THE UNIVERSITY OF ALABAMA®

Data Governance Operational Playbook

DOCUMENT CHANGE HISTORY

Version	Change Date	Change Description
1.0	June 16, 2023	Document Created
1.1	August 7, 2023	Updated most sections
1.2	August 25, 2023	Updated links to documents; replaced charter screenshots; Replaced all instances of “Data Trustee” with “Data Executor”
1.3	August 28, 2023	Updated hyperlinks to related documents

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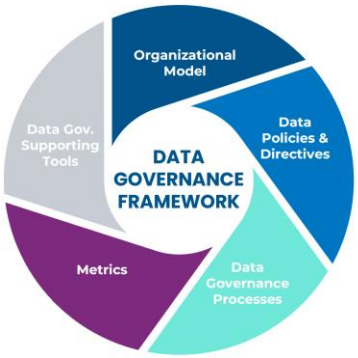
I. Introduction

1. Overview

Data Governance is a practice that sets expectations for organizational behaviors with respect to making decisions which impact data assets. This operational playbook shall act as the authoritative resource for understanding our approach to data governance in support of driving consistent data management practices. Following the approach laid out in this playbook is fundamental to ensuring we have high-quality data that supports our business initiatives.

This document will build upon industry best practice of utilizing a Data Governance Framework to define our data governance practice aligned to our specific business goals and objectives, and our organizational culture. The Data Governance Framework we are using contains five (5) components: (1) Organizational Model, (2) Data Policies & Directives, (3) Data Governance Processes, (4) Metrics and (5) Data Governance Supporting Tools.



Organizational Model	represents how our organization will align around executing data governance practices, inclusive of defining organizational structures (e.g., committees, working groups, etc.) and specifics roles (e.g., Data Trustee, Steward, etc.) with clearly defined responsibilities
Data Policies & Directives	represent the rules and advice that the organization shall adhere to with respect to defining, maintaining, monitoring, enforcing and remediating data requirements and data-related processes, procedures, technologies, etc.
Data Governance Processes	represent the standardized way tasks are performed by those assigned to the organizational model to achieve data governance goals and objectives
Metrics	represent the way an organization will observe the degree to which data and data-related policies, processes, etc. are adhered to with respect to their defined requirements
Data Governance Supporting Tools	represent how tools are used to support the execution of data governance. This includes how key data-centric decisions (e.g., terms, definitions, standards) are made and documented (e.g., Metadata Management), how issues are tracked and managed (e.g., pain points log, issues tracker), and how data requirements are tracked and managed (e.g., requirements management software)

2. Data Governance Examples

The goal of implementing data governance practices is not to introduce new work, but rather to formalize and apply best practices to work already being done. This will result in the work that we do being standardized, shared, and leveraged across a wider audience. This chart demonstrates common examples of how a formalized Data Governance Program will help us be more successful.

Data-Centric Question	Ad-Hoc Data Gov.	Formalized Data Governance
Who can help understand what our data means?	“Phone a Friend”	Assigned Data Steward(s)
How can we consistently define data terms, definitions, business rules and standards?	No common process / last person decides	Formalized Data Quality Management processes

Data-Centric Question	Ad-Hoc Data Gov.	Formalized Data Governance
What data is available to use within the enterprise?	“Phone a Friend”	Metadata Repository (supported by Business and Technical Metadata Management processes)
How do we prevent creating the same data multiple times?	Difficult to prevent	Data specific resources embedded into Change Request processes
What is impacted when data values change?	Reactive identification	Impact Analysis process empowered by Business and Technical Metadata
Where did the data on a report come from?	“Undocumented Institutional Knowledge” or time-consuming analysis of code	Data Lineage is documented and easy to access/use
How is data transformed as it is passed throughout the organization?	“Undocumented Institutional Knowledge” or time-consuming research	Data Lineage is documented and easy to access/use
How do we know what data can be trusted?	Gut Feeling	Data Quality Metrics

3. Critical Success Factors

Data Governance will require care and tending over time to ensure that it remains a trusted part of the organization. Each critical success factor outlined below helps to ensure the durability of Data Governance.

- Data Governance must be viewed as an on-going program, not a project, with regular reviews leading to appropriate updates or enhancements to stay relevant to business needs.
- Long-term Data Governance must have executive sponsorship from the highest levels of the organization. Executive sponsors must be involved, take significant ownership of the effort, and champion the initiative.
- Data Governance programs must have real authority which includes the ability to resolve data management issues, review project data issues, settle disputes, and hold leaders accountable for adherence to standards.
- Data Governance guiding principles should be instituted throughout the organization and cannot be viewed as optional.
- Functional, Data and Technical Executors should be leaders in the area they represent.
- Data Stewards must be Subject Matter Experts (SMEs) in their respective process, function, or domain.

- The responsibilities of Daata Executors and Stewards should be fundamental attributes of their role; their responsibilities should be clearly communicated and maintained.
- There should be a clearly defined set of Data Governance, Data Stewardship, and Data Quality metrics which can be used to measure the overall program success.
- There must be a clear and timely communication method for Data Governance initiatives at all levels.
- The Data Governance program must continually revisit training to ensure people understand how to perform their activities. Training activities should mimic real life situations and focus on activities and tasks that are applicable to one's functional area which contributes to adoption of the program.

4. Data Governance Summary

Data Governance is…	Data Governance is NOT…
✓ owned by functional areas of the business ✓ focused more on people & behavior, less on data ✓ a collaborative activity that requires and promotes alignment / agreement ✓ a proven way to drive and support the organization's mission, goals, and objectives ✓ a way to improve the effectiveness of the organization	• owned by IT, but can be facilitated by IT • solved by technologies, but can be enabled by them • applied equally to all data assets • a short-term project (it's an on-going program) • an activity for its own sake

5. Continual Improvement

This Data Governance playbook and all details within it should be reviewed periodically to ensure that it remains aligned with on-going changes within the organization. Minimally, each year the Data Governance Lead will drive a review of this playbook.

6. Intended Audience

This resource should be available to anyone involved in planning, executing, or supporting any data management activities to ensure the work they are doing aligns with the overall data governance practices approved for the organization.

II. Vision Statement, Goals, and Objectives

1. Vision Statement

[A vision statement is one that should drive towards a revised future, and it should expound upon what problem is trying to be resolved and/or what is being changed in the organization. This vision statement will be used to ensure that the program we develop for Data Governance will meet the long-term needs of the business.]

The Vision that our Data Governance program is striving to achieve is:

- Data governance will ensure that data is treated as an institutional asset and empower data-based decision-making while protecting individual privacy and institutional security.

2. Goals

[Goals are broadly stated, long-term, achievable outcomes which drive planning, and typically will focus on Financial or Operational outcomes. Common financial outcomes may include increase revenue, decrease costs, optimize resource allocation, reduce risk, and improve student engagement / satisfaction. Similarly common operational methods or practices may include activities to implement or modify data culture, business capabilities or technology/infrastructure.]

The goals that the Data Governance Program is empowered to achieve are:

- Improved Data-Informed Decision-Making empowered by trusted data
- Increased data literacy including common understanding of available data, where the data resides and how/when to use it
- Reduction in duplicative data curation efforts and improved resource focus on analytics
- Enhanced transparency of data accountability and responsibility
- Improved collaboration in defining data including descriptions, standards, and appropriate use cases

3. Objectives

[Objectives are specific, measurable actions that should be taken to achieve the goal(s) as defined above. Typically, the outcomes are implemented through a variety of Programs, Projects, Iterative Enhancements and/or Quick Wins.]

The high-level objectives that the data governance program is set to achieve include:

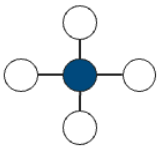
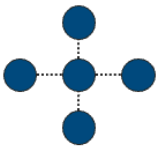
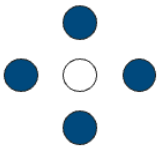
- Initiate an institution-wide Data Governance practice based upon a best practice Data Governance Framework, inclusive of methods and tools to monitor, enforce and remediate adherence to policies, practices, and standards

- Develop standardized methods and tools to define and document common terms, definitions, data standards, proper use and data lineage
- Develop approach to identify and remediate data-centric risks and issues
- Develop training that improves data awareness for policies, roles & responsibilities, processes, metadata availability, etc.
- Develop training for users of data management tools
- Develop consistent approach to ensure proper and timely access to data, while monitoring to ensure data security risks/issues are promptly remediated.

III. Purview and Implementation Model

Establishing the scope of a Data Governance effort is important, as it sets the stage for managing stakeholder engagement, a key activity of any governance (data or otherwise) effort. The scope of a data governance effort may vary from organization to organization and may include the entire organization, a single or collection of independent business unit(s), a single or collection of aligned departments, a program, or a single area. The data governance program will expand to include all campuses, colleges, departments, etc. across the University of Alabama.

Furthermore, it is important to align the overall data governance approach to the way our organization makes decisions and, if appropriate, set a path to align it to how we plan to make decisions in the future. Some organizations have a culture of centralized/organization-wide decision-making whereas others are more decentralized. The goal of any Data Governance approach is to match it to an organization's current or expected culture, to increase adoption. The below image provides an overview, including the most common pros and cons of the three (3) typical styles for organizational models that are followed when designing Data Governance.

Type	Centralized	Federated	Decentralized
Description	Data Governance practices and tools are defined, managed, and executed centrally for the organization • Data Governance Office and DG Council are established to oversee all practices and data decisions • Decisions around Organization-Level Data Assets (master data, reports, etc.) are made centrally	Data Governance practices and tools are defined and managed centrally, and executed centrally and locally • Central Data Governance Office and Council are established to drive centralized practices and decisions • Each Local area may establish their own set of committees, which follow the enterprise practices • Decisions around Data Assets (master data, reports, etc.) are principally made centrally, but with local decisions where appropriate	Data Governance practices and tools are defined, managed and executed within each Local area. • Collaborative efforts are made to create enterprise standards, but are unenforceable • Each Local area may have its own unique set of committees and processes for decision making • Decisions around Data Assets (master data, reports, etc.) are made locally
Pros	• Consistent data governance practice, tools and adherence requirements across the organization • Clear and consistent culture around data • Clear path to decision-making	• Consistent data governance practice, tools and adherence requirements across the organization • Decisions with enterprise impact are made centrally, and those without are within Local areas impacted • Fewer duplicated efforts to drive Data Governance • Improved adoption for local areas	• Relatively quick and simple to establish and implement • Easier path to adoption due to lower organizational change management required.
Cons	• Requires higher levels of organizational change management due to scale of organizational impact • Incompatible in organizations w/ diverse operations • Authority of different aspect of operations may be perceived as restricted	• Requires central and Local organizational change management efforts to adopt and sustain • Increased effort to coordinate / communicate • Prioritizing Enterprise vs Local requirements can be challenging	• Enterprise needs are lower priority than Local ones • More time and effort required to coordinate and build consensus for enterprise decisions • Limited standardization across Local areas leading to redundant / duplicate efforts and increased costs

Local can have a variety of meanings depending upon the existing organizational structure (e.g., Legal Entities, Business Units, Lines of Businesses, Programs/Projects, Departments, etc.)

The University of Alabama has chosen to go with a Federated Data Governance approach. This approach will allow the University of Alabama to drive system-level decisions for major data sets, while allowing local areas to maintain control of their decisions. Furthermore, this Federated approach will enable a single repository for all decisions made to be documented leading to improved data literacy.

Data Governance currently is focusing on the following efforts and will expand to cover a broader range of Data Domains and Sub-Data Domains over time.

1. Human Resources
2. Finance
3. Curriculum
4. Student
5. Faculty
6. Space
7. Institutional Research

And we are therefore focusing our Data Governance efforts around establishing and maintaining the following Data Management Capabilities.

1. Data Organization, Planning and Adoption
2. Data Asset Planning

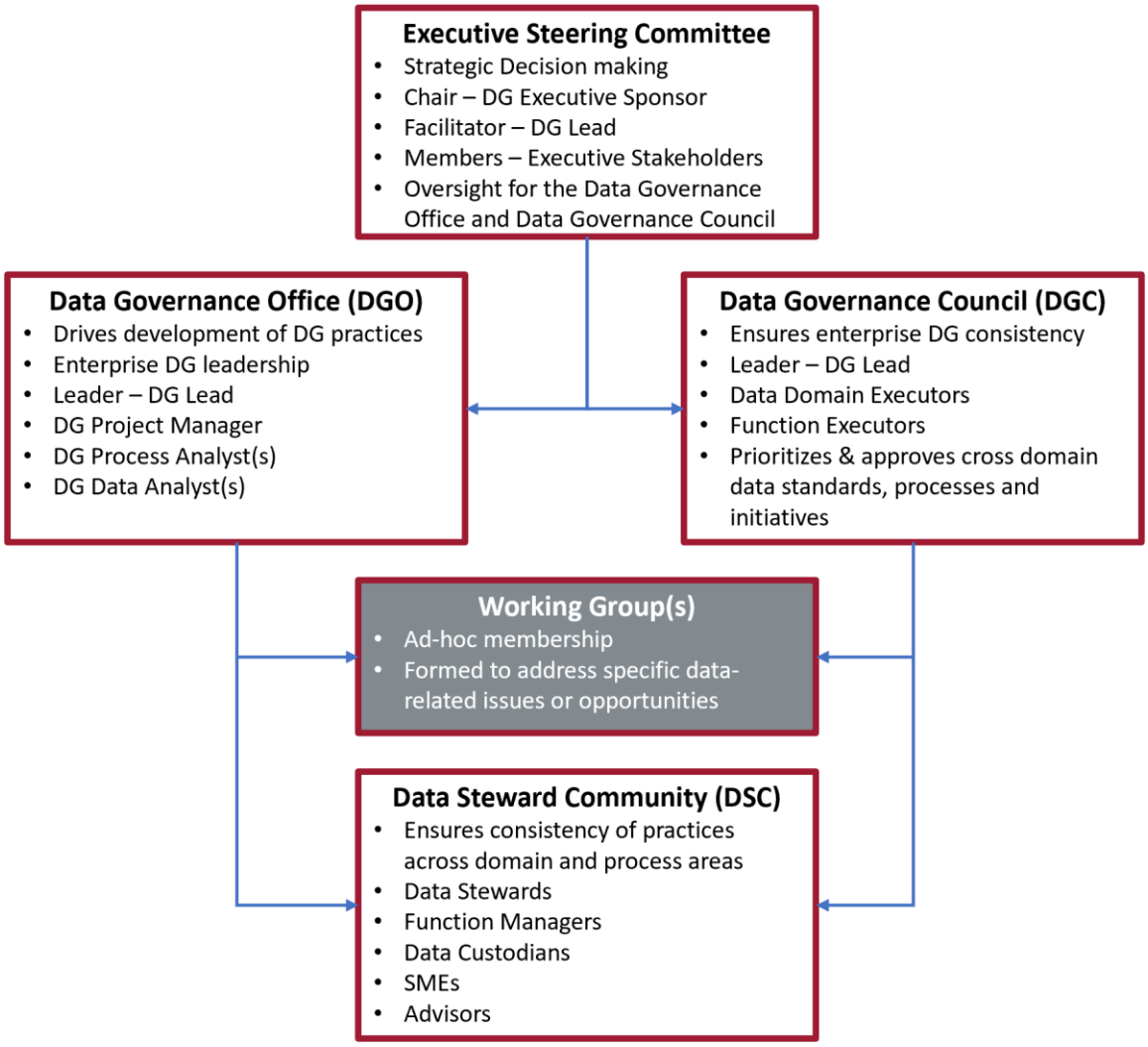
IV. Data Governance Organizational Model

1. Overview

A Data Governance program that is built on an organization-scale will require participation at every level of the organization from executive-level stakeholders to tactical-level SME's. It should also be multidisciplinary with participants from both functional and technical disciplines, as well as key business support functions such as HR, Risk, Compliance, Privacy, etc.

Such a Data Governance program will develop an Organizational Model (i.e., committees, working groups and roles), which ensure the active and timely participation of all necessary personnel. When a simplified "top down" (i.e., executive drive/sponsored) approach is taken, there are clear delineations between activities which occur at a Strategic, Operational and Tactical level.

As called out in earlier sections, we require a Data Governance Organizational Model that will allow us to create a single way of implementing Data Governance at the University of Alabama while allowing local decisions to be made locally. The below image demonstrates a high-level view of our defined Data Governance organizational model that will allow us to work together to drive data-centric decision-making is below. This model will ensure that we have participants at all levels and across all areas engaged in making data-centric decisions.



2. Organizations, Committees, Working Groups & Communities

Organizations and Committees

The responsibilities for a typical Data Governance Office (DGO), Executive Steering Committee (ESC), and the Data Governance Council (DGC) are further elaborated upon in the Data Governance Roles, Responsibilities and RACI document here.

Working Groups

Working Groups differ from the DGO, ESC and DGC in that they are typically created to solve a specific scope. Once the scope has been evaluated and a resolution is created (accept, reject, delay, mitigate, avoid, etc.), then the working group disbands. Working Groups can be established at any level of the Organizational Model; They may be established by the ESC, DGO, DGC or by Data Stewards and Custodians within the Data Steward Community.

There are instances where a working group might be established as a permanent or semi-permanent part of the organization. For example, one might initiate a working group to continually review standards, standards exceptions, change requests, upcoming initiatives, etc. associated with a particular domain on a periodic basis (e.g., monthly, quarterly, etc.). When a working group has a (semi)permanent lifespan, it is not uncommon for a charter to be created which details out a name, scope, and other relevant details.

Communities

The Data Steward Community is not a formal organizational structure, rather it is a loose association of the individuals within an organization that define, produce, and consume data. They have a collective responsibility to ensure that data, at the most tactical levels of the organization, meets the business needs.

Within this community there are traditionally two key (semi) permanent working groups that are initiated:

Working Group	Description
Data Stewardship Practice Working Group	The purpose of the Data Stewardship Practice working group is to bring the data stewards together on a regular basis to share ideas around best practices and lessons learned. The concepts generated and shared in this working group may be immediately applied across the other areas if they are of low-impact, or may be escalated to Data Executors, the DGC or the DGO if they have higher level of impact (e.g., cross-domain, cross-process, etc.) or should be incorporated into the standard practice for all data stewardship effort.
Data Steward Domain Working Group	The purpose of a domain specific stewardship working group is to provide a forum for the relevant stakeholders for a given data domain (e.g., Customer, Product, Chart of Accounts, etc.) to discuss the definition, production, and consumption of domain records, for the purpose of identifying and obtaining alignment on required modifications (e.g., process, data standards, technology, etc.).

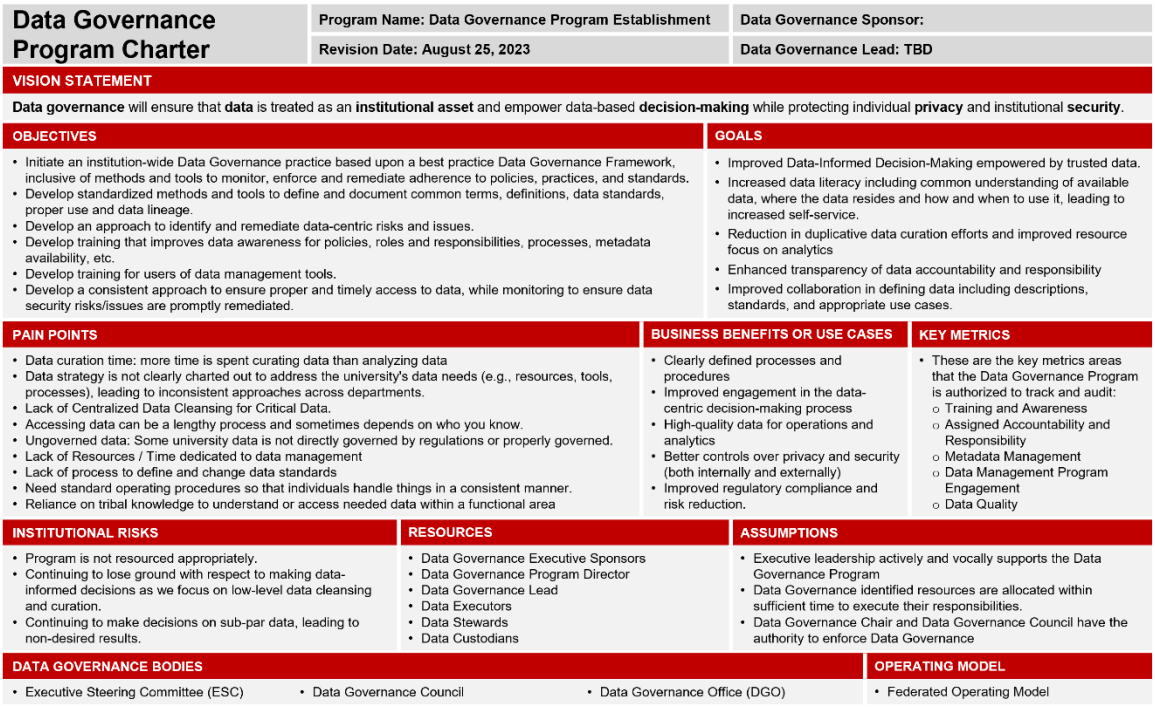
3. Roles

The individual-level Roles and Responsibilities for our Data Governance Organizational Model are further elaborated upon in the Data Governance Roles, Responsibilities and RACI document here. These descriptions will serve the basis for educating those who assume the role as a part of their “day job,” and, when appropriate, will serve as the basis for creating data-specific positions with defined job titles, levels, and descriptions.

4. Charters

Program Charter

The contents of this operational playbook contain the salient contents for developing an overall Data Governance Program Charter. However, the content is more than is necessary for most audiences. To support more directed conversations, especially with senior and executive leaders, a single page Program Charter is recommended. This single-page Program Charter allows for the most salient talking points to be quickly disseminated and a broad understanding to be achieved. Those wishing more details on the "how" can be directed to this playbook.



Data Governance Program Charter

Program Name: Data Governance Program Establishment | Data Governance Sponsor:

Revision Date: August 25, 2023 | Data Governance Lead: TBD

VISION STATEMENT

Data governance will ensure that **data** is treated as an **institutional asset** and empower data-based **decision-making** while protecting individual **privacy** and institutional **security**.

OBJECTIVES

- Initiate an institution-wide Data Governance practice based upon a best practice Data Governance Framework, inclusive of methods and tools to monitor, enforce and remediate adherence to policies, practices, and standards.
- Develop standardized methods and tools to define and document common terms, definitions, data standards, proper use and data lineage.
- Develop an approach to identify and remediate data-centric risks and issues.
- Develop training that improves data awareness for policies, roles and responsibilities, processes, metadata availability, etc.
- Develop training for users of data management tools.
- Develop a consistent approach to ensure proper and timely access to data, while monitoring to ensure data security risks/issues are promptly remediated.

GOALS

- Improved Data-Informed Decision-Making empowered by trusted data.
- Increased data literacy including common understanding of available data, where the data resides and how and when to use it, leading to increased self-service.
- Reduction in duplicative data curation efforts and improved resource focus on analytics
- Enhanced transparency of data accountability and responsibility
- Improved collaboration in defining data including descriptions, standards, and appropriate use cases.

PAIN POINTS

- Data curation time: more time is spent curating data than analyzing data
- Data strategy is not clearly charted out to address the university's data needs (e.g., resources, tools, processes), leading to inconsistent approaches across departments.
- Lack of Centralized Data Cleansing for Critical Data.
- Accessing data can be a lengthy process and sometimes depends on who you know.
- Ungoverned data: Some university data is not directly governed by regulations or properly governed.
- Lack of Resources / Time dedicated to data management
- Lack of process to define and change data standards
- Need standard operating procedures so that individuals handle things in a consistent manner.
- Reliance on tribal knowledge to understand or access needed data within a functional area

BUSINESS BENEFITS OR USE CASES

- Clearly defined processes and procedures
- Improved engagement in the data-centric decision-making process
- High-quality data for operations and analytics
- Better controls over privacy and security (both internally and externally)
- Improved regulatory compliance and risk reduction.

KEY METRICS

- These are the key metrics areas that the Data Governance Program is authorized to track and audit:
  - Training and Awareness
  - Assigned Accountability and Responsibility
  - Metadata Management
  - Data Management Program Engagement
  - Data Quality

INSTITUTIONAL RISKS

- Program is not resourced appropriately.
- Continuing to lose ground with respect to making data-informed decisions as we focus on low-level data cleansing and curation.
- Continuing to make decisions on sub-par data, leading to non-desired results.

RESOURCES

- Data Governance Executive Sponsors
- Data Governance Program Director
- Data Governance Lead
- Data Executors
- Data Stewards
- Data Custodians

ASSUMPTIONS

- Executive leadership actively and vocally supports the Data Governance Program
- Data Governance identified resources are allocated within sufficient time to execute their responsibilities.
- Data Governance Chair and Data Governance Council have the authority to enforce Data Governance

DATA GOVERNANCE BODIES

- Executive Steering Committee (ESC)
- Data Governance Council
- Data Governance Office (DGO)

OPERATING MODEL

- Federated Operating Model

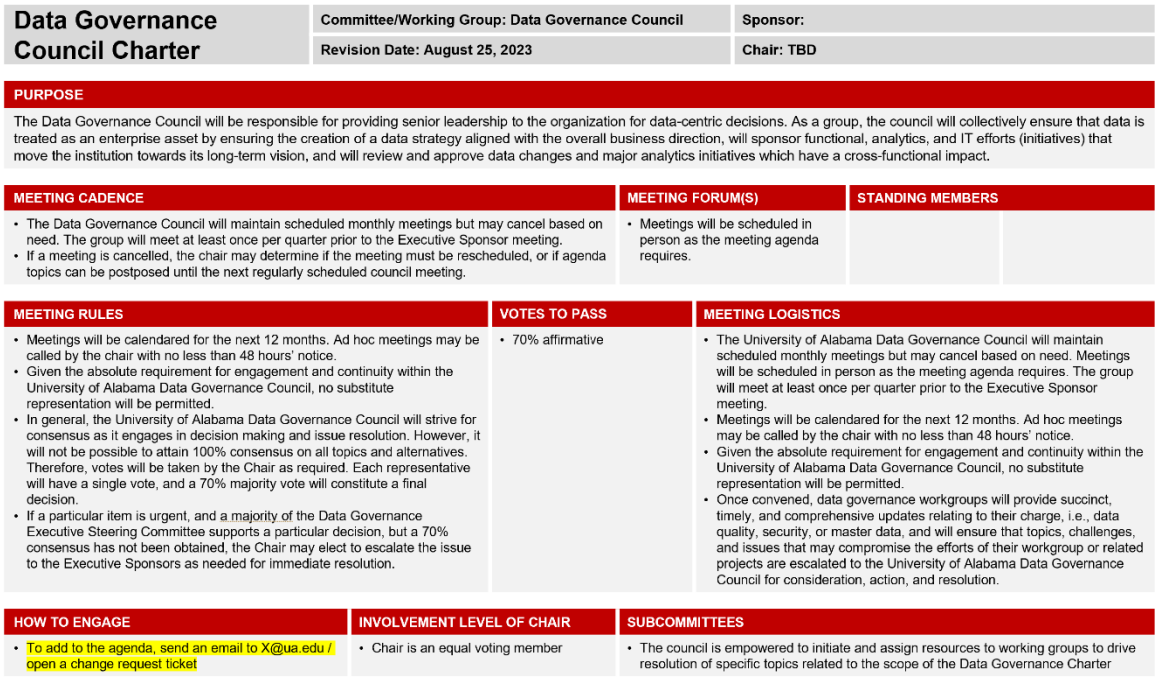
[Link to full Data Governance Program Charter]

[Link to one-slide Data Governance Program Charter]

Committee / Working Group Charter

Individual committees and working groups that are instantiated in support of the overall Data Governance Program should have charters of their own created. Each such committee should ensure that their sponsors(s) review(s) and approve(s) the respective charter. The committee / working group charters will establish the purpose of the committee and the general parameters which shall drive how the committee meets and makes decisions.

Council Charter



Data Governance Council Charter	Committee/Working Group: Data Governance Council	Sponsor:
	Revision Date: August 25, 2023	Chair: TBD

PURPOSE

The Data Governance Council will be responsible for providing senior leadership to the organization for data-centric decisions. As a group, the council will collectively ensure that data is treated as an enterprise asset by ensuring the creation of a data strategy aligned with the overall business direction, will sponsor functional, analytics, and IT efforts (initiatives) that move the institution towards its long-term vision, and will review and approve data changes and major analytics initiatives which have a cross-functional impact.

MEETING CADENCE	MEETING FORUM(S)	STANDING MEMBERS
• The Data Governance Council will maintain scheduled monthly meetings but may cancel based on need. The group will meet at least once per quarter prior to the Executive Sponsor meeting. • If a meeting is cancelled, the chair may determine if the meeting must be rescheduled, or if agenda topics can be postposed until the next regularly scheduled council meeting.	• Meetings will be scheduled in person as the meeting agenda requires.	

MEETING RULES	VOTES TO PASS	MEETING LOGISTICS
• Meetings will be calendared for the next 12 months. Ad hoc meetings may be called by the chair with no less than 48 hours' notice. • Given the absolute requirement for engagement and continuity within the University of Alabama Data Governance Council, no substitute representation will be permitted. • In general, the University of Alabama Data Governance Council will strive for consensus as it engages in decision making and issue resolution. However, it will not be possible to attain 100% consensus on all topics and alternatives. Therefore, votes will be taken by the Chair as required. Each representative will have a single vote, and a 70% majority vote will constitute a final decision. • If a particular item is urgent, and a majority of the Data Governance Executive Steering Committee supports a particular decision, but a 70% consensus has not been obtained, the Chair may elect to escalate the issue to the Executive Sponsors as needed for immediate resolution.	• 70% affirmative	• The University of Alabama Data Governance Council will maintain scheduled monthly meetings but may cancel based on need. Meetings will be scheduled in person as the meeting agenda requires. The group will meet at least once per quarter prior to the Executive Sponsor meeting. • Meetings will be calendared for the next 12 months. Ad hoc meetings may be called by the chair with no less than 48 hours' notice. • Given the absolute requirement for engagement and continuity within the University of Alabama Data Governance Council, no substitute representation will be permitted. • Once convened, data governance workgroups will provide succinct, timely, and comprehensive updates relating to their charge, i.e., data quality, security, or master data, and will ensure that topics, challenges, and issues that may compromise the efforts of their workgroup or related projects are escalated to the University of Alabama Data Governance Council for consideration, action, and resolution.

HOW TO ENGAGE	INVOLVEMENT LEVEL OF CHAIR	SUBCOMMITTEES
• To add to the agenda, send an email to X@ua.edu / open a change request ticket	• Chair is an equal voting member	• The council is empowered to initiate and assign resources to working groups to drive resolution of specific topics related to the scope of the Data Governance Charter

Link to full Data Governance Council Charter

Link to one-slide Data Governance Council Charter

V. Data Governance Framework: Policies & Other Data Directives

Data Directives provide guidance to the organization with respect to rules, principles, standards, and guidelines which direct the organization on how to execute one or more data management capabilities. Data Policies, Data Design Guidelines and Data Guiding principles all fall under the broad category of "data directives."

1. Data Policy

A Data Policy is a formalized set of rules, principles, and guidelines that provide a framework for establishing behaviors across the organization for various aspects of data management. The most common set of topics which are covered by data polices are outlined in the below table.

Policy	Purpose
Asset Management	Drive organizational behavior to think of data / information as a valuable asset to be actively managed and protected
Information Security	Drive overall organizational behavior around authentication, authorization, and access to data / information; Information security may also include guidance on requirements for data in movement and at rest (e.g., encryption)

Policy	Purpose
Confidentiality & Privacy	Drive organizational behavior as it deals with data that could put the organization at risk if it is improperly exposed (e.g., PII, PHI, PCI, etc.)
Information Classification	Drive organizational behavior with respect to identifying and documenting the risk associated with data based on various levels (e.g., Public, Internal Public, Sensitive, Restricted, etc.)
Appropriate / Responsible Use	Drive organizational behavior around the use of data / information which doesn't impair or impede its use by others, or does not infringe on any legal or other agreements controlling the use / distribution of the data
Training	Drive organizational behavior with respect to their awareness and ability to adhere to data-related policies and procedures
Business Continuity / Disaster Recovery	Drive organizational behaviors with respect to setting standards for how data / information should be made resilient across various business scenarios
Data Retention, Archiving, & Disposal	Drive organizational behaviors with respect to how data should be managed as it ages and in compliance with applicable laws and regulations.
Data Quality	Drive organizational behaviors with respect to identifying metrics / measures for all critical data elements to monitor and address data quality issues.
Metadata Management	Drive organizational behaviors with respect to identifying, capturing, and maintaining the business and technical metadata needed to define critical data elements and metrics.

Within our organization, we have created the below standards and guidelines, which drive and/or support our Data Governance program.

Standard / Guideline Name	Description	Document Location
Metadata Management Standards and Guidelines	Defines standards for capturing, maintaining, and making available business and technical metadata. It defines: 1. Value and purpose of metadata 2. Minimum metadata attribution to collect for both business and technical 3. Basic procedures for updating metadata	Link to document
Data Quality Standards and Guidelines	Defines standards for measuring the data quality of critical data elements.	Link to document

2. Data Guiding Principle

A Data Guiding Principle is an informal statement that sets the direction of how we should behave with respect to data management capabilities. Below is a list of the key Data Guiding Principles that we have used as input into how Data Governance has been designed and/or how we should behave when executing data governance and data

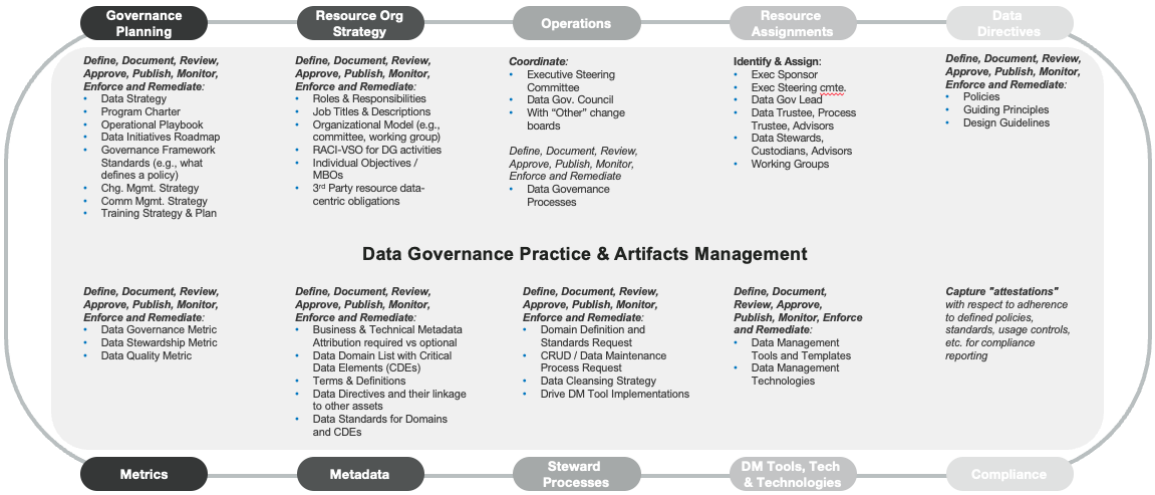
ownership/stewardship activities. Each of these Guiding principles is further elaborated upon in the appendix.

- Data is an Asset
- Metadata is an Asset
- Data Supports Strategy
- Data Follows Data Management Standards
- Data is of High Quality
- Data is Shareable and Accessible
- Data has an Executor and a Steward
- Data has a Common Vocabulary
- Data is Secure

VI. Data Governance Framework: Processes Overview

1. Overview

To sustain our Data Governance practice for the long-term, it is important that there is a clear understanding of how stakeholders will be engaged in Data Governance activities. This section of the playbook describes the 10 major categories of Data Governance activities which drive the creation of key data governance deliverables and/or define how to execute key responsibilities of data governance.



A key step in driving formalizing data governance is ensuring that the necessary resources are being engaged to create or execute each of the above.

For identifying resources and defining their level of engagement, the University of Alabama has chosen to follow the RACI model, which is defined as:

- **Responsible** – A party / group who is directly performing the activity /task

- **Accountable** - The party / group who hold the ultimate decision rights associated with performing an activity / task
- **Consulted** – A party / group whose knowledge and collaboration is required to perform an activity / task, but are not themselves delivering the end result
- **Informed** – A party / individuals who are given updates on an activity / task, but are not by way of doing or being consulted involved in the activity / task

Here is an example, of how the RACI is documented:

	Executive Steering	Executive Sponsor	Executive Stakeholders	**Data Governance Office**	Data Governance Lead	Data Governance Prg/Prj	Data Gov. Process Analyst	Data Gov. Data Analyst	**Data Governance Council**	Data Executor	Process Executor	DGC Shared Services	DGC Technology Advisors	**Data Steward Community**	Data Steward	Process Manager	Technology Custodian	D.S. Shared Services	D.S. Technology Advisors	Subject Matter Experts
Enterprise Data Governance Policy		**A**	C		R	I	C	C	C	I	I	I	I	I						

Note: if the same level of engagement applies to all participants of a group, then the engagement level can be assigned at just the group level.

When defining process flows for Data Governance activities, we have considered whether to formally document each of the following sub-activities: Define, Document, Review, Approve, Publish, Monitor/Measure, Enforce, and Remediate. For now, we have mostly focused on the initial sub-activities (e.g., Define, Document, Review, Approve and Publish). As we continue to mature, we will determine if a secondary flow is necessary for detailing specifically how we shall Monitor/Measure, Enforce, Remediate. Regardless, each of these have a RACI to drive resource alignment.

Additionally, when we have created process flow diagrams, we have focused on detailing the standard/default (a.k.a. 'happy path') flow. In the future, we may further refine these process diagrams, or create new process diagrams, to document alternative flows. New flows diagrams are recommended when alternative process flow vary sufficiently enough that it would make a single documented flow too complicated to read. Alternative flows are typically necessary when extenuating circumstances require skipping parts of and/or accelerating the pace of the Standard path. The two most common alternative process flows are:

- **Exception**: An exception flow is one where the standard steps must still be followed, however, a change to the order and/or timing is required to meet business objectives.
- **Emergency**: An emergency flow is one where following the standard steps would not allow the business to timely deal with an immediate/urgent issue and therefore steps

must be eliminated in the present to remediate. Many times, any steps that were omitted, may require some level of documentation later to ensure consistency.

2. Data Governance Planning

Initiating and Sustaining a Data Governance practice requires thought leadership that defines the rationale behind the effort and the ways that the organization will remain educated about and engaged with the effort. The below list of Data Governance deliverables for which are likely to be formalized activities are the ones resources practicing Data Governance will follow to ensure a sustainable Data Governance practice.

DG Artifact or Function	Description	Process Flow (as applicable)
Data Strategy	High-Level plan that defines the data required to achieve key business outcomes and, where applicable, how the data will be used to drive a competitive advantage. The plan may also define how the organization will ensure stakeholders have the right data, at the right level of quality, delivered in the right ways, at the right times.	Data Governance Council Standard Review & Approval Flow
Data Initiatives Roadmap	Iterative plan that demonstrates how the data strategy, operational programs, etc. will be iteratively executed.	Data Governance Council Standard Review & Approval Flow
Data Gov Program and Council Charter	Documents that clarify the goals, objectives, authority, responsibilities, and other relevant provisions for programs and working committees	Data Governance Council Standard Review & Approval Flow
Data Governance Operational Playbook	Document that details the scope of data governance and how that scope will be executed and by whom.	Data Governance Council Standard Review & Approval Flow
Data Governance Framework Documentation Standards	Set of standards that define what is required to be documented with respect to the Data Governance Framework. For example, what's minimally required to be documented when roles, processes, metrics, etc. are defined.	Data Governance Council Standard Review & Approval Flow
Change Management Strategy	Overarching plan to drive change related to Data Governance.	This function to employ the university's standard approach

DG Artifact or Function	Description	Process Flow (as applicable)
Communication Management Strategy	Overarching plan to identify the recipients, channels, and timing with respect to Data Governance communications	This function to employ the university's standard approach
Training Strategies & Plan	Overall plan to define, create, coordinate, and deliver training for Data Management activities, especially for Data Governance and Metadata Mgmt.	Data Governance Council Standard Review & Approval Flow

3. Resource Organization Strategy

Implementing Data Governance requires changes in organizational responsibilities. The general strategy of how those responsibilities will be implemented should be balanced between groups of people and individuals to ensure proper collaboration. Additionally, there must be thought behind how to ensure that resources prioritize these responsibilities relative to all priorities on their plate. In this section are the list of activities that Data Governance follows to drive the organizational planning for Data Management activities.

DG Artifact or Function	Description	Process Flow (as applicable)
Data Governance Organization Model – Roles & Responsibilities	Documentation that defines the key roles and responsibilities within Data Governance	Data Governance Council Standard Review & Approval Flow
Data Governance Organization Model – Committees and Working Groups	Documentation that defines one the need for one or more relevant committees or working groups sponsored by Data Governance	Data Governance Council Standard Review & Approval Flow
RACI for Data Governance activities	Details that define the RACI for one or more Data Governance deliverable or responsibility.	Data Governance Council Standard Review & Approval Flow
Create new job titles, level and descriptions to align with defined Data Governance Roles & Responsibilities	Document that defines a job, including the scope, responsibilities, working experience, etc.	Will follow the current processes set out by Human Resources
Modify existing HR job descriptions to align with defined Data Governance Roles & Responsibilities	Responsibility	Will follow the current processes set out by Human Resources
Align employee MBO's with Data Governance Objectives	Responsibility	

DG Artifact or Function	Description	Process Flow (as applicable)
Ensure that contractual and operational mechanisms are in place so that DG expectations are applied to non-direct employees (e.g., contractors, consultants, etc.)	Responsibility	RACI only

4. Data Governance Operations

Data Governance activities should be actively coordinated to ensure that they become a part of the overall "way of working" within the organization. If there are specific processes that need to be followed to make sure there is coordination between the Data Governance Council and other parts, they should be documented within this section.

DG Artifact or Function	Description	Process Flow (as applicable)
Data Governance Processes	Documentation that outlines the processes to follow to define Roles, policy, data governance processes, data standards, metrics, etc.	Data Governance Council Standard Review & Approval Flow
Coordinate Data Governance Exec Steering Committee	Responsibility	Reference: Executive Steering Committee Charter
Coordinate Data Governance Council	Responsibility	Reference: Data Governance Council Charter
Coordinate DG Change Control with other Enterprise Change Control boards/activities	Responsibility	RACI paired with Data Governance Council Charter
Coordinate DG activities with Project Management and Operations Mgmt.	Responsibility	RACI only
Coordinate DG activities with Security, Regulatory, Risk, Compliance, Privacy	Responsibility	RACI only
Coordinate notifications to members of the Data Governance practice about changes which impact Governed Data Domains and CDE's	Responsibility	RACI only paired with Change Management Strategy & implementation

DG Artifact or Function	Description	Process Flow (as applicable)
Coordinate and ensure that contractual and operational mechanisms are in place so that DG expectations are applied to non-direct employees (e.g., contractors, consultants, etc.)	Responsibility	RACI only

5. Manage Resource Assignments

Identifying and assigning roles to the right resources is critical to the success of data governance. Any details which expand upon what is required to ensure Data Governance defined roles are filled should be documented here.

DG Artifact or Function	Description
Identify Executive Sponsor	Responsibility
Identify additional resources for Executive Steering Committee	Responsibility
Identify & Assign Data Governance Lead	Responsibility
Identify & Assign additional resources to Data Governance Office (DGO) Roles	Responsibility
Identify & Assign Data Executor(s)	Responsibility
Identify & Assign additional Process Executors, Technology Advisors and Shared Services resources to Data Governance Council	Responsibility
Identify & Assign Data Steward(s)	Responsibility
Identify & Assign additional resource to Working Group (varies by Working Group)	Responsibility

6. Manage Data Directives

Driving change in an organization can be facilitated by the creation of guardrails that reinforce expected behaviors. Based upon the criticality/impact of failing to remain within the guardrails, these may be defined at different levels within the organization and with differing levels of formalization. When there is high criticality and impact, these guardrails are sponsored by Executive Action and are formally written and approved in the form of a (Data) Policy. When a guardrail still needs a level of formalization, but doesn't warrant a Policy being written, lower levels of the organization can set guardrails through such things as Design Guidelines or Business Rules. When an organization wants to set a general tone, rather than specific results, then the organization may identify informal directives, such as Guiding Principles (general directional statements) or Best Practice standards. These informal directives provide a looser direction for the organization to follow but allows greater freedom to diverge as appropriate.

DG Artifact or Function	Process Flow (as applicable)
Organizational Data Policy	N/A
Organizational Data Guiding Principle	Data Governance Council Standard Review & Approval Flow
Organizational Data Design Guidelines	Data Governance Council Standard Review & Approval Flow

7. Manage Data-Centric Metrics

To ensure that Data Governance and the corresponding Data Stewardship activities are effective and efficient, it will be important to measure progress. In doing this, most metrics associated with Data Governance and Stewardship can be divided into three categories, as defined below. Within this section, the processes necessary to be followed to define, approve, measure, and enforce metric across all three types, should be documented.

DG Artifact or Function	Description	Process Flow (as applicable)
Data Governance Metrics	Metrics that demonstrate the progress made with respect to initially standing-up and on-going roll-out of Data Governance	Data Governance Council Standard Review & Approval Flow
Data Stewardship Metrics	Metrics that demonstrate the efficiency and effectiveness of Data Stewardship activities	Cross Domain: Data Governance Council Standard Review & Approval Flow Within a Domain: Data Steward Driven Standard Review & Approval Flow
Data Quality Metrics	Metrics that demonstrate point in time and/or trends in data quality relative to defined data standards.	Data Steward Driven Standard Review & Approval Flow

See the appendix for example metrics.

8. Manage Data-Centric Business and Technical Metadata

Data Governance facilitates managing change to Data Assets; thus, it is critical to have a way to identify changes. Documenting data assets and providing a mechanism for resources to notify the Governance Practice about changes, improves the organization's ability to effectively manage changes and minimize organizational impacts.

DG Artifact or Function	Description	Process Flow (as applicable)
Business and Technical Metadata to be tracked	Defined standards for which metadata attribution should be managed for each type of Data Asset (e.g., the metadata to be documented and published for Data Domains, Data Attribute, Systems, etc.)	Data Governance Council Standard Review & Approval Flow
Data Domain List with Critical Data Elements (CDEs)	Documented set of Data Domains and the attributes which are critical to business operations and decision making and should be managed via Data Governance.	Data Governance Council Standard Review & Approval Flow
Domain and CDE's business and technical metadata content	Documented set of terms, definitions, data standards, business rules, permissible values, etc.	Data Steward Driven Standard Review & Approval Flow
Data Directives and their linkage to other assets	Documented linkage between policies, guiding principles, etc. and a data domain or a specific CDE	Data Steward Driven Standard Review & Approval Flow

9. Data Stewardship Processes

Data Stewards are responsible for making sure that data is fit for purpose and accessible to the organization. They guarantee this by making sure (a) the data is properly documented, (b) that the business content is managed (e.g., managing a Customer Master or Product Master record) in alignment with defined policies, guiding principles and standards for use within an organization, and (c) that there are procedures in place to ensure proper access to the data. The activities will be followed by each steward to perform their job function.

DG Artifact or Function	Description	Process Flow (as applicable)
CRUD flow per Data Domain	Documented workflow that defines how to Create, Read, Update, Delete/Deactivate records for a specific Data Domain. The workflow can be documented using process flows (e.g., swim lane diagrams), work instructions, standard operating procedures, etc.	Data Steward Driven Standard Review & Approval Flow
Data Cleansing Strategy per domain	Documented strategy and corresponding plan that defines how data quality will be established, maintained, and monitored.	Data Steward Driven Standard Review & Approval Flow
Drive implementation of tools, templates, and technologies to support	Data Stewards and Owners should lead the Coordination/Execution of activities that will help to optimize	RACI only

making CRUD flows more efficient and effective.	the CRUD (e.g., data maintenance) flows	

10. Data Management Tools, Templates and Technologies

Data Governance participants are responsible for ensuring that the organization is consistently able to act on Data Governance and Data Stewardship activities utilizing acceptable Tools, Templates and Technologies. Tools and Templates are typically "lightweight" (e.g., process flow templates) and require significantly lower levels of investment than Data Management Technologies such as Master Data Management (MDM), Data Warehouses (DW's), Data Integration platforms, etc. The processes necessary to ensure that the Data Management area has the right tools, etc. to execute in accordance with an overall data strategy, should be documented in this section.

DG Artifact or Function	Process Flow (as applicable)
Standard Tools and Templates to be used when documenting Roles, Policy, Standards, Metrics, etc.	Data Governance Council Standard Review & Approval Flow
Standard Data Management Technologies	Two-fold: Data Governance: Drive the concept, requirements, and funding: Data Governance Council Standard Review & Approval Flow Procurement & Contracts Follow existing vendor selection, negotiation, and contract procedures

11. Compliance

Effective Data Governance results in organization-wide (within the scope of a defined DG artifact) adherence to defined data governance artifacts (policies, standards, processes, etc.). The processes in this section demonstrate how to monitor, document, and enforce adherence to Data Governance, or related, efforts.

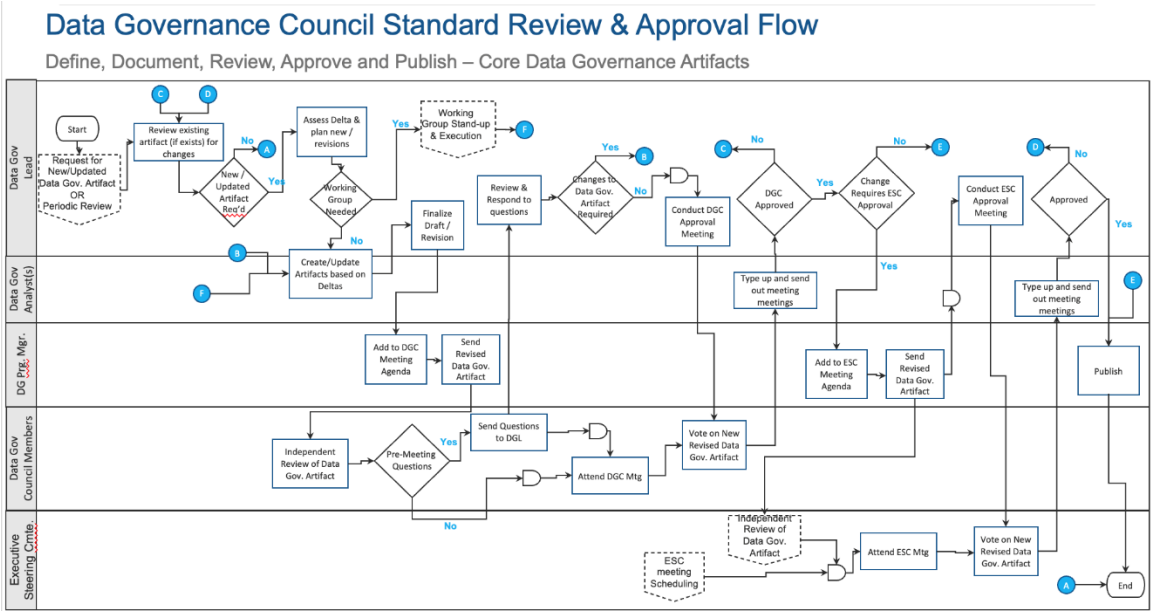
DG Artifact or Function	Description
Compliance attestations	Capture "attestations" with respect to adherence to defined policies, standards, usage controls, etc. for compliance reporting

VII. Data Governance Framework: Processes Defined

Within this section, we have documented the process flows, standard operating procedures, work instructions, etc. that demonstrate how the University of Alabama will drive Data Governance decisions. The editable versions of these can be found here. Please note that the process flows are examples that have not been approved.

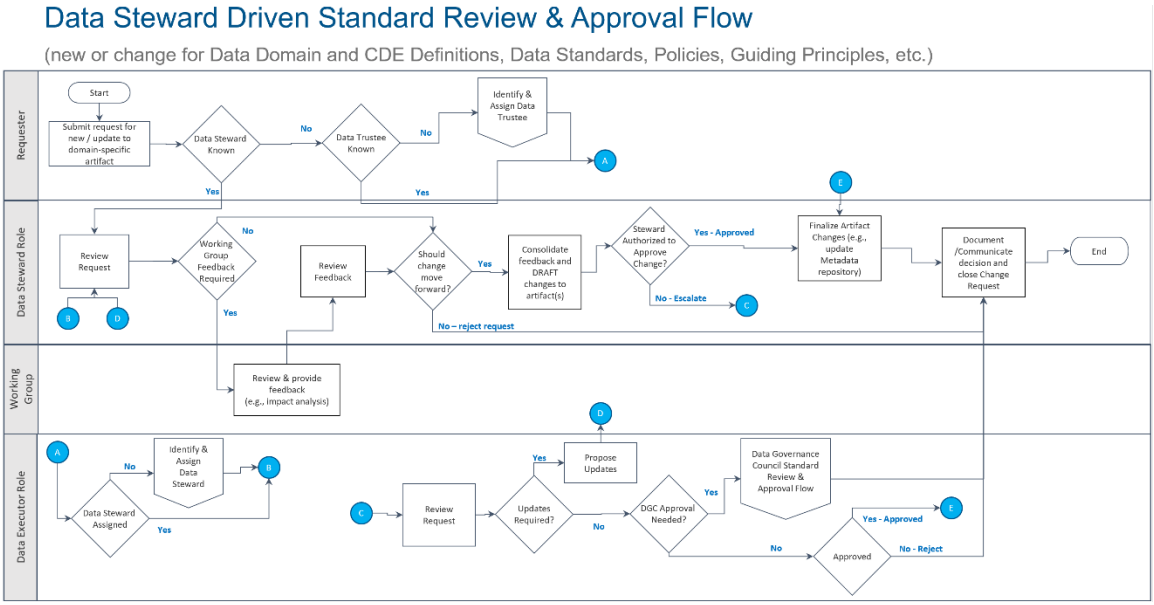
1. Data Governance Council Standard Review & Approval Process Flow

This process is defined to cover the definition, documentation, review, approval, and publishing of many of the core Data Governance Artifacts. The core Data Governance artifacts, once created, are relatively stable, and usually non-time constrained, and thus there should rarely, if ever, be an exception or an emergency that requires going around this path.



2. Data Steward Driven Standard Review & Approval Flow

This process is defined to cover the definition, documentation, review, approval, and publishing of many of the data-centric artifacts under the accountability and responsibility of the Data Executors and Data Stewards. These artifacts tend to be more tactical / operational in nature, resulting in the first point of contact being most often the Data Steward. The Data Steward will rely on key members of their respective Data Steward Community of Practice to assess requests via a working group. When a change request requires additional level of authorization, then the request can be initially escalated to the Data Executor, and if appropriate, and further escalated to the Data Governance Council.



VIII. Data Governance Framework: Decision Escalation

Upfront clarity in terms of who is necessary to participate in data-centric decisions ensures timely execution in the decision-making process. The level of leadership involved in final decision-making generally corresponds to the level of complexity and institutional impact of the decision to be made. Each decision, even if it is of the same type as others (e.g., defining a term and definition), may be finalized by a different level of leadership. The goal of the Data Governance escalation framework is to provide direction for which types of decisions should be made at each level.

In assessing the level of leadership involvement, the escalation matrix looks at the overall complexity of the decision and the impact the decision may have on the University of Alabama. Those decisions which are highly complex and/or have significant institutional impact, should be escalated to the Executive Steering Committee. Whereas those decisions which have very limited complexity and have controlled impact are best delegated as far down the decision tree as practicable. The below table, provide quick visual as a reference.

	Minimal Complexity	Moderate Complexity	Highly Complex	Very Complex
Institutional Impact*	**DGC Approval**	**DGC Approval**	ESC Approval	ESC Approval
Cross Functional Impact*	**DGC Approval**	**DGC Approval**	**DGC Approval**	ESC Approval
Single Functional Impact*	Data Trustee Approval	Data Trustee Approval	**DGC Approval**	**DGC Approval**
Implementation & Execution Impact*	Data Steward (No Approval)	Data Trustee Approval	**DGC Approval**	**DGC Approval**

* Includes Decision Scope, Cost, Resource Needs / Effort, Planning Timeframe, Compliance and Security Impact, Organizational Environment Impact, Culture

1. Decision Escalation Characteristics

While the conceptual model provides general direction, it's much more practical to think of Complexity and Impact in terms of real-world characteristics which affect day-to-day decision-making. The below table outlines many common complexity and impact characteristics which should be evaluated when determining the level of decision-making authority required.

Complexity / Impact Characteristic	Description	Examples
Organizational visibility / exposure	At what level of leadership will the change have visibility	• routine change at the doer level • board level visibility • etc.
Environmental Impact	What is the scale of change / impact to business processes, systems, or applications	• no to minimal impact (e.g., documentation change) • large effort (e.g., major system modifications) • etc.)
Planning horizon	Over what time horizon are planning activities occurring.	• Day-to-day execution and/or issue resolution (e.g., 1 month or less) • Annual or multi-year planning (e.g., Strategic and Long Term Planning) • Etc.
Compliance and Security Impact	What is the overall risk associated with the change	• No risk or risk is limited to task execution • Risk exposure across the University • Etc.
Resourcing	What resources will be allocated to this effort	• Using existing resources within pre-approved parameters • Net new investment dollars for one or more functional areas, or meaningful change in the allocation of approved resources • Etc.
Scope of assets affected	What systems or other assets are directly impacted by the change	• minor changes to a single system/component • major changes to multiple systems / components • etc.
Effort to revert / backout	How complex is the effort to "undo" a change once it's implemented	• insignificant effort • no manageable rollback plan • etc.

Change experience	What is the relative understanding and experience of the proposed solution	• existing tools and technologies with which resources have strong experience • New tools and technologies widely released, and resources have minimal experience • Etc.
Expected time to complete	Over what duration will the planned activity be performed.	• Less than a day • Multi-year effort • Etc.

2. Decision Escalation Matrix

When evaluating any decision, it's important to assess the relevant complexity or impact characteristics to ensure the appropriate level of decision-making authority has been identified. The below chart provides examples where decisions are made at different levels, even though they are being evaluated on the same primary complexity/impact characteristic. It's also important to note that a single decision may have multiple complexity/impact characteristics, and it will be important to decide which of those will drive the level of decision-making authority required.

	Decision Driver				
Decision Driver	Data Steward	Data Executor	Data Gov Lead	Executive Sponsor	
Committee / Group	Data Steward working Group	Data Executor working group	Data Governance Council	Executive Steering Committee	
Characteristics	**Tactical**	**Operational (One Area)**	**Operational (Cross-Area)**	**Strategic**	**Example**
Organizational visibility / exposure	Specific to functional area of focus and aligned with previously approved policies, standards, etc.	Specific to a single functional area	Cross-functional area	Materially changes the way the University operates (e.g., culture, processes, etc.)	• Updating the meaning of a Finance specific field – **Operational (One Area)** • Updating the definition of "Employee" – **Strategic**
Environmental impact	Data Domain specific enhancements & maintenance	Functional area specific enhancements & maintenance	Cross-functional area enhancements & maintenance	Strategic technology or functional implementation (e.g., new enterprise-wide application/service)	• Updating list of country codes based on approved 3rd party data **(tactical)** • Creating plan to roll-out approved software across functional areas – **operational (cross-area)**
Planning horizon	Day-to-day execution and/or issue resolution (e.g., 1 month or less)	Operational planning within a functional area for a 1–6-month(s) time horizon	Operating planning across functional areas for 6 months to 1 year time horizon	Annual or multi-year planning (e.g., Strategic and Long Term Planning)	• Assigning analyst(s) to evaluate and respond to escalated issue – **Tactical** • Developing multi-year analytics roadmap to achieve business strategy - **Strategic**
Compliance and Security Impact	No risk or risk is limited to task execution; no exposure to the functional area the entire University	Risk that is limited to a single functional area; no exposure elsewhere in the University	Risk across functional areas, but does not elevate to the University level	Risk exposure across the University	• Modifying CRUD workflow in alignment with approved policy – **Tactical** • Defining new policy to drive compliance – **Strategic**
Resources (funding, people/effort, etc.**)**	Using existing resources within pre-approved parameters.	Reallocating resources within an area for related tasks.	Reallocating resources across functional areas for pre-approved or related tasks	Net new investment dollars for one or more functional areas, or meaningful change in the allocation of approved resources	• Implementing localized data profiling effort to diagnose data quality issue - **Tactical** • Approving large funding request for new Data Management tool purchase – **Strategic**

3. Decision Escalation Extended Examples

It's recommended that the following decisions be made at each indicated decision-making authority level:

Example ESC Decisions

- Approve funding for initiatives identified by DGC (e.g., MDM or Metadata Mgmt. tool) – *Institutional Impact / Highly Complex*
- Approve / Direct DG resources or domain expansion - *Cross-Functional / Very Complex*

- Approve definition of culture-impacting terms – *Institutional Impact / Very Complex*

Example DGC Decisions:

- Approve DG SLAs (e.g., Executors approving new / updated definitions within 5 days) - *Cross-Functional / Minimal Complexity*
- Approve updates to Metadata Mgmt. policy - *Cross Functional/ Moderate Complexity*
- Resolve cross-departmental definitions and metric conflicts – *Single & Cross-Functional / Highly Complex*
- Approve changes to reporting environment for a domain - *Single-Functional / Very Complex*
- Approve new domain and identify applicable Executor - *Institutional Impact / Minimal Complexity*
- Approve updates to DG Metrics (e.g., measuring if SLAs are being met) - *Institutional Impact / Moderate Complexity*
- Approve/Resolve conflict around changes to metadata Mgmt. tool workflows - *Implementation & Execution / Highly Complex*
- Approve plan for master data implementation for a data domain – *Implementation & Execution / Very Complex*

Example Data Executor Decisions

- Approve changes to business term definition within Executor's domain – *Single-Functional / Minimal Complexity*
- Approve changes to domain data standards / data quality rules – *Single-Functional / Moderate Complexity*
- Approve data steward plan for implementing revised data quality rules – *Implementation & Execution / Moderate Complexity*

Example Data Steward Decisions

- Approve request to update incorrectly documented metadata in Metadata Mgmt. tool – *Implementation & Execution / Minimal Complexity*

IX. Data Governance Framework: Metrics

As a result of our data governance program, we expect to see measurable changes in our organization. Specific to Data Governance, we expect to see changes with respect to data culture, data knowledge, awareness of responsibilities, clear points of contact, clarity on governance processes, etc.

When defining metrics, we should be able to see "Current Totals (counts)", Totals for a specific timeframe or topic area, and / or trends over time. The appendix lists sample DG metrics.

X. Data Governance Framework: DG Supporting Tools

To accelerate and standardize Data Management practices, various tools, templates, and technologies ('tools') are typically introduced or enhanced. Data Governance, by the nature of its central role in driving Data Management practices, has an inherent accountability for driving the evaluation, selection, and implementation of Data Management tools, as well as the development of standard practices for each identified tool. While Data Governance has this inherent accountability, the most common approach is for the Data Governance Office and/or Data Governance Council to delegate most of the responsibility to specific areas so it is driven by those closest to who will directly own, manage, and support the tools.

The below table provides an overview of the key Data Management Capabilities which most often require tool decisions and have the responsibility delegated by the DGO/DGC to other areas within the organization.

Data Management Capability	Approved Vendor / Solution (sub-capabilities)	Responsible
Master Data Management	<Customer>	
	<Product>	
	<Vendor>	
	<Legal Entity>	
Reporting & Analytics	<'Canned Report'>	
	<Self-Service Reporting>	
	<Data Visualizations>	
Data Science	<Data Algorithm>	
Data Quality Management	<Data Profiling>	
	<Data Rules / Cleansing>	
	<Data Enrichment>	
	<Data Scorecard / Dashboard>	
Data Movement / Accessibility / "Integration"	<Batch – ETL/ELT>	
	<Real-time - API Mgmt>	
	<near-real-time - Messaging>	
Data Storage	<Data Warehouse>	
	<Data Mart>	
	<Data Lake>	
	<Operational Data Store>	
Data Security Management	<IDM/IAM/IDAM>	

In addition to the Data Management tools identified above, there are three additional Data Management tools which facilitate Data Governance efforts. These tools are:

Tool	Description
Issue Tracker	Tool used to facilitate the in-take, analysis, resolution, and communication of issues (e.g., reported problems) with respect to “people, process data and technology”. This system will ensure that issues are tracked and managed throughout their lifecycle.
Requirement Backlog	Tool used to facilitate the in-take, analysis, resolution, and communication of requirements (e.g., desired new features, capabilities, needs, etc.) with respect to “people, process data and technology”. This system will ensure that requirements are tracked, prioritized, and managed throughout their lifecycle
Metadata Management	Tool used to facilitate the in-take, analysis, resolution, and communication of both functional and technical (including data lineage) metadata. This system will ensure that policies, processes, procedures, etc. approved through Data Governance are followed. The Metadata Management tool can be coupled with the Data Quality Management tool to provide data users with the real-time data quality for critical data elements to supplement the underlying metadata.

4. Issue Tracker

We developed and are using a SmartSheet log to track issues. It is available here. The log has been developed in the style of a “pain points” log, allowing us to evaluate and prioritize each identified issue. Using this log we document our assessment of each identified issue, including distinct callouts for the following:

- **Business Impact**: Written explanation of how the University of Alabama operations are sub-optimized due to the identified issue / pain point.
- **Root Cause**: What upstream business capabilities, functions, etc. are missing that are ultimately resulting in this pain point
- **Business Benefit**: Describe how the organization will strategically and/or operationally be improved if this pain point is resolved
- **Solution**: What are the recommended actions that can be taken to remediate the pain point?

Issues in this list are reviewed with an initial prioritization provided by Rainey Way to be presented to the Data Governance Council for confirmation of prioritization. Once prioritized, issues are to be driven through the standard Data Governance Review and Approval Process Flow.

At this time, issues which require the attention of the Data Governance Council and for which you do not know the appropriate Data Executor and/or Data Steward should be submitted via email to x@ua.edu. If you know the Data Executor and/or Data Steward, then you should submit the identified issues directly to them. The Data Executor and/or Data steward will follow the proper procedures to ensure that decisions are made, including escalation to the Data Governance Council as appropriate.

In the future, we will assess alternatives to this “office documents” based solution. The most common solutions are to combine the use of a ticketing solution, like what is used in help-desk applications, for general issues with the use of a Metadata Management repository for issues directly affecting a governed terms and data.

5. Requirement Backlog

At this time, requirements which require the attention of the Data Governance Council and for which you do not know the appropriate Data Executor and/or Data Steward should be submitted via email to x@ua.edu. If you know the Data Executor and/or Data Steward, then you should submit the identified requirements directly to them. The Data Executor and/or Data steward will follow the proper procedures to ensure that requirements are properly evaluated, prioritized, approved, and implemented. Data Executors have the responsibility to escalate to the Data Governance Council any requirements that have the potential to have cross-functional impacts.

In the future, we will assess alternatives to this “office documents” based solution, such as using Jira. Additionally, we may also evaluate the use of a ticketing solution like what is used in help-desk applications for submittal of requirements. Similarly to the issues log if a term / data is already documented and the requirement can be expressed as a change to the governed term / data, then the Metadata Management solution may also serve the need.

6. Metadata Management

Currently, we drafted a Business Glossary to track terms, definitions, standards, and other key metadata values. It is available here. The Business Glossary has been developed as initial solution to allow us to gain experience with the type of functional metadata that is valuable to collect to advance our goal of data-informed decision-making. The Business Glossary has 18 metadata fields as listed below. The Business Glossary is currently set-up to document Terms, Data Domains, and Data Domain Attributes. Those which have a “YES” in the required column are the fields which are minimally required to add a new record.

Glossary Column	Required	Glossary Column	Required
Asset Name	**YES**	Data Consumers	no
Business Asset Type	**YES**	Valid Values List	no
Synonym(s)	no	Valid Values Rules	no
Business Description / Definition	**YES**	Valid Use Cases	no
Data Domain	no	Modify After Create	no
Attribute Classification	no	Relevant Procedures	no
Data Executor	**YES**	Verification Notes	no
Data Steward	**YES**	Regulatory requirements	no
Data Custodian	no	Business Notes	no

At this time, the Business Glossary is being piloted and managed in preparation for evaluating, selecting, and implementing a more robust solution.

When the future Business Glossary is implemented, the responsibility for maintaining the details will be principally delegated to the Data Executors and Data Stewards for each relevant domain. The solution will be web/internet-accessible and allow appropriate members of the University of Alabama community to readily access the content, as well as to propose changes.

XI. Appendices

1. Metrics & KPIs

Metrics are created to assist in the identification of key events, thresholds or trends which can be used to make informed decisions. A metric becomes a Key Performance Indicator (KPI) when it provides a clear quantifiable target for individuals and teams to target to gauge progress and/or when it provides pertinent insights to a user to make better decisions.

Template to document metrics

Each Metric that is defined should minimally have the following information documented.

Metric Attribute	Metric Attribute Description
Metric Name	A name that has clear allusion to the business purpose / intent for the Metric
Metric Description	An overview of the business purpose / intent of the Metric (e.g., what is being measured, why is it being measured, how to utilize the results of the measurement)
Executor	Identify the individual (or team) that is accountable for the definition and use of this Metric
Metric Calculation	Describe how the Metric is calculated Be sure to indicate if the Metric calculation only needs to be real-time, or if there needs to be trending. The calculation should be in both business and technical terms
Metric Thresholds	Define the ranges which establish when there is an issue, a possible issue, things are good, above average, etc.
Audience	Who is the intended audience of this Metric
Location	Detail where this Metric is available (e.g., email, dashboard, etc.)
Access	Detail if there are restrictions with respect to who can access this Metric
Reporting Frequency	What is the cadence which the details of this Metric should be refreshed
Drill-down	Detail out if the Metric should allow for slicing and dicing drill-down capabilities

Metric Attribute	Metric Attribute Description
Filter	Detail out if the Metric should allow for filtering of results, and if so, by which categories
Origin Date	Provide the date when this Metric was originally implemented
Date Approved	Provide the latest date when this Metric was re-evaluated and approved.
Periodic Review Schedule	Detail out the interval in which this metric should be re-evaluated. The re-evaluation may include eliminating the Metric, updating calculations, modifying where it is displayed, modifying thresholds, etc.
Notes	Provide any additional details relevant to this Metric that were not outlined above.

Example Data Governance Metrics

Data Governance metrics are used to demonstrate the overall change within the organization resulting from initiating a Data Governance Practice. These changes may relate to people and their behaviors, the availability and quality of documentation, the efficiency and effectiveness of data governance processes, etc. This list provides a starting point for considering what Metrics are right for an organization.

Metric Category	Status Metrics	Available in Metadata Mgmt Tool(s)?
Data standards definition	• Count / Percent of in-scope data domains and data attributes in-scope • Count / Percent of data elements / attributes / fields data standards defined, documented, and communicated	Yes, you can create search to bring back objects without data quality rules
Governance artifacts	• Count of data governance artifacts (e.g., polices, metrics, roles, etc.) and their current development status (e.g., proposes, review, approved, retired)	Yes, you can get a breakdown of the number of each object type and the breakdown within that object type by status or type.
SLA's utilization	• Count / Percent of in-scope data governance processes with SLA's defined and implemented • Count / Percent of defined SLA's which are actively being monitored	
Organization Readiness	• Measurement of the organization's awareness as measured by the availability of training/education, delivery of education, training quiz results, etc..	No
Organization Adoption	• Count / Percent of defined data governance artifacts have demonstrated use within the organization (e.g., defined data governance roles filled by	Yes, you can see the number of roles assigned, which objects don't have roles, etc.

Metric Category	Status Metrics	Available in Metadata Mgmt Tool(s)?
	employees, policies have demonstrated enforcement, etc.)	
Resource Utilization	• Count / Percent of the resources that are aligned towards data management tasks (data governance, data quality, metadata management, MDM, etc.)	No
Return On Investment	• Ratio of effort / cost to implement changes relative to the overall improvement of business function as measured by value of increased top line, decreased bottom line, operational improvements, risk avoidance, etc..	No
Adherence to regulatory / compliance requirements	• Count / Percent of issues which have been identified during a particular time period or trended over multiple time periods	Yes, Can number track change requests, time to close change requests, etc.
Project Execution	• Time delays on data-centric project associated with not having the right People, Process, Data or Technology	No

Example Data Stewardship Metrics

Data Stewardship Metrics are used to demonstrate the improvement in the execution of the data maintenance processes from create through issue resolution. This list provides a starting point for considering what Metrics are right for an organization.

Metric Category	Status Metrics	Available in Metadata Mgmt Tool(s)?
Process cycle time per time period	Measure the end-to-end workflow (e.g., Data Governance Artifact CRUD, Master Data CRUD) to understand the performance of the workflow and optimizing process, where possible, to meet business requirements.	No
Outcomes per time period	Number/Percent of requests (new/update) that are approved, rejected, in progress, etc. during a particular time period or trended over multiple time periods	Yes, can track the number of change requests raised on objects within the tool and the time to close them.
Process adherence	Number/Percent % of requests which come in via the standard or escalated workflow during a particular time period or trended over multiple time periods	Partially, would need to include any change requests raised outside the tools.

Metric Category	Status Metrics	Available in Metadata Mgmt Tool(s)?
Issue Resolution SLA	Number/ Percent of requests resulting in issues requiring remediation during a particular time period or trended over multiple time periods.	Partially, you can track time for change requests on objects within the tools.
Security Compliance	Improving clarity with respect to data access rights and ensuring security within each system supports those access rights accordingly	No

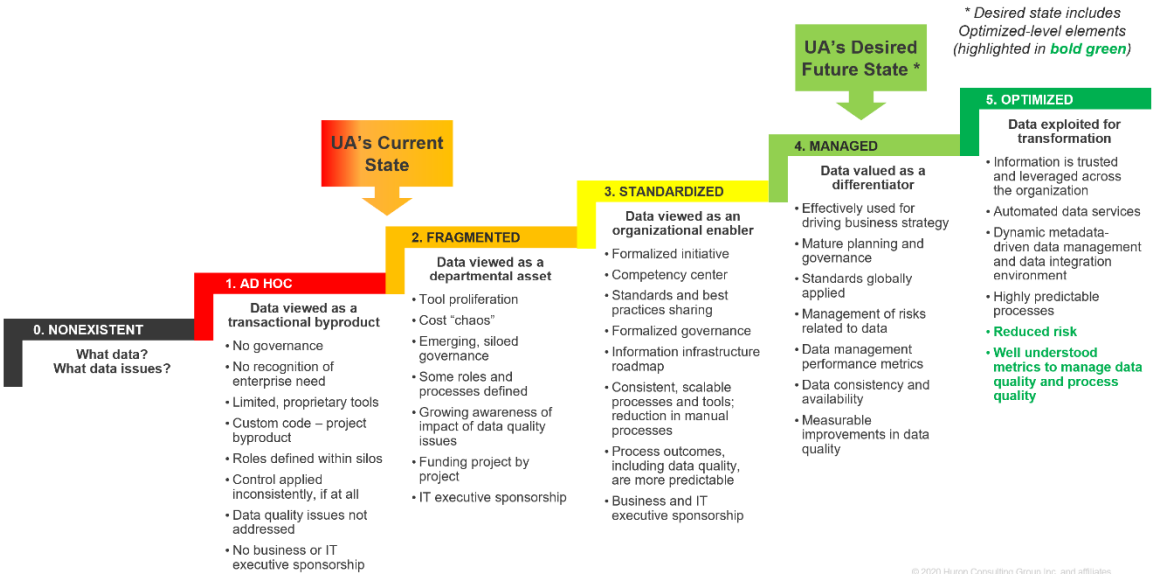
Example Data Quality Metrics

Data Quality Metrics are used to demonstrate the improvements in the quality of data resulting from initiating a Data Governance Practice. These changes track against the eight (8) key characteristics of data quality including (timeliness, accuracy, consistency, etc.). This list provides a starting point for considering what Metrics are right for an organization.

Metric Category	Status Metrics	Available in Metadata Mgmt tool(s)?
Data Standard Compliance	number/percent of records for a particular field which adhere to or deviate from defined data quality standards, during a particular time period or trended over multiple time periods; This can be further refined between “existing, updated and new” records	Yes, if paired with Data Quality tool
Data / system availability	Number/Percent of requests for access for data were fulfilled/unfilled during a particular time period or trend over multiple time periods.	Yes, if utilize ‘Data Marketplace’ features
Uniqueness of records	Number/percent of records for a domain which are unique, matched with others, pending matches, etc. within the domain during a particular time period or trended over multiple time periods	Yes

2. Data Governance Maturity Model

A Data Governance Maturity Model describes the evolution that companies most often go through with respect to adopting Data Governance capabilities. Through a thorough assessment of our Data Management capabilities and more specifically our Data Governance efforts, we assessed that the University of Alabama at the start of our effort was between a Level 1 & 2 Maturity. Currently, we are focusing on Finance, HR, Student and Space Management. For this are we are working towards improving the maturity of our Data Governance efforts to a Level 4. Over time, we will continue to include additional functional areas of the university and elevate them to a Level 4 as well. Periodically, we will reassess our overall maturity and our target maturity. Continuing to re-evaluate the delta between these two levels, we will us to understand and plan for the work to define, implement, and evolutionarily improve our Data Governance practices.



3. Data-Centric Guiding Principles

The following set of Guiding Principles set out guidelines which will help an organization make better decisions with respect to how it defines, manages, uses and secures its data.

Data is an Asset

Principle	Data is an asset that has intrinsic value and should be managed accordingly
Rationale	Data is a valuable resource and is important to make accurate and timely decisions. Thus, data, like other important assets, should be carefully managed. Issues of incomplete and/or conflicting data can be just as harmful to decision-making as having no data at all.
Implications	• Education is important to ensure the value of data is understood in the context of its impact on the organization's ability to drive towards goals and objectives. • Data has potential to impact the entire organization and therefore key decisions must include participation from across the organization • Proper authority must be given to those who lead and manage data (e.g., Data Gov. Council, Data Executors, Data Stewards, Data Custodians, etc.) • Accountability for data, through assignment of a Data Executor, must be done at a level that provides visibility and support across the organization. • Clear responsibility for data, through assignment of a Data Steward, is important to ensure data quality is maintained from time of entry 'til disposal • Quality of Data should be readily apparent to data consumers to provide confidence in data results. Data Quality rules for critical data elements

	should be clearly documented and results visible to users within accessible dashboards or the metadata repository • Proper documentation of data must be maintained including privacy classifications, terms, definitions, data standards, technical requirements, etc.

Metadata is an Asset

Principle	Metadata is an asset that provides critical context for data-informed decision-making and should be managed accordingly
Rationale	Metadata is a valuable resource and is important to providing users the context needed to leverage University data properly for decisions and analytics. Incomplete / missing metadata leads to more guesswork, rework, and incorrect reporting as users are unable to determine how institutional metrics are defined or sourced.
Implications	• Metadata capture and maintenance should be addressed as part of every data initiative / project at the University • Data Executors and Stewards should work closely with the Data Custodian(s) to implement approved additions or changes to existing technical metadata data within applicable systems so that there is alignment with business metadata. • Clear responsibility for metadata, through assignment of a Data Steward, is important to ensure data definitions and context is maintained. This includes creating, managing, and monitoring assigned metadata objects within chosen metadata repository / tool. • Executors and stewards must actively participate in data-related projects that impact their data domain to ensure that any new or existing metadata is accurately captured / updated. • Executors and stewards must be responsive to questions, concerns, and change requests raised on data within their domain.

Data Supports Strategy

Principle	Data is managed to support an organization's strategy
Rationale	Data and Infrastructure requirements are developed with the purpose of supporting the long-term strategy objectives. Due to the complexity created by the business requirements over time and the length of the roadmap, it is essential to keep the future vision in scope in making short-term decisions that have a long-term impact.
Implications	• Data Strategy and priorities must be derived from the organization-level strategy and priorities; when the latter changes, the former must be reconsidered • Improved data availability and quality, expedite the delivery of organization priorities • Common (and documented) terms, definitions, standards, etc. support understanding, adoption and execution of strategies • Common data (e.g., single source of truth) is required to support a common strategy

	• Common understanding of data available and permissible uses supports new and innovative capabilities within an organization and allow it to be more competitive

Data Follows Data Management Standards

Principle	Data should be managed using industry best in class standards
Rationale	Following consistent standards allows for streamlining of Data Management practices / supporting systems and reducing the effort to maintain and exchange of data.
Implications	• Data Management standards should be defined by functional and technology leaders • Data Management should be defined and managed across the core datasets to optimize for efficiency and effectiveness • Data Architecture should have a cross-organization focus with common definitions, standardized metadata, and data models • Data content, structure, and management standards should be defined to meet the needs of the whole organization • Data Governance should be empowered to make decisions on unique data requirements that affect multiple data domains • Data Management should utilize leading industry access control techniques

Data is of High Quality

Principle	Data Quality should be enforced across the organization
Rationale	Having high quality data available across the organization supports each area to work more efficiently and effectively, by not allocating time towards curating data; it further enables a data driven organization to support accuracy in building decisions
Implications	• Data Executor and Stewards should be assigned to preserve data integrity, reliability, timeliness, availability, and usability; Must be done at an organization level, and when appropriate, at lower levels • System of Record should be established for each type of data, and the System of Record is where data updates should be made using controls to validate and cleanse the data • Data Lineage should be captured and traceable to System of Record for any data which is accessed outside of the system of record • Data Quality rules should be enforced throughout a data record's lifecycle • Quality of Data should be readily apparent (e.g., through measures) to consumers to provide confidence in the results • Data Stewards should establish, and Data Executors approve, data standards for all critical data elements • Defined data standards should be converted into business rules and used to monitor critical data elements

Data is Shareable and accessible

Principle	Data is accessible for users to perform their duties
Rationale	Timely access to accurate data is essential to improving the quality, efficiency, and effectiveness of enterprise decision-making. It is less costly to maintain timely, accurate data in a single application, and then share it, than it is to maintain duplicative data in multiple applications. The speed of data collection, creation, transfer, and assimilation is driven by the ability of an organization to efficiently share this data to a wide variety of users across the organization allowing for timely response to information requests and service delivery.
Implications	• Education is important to ensure an organization understands the relationship between value of data, the need to share data, and how to make data accessible • Data sharing requires a common set of policies, procedures, and standards, which are periodically reviewed to ensure they support current organizational needs • Accessibility involves the ease with which users obtain information. • Access should be supported by common methods and tools • Data Architecture should support data sharing through standard data models, data designs and data repository. • Data Knowledge should be supported by a common metadata repository that documents the shared data assets and rules for accessing • Data Culture should encourage proper sharing (i.e., sharing of data must not compromise privacy / security requirements) of data across the organization

Data has an Executor and a Steward

Principle	Accountability and responsibility for data is given to Data Executors and Data Stewards, respectively
Rationale	As the degree of data sharing grows and units rely upon common information, it becomes essential that there is a clear voice that can drive decision making about data content and data context (e.g., metadata), and a clear driver for managing the data day-to-day (e.g., answering and approving change request and / or questions about the data).

Implications	• Ownership and Stewardship should be assigned to functional individuals who are empowered to drive decisions and adherence, and act accordingly • Executors and Stewards should be the authoritative Subject Matter Experts for their data • Executors and Stewards should be empowered to drive cross-organization data standards • Executors and Stewards should be empowered to drive adherence to data standards • Executors and Stewards should create quality measures to monitor data quality • Organization-level data assets must meet the broad needs of the organization • Organization-level assets must be controlled via a common access control policy • Executors and stewards must drive efforts to secure the data physically and logically • Executors and stewards must complete training related to data governance processes and metadata repository / tool(s) so they are aligned with the Data Governance goals, objectives, and initiatives laid out by the Data Governance Council.

Data has a Common Vocabulary

Principle	Data is defined consistently throughout the organization, and the definitions are understandable and available to all users
Rationale	Common vocabulary will facilitate communications across the organization and enable dialogue to be efficient and effective. Data affects all areas of the organization including development of applications, analytics, and reporting, and therefore having a common definition enables sharing and use of the data.
Implications	• Organization wide common vocabulary requires cross-organization participation • Common vocabulary and taxonomy should be used uniformly across the organization • Common vocabulary must be stored in a common, accessibility metadata repository • Common vocabulary forms the basis for establishing a common set of data standards • Review of existing definitions must be in place to prevent duplicates / ambiguities

Data is Secure

Principle	Data is protected from unauthorized use and disclosure.
Rationale	Organizations own and maintain broad range of data domains and sub-data domains, which must be created, maintained, disposed of, and consumed in accordance with laws, regulations, best practices, and internal standards.

	Without proper controls to secure data, there are additional organization risks with respect to inappropriate use and disclosure, especially as it relates to new consumer privacy laws, proprietary information, etc.
Implications	• Organizations should adopt data classification policies which drive the level of security / access controls which must be in place • Data Classification should be stored within a central repository to ensure awareness • Systems should align their security procedures to the data classification policy to ensure proper data visibility (e.g., view only, never see, etc.) • Security should be designed to support securing data down to an attribute level, not at a domain or application level • Policies should be developed to define when and how it is appropriate to share private and/or confidential data, including de-identification if appropriate • Policies should establish access on a need-to-know basis, which should enforce a regular review of security access to confirm that resources still need-to-know • Metadata repