



Deliver a Fit-For-Purpose Data Governance Model and Strategy That Act As a Key Business Enabler

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Abstract: Data is one of the most vital, strategic assets any organization possesses. The management and staff of an organization need to make good decisions, i.e., the ones that yield results. They thus need to create guidelines and rules, to ensure that these are being followed and then deal with ambiguities, noncompliance and other issues. A data governance framework empowers an organization to do just that, by allowing them to make informed decisions about how to manage data and eventually realize value from it, minimize cost and complexity, manage risk and ensure that the organization can fulfill the ever-growing demand for compliance with regulatory, legal and state requirements. Organizations need more than just data management; they need a governance system that sets the rules for every type of activity. The system needs to answer data ownership questions, address inconsistencies in data across different departments as well as provide solutions to the growing need of big data and the various advantages it offers. Data governance is a quality control discipline for assessing, managing, using, improving, monitoring, maintaining, and protecting organizational information. It is a system of decision rights and accountabilities for information-related processes, executed according to agreed-upon models which describe who can take what actions with what information, and when, under what circumstances, using what methods. This paper shows a standard data governance model and strategy that includes people, process and information technology. Data governance Strategy is a joint effort of the business functions of an enterprise organization. Information technology professional deploys technology solutions and systems to establish platform of an enterprise data management process.

Keywords: Data, information Governance, Data Governance, Data Quality

1. INTRODUCTION

Data Governance is the exercise of decision making and authority for data-related matters. Gartner defines data/information governance as the specification of decision rights and an accountability framework to ensure appropriate behavior in the valuation, creation, storage, use, archiving and deletion of information. It includes the processes, roles and policies, standards and metrics that ensure the effective and efficient use of information in enabling an organization to achieve its goals. Data Governance (DG) is a cross-functional set of roles, policies and enabling technologies that work together to ensure that an organization is getting the maximum net benefit out of its data assets. To be both successful and sustainable, a DG program must be integrated with business and IT processes throughout the organization.

Data Governance design lays out the decision-making structures, alignment processes, and communication approaches that enables the strategic objectives for data and its quality to be implemented and to monitor how well these strategic objectives are being achieved.

2. OBJECTIVES OF DATA GOVERNANCE

- Define, develop and communicate data strategies, policies, standards, architecture, procedures and metrics
- Track and enforce conformance to data policies, standards, architecture and procedures
- Sponsor, track and oversee the delivery of data management projects and services
- Manage and resolve data related issues

- Improve quality of high value business data
- Treat data as an asset

3. BENEFITS OF DATA GOVERNANCE

- Secured and reliable data: Data Governance can help improve the safety, security, reliability, integrity, accessibility and quality of your data. An effective information governance strategy involves a set of rules, responsibilities, standards and regulations, which will affect all types of data that flow through the organization thereafter.
- Reduce time and cost: Since data is organized in pre-defined format, it takes less time and resources to find the information
- Better decisions: Data Governance focuses on data quality. Quality data helps to the right decision at the right time.
- Compliance: Data Governance establishes the process and guidelines to ensure data privacy and confidentiality and thereby contribute fulfil compliance requirements and help the organization avoid legal risks.

4. COMPONENTS OF DATA GOVERNANCE

- People: A Data Governance team consists of individuals from within the organization who have clearly defined roles and responsibilities, adequate resources to perform their required duties, and clear guidance on the overall data governance objectives. They are responsible for defining principles, policies and procedures that govern key aspects of data classification, protection, use and management.
- Process: This includes statutes, regulations, standards, and company policies and strategy documents, data quality metrics and business rules. While establishing process the organization should identify threats against data security, privacy and compliance in the context of specific data flows; analyze the related risks; and determine appropriate control objectives and control activities.
- Technology: This includes data modeling, system of records, applications, data quality and compliance monitoring tool.

5. OPERATING MODELS

- De-centralized: In this model, individual business users maintain their own master data. This model ensures that the data is created by the local users who are typically the consumers of this master data. This model works best for a small company or a single business unit.
- Centralized: This data governance model is characterized by single or multiple business units centralizing the maintenance of master data. In this model, one central organization owns setting up master data based on requests coming from the consumers of the master data. This works best for large and medium organizations with multiple business units.
- Hybrid: In hybrid model a centralized governance body defines the framework of controls and individual businesses creates their individual parts of master data. Here the Governance is centralized but the execution is de centralized. It is suitable for medium and large organizations with multiple business units.

6. STEPS FOR ESTABLISHING DATA GOVERNANCE

- 1) Identify Key Enterprise Data and Processes
- 2) Define a Governance Structure for these Processes
 - a) Who will be responsible, accountable, consulted and/or informed for decisions regarding these key enterprise data processes?
 - b) How will these decisions be made and monitored?
- 3) Monitoring Data Quality Performance Using Data Quality Metrics and develop DQ scorecard

6.1. Identify Key Enterprise Data and Process

- Identify key business data
- Data models and System of records (SoRs)
- Data quality
- Management & Admin
- Structured Data Issues
 - Data Synchronization
 - Meta Data
 - Data Retention/Archiving/Cleansing
- Data access permission
- Data Privacy
- Application Processes
 - Data Origination /Authorization Controls
 - Data Input Controls
 - Data Processing Controls
 - Data Output Controls
 - Boundary Controls
- Unstructured Data Issues
- Document Repository
- Email

6.2. Define a Governance Structure

1. Who has Decision and/or Input Rights for the decisions that must be made concerning Key data processes?
2. What will be the Data Governance Mechanisms (i.e. How will Decisions be Made and Monitored)?
 - Decision-Making Structures
 - Alignment Processes
 - Communication approaches
3. Forming a Data Governance Council
 - It's a cross functional entity. Members come from all business functions. Key lines of business are represented
 - Data management SMEs provide with data platforms and technology to support data management.
 - There is a list of sanctioned standards that serve as operating principles for handling exceptions, conflicts, investments, metrics and reporting regarding data and its quality
 - The council communicates to executive management, data stewards, project managers, and other stakeholders

4. Data Governance Pyramid

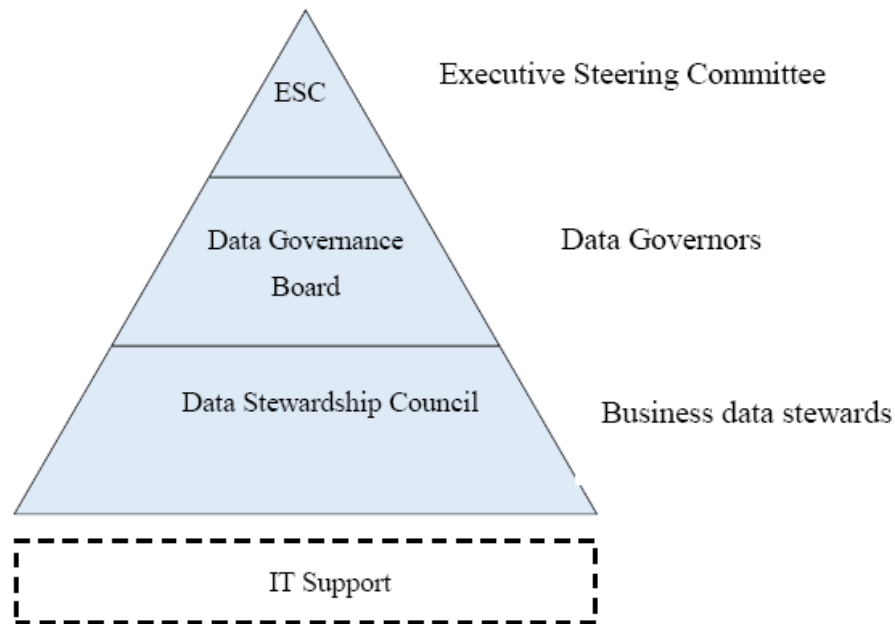


Fig1. A Data Governance program is often arranged as a pyramid, with support from IT and a Data Governance Program Office. Source: *Data Stewardship: An Actionable Guide to Effective Data Management and Data-* By David Plotkin

The pyramid structure illustrates both the level of data responsibilities as well as the typical number of participants at each level. A relatively few number of executives provide the support, any necessary culture change, and impetus to drive the program. They may, on occasion, also make far-ranging decisions, such as changing how people are incentivized to drive data quality. The Data Governors represent their business function, appoint the Data Stewards, and make decisions based on the recommendations of the Data Stewards. The largest numbers of participants are the Data Stewards, who understand the use of the data, the impacts of changes to the data, and what rules must apply to the data. The Data Stewards create the metadata (definitions, etc.) and make recommendations for the Data Governors to act on.

● Executive Steering Committee

- Drives cultural changes needed to treat data as an asset and manage it effectively across business-area boundaries.
- Makes necessary changes to the organization and tools as required for effective Data Governance.
- Creates and promotes the vision for the Data Governance program.
- Authorizes the Data Governance Board budget.
- Balances business priorities with operational needs across the enterprise.
- Approves Data Governance policies
- ✧ Reviews, evaluates, and reports to executive sponsorship on the Data Governance performance and effectiveness.
- ✧ Provides advice, direction, counsel, and feedback to the Data Governors (members of the Data Governance Board).
- ✧ Ensures decisions regarding the data support the strategic direction of the organization.
- Represents their business function’s direction and views regarding the adoption and deployment of enterprise policies and practices
- Resolves issues escalated by the Data Governance Board.

● **Data Governance Board**

- Has funding authority to spend budget money on data management improvements
- Prioritizes decisions regarding data to address the most relevant needs of the organization.
- Reviews, evaluates, and reports to the Executive Steering Committee on Data Governance performance and effectiveness
- Ensures that annual performance measures align with Data Governance and business objectives
- Reviews and approves Data Governance policies and goals.
- Ultimately is accountable for business data use, data quality, and prioritization of issues
- Makes strategic and tactical decisions.
- Reviews and, where appropriate, approves the recommendations made by members of the Data Stewardship Council
- Assigns the Business Data Stewards to the Data Stewardship Council.
- Represents all data stakeholders in the Data Governance process. Ensures appropriate representation and participation in Data Governance across the enterprise.

● **Data Stewardship Council**

The bottom of the Data Governance pyramid is the Data Stewardship Council, comprised of the Business Data Stewards.

- They are the experts on use of their data domain data
- Able to reach out to SMEs to gather information and make decisions
- Make recommendation on data decisions and write data-related procedure

● **IT Support Through the Technical Data Stewards**

The primary role of the IT Technical Data Stewards is to provide technical expertise in support of the Data Governance efforts with respect to systems and application impact analysis for proposed changes and data quality issues. IT resources are assigned to this role officially by IT management and are expected to respond to requests for assistance from Data Governance in a timely manner as part of their regular duties. These individuals are often lead programmers, database administrators, and application owners.

● **Data Governance Program Office**

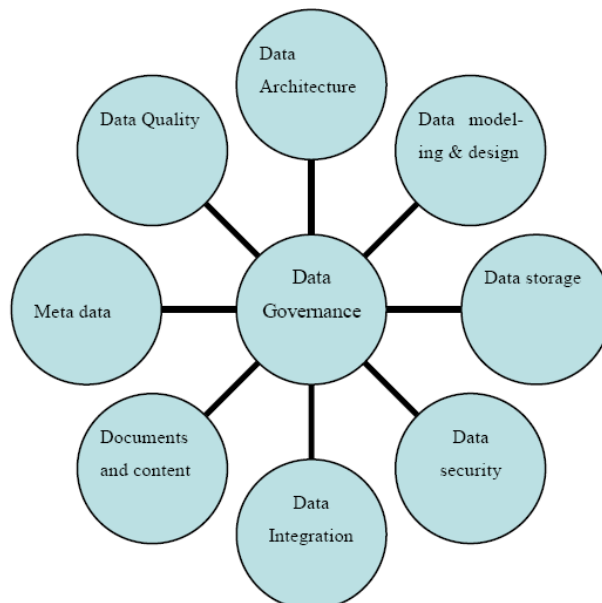


Fig2. Data Management knowledge areas. Source: *The DAMA-DMBOK2 Guide Knowledge Area Wheel*

The Data Governance effort, including documentation, communication, and enforcement, is run by the Data Governance Program Office (DGPO). The Program Office must be staffed with ample resources to do the work, including at least a full-time program manager.

6.3. Monitoring Data Quality Performance using Data Quality Metrics and Develop DQ Scorecard

- Organizations need a way to formalize data quality expectations as a means for measuring conformance of data to those expectations;
- Organizations must be able to baseline the levels of data quality and provide a mechanism to identify leakages as well as analyze root causes of data failures; and lastly,
- Organizations must be able to effectively establish and communicate to the business client community the level of confidence they should have in their data, which necessitates a means for measuring, monitoring, and tracking data quality.

7. EXAMPLE: DATA GOVERNANCE IN AN OIL AND GAS INDUSTRY

Oil and gas companies often have problems sustaining data quality. Engineers spend too much time looking for information. Therefore, the productivity is often low. It badly impacts decision quality. To get maximum value from critical business data good data governance is required. The following steps are useful for establishing a good data governance in an oil and gas industry

- Identify high value business data
- Establish Policy
- Assign Responsibility
- Build data platform and data architecture
- Encourage and Enforce
- Communicate and Train

A typical O&G data governance framework will include the following:

- 1) Data Definition and prioritization:
 - a. Which data elements are most important to business
- 2) Authority and accountability Matrix:
 - b. Who owns the data
 - c. Who can do what with the data
- 3) Workflow:
 - d. How data moves through process?
- 4) Data Quality (DQ) measurement metrics:
 - e. Data quality and gaps?
- 5) Governance, enforcement, monitoring and decision making:
 - f. Who is setting the vision
 - g. Who is monitoring
 - h. Who is allocating budget for data platform, applications and integration
 - i. Who is addressing DQ gaps and taking initiatives to improve the completeness, accuracy, and timeliness

8. RECOMMENDATION

The idea of data creating business value is not new, however, the effective use of data is becoming the basis of competition. Business has always wanted to derive insights from information in order to make better, smarter, real time, fact based decisions. As Organizations are becoming more data driven, it is critical organizations manage data properly. Good data management helps companies to

save millions of dollars. Without effective data governance, the value data can never be realized. Therefore, a fit-for-purpose data governance is a critical element of a modern organization. Decision makers must establish a formal or informal data governance team to drive data management activities. Every organization must identify its high value data, data stewards and data standards and data repositories and establish data standards and proper process. It can choose centralized, de-centralized or hybrid data governance operating model based on its size, structure and financial capability. Good data management doesn't mean deploying expensive IT tools, it means establishing a data driven culture which starts with good information practice and building awareness about the value of data.

9. CONCLUSIONS

Today's world is data driven. Complying with regulations and extending data integration are common initiatives that gain from data governance. Comprehensive management of business data helps to improve quality of the high value data in our daily operations and lead to improved availability and usability of data and improve decisions concerning our technology investments. The importance of high quality data requires constant vigilance. Therefore, data governance is critical in today's business environment. Good decisions can be taken only from good/quality data. Data Governance acts as a key business enabler in building a data driven culture.

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Mr. Sadik Noman, is a progressive and people oriented leader with 12 years of diverse IT experience in oil & gas Industry, high-tech R&D, smartphone, consumer electronics and telecommunication. He received his Bachelor's degree in Computer Science & Engineering from BUET, ranked 1 engineering university of Bangladesh in 2006 and Master's degree in Business Administration from North South University in 2011. He has worked in top ranked 'Fortune 500' companies like Chevron and Samsung. He has also worked in several million dollar projects with World Bank and PwC in other

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