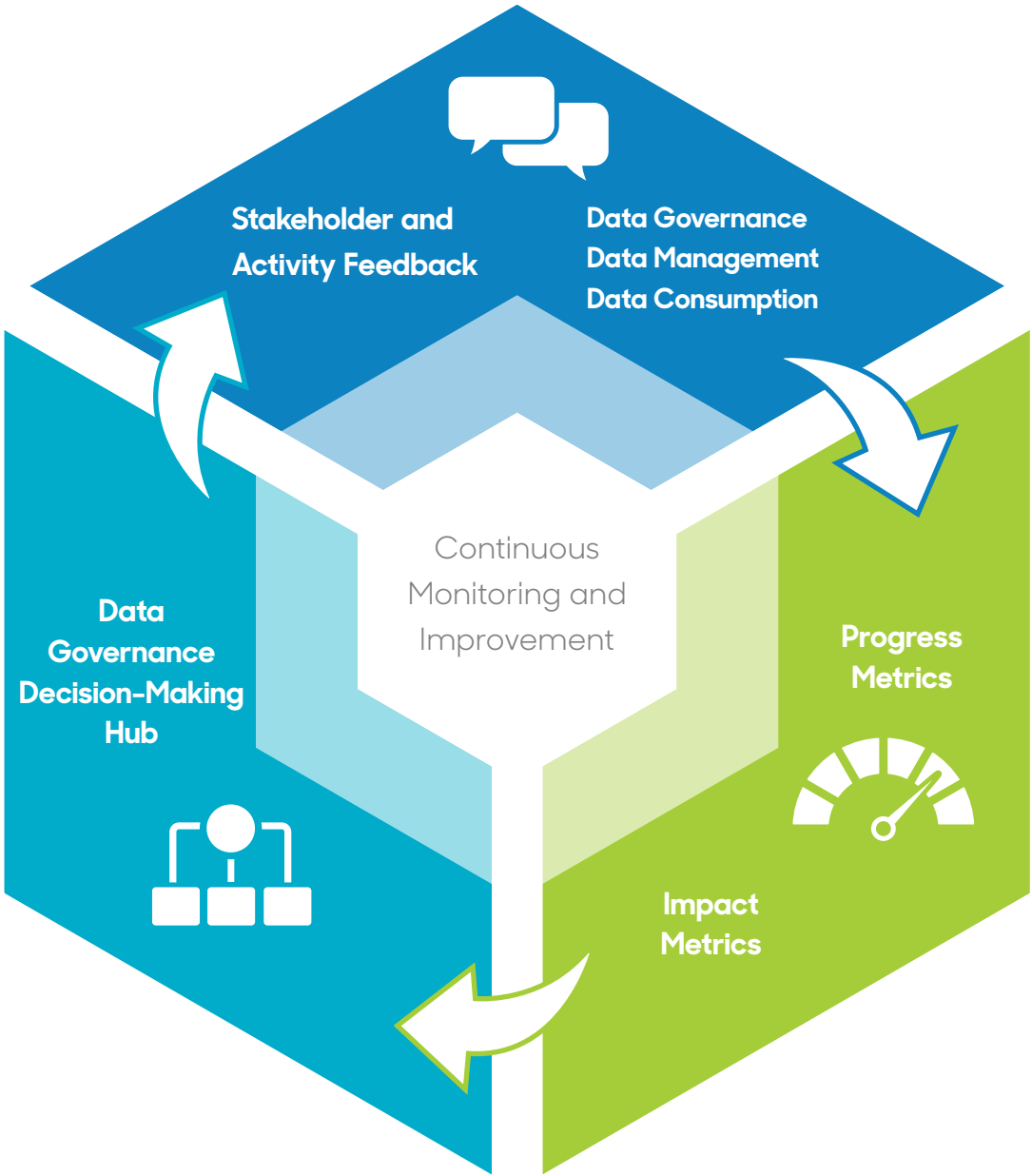
6.7. Plan for Continuous Monitoring and Improvement

Established during the pilot phase, continuous monitoring and improvement can be incorporated into the enterprise data governance program change management plan to ensure ongoing continuous monitoring and improvement across the organization.

Use KPIs to monitor project results. The example pilot project was focused on solving a data quality problem. Is it working? Can it be improved? Can it be proved with empirical data that what was done worked?

Three metrics—accuracy, completeness, and consistency—are foundational to maintaining high-quality data within a data governance program. They help to ensure data is reliable, usable, and effective (fit for purpose) for decision-making, analysis, and operational efficiency. Tracking these metrics provides a clear view of data health and highlights areas needing improvement, thus supporting the overarching goals of the data governance program. Continuous improvement occurs as the data governance team responds to direct feedback from stakeholders and the indirect feedback of the progress and impact metrics recorded from the data governance, data management, and data consumption arising during as a result of the project. Metrics will be reviewed in section 7.

6. Suggested Approach to Data Governance



Examples of Impact Metrics

- Data issue resolution metrics.
- Data quality scores.
- Policy adherence indicators.
- Training completion rate.
- Data usage & compliance indicators.

Examples of Progress Metrics

- Business performance metrics.
- Business process metrics.
- Data compliance metrics.
- Data utilization metrics.
- Data-driven decision metrics.

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DATA GOVERNANCE COUNCIL RESPONSIBILITIES

- **KPIs review**—Regularly review KPIs related to data quality and regulatory compliance. Use these reviews to guide strategic decisions and resource allocation.
- **Continuous improvement initiatives**—Support the initiation of continuous improvement projects. Encourage innovation and adaptation in data governance practices to keep pace with changing regulatory requirements and business needs.

DATA STEWARDSHIP COMMITTEE RESPONSIBILITIES

- **Monitoring plan**—As appropriate, establish a continuous monitoring plan to track data quality metrics on an ongoing basis. Set up regular audits and assessments to ensure data remains accurate and compliant. Wherever possible, automate these monitoring and auditing processes to enhance efficiency and reduce manual effort. Alternatively, a self-service policy can be implemented, so the work gets distributed to producers and consumers of the data who are in a better position to know the data or what quality criteria it should meet for it to be useful.
- **Feedback loops**—Create feedback loops for ongoing stakeholder input. Encourage reporting of data quality issues and suggestions for further improvements.

APPLY THE PROCESS

PROCESS

- Establish a continuous monitoring plan to track data quality metrics. Create feedback loops for ongoing stakeholder input. Support continuous improvement projects to keep pace with changing requirements.

PILOT APPLICATION

- The utility sets up a plan to continuously monitor data quality in regulatory reports. They establish feedback loops for stakeholder input and initiate continuous improvement projects to adapt to changing regulatory requirements.

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6.8. Expand Data Governance Efforts

At this stage, it has been successfully proven a real business problem related to data can be solved using the capabilities of data governance. This is a win! The next step is to create a roadmap to implement an enterprise-level data governance program (DGP) and initiate its deployment across the organization’s data landscape.

DATA GOVERNANCE COUNCIL RESPONSIBILITIES

- **Communicate**—Although the council has limited membership, it successfully oversaw a significant achievement. This accomplishment should be shared more broadly with the senior leadership. While the data stewardship committee can implement, it is the data governance council’s role to lead the way for the next stages.
- **Strategic alignment**—Ensure new data governance projects are strategically aligned with the organization’s overall goals.
- **Allocate resources and support to high-priority initiatives.** Inform the priorities for the next 12 months and communicate them to the data stewardship committee.
- **Cross-functional coordination**—Foster collaboration across different business units to ensure comprehensive data governance efforts. Promote the sharing of best practices and knowledge across teams.

DATA STEWARDSHIP COMMITTEE RESPONSIBILITIES

- **New projects**—While an initial list of prioritized issues may have come from the initial assessment, the process of identifying new business problems, use cases, and areas where data quality can be improved must continue. This includes prioritizing projects based on their potential impact and urgency.
- **Plan next 12 months**—Create a prioritized backlog of data issues (to fix) and data opportunities (to create value) and task someone to maintain it. Consult business units, considering their maturity and desire to participate, and the data governance council.
- **Working group activation**—Form new data governance working groups or leverage the existing group to tackle these new initiatives.

APPLY THE PROCESS

PROCESS

- Identify new business problems to solve using data governance. Form new data governance working groups to tackle these initiatives. Ensure alignment with organizational goals.

PILOT APPLICATION

- The utility identifies other areas with data quality issues and forms new working groups to address these problems. They ensure these new projects align with the organization’s strategic goals.

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6.9. Maintain Governance Structures

DATA GOVERNANCE COUNCIL RESPONSIBILITIES

- **Oversight and support**—Continue to provide oversight and strategic support to the data stewardship committee and working groups. Ensure governance structures remain effective and adaptive to organizational changes.

DATA STEWARDSHIP COMMITTEE RESPONSIBILITIES

- **Role continuity**—Ensure continuity of roles within the data stewardship committee. Facilitate smooth transitions and onboarding for any new members.
- **Governance operations**—Maintain regular meetings and governance operations to address ongoing and emerging data quality and security issues identified as part of the ongoing monitoring process as well as the data stewardship committee’s planning responsibilities.

APPLY THE PROCESS

PROCESS

- Ensure continuity of roles within governance committees. Maintain regular meetings and operations to address ongoing data quality issues. Provide oversight and strategic support.

PILOT APPLICATION

- The utility maintains regular meetings of the data stewardship committee and data governance council. They ensure continuity of roles and provide ongoing support to address data quality issues.

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7. Metrics

7.1. Why Metrics Are Important

Tracking metrics is a fundamental component of a successful data governance program. It provides the necessary insights to measure success, drive continuous improvement, ensure compliance, enhance data quality, support decision-making, demonstrate value, optimize resources, and foster accountability. Tracking metrics for a data governance program is crucial to the following.

MEASURE EFFECTIVENESS

- Metrics allow for quantitatively assessing the success of data governance initiatives. By tracking key performance indicators, an organization can determine whether the implemented policies and processes are achieving the desired outcomes.

IDENTIFY AREAS FOR IMPROVEMENT

- Continuous monitoring of metrics helps to identify gaps and areas that require enhancement. This ensures the data governance program evolves and improves over time, addressing emerging challenges and opportunities.

ENSURE COMPLIANCE

- Regulatory requirements often mandate specific data management practices. Metrics help to track compliance with these regulations, ensuring the organization meets legal and industry standards, thereby avoiding fines and legal issues.

ENHANCE DATA QUALITY

- Metrics related to data quality (such as accuracy, completeness, and consistency) provide insights into the state of data. This information helps to implement targeted data quality improvement initiatives, leading to more reliable and trustworthy data.

SUPPORT DECISION-MAKING

- High-quality data governance metrics provide valuable insights that support strategic decision-making. They help to provide an understanding of the impact of data governance on business outcomes and in making informed decisions based on data-driven evidence.

DEMONSTRATE VALUE

- Tracking metrics helps to demonstrate the value of the data governance program to stakeholders. Clear, quantifiable evidence of improvements and successes can secure ongoing support and investment from senior management.

OPTIMIZE RESOURCES

- By identifying which aspects of the data governance program are performing well and which are not, resources can be allocated more efficiently, focusing efforts on areas that yield the highest return on investment.

FOSTER ACCOUNTABILITY

- Metrics establish clear benchmarks and targets, fostering accountability among data stewards, data owners, and other stakeholders involved in the data governance program. This encourages adherence to data governance policies and practices.



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7.2. Example Metrics

METRIC	DESCRIPTION	EXAMPLE METRICS	IMPORTANCE
DATA QUALITY METRICS			
Data accuracy	Data accuracy refers to the extent to which data correctly reflects the real-world entities and events it is intended to represent.	● Percentage of data entries free from errors compared to the total number of entries. ● Number of errors detected per 1,000 data entries. ● Percentage of data elements that match against a trusted reference dataset (for example, customer addresses matching postal service records).	Percentage of data entries free from errors compared to the total number of entries.
Data completeness	Data completeness measures the extent to which all required data is present in the dataset. It ensures no critical information is missing.	● Percentage of records that have all required fields populated. ● Number of records with missing required fields per 1,000 records. ● Percentage of completeness for critical data categories (for example, customer contact details and transaction records).	Number of errors detected per 1,000 data entries.
Data consistency	Data consistency assesses whether data is uniformly and consistently recorded across different systems and datasets.	● Percentage of data entries that are uniform across different systems and match predefined standards or formats. ● Percentage of data elements that are consistent across multiple systems (for example, customer names and IDs matching in customer relationship management and billing systems). ● Percentage of data entries that adhere to standardized formats (for example, date formats and phone numbers).	Percentage of data elements that match against a trusted reference dataset (for example, customer addresses matching postal service records).



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Metric	Description	Example Metrics
Data Management Metrics		
Data accessibility	Measures how quickly users can retrieve data, indicating the efficiency of data access mechanisms. This can be a query-time measure or time to get access to a requested dataset. These would measure different aspects of accessibility.	Average time taken to access data.
Data usage	Tracks how frequently data is used, helping to understand its value and relevance to business operations.	Number of times data assets are accessed or utilized.
Compliance Metrics		
Regulatory compliance	Monitors adherence to relevant data regulations and standards, ensuring the organization meets legal requirements.	Number of compliance breaches.
Data privacy	Measures compliance with data privacy regulations such as the European General Data Protection Regulation (GDPR) and California Consumer Protection Act (CCPA), ensuring personal data is protected.	Percentage of data handling processes that comply with privacy policies.
Data Governance Metrics		
Policy adherence	Ensures data governance policies are being followed consistently across the organization.	Percentage of data management activities that comply with established policies and procedures.
Issue resolution time	Measures the efficiency of processes in place for identifying and resolving data problems.	Average time taken to resolve data-related issues.
Data Stewardship Metrics		
Data steward activity	Tracks the activities and engagement of data stewards in managing data assets.	Ensures all important data assets have clearly defined ownership and accountability.
Data ownership	Number of data stewardship tasks completed.	Percentage of critical data elements with assigned data owners.
Data Security Metrics		
Data breach incidents	Monitors the frequency of data breaches, helping to assess the effectiveness of data security measures.	Number of data breach incidents reported.
Access control effectiveness	Ensures data access controls are working effectively to prevent unauthorized access.	Percentage of data access requests that comply with security policies.
Data Integration Metrics		
Integration success rate	Measures the effectiveness of data integration processes, ensuring data from various sources is accurately combined.	Percentage of successful data integration attempts.
Data transformation accuracy	Ensures data transformations are performed correctly, maintaining data integrity.	Percentage of data transformations that meet accuracy criteria.

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7.3. Start Slow, Adapt, and Grow

Starting with a manageable set of key metrics and gradually expanding ensures the data governance program remains focused, manageable, and effective. This approach helps to prevent information overload, resource strain, and complexity while ensuring the most critical aspects of data governance are monitored and improved. Incorporating continuous learning into this process enhances the organization’s ability to adapt and evolve, ensuring sustained improvements and alignment with organizational goals. Regular review and adaptation of metrics ensure they remain meaningful and provide actionable insights.

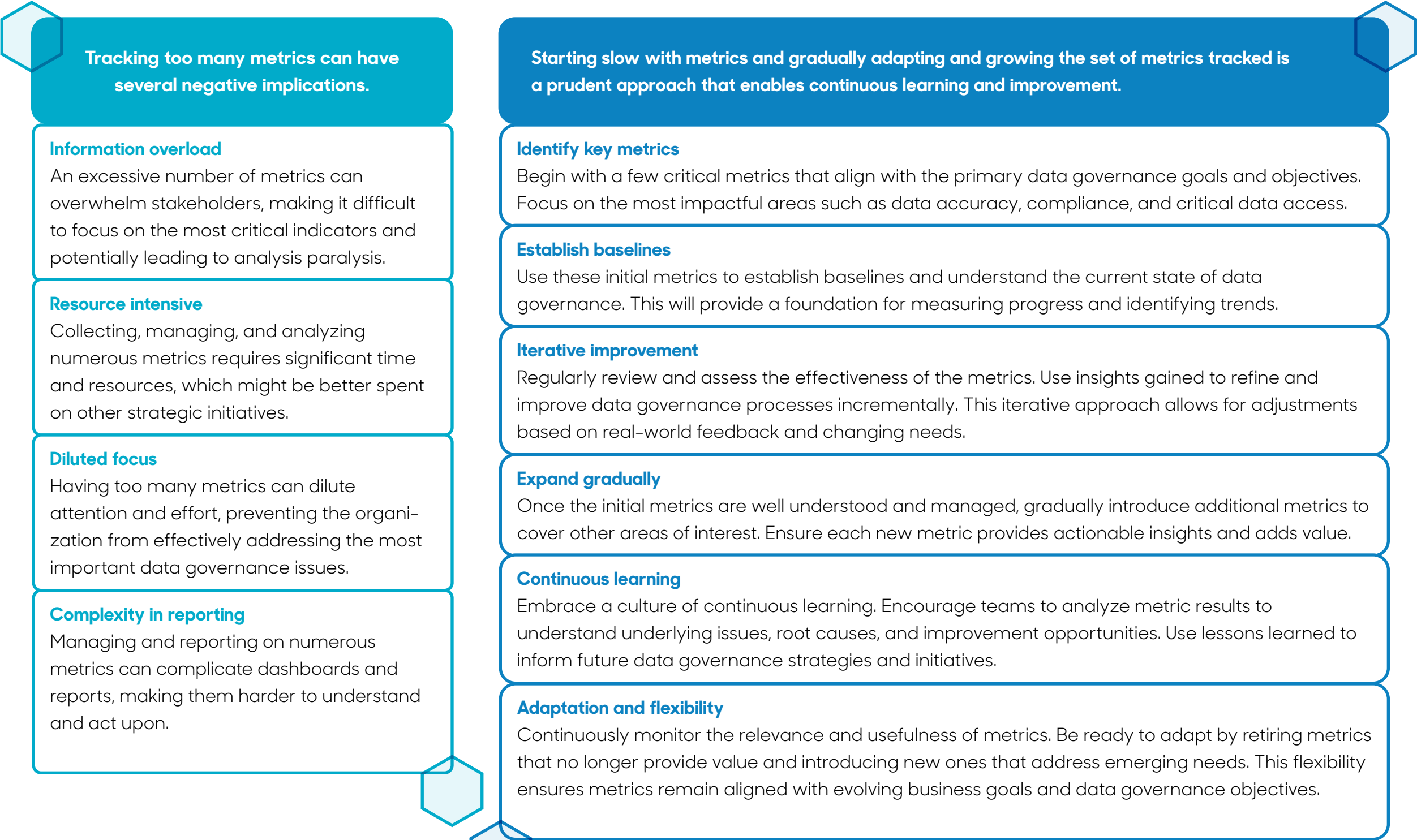


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8. Impact of Technology and Data on Data Governance Scope

8.1. Overview

The data landscape continues to evolve rapidly. It is essential for organizations to continuously adjust the scope and objectives of their data governance programs to respond to changing conditions and requirements. For example, the shift from on-premise to cloud-based platforms introduces new challenges and opportunities, such as vendor management and commercial considerations, that were not in the scope of traditional data governance activities.

In addition to the cloud, embracing new types of data platforms, analytic applications, and diverse data types requires a dynamic approach to managing data governance scope. Continuous scope adjustments ensure alignment with the primary goals of data protection and accessibility as well as overall organizational objectives over time.

8.2. Impact of Cloud Platforms

Transitioning from on-premise to cloud environments introduces new conditions data governance must address. Recognizing that data governance sets policies for different management processes to execute effectively, it is important for data governance to identify missing or deficient management processes that must be implemented or adjusted. This is applicable to cloud platforms that offer scalability and flexibility but require enhanced vendor management, security management, regulatory compliance management, and cost management.

CHALLENGES UNIQUE TO CLOUD PLATFORMS

- Robust vendor management.
- Ensuring data security across environments.
- Compliance with regulations and standards.
- Ensuring data sovereignty.
- Understanding and managing billing and cost structures.

OPPORTUNITIES FROM CLOUD PLATFORMS

- Scalability and flexibility of cloud services.
- Efficient resource management with dynamic scaling.
- Enhanced data accessibility and collaboration.
- Embedded data backup and recovery processes.
- Supplement non-core skills and assets.
- Potential for reduced cost.

As organizations adopt hybrid models, managing data across both on-premise and cloud environments, data governance programs must evolve to provide consistent oversight and interoperability capabilities. These lists serve as a starting point for discussing additional scope components that should be added to the data governance program to minimize risks, manage costs, and pursue new value opportunities in cloud-based environments.

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8.3. Adapting Governance Scope

The development of new data platforms to serve emerging applications and use cases demands continuous updates to governance frameworks. Whether incorporating real-time analytics, integrating external data sources, or leveraging machine learning models, data governance must ensure data is accessible, accurate, and secure. This involves updating policies, standards, and processes to align with the evolving needs of new platforms and applications.

PROACTIVE AND FLEXIBLE GOVERNANCE SCOPE DEFINITION

Data governance programs must be proactive, agile, and flexible to stay aligned with evolving needs. This involves regular assessments and adjustments to governance policies, continuous monitoring of regulatory changes, and the adoption of emerging technologies and best practices. By doing these activities, data governance can ensure the appropriate data management practices are followed to protect data and enhance its usability and value. The data management teams must follow these adjusted policies and practices to ensure ongoing success.

The following sections can be used as a checklist to help identify gaps between the data governance scope and policies developed at a point in time and the evolving data management requirements driven by the evolution of the data landscape.

COMMON FACTORS ACROSS ALL DATA PLATFORMS

To establish a baseline for data governance scope, consider the following common data management practices across all platforms and data types. They serve as a reference for the standard aspects of data governance scope. Subsequent sections will cover the unique aspects of data governance scope based on data platform type, data application type, and data type.

Each category provides unique requirements that should be considered using this guide as a checklist.

COMMON DATA MANAGEMENT SUCCESS FACTORS

- Data security.
- Data integration.
- Compliance.
- Performance optimization.
- Data quality.
- Metadata management.
- Backup and recovery.
- Monitoring and auditing.
- Cost management.
- Data life cycle management.

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8.4. Identifying Additional Success Factors

To explore incremental components of data governance scope, the following criteria can be used as a planning checklist. The criteria are based on categories of data provisioning platforms, data analytic use cases, and data types.

Each of the tables described below provide some of the special data management success factors for one of the three categories. For each category that is relevant to a utility’s environment, use the list of success factor examples to identify specific scope elements that data governance should address.

The list of special success factors is not meant to be exhaustive. They are provided to illustrate some of the factors that need to be addressed as the scope is adapted to maintain alignment with changing needs.

DATA PROVISIONING PLATFORMS

The following table describes different data provisioning platforms that often have unique requirements for data management success. Data governance must account for these unique factors to ensure data management executes the policies and achieves the objectives as new platforms are integrated into an environment.

DATA PROVISIONING					
PLATFORM	SCOPE OF DATA	IMPACT AND VALUE		SUCCESS FACTORS	
Operational database	Structured transactional data	● Data integrity ● Operational execution		● Data consistency ● Data latency	● Schema evolution
Data warehouse	Structured data for reporting and analysis	● Centralized analytics ● Business insights		● Data freshness ● ETL process ● Data modeling	● Integration ● History management
Data lake	Structured and unstructured data for exploration and analytics	● Scalability ● Flexibility ● Data science	● Model building exploration ● Discovery	● Data quality ● Data discoverability ● Data understanding	● Data accessibility ● Compliance ● History management
Data lake house	Unified approach to data lakes and warehouses	● Unified analytics ● Cost-effectiveness		● Data integration ● Schema evolution	● History management
Streaming environment	Real-time data streams from IoT event data	● Real-time analytics ● Immediate insights		● Data ingestion rate consistency	● Reliability
API hub	Data accessed via APIs	● Accessibility integration ● Monetization ● Agility		● API versioning ● Security ● Access control	● Metadata ● Monetized value

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8.5. Data Applications and Analytic Use Cases

The following table describes data applications and analytic use cases creating unique factors for data management success. These factors should be considered for inclusion in the data governance scope to ensure various data management processes are in place and align with new applications and use cases that are implemented.

DATA APPLICATIONS AND ANALYTIC USE CASES				
USE CASES	SCOPE OF DATA	IMPACT AND VALUE	SUCCESS FACTORS	
Reporting	Structured data in reports and dashboards	- Decision support - Operational efficiency	Report consistency	Data literacy
Semantic layers	Metadata-driven views, ontologies, taxonomies, knowledge graphs	- Simplified data access - Consistency	- Metadata management - Synchronization	- Taxonomy versions - Ontology versions
Analytics	Data for reporting and analysis	- Business insights - Competitive advantage	- Data integration - Data visualization	- Performance optimization - Data literacy
Self-service analytics	Tools for user-generated models and analyses	- Empowerment - Agility	- Data literacy - Training - Support	- Discoverability - Accessibility
Machine learning	Data for training and data from inference	- Insights for decisions - Automation	- Model drift management - Model explainability - Ethics and bias - AI transparency	- Data quality - Data understandability - Data accessibility
Generative AI	Data for training, data from inference, and large language model integration inference of new content	- Innovation - Productivity - Content generation	- Data quality - Inference validation - Veracity risks	- Ethics and bias - Security - Intellectual property risks

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8.6. Diverse Data Categories

The following table describes different data categories, each having unique requirements for data management success. These factors should be considered for inclusion in the data governance scope to ensure effective data management processes are in place that are aligned with new types of data used.

DIVERSE DATA CATEGORIES				
CATEGORY	DESCRIPTION	IMPACT AND VALUE	SUCCESS FACTORS	
Internal data	Data generated within the organization	● Operational efficiency ● Business effectiveness ● Risk mitigation ● Compliance	● Data quality ● Access control ● Security	● Compliance ● Discoverability ● Classification
External data	Data from external sources	● Enhanced decision-making ● Broader insights	● Data integration ● Privacy ● Veracity	● Vendor management ● Metadata
Structured data	Data in predefined tabular format	● Efficient querying ● Structured analysis	● Data modeling ● ETL processes	● Schema management
Unstructured data	No predefined structure, contains multimedia formats	● Rich insights ● Innovation opportunities	● Data classification ● Metadata enrichment	

By adapting the data governance scope and considering unique success factors for the different types of data platforms, applications, and data categories, utilities can ensure their data governance program provides oversight and coordination to their changing data management and development processes. This will ensure alignment over time as the data landscape and business requirements continue to evolve.

8.7. Summary

This section describes the need for organizations to continuously adapt their data governance scope to align with evolving technology, data, analytics, and business factors. With the shift from on-premise to cloud-based platforms, new challenges such as robust vendor management, enhanced security, and compliance with diverse regulations arise, including issues related to data sovereignty requirements. These challenges require a dynamic approach to data governance to ensure data protection and accessibility are maintained to protect data and enable its value creation.

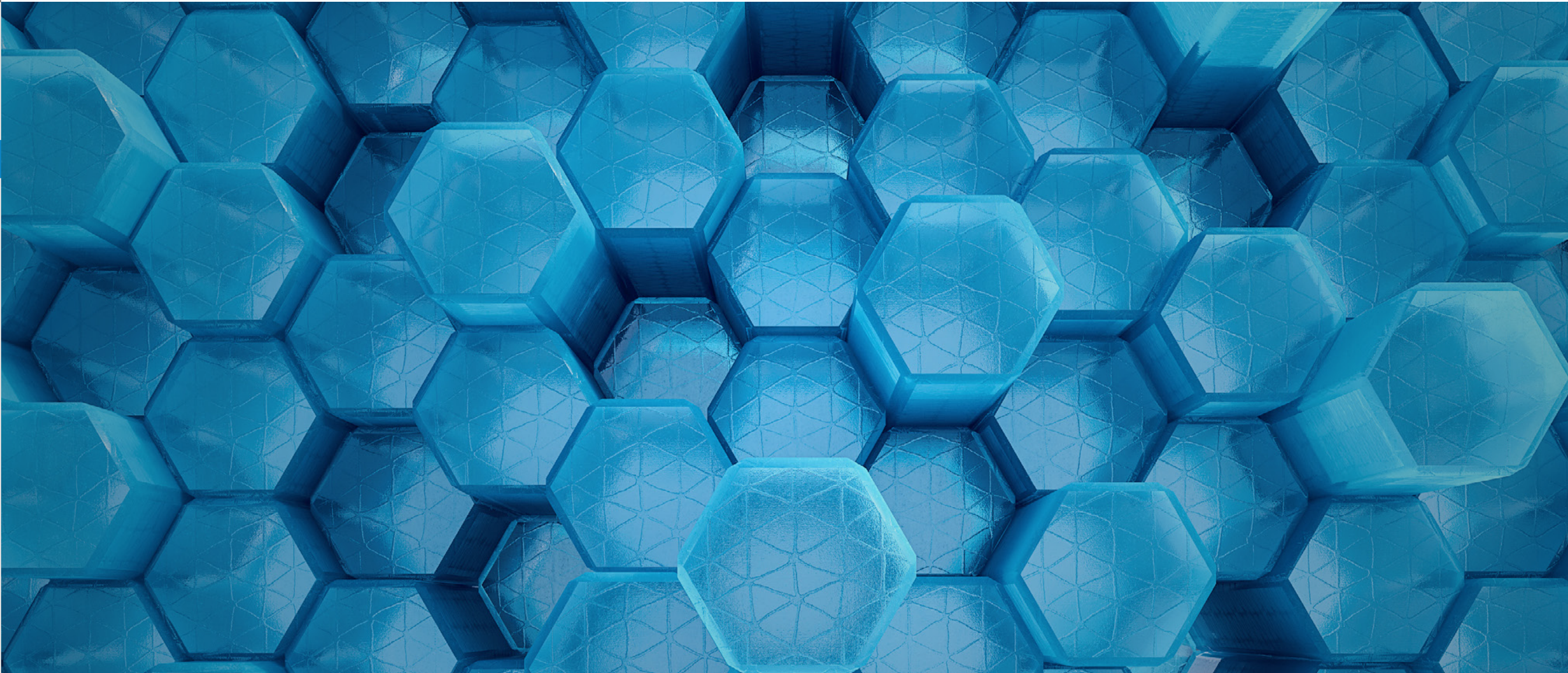
Unique requirements and opportunities are introduced by different data platforms and analytic use cases. Cloud platforms offer scalability and flexibility but require careful management of data security and cost structures. Emerging applications like machine learning and generative AI bring new considerations for data quality, model calibration, ethics, and security. To stay aligned with the evolving requirements, data governance programs need to proactively update their policies and processes to ensure the right data management practices are in place and followed.



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9. Case Studies

The data governance journeys of three different utilities are described on the following pages in this section. They are provided at a high level to give some specific examples of how differently these utilities are implementing the concepts and principles described in this e-book. These case studies are a picture in time; conditions at these utilities may have changed over time.



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9.1. San Diego Gas & Electric (SDG&E)

SOURCE OF INFORMATION

Information for this case study is based on a presentation titled “Treating our Data as an Asset” (SDG&E, 2020).

INTRODUCTION

In March 2020, SDG&E described a business transformation project aimed at modernizing operations and enhancing services for both customers and employees through innovation and technology. Recognizing the critical role of data in this transformation, the project placed a strong emphasis on data governance.

The strategic imperatives driving this change included ensuring data protection, adhering to regulatory mandates, avoiding costly project reworks, and improving overall productivity by treating data as a valuable asset.

PEOPLE, PROCESS, AND TECHNOLOGY

The transformation project involved over 2,000 end users and served 3.6 million customers. It encompassed 250 business processes across more than 30 business units, requiring a substantial technological overhaul. Approximately 45 systems were slated for replacement and 85 systems needed to be integrated. This massive undertaking required a meticulous approach to managing people,

processes, and technology to ensure a seamless transition and effective governance.

DATA GOVERNANCE STRUCTURE AND ROLES

SDG&E established a data governance structure to manage this transformation. Key roles include data owners, stewards, maintainers, producers, and consumers. The governance model features an executive governance council (EGC) responsible for data governance portfolio planning, scope, direction, and funding. The data governance office (DGO) plays a central role in leading the data governance council (DGC), identifying stakeholders, enforcing policies and processes, and ensuring ongoing engagement with various teams, such as cybersecurity and application services.

This structure provides a single point of control at the enterprise level while allowing for governance at the business unit level.

IMPLEMENTATION STRATEGY AND ROADMAP

The data governance journey began with assessing the current state and developing a vision, mission, and charter for the program. The strategy included defining the deployment roadmap, determining the landscape model, and establishing clear roles and responsibilities.

Key milestones in the roadmap included the data governance council kickoff, data governance tool configuration and testing, and data governance education and training services. The ultimate goal was to achieve high-quality data, scalability, and awareness across the utility.

The implementation was designed to start with master data and expand enterprise-wide, driven by future data needs and business requirements.

SUMMARY

SDG&E’s approach to data governance aims to address common data issues, regulatory compliance, and protection of the utility’s reputation. By treating data as a crucial asset, the project sought to gain employee trust, improve productivity, and avoid costly project reworks.

The data governance program was also designed to balance the responsibility of protecting customer data with the need to operate efficiently and effectively. This proactive approach ensures data management practices not only safeguard data but also enhance its usability and value as a strategic corporate asset.



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9.2. Southern California Gas (SoCalGas)

SOURCE OF INFORMATION

Information for this case study is based on a presentation titled "Customer Data Governance Journey at SoCalGas (Carrigan, B., 2018).

INTRODUCTION

SoCalGas is a large natural gas distribution utility, serving 21.6 million consumers through 5.9 million meters across more than 500 communities in Central and Southern California. It is a regulated subsidiary of Sempra Energy.

The utility embarked on a data governance journey to enhance business effectiveness, mitigate risks, boost profitability, and reduce costs within the customer data domain. The scope of data governance evolved from initial data modeling efforts in the 1990s to a comprehensive data governance program by 2018.

DATA GOVERNANCE VISION

The vision is to manage customer data as a strategic asset that is understood, trusted, and used across the enterprise in alignment with Enterprise Information Management and Customer Services and Solutions goals.

APPROACH

The utility identified key stakeholders, data owners, and data stewards, and educated customer data stakeholders on best practices for data governance. Awareness programs foster a culture that treats customer data as a strategic enterprise asset.

Data management strategies, policies, standards, procedures, and metrics are in place as well as data onboarding, data quality, issue management,

and change management policies. Additionally, processes exist for data model management, data quality management, metadata management, and issue management.

The utility uses a data governance portal, fosters collaboration using SharePoint, and maintains a glossary and a data dictionary. SAP Information Steward is employed for metadata management, and issues are tracked using an Excel-based issue log.

DATA GOVERNANCE ORGANIZATION

The organization includes a director steering committee, data governance board, data stewardship team, and data governance office. Each level has specific responsibilities and meeting frequencies to ensure effective governance and decision-making.

Responsibilities at different levels include reviewing program progress, strategic decision-making, supporting and executing program strategies, and managing program activities and communications.

KEY POLICIES IMPLEMENTED

- **Data onboarding policy**—Guides the transition of data from an unknown/unmanaged state to a known/managed state.
- **Data quality policy**—Ensures continuous improvement of the quality of governed data assets.
- **Issue management policy**—Ensures consistent collection, documentation, and prioritization of data governance and data quality issues.
- **Change management policy**—Ensures all governed data follows standard change management processes.

IMPLEMENTATION STRATEGY AND ROADMAP

The implementation strategy followed a crawl-walk-run approach.

- **Early 1990s-2005**—Initial data modeling and system architecture efforts.
- **2014-2016**—Funded the integrated customer data warehouse and initiated data steward education.
- **2017**—Formed the data governance organization and developed its mission, vision, and goals.
- **2018**—Implemented policies, procedures, profiling, and metrics.

The roadmap includes three levels of governance.

- **Basic**—Minimal metadata required for all terms.
- **Lightly governed**—Documented business rules, lineage, and model mapping.
- **Highly governed**—Business-critical data, complete metadata, rigorous data quality monitoring.

SUMMARY

SoCalGas faced data quality issues, such as incorrect tagging of branch office payments, reductions in order counts impacting reporting, and channel data quality problems with data loaded from customer information system.

The data governance program provides opportunities to improve business effectiveness, reduce risk, increase profitability, and cut costs across the customer data domain. Additionally, it focuses on enabling a culture where customer data is managed as a strategic asset, enhancing data understanding, trust, and usage across the enterprise.



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9.3. Tennessee Valley Authority (TVA)

SOURCE OF INFORMATION

Information for this case study is based on a presentation titled "How TVA Operationalizes Data Governance Principles" (Fischer, T., Held, S., Fleet, P., 2022).

INTRODUCTION

TVA is a corporate agency of the United States that provides electricity for business customers and local power utilities. As part of its commitment to operational excellence and regulatory compliance, TVA has implemented a robust data governance framework.

This case study describes TVA’s data governance practices, tools, and a specific use case involving the development of a power platform dashboard.

DATA GOVERNANCE FRAMEWORK

TVA’s data governance framework is based on the following eight dimensions.

- 1. **Data security**—Ensuring data is protected from unauthorized access and breaches.
- 2. **Data compliance**—Adhering to federal regulations and industry standards.
- 3. **Data ownership**—Defining clear ownership and accountability for data assets.
- 4. **Data retention**—Establishing policies for data archiving and deletion.

- 5. **Data quality**—Maintaining high standards for data accuracy, completeness, and reliability.
- 6. **Data standardization**—Implementing consistent data formats and definitions.
- 7. **Data reconciliation**—Ensuring data consistency across different systems and sources.
- 8. **Data acquisition**—Managing the process of obtaining and integrating new data.

TOOLS AND PRACTICES

To support these dimensions, TVA employs various tools and practices.

- **Data dictionary**—A centralized repository of data definitions and metadata.
- **Business glossary**—A comprehensive list of business terms and their meanings.
- **Classification framework**—A system for categorizing data based on sensitivity and importance.
- **Data lineage documentation**—Tracking the origin and transformations of data.
- **Reporting catalog**—A catalog of available reports and their metadata.

EXAMPLE USE CASE—POWER PLATFORM DASH-BOARD DEVELOPMENT

The development of the power platform dashboard begins with an intake process using a PowerApp tool called Spark. This tool facilitates the collection of project requirements and stakeholder engagement.

USE CASE OBJECTIVES

The main objectives of the dashboard development are as follows.

- Enhance business engagement.
- Enable self-service analytics.
- Streamline data access and reporting.

COLLABORATION AND REQUIREMENTS GATHERING

The project involves collaboration with various stakeholders, including business users, IT teams, and data stewards. Requirements are gathered through workshops, interviews, and surveys to ensure the dashboard meets user needs and aligns with organizational goals.

APPLICATION OF DATA GOVERNANCE PRINCIPLES

Throughout the development process, data governance principles are applied to ensure data quality, security, and compliance.

Key steps include.

- **Data classification**—Identifying the sensitivity of data to determine appropriate security measures.
- **Data lineage**—Documenting data sources and transformations to maintain transparency.
- **Data quality checks**—Implementing validation rules to ensure data accuracy and completeness.



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9.3. Tennessee Valley Authority (TVA) continued

OPERATIONAL CHALLENGES RELATED TO DATA AND ANALYTICS

- **Federal regulations**—Compliance with regulations such as North American Electric Reliability Corporation standards.
- **Cybersecurity**—Protecting data from cyber threats.
- **Data classification systems**—Managing data across multiple classification levels.
- **Access to multiple data stores**—Integrating data from various sources.
- **Self-Service vs IT infrastructure**—Balancing the need for self-service analytics with IT managed processes.

ROLES AND RESPONSIBILITIES

TVA has specific roles to support its data governance framework.

- **Data community stewards**—Responsible for overseeing data governance activities within their community.
- **Information stewards**—Ensure data quality and compliance within specific domains.
- **Subject matter experts**—Provide expertise and guidance on data-related issues.

ENTERPRISE ANALYTICS COMMUNITY

The enterprise analytics community at TVA plays a crucial role in promoting best practices and fostering collaboration. The community’s charter outlines its mission, leadership team, and engagement strategies.

SUMMARY

TVA’s data governance framework is a comprehensive approach to managing data assets effectively. By implementing tools and practices, TVA ensures data quality, security, and compliance. The power platform dashboard use case demonstrates the practical application of data governance principles, highlighting the importance of stakeholder collaboration and rigorous requirements gathering.

This case study serves as an example for other organizations looking to enhance their data governance capabilities

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10. Summary

As explained in section 1, the main objective of this e-book is to provide a useful guide for those first setting up data governance in utilities. This guide compiles widely accepted best practices in data governance in the context of utilities, all to help those tasked with starting data governance in their own organization.

The e-book was designed to help individuals in the early stages of establishing data governance in their organization to understand and carry out data governance effectively. It began by explaining the concepts and steps in establishing data governance and came to an apex in section 6 with a suggested, practical step-by-step approach to start implementing it.

The authors felt it helpful at this point to summarize some key learnings from the different sections briefly to remind those responsible for this initial project what the critical success factors are and what not to lose sight of.

10.1. People and Processes Over Technology

When establishing data governance, prioritizing people and processes over technology is crucial for success. Stakeholders tasked with leading this initiative must recognize effective data governance hinges on clear roles, responsibilities, and workflows that align with the organization’s goals.

Engaging the right people ensures policies are understood and adhered to, fostering a culture of accountability and transparency. Well-defined processes provide a framework for consistency, compliance, and continuous improvement. Without this foundational focus, even the most advanced technology will fall short, as it cannot compensate for a lack of strategic vision and human engagement. Therefore, stakeholders must first build a robust governance structure through people and processes to drive meaningful and sustainable data governance outcomes.

10.2. Change Management

Change management is an essential component of successful data governance, ensuring the transition to new policies, processes, and roles is smooth and effective. Stakeholders must proactively address the human side of change by communicating the vision, benefits, and impact of data governance initiatives. This involves engaging employees at all levels, providing training and support, and addressing concerns and resistance.

A structured change management approach helps to build buy-in and commitment, which are vital for the adoption and sustainability of data governance practices. By fostering a culture that embraces change, organizations can more effectively implement data governance, leading to improved data quality, compliance, and overall business performance. Therefore, integrating change management into the data governance strategy is crucial for achieving long-term success and ensuring the initiative gains traction and delivers value.

Leadership plays a pivotal role in promoting data governance, serving as the driving force behind its adoption and integration within an organization. Effective leaders champion the importance of data governance by articulating its value to the organization’s success and aligning it with the strategic vision. Their commitment and support are essential for securing the necessary resources, fostering a culture of data stewardship, and ensuring adherence to data governance policies. Leaders set the tone for accountability and compliance, demonstrating through their actions data governance is a priority.

By actively engaging in change management efforts, leaders can address resistance, motivate stakeholders, and guide the organization through the transition to robust data governance practices. Their influence is crucial for embedding data governance into the organizational fabric, ultimately leading to enhanced data quality, security, and business performance.



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10.3. Data Governance Charter

Establishing a data governance charter is essential for defining authority, accountability, and clear objectives within an organization’s data governance framework. This foundational document outlines the scope, goals, and guiding principles of the data governance initiative, providing a clear roadmap for stakeholders. By delineating roles and responsibilities, the charter ensures every individual understands their part in the data governance program, thus fostering accountability and reducing ambiguity. Part of a good communication plan, it supports the change management needed to do things differently than before.

As it evolves, a well-crafted data governance charter aligns data management practices with the organization’s overarching business goals. This alignment ensures data initiatives support strategic objectives, driving business value and enhancing decision-making capabilities. It also plays a crucial role in supporting regulatory compliance, as it formalizes the processes and policies necessary to adhere to industry standards and legal requirements, thereby mitigating risks and avoiding potential penalties.

Additionally, the charter promotes the data governance program by establishing standards and best practices for data collection, storage, and usage. It enhances security and privacy by setting protocols to protect sensitive information from breaches and unauthorized access.

Lastly, by embedding these practices into the organization’s culture, the charter encourages a data-driven mindset, empowering employees to leverage data insights for innovation and operational excellence. Overall, a data governance charter is a vital tool for creating a structured, accountable, and effective data governance environment.

10.4. Proactive and Flexible Data Governance

Proactive and flexible governance is critical for the success of data governance programs, ensuring they remain relevant and effective in a rapidly changing landscape. Being proactive means anticipating potential issues and addressing them before they become significant problems. This

involves regular assessments of data governance policies and practices to identify areas for improvement and ensure they align with the organization’s evolving needs and objectives. Proactive governance also includes continuous monitoring of regulatory changes, allowing organizations to swiftly adapt to new compliance requirements and avoid legal pitfalls.

Flexibility in data governance allows organizations to respond to changing conditions and emerging challenges with agility. As new technologies and best practices emerge, a flexible governance framework enables the organization to integrate these advancements, enhancing data protection and maximizing its usability and value. This adaptability ensures the data governance program can support innovation and stay ahead of industry trends.

Continuous monitoring and adjustments are crucial for maintaining the effectiveness of data governance. Regular reviews of data policies, processes, and controls help to identify and rectify inefficiencies, ensuring data management practices remain robust and efficient. Adopting emerging technologies, such as AI and machine learning, can further enhance data governance by automating processes, improving data accuracy, and providing deeper insights.

10.5. Parting Words

Before diving into data governance for the first time, it is crucial to acknowledge data-related decisions have been and are currently being made in your organization. What you should aim to do is bring some structure to it to give it more impact.

Data governance is not about enforcement and control; it primarily revolves around organization, education, and communication, aiming to engage more individuals in decision-making, provide necessary data access, improve the trust in data, leverage data assets effectively, and prevent adverse effects on other business processes.

Your goal, therefore, is to introduce expertise and proven methodologies that enhance the organization’s data utilization and the value it garners from it.

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11.1. Data Governance Terms

DATA DOMAIN

A data domain is a category of data within an organization that defines its content scope from a governance perspective. Each domain requires distinct governance and management practices based on its characteristics and usage. The following are common ways to define a data domain.

- **Subject area domain**—Based on the business subject that the data represents and describes such as customer data, product data, financial data, employee data, or asset data.
- **Business capability domain**—Based on the capabilities needed to execute the organization’s business model. Capabilities describe what needs to be done to deliver value to the stakeholders. A capability is made up of people, processes, technologies, resources, and standards. It presents an operational view of what data is needed to deliver value and be successful. Examples include maintaining safety, delivering customer service, enabling grid reliability, and managing capital investments.
- **Business function domain**—Based on the business processes or functions that are carried out, such as marketing data, supply chain data, or human resources data.
- **Organizational domain**—Based on the department or business unit responsible for its creation and/or use, such as data related to the departments of finance, operations, and compliance.
- **Data characteristics domain**—Based on common attributes, data types, time periods, and format types, such as structured data, unstructured data, transactional data, or reference data. This can also be applied to historical data vs current data.

DATA GOVERNANCE BUSINESS STAKEHOLDER GROUP

The data governance business stakeholder group represents business units or functional groups impacted by data governance policies and objectives. It may include business leaders, department heads, and process managers. They provide input and feedback on priorities, strategies, and policies.

DATA GOVERNANCE CAPABILITY

The data governance capability refers to the capacity of an organization to effectively govern its data as assets. This includes the assurance governed data is available, accessible, trusted, accurate, relevant, useful, compliant, and protected throughout its life cycle.

DATA GOVERNANCE COMMITTEE

The data governance committee is a subset of the data governance council responsible for specific aspects of data governance oversight and decision-making. The committee may focus on specific tasks such as policy development, compliance monitoring, and addressing data quality issues.

DATA GOVERNANCE COUNCIL

The data governance council is made up of stakeholders from various business units and departments tasked with providing oversight, guidance, and decision-making authority for data governance initiatives and results. It sets data governance priorities, approves policies, resolves data-related issues, and ensures alignment with business objectives.



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DATA GOVERNANCE DEPARTMENT

The data governance department is a dedicated unit in the utility responsible for executing data governance functions and initiatives.

DATA GOVERNANCE FRAMEWORK

The data governance framework provides guidelines, building blocks, and best practices for implementing and executing data governance initiatives.

DATA GOVERNANCE OFFICE

The data governance office describes a centralized team or department responsible for overseeing and managing the utility’s data governance program. It defines data governance policies, standards, and processes, coordinates data governance activities, and provides guidance and support to data stewards and stakeholders. This term is a synonym for the data governance department.

DATA GOVERNANCE OPERATING MODEL

The data governance operating model defines the structure, roles, responsibilities, and workflows for data governance activities. It also addresses decision-making, authority levels, and accountabilities for results.

DATA GOVERNANCE PARTNER GROUP

The data governance partner group is a synonym for the data governance business stakeholder group.

DATA GOVERNANCE PROCESS

A data governance process involves the activities and practices required to plan and execute data governance initiatives. This includes defining policies, roles, and responsibilities to ensure data management activities are effective. An example is establishing a data governance council to create policies, define roles, and monitor compliance.

DATA GOVERNANCE PROGRAM

The data governance program is a strategic initiative designed to establish and maintain policies and oversight to ensure data management practices are effective and align with the organization’s objectives. It coordinates the activities and projects aimed at improving data quality, security, compliance, and usability across the organization.

DATA GOVERNANCE PROGRAM TEAM

The data governance program team is a dedicated group of individuals responsible for overseeing and implementing data governance initiatives within an organization, often comprising stakeholders from IT, business units, compliance, and data management roles.

DATA GOVERNANCE PROJECT

A data governance project is a focused initiative bounded by start and end dates with defined objectives aimed at establishing or enhancing data governance practices within an organization. Data governance projects are initiated and sponsored by the data governance team and executed by data management teams. They may include data quality profiling, data quality assessment, implementing a data catalog, and cleansing the content of data sources.

DATA GOVERNANCE PROJECT TEAM

A data governance project team is a cross-functional structure tasked with implementing specific data governance practices using start and end dates with agreed scope and deliverables. The team may include business analysts, data architects, and IT developers and focus on tasks such as data classification, rationalizing data definitions, consolidating reports, and developing data lineage views.

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DATA GOVERNANCE USE CASE

A data governance use case is a specific example that demonstrates how data governance practices can address a business challenge or opportunity, illustrating the value of effective data management within an organization. The use case helps to scope a project or workflow and typically requires a subset of data governance capabilities.

DATA GOVERNANCE WORKFLOW

The data governance workflow is a structured set of steps designed to manage and improve the quality, availability, integrity, and security of organizational data throughout its life cycle. Examples of workflows include approving data access requests, addressing data quality issues, monitoring data quality, approvals for data sharing, and managing data catalog content. Workflows are ongoing and support the functional requirements of the data governance program.

DATA GOVERNANCE WORKING GROUP

A data governance working group is task oriented with focus on specific assigned issues, such as data quality remediation, metadata management, developing meaningful measures and metrics, and creating data standards. The working group may be a temporary structure dealing with a specific issue or it may be a long-term structure focusing on solving ongoing issues.

GOVERNED DATA SCOPE

The scope of governed data is defined by the selected data domains. This data is subject to the policies, standards, objectives, accountabilities, and enforcement rules of the data governance program.

11.2. Data Management and Data Analytics Terms

DATA ANALYTICS

Data analytics is the process of examining datasets to draw conclusions and support decision-making. It involves using statistical and computational techniques to analyze and interpret data. An example is analyzing sales data to identify trends and predict future sales performance.

DATA ASSET

A data asset is a valuable dataset owned and managed by the utility. Raw data is transformed into an asset through governance policies and enforcement models that enable the properties of access, shareability, relevance, understanding, and protection.

DATA ARCHITECTURE

Data architecture describes the structure, format, location, and technology about an organization’s data and related processes. It includes models, policies, rules, and standards that describe data collection, storage, integration, and usage.

DATABASE

A database is an organized collection of data stored and accessed electronically. It is designed to manage, store, and retrieve data efficiently and securely. It supports the necessary create-read-update-delete (CRUD) functions for managing data.

Each database can encompass a different type of approach, including SQL and NoSQL. A SQL database may be used by a utility to store data about customers, orders, and inventory in a tabular format. NoSQL databases are organized according to key-value structures to provide flexible access to serve a variety of analytics use cases.

DATA CATALOG

A data catalog is a repository that organizes and stores metadata to help users find and manage data. It supports data discovery, governance, and collaboration by providing a comprehensive inventory of available data assets and related definitions, access rules, and quality indicators.



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DATA INTEGRATION

Data integration involves combining data from different sources into a unified view. This process typically includes extract-transform-load (ETL) processes to merge data from different systems into a cohesive format.

DATA LAKE

A data lake is a centralized repository that stores raw data in its native format until needed. Data lakes can store structured, semi-structured, and unstructured data, providing flexibility for various types of analysis. An example is the storage of unstructured data such as social media feeds, log files, and raw sensor data for future analysis.

DATA LIFE CYCLE MANAGEMENT

Data life cycle management involves managing data from its creation through to its retirement to ensure end-to-end integrity and usability. This includes following policies and standards for data creation, usage, archiving, and deletion.

DATA LINEAGE

Data lineage tracks data’s origins, movements, and transformations across its life cycle. It provides visibility into the data flow, ensuring transparency and traceability from source to destination.

DATA MANAGEMENT PROCESS

A data management process includes the methods, procedures, and workflows needed to handle data throughout its life cycle. This includes data collection, storage, maintenance, and disposal to ensure data integrity, availability, and protection. In a data governance environment, the data management processes execute the necessary work based on the policies, standards, and objectives defined by the data governance team. In this scenario, the data management processes are responsible for carrying out the necessary work while the data governance function is accountable for the results.

DATA MARKETPLACE (INTERNAL)

An internal data marketplace is an online platform within an organization that enables the sharing and exchange of datasets among different departments and teams. It enables internal data providers to list their data offerings and internal data consumers to discover, access, and use data for different analytical and business purposes.

DATA MARKETPLACE (EXTERNAL)

An external data marketplace is an online platform operating outside of the organization. This supports the buying and selling of datasets between different organizations or individuals. It allows external data providers to list their data offerings and external data consumers to search, purchase, and access data. External data marketplaces may include features for data discovery, pricing, licensing, and transaction security.

DATA MIGRATION

Data migration is the process of transferring data from one system to another. This process often occurs during system upgrades or consolidations and involves moving data between different storage types, formats, and databases. An example of data migration is moving data from an on-premise legacy system to a new cloud-based database.

DATA MODELING

Data modeling involves the analysis and design of database platforms and data pipelines. It creates diagrams and metadata to describe required data elements, how they are organized, and what relationships link them together. Data models are used to define and structure data stored in a database and applied in information and analytic systems. An example is an entity-relationship diagram (ERD) showing the relationships between customers, operations, and energy demand in a utility context.

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DATA OBSERVABILITY

Data observability is the ability to monitor and understand the health, behavior, and performance of data systems through comprehensive visibility into data flows, transformations, and lineage. It enables the detection of anomalies and understanding of data dependencies as well as ensures data reliability by providing insights into how data is processed and used across the organization.

DATA PIPELINE

A data pipeline is a series of processes that move data between different systems and databases, ensuring it is collected, processed, and stored efficiently. It involves stages like data extraction, transformation, loading, and analysis. An example is a pipeline that extracts data from an online transaction system, transforms it for analytical purposes, and loads it into a data warehouse.

DATA PRIVACY

Data privacy ensures personal data is collected, processed, and stored in compliance with privacy laws and regulations. It involves the safeguarding of personal information and ensuring individuals’ rights are respected.

DATA PRODUCT

A data product is a refined and processed dataset, information asset, or analytics model packaged, certified, and delivered for specific business purposes. It may involve APIs, datasets, data visualizations, machine learning models, reports, and dashboards.

DATA PROFILING

Data profiling enables the analysis of data to understand its structure, content, statistical properties, and quality. It helps to identify data quality issues and provides insights into the data’s characteristics.

DATA QUALITY

The principle of data quality describes how well data fits its purpose for a given use case, based on characteristics such as accuracy, completeness, reliability, and relevance. High-quality data ensures data is fit for its intended use. Data quality is a relative concept based on comparing the needs of a given use case against the characteristics of the data. An organizational perspective can be described as the more use cases the data can serve, the higher its quality. The opposite is also true.

DATA QUALITY MANAGEMENT

Data quality management refers to the comprehensive process of ensuring data is accurate, consistent, complete, reliable, and timely throughout its life cycle. This involves the establishment of policies, procedures, and standards to maintain high-quality data, as well as the use of tools and techniques to monitor, assess, and improve data quality continuously.

DATA RETENTION

Data retention involves policies and processes for maintaining and archiving data over time. Data retention policies determine how long data should be kept and when it should be deleted or archived.

DATA SCIENCE

Data science is a multidisciplinary field that uses scientific methods, processes, and algorithms to extract knowledge and insights from data. It combines statistics, computer science, and domain expertise to analyze complex data and solve problems.

DATA SECURITY

Data security consists of methods and practices to protect data from unauthorized access and breaches. It includes encryption, access controls, and regular security audits to protect sensitive information. An example is implementing encryption and access controls to secure sensitive customer information.



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DATA SEMANTICS

Data semantics refers to the meaning and interpretation of data within a specific context. It ensures data is understood and used correctly across different systems by different stakeholders. An example is standardizing terminology and definitions for customer data to ensure consistency across marketing, sales, and support departments.

DATA STEWARDSHIP

The data stewardship function is responsible for facilitating and coordinating the management of data assets based on data governance policies and standards, while maintaining oversight of the results of these activities. Data stewards influence, facilitate, and ensure data quality, metadata management, compliance, and proper data usage within their assigned scope.

DATA STORAGE

Data storage includes the methods and technologies used to store data in a digital format. Solutions include operational databases, data warehouses, data lakes, and cloud storage, each suited to different types of data and use cases.

DATA TRANSFORMATION

Data transformation is the process of converting data from one format or structure to another. It is essential for data integration, ensuring data from different sources can be used together. An example is converting dates stored as strings into a standardized date format for consistency.

DATA WAREHOUSE

A data warehouse is a centralized repository designed to store, manage, and facilitate the analysis of large volumes of structured data from multiple sources. It enables organizations to consolidate historical and current data into a single, unified view, supporting business intelligence, reporting, and data analysis. It is optimized for querying and analyzing data rather than for transaction processing. The original defining properties of a data warehouse state that the data will be subject-oriented, nonvolatile, integrated, and time-variant.

DATA VIRTUALIZATION

Data visualization describes a data management technique that enables users to access, integrate, and manipulate data from multiple, disparate sources without requiring physical data replication and storage. It creates a virtual data layer that provides a unified view of data across various systems, such as databases, data warehouses, and cloud services.

DIMENSIONAL DATA WAREHOUSE

The dimensional data warehouse is designed to organize data into dimensions and facts, facilitating querying and reporting to analyze business metrics and performance. Data is structured around facts, which are quantitative elements such as sales quantities. The facts are put into context by dimensions that are descriptive items about business categories such as time, location, product, or customer. This schema design is referred to as a star schema.

EXTRACT-TRANSFORM-LOAD (ETL)

ETL describes the process of extracting data from sources, transforming it, and loading it into a target system. This process is critical for data integration and warehousing, ensuring data is accurate, consistent, and usable.

MASTER DATA MANAGEMENT (MDM)

MDM describes the process of managing critical enterprise reference data to provide a single point of content. MDM ensures the consistency and accuracy of key shared data entities, such as customers, products, and suppliers across the organization.

METADATA

Metadata is data about data. It provides information about data structure, content, context, and attributes. Metadata helps to understand and use data effectively. It includes details such as data type, format, creation date, author, and usage instructions. It enables the functionality of data marketplaces and the informed use of data products. Metadata is key to effective data sharing and self-service reporting.



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NOSQL DATABASE

A NoSQL database is not based on a relational model. Its design is intended to handle large volumes of unstructured or semi-structured data. It offers flexibility and scalability, making it suitable for big data and real-time web applications. A NoSQL database uses keys and values to make the data self-describing. An example is a document database that stores and retrieves data structured in a JSON-like format.

RELATIONAL DATABASE

A relational database stores data in structured tables with rows and columns, enforcing relationships between tables using keys. It follows the rules of the relational model and use SQL for data manipulation and querying. An example is a database used to manage and query customer and order transaction data formatted and stored in tables.

SELF-SERVICE REPORTING

Self-service reporting describes a style of reporting that allows end users to access data and generate reports on their own without requiring assistance. It empowers business users to create, customize, and share reports independently. It is enabled by metadata and data literacy skills while complying with policies, rules, and regulations.

SEMANTIC LAYER

The semantic layer describes an abstraction layer that sits between raw data sources and end users. It provides a unified and business-friendly view of the data. The semantic layer supports consistent data definitions, simplifies querying, and enhances data accessibility by enabling users to create reports using familiar business terminology.

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12.1. Website Resources

The following organizations provide vendor-neutral resources on topics related to data governance. This list is not intended to provide recommendations nor is it exhaustive. The purpose is to provide additional resources as you develop your knowledge and skills in data governance.

DAMA INTERNATIONAL

A global association dedicated to advancing the principles and practices of data management. It provides resources, networking opportunities, and professional development for data management professionals.

www.dama.org

DATA GOVERNANCE PROFESSIONALS ORGANIZATION (DGPO)

A professional association focused on the practice of data governance. It supports data governance professionals through education, networking, and advocacy.

<https://dgpo.org>

EDM COUNCIL

A global trade association focused on advancing data management best practices and standards. It offers resources, certifications, and a community for data management and data governance professionals.

<https://edmcouncil.org>

ASSOCIATION FOR INTELLIGENT INFORMATION MANAGEMENT (AIIM)

An international organization providing information management and document management solutions. It offers training, certification, and industry resources for professionals in information and document management.

www.aiim.org



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12.2. Data Governance Maturity Model

A data governance maturity model is a framework used to assess an organization’s current data governance capabilities and to guide its development toward higher levels of maturity. It is a great communication tool, especially with management or executives, and can be used in strategic planning or to identify gaps and priorities.

Be cautious of advice suggesting rigid adherence or using it as a box-ticking exercise. It has some value for benchmarking, especially when plotting one’s organization over time, but it is always used along

with many other tools that are brought to bear when carrying out a data governance assessment.

The table below provides an example of maturity levels adapted from DAMA’s Data Management Maturity Model (Earley & Henderson, 2017, pp. 504–505). DAMA modeled it after Carnegie Mellon University’s Capability Maturity Model, a widely recognized standard for maturity assessment (ISACA, 2025).

Maturity Level	Description	Characteristics
Level 1: Initial	Processes are ad hoc and often reactive. Data governance is unstructured and informal.	● Lack of standardized procedures. ● Minimal to no documentation. ● Data issues are addressed as they arise.
Level 2: Repeatable	Basic processes are established, often as specific projects. Governance is reactive but repeatable.	● Some documentation exists. ● Procedures are informal but can be repeated. ● Data issues are handled with some consistency.
Level 3: Defined	Data governance processes are defined, documented, and standardized across the organization.	● Formal documentation of procedures. ● Standardized data governance practices. ● Roles and responsibilities are defined.
Level 4: Managed	Data governance is integrated into business processes. Performance is measured and managed.	● Integrated data governance processes. ● Regular performance measurements. ● Proactive management of data quality and governance.
Level 5: Optimized	Continuous improvement processes are in place. Data governance is a core part of organizational culture.	● Continuous improvement and optimization. ● Data governance is integral to business strategy. ● Best practices are routinely updated.

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13.1. Data Governance Assessment and Future Vision Report

A data governance assessment and future vision report evaluates the current state of data governance within an organization, identifying strengths, weaknesses, and gaps. It also outlines a strategic vision for the future state of data governance, detailing the desired goals, capabilities, and roadmap to achieve them.

VALUE

The value of a data governance assessment and future vision lies in its ability to do the following.

- 1. **Identify gaps**—Provides a clear understanding of the current shortcomings and areas needing improvement in data governance practices.
- 2. **Strategic alignment**—Ensures data governance initiatives align with the organization’s strategic goals and objectives.
- 3. **Resource optimization**—Helps in planning and allocating resources effectively to address data governance issues.
- 4. **Enhanced data quality**—Leads to improved data management practices, resulting in higher-quality data.
- 5. **Stakeholder confidence**—Builds trust among stakeholders by demonstrating a commitment to robust data governance and future readiness.

TOPIC	DESCRIPTION
Introduction	Provide an overview of the assessment’s purpose, scope, and importance in the context of the organization’s data governance framework.
Current state analysis	Analyze the existing data governance practices, policies, and infrastructure to identify strengths and weaknesses.
Data governance maturity assessment	Evaluate the maturity level of the organization’s data governance across various dimensions such as policy, processes, and technology.
Stakeholder interviews and surveys	Conduct interviews and surveys with key stakeholders to gather insights on current practices, challenges, and improvement opportunities.
Gap analysis	Identify gaps between the current state and desired state of data governance, highlighting areas requiring improvement.
Risk assessment	Assess potential risks associated with current data governance practices and their impact on the organization.
Recommendations	Give actionable recommendations for addressing identified gaps and improving data governance practices.
Roadmap for implementation	Provide a strategic roadmap with timelines and milestones for implementing the recommended improvements.
Metrics and KPIs	Define metrics and key performance indicators (KPIs) to measure the success and effectiveness of the data governance program.
Cost-benefit analysis	Analyze the costs and benefits of implementing the recommended data governance improvements.
Conclusion	Summarize the key findings and recommendations from the assessment, reinforcing the importance of data governance improvements.
Appendices	Include supplementary information such as detailed interview notes, survey results, and additional reference materials.



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13.2. Data Quality Problem Statement

A data quality problem statement is a concise document that defines and describes specific data quality issues within an organization. It outlines the nature of the problems, their impact on business processes, and the root causes. This statement serves as a foundation for identifying and prioritizing data quality improvement efforts.

VALUE

The value of a data quality problem statement lies in its ability to do the following.

- 1. **Clarify issues**—Provides a clear and detailed understanding of the specific data quality problems faced by the utility.
- 2. **Focus efforts**—Helps to prioritize data quality issues based on their impact and urgency, ensuring targeted and efficient improvement efforts.
- 3. **Support business cases**—Aids in building strong business cases for data quality initiatives by quantifying the impact of poor data quality on business operations.
- 4. **Guide solutions**—Serves as a reference for developing targeted solutions and strategies to address the identified data quality issues.
- 5. **Enhance communication**—Facilitates better communication and understanding among stakeholders regarding data quality challenges and the need for improvement actions.

SUGGESTED OUTLINE

Identify the symptoms using a checklist.

After identifying the symptoms based on the checklist, use those inputs to define the problem. Follow the instructions below to generate a concise and effective problem statement.

To create an effective data quality problem statement, use the following approach.

- 1. Start with an **issue, opportunity, or idea** for positive change.
- 2. Ask what the attributes and **symptoms** of that reality are **today**; do this with the people impacted and not on your own. This should be an IT and business collaboration. Use the checklist to identify some of these symptoms.
- 3. Draw **conclusions** about what it all means. What have you collectively learned?
- 4. Consider the **implications** of your conclusions and other factors that must be taken into account like regulatory needs, compliance, policy, and targets.
- 5. Contain the problem to something that can be solved in a realistic time frame, such as three months.

Who

- ☐ Who is facing data quality issues?
- ☐ Who knows the details of those data quality issues?
- ☐ Who owns that piece of data?

What

- ☐ What symptoms of poor quality are you facing?
- ☐ What top risks are you trying to alleviate?
- ☐ What top opportunities do you wish to engage?
- ☐ Is there data today you must jump through hoops to acquire, clean, or integrate?
- ☐ What pet peeves do you wish to address?

When

- ☐ When do data quality issues present themselves?
- ☐ What are you currently doing to measure and correct data inaccuracies?
- ☐ How often do data quality issues occur?
- ☐ What actions do you take once you receive the data?
- ☐ Do you have processes today to filter out unneeded data?
- ☐ How long do the data quality issues last?

Where

- ☐ Where is the data stored?
- ☐ Where do you see the data quality issues?
- ☐ Is the poor data used elsewhere?

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13.3. Data Governance Charter

A data governance charter is a foundational document that formally establishes the data governance framework within an organization. It outlines the scope, objectives, principles, roles, responsibilities, and processes for data governance. The charter serves as a guiding document to ensure that data management practices align with the organization’s strategic goals and regulatory requirements.

VALUE

The value of a data governance charter lies in its ability to do the following.

1. **Establish authority**—Provides formal recognition and authority for the data governance program, ensuring organizational support and commitment.
2. **Define roles and responsibilities**—Clarifies the roles, responsibilities, and accountabilities of various stakeholders involved in data governance.
3. **Align with business goals**—Ensures data governance initiatives support and align with the organization’s strategic objectives.
4. **Promote consistency**—Ensures consistent data management practices and standards across the organization.
5. **Enhance data quality**—Leads to improved data quality through well-defined governance processes and policies.
6. **Support compliance**—Helps to meet regulatory and compliance requirements by establishing clear data governance practices.

VISION STATEMENT

- Develop a clear and concise vision statement that articulates the long-term aspirations of the data governance program.

MISSION STATEMENT

- Create a mission statement that defines the core purpose and primary objectives of the data governance initiative.

MAIN PURPOSE

- Explain the fundamental reasons for implementing the data governance program, including its role in supporting business strategies and technological advancements.

GOALS AND OBJECTIVES

- Document specific goals and objectives for both business and IT, providing a clear roadmap for the data governance efforts.

RISKS AND MITIGATION STRATEGY

- Identify potential risks associated with the data governance project and outline strategies to mitigate these risks.

CROSS-FUNCTIONAL PROJECT TEAM

- Describe the creation of a project team composed of members from various functions within the organization, ensuring a comprehensive approach to data governance.

STAKEHOLDERS AND RACI

- Identify key stakeholders and assign roles and responsibilities using the responsible-accountable-consulted-informed (RACI) matrix to ensure clarity and accountability.

TIMELINE AND COSTS

- Create a detailed timeline for the project and estimate the associated costs, ensuring proper planning and resource allocation.

BUSINESS METRICS

- Establish metrics to measure the effectiveness of the data governance program from a business perspective, setting targets and assigning accountability.

IT METRICS

- Provide IT-specific metrics to evaluate the success of the data governance initiatives, including data quality, compliance, and efficiency.

REVIEW AND APPROVAL PROCESS

- Describe the process for reviewing and approving the data governance program charter, including the necessary sign-offs and conditions for approval.



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13.4. Data Quality Improvement Plan

A data quality improvement plan is a formal document that outlines the strategies and actions required to enhance the accuracy, completeness, reliability, and consistency of data within an organization. It involves assessing current data quality, identifying issues, analyzing root causes, proposing solutions, and implementing improvements.

VALUE

The value of a data quality improvement plan lies in its ability to do the following.

- 1. **Improve decision-making**—Ensures high-quality, reliable data is available for strategic decisions.
- 2. **Enhance operational efficiency**—Reduces errors and rework, streamlining processes.
- 3. **Boost compliance**—Helps to meet regulatory and compliance requirements by maintaining accurate data records.
- 4. **Increase trust**—Builds confidence in data among stakeholders, fostering better business relationships.
- 5. **Support strategic goals**—Aligns data quality initiatives with business objectives, driving overall organizational success.

TOPIC	DESCRIPTION	PILOT EXAMPLE
Project team	List the roles and individuals assigned to the project, ensuring clarity in responsibilities and accountability.	Project team includes data analysts, regulatory experts, and IT specialists.
Business context	Document the business context, highlighting how data quality impacts the organization’s objectives and operations.	Regulatory reports are inconsistent and time-consuming, affecting compliance and operational efficiency.
Subject area selected	Describe the chosen subject area, its relevance, and the necessity for high-quality data to support business functions.	Regulatory reporting processes within the utility.
Subject area goals and objectives	Summarize goals and objectives to achieve the business vision, ensuring alignment with data quality initiatives.	Reduce report preparation time and eliminate inconsistencies.
Subject area differentiators	Identify key differentiators of the subject area that can be leveraged to enhance data quality and business value.	Critical for regulatory compliance and operational decision-making.
Subject area drivers	Record essential business drivers that empower the subject area, focusing on the role of data in supporting these drivers.	Regulatory requirements and the need for timely, accurate reporting.
Subject area assessment	Assess and prioritize subject areas, identifying those critical to the organization’s data quality improvement efforts.	High priority on regulatory reports due to compliance and operational impact.
Data quality objectives from the business	Document business-perceived data quality objectives and barriers, forming the basis for improvement initiatives.	Ensure reports are accurate, consistent, and quicker to prepare.



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TOPIC	DESCRIPTION	PILOT EXAMPLE
Data quality statement of the subject area	Record final observations and insights from phase 1 activities, providing inputs for the data quality improvement roadmap.	Reports are currently inconsistent and time-consuming, needing systematic quality improvements.
Understanding the root causes	Perform root-cause analysis of data issues, using diagrams to identify and document underlying problems.	Identify data entry errors, system integration issues, and manual processing bottlenecks.
Data lineage diagram	Document the data lineage diagram, tracing data flow and transformations to identify points of failure.	Trace data from collection to report generation to pinpoint inconsistencies.
Root-cause analysis	Use tools like fishbone diagrams to systematically identify root causes of data quality issues.	Use fishbone diagram to map out and address root causes of report inconsistencies and delays.
Impact assessment	Conduct an impact assessment to identify and quantify the downstream effects of data quality issues.	Assess impact on regulatory compliance, financial penalties, and operational efficiency.
Proposed solutions	Propose solutions to address data quality issues identified in the root-cause analysis, considering the business context.	Automate data collection, improve system integrations, and establish data validation rules.
One-time fix to the data	Detail a project plan for a one-time fix to address specific data quality issues, including stages and validation steps.	Implement a one-time cleanup of existing data, ensuring immediate compliance and accuracy.
Testing approach	Describe methods to test data quality fixes, ensuring they are effective and meet business requirements.	Develop and execute a testing plan to validate improvements in report preparation time and data accuracy.

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He holds graduate and undergraduate degrees in engineering from the University of Waterloo and serves on the faculty of UAI, TDWI, McMaster University, and York University, delivering courses on data governance, management, and analytics.

Mark’s expertise in data warehousing, business intelligence, real-time process monitoring and control, operations planning and scheduling, control center management, plant performance optimization, business transaction control, simulation, and analytics is complemented by his experience as an engineer in operations management. He has led numerous consulting and integration projects, guiding clients through fundamental shifts in business models and technology. A global instructor for over a decade, he is passionate about helping professionals develop a shared understanding of complex data concepts.

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Marc-Eric LaRocque is a seasoned data governance and data management expert with over 25 years of experience transforming complex data landscapes into strategic business assets. Throughout his career, he has been involved in multiple advisory firms, including two that he founded, where he developed, implemented robust frameworks, and helped clients enhance data quality, ensure regulatory compliance, and drive operational efficiency. His comprehensive expertise spans data discovery, classification, cataloging, master data management, and privacy. He has taught Data Governance with the UAI Analytics Institute, and Data Project Management in the Information Quality Program at the University of Arkansas at Little Rock. Currently, he manages the growth of the advisory practice at Incept Data Solutions, leveraging his pragmatic, results-oriented approach in both advisory and implementation roles to consistently enable organizations to unlock the true potential of their data.

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Neelanjan joined TVA in 2003 and is a visionary technology leader, with over 23 years of utility expertise in driving the strategy, design, and execution of enterprise and operational technology, analytics, and self-service solution across the organization.

He has served various roles during his tenure at TVA that includes setting up data and analytics competency, enterprise architecture, transmission planning and asset management, development of the TVA Environmental Policy and being involved in the creation of the 2007 TVA Strategic Plan.

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Nadia has been with El Paso Electric since 2009 and has held various positions, including Sr. Regulatory Case Manager and Director – Palo Verde Management. Her current role is Director, Enterprise Advanced Analytics.

Prior to joining El Paso Electric, Nadia served as Consumer Affairs Officer at the City of El Paso and Regulatory Project Manager with Southern California Edison. She holds dual master’s degrees in both Economics, with a Regulatory Concentration and an MBA from New Mexico State University as well as an undergraduate degree in Industrial Technology from Colorado State University. Nadia is a native of Brussels, Belgium.

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15.3. Note

This e-book is written by humans for humans with occasional AI-assisted editing for expediency—practicing the data governance principles we preach.



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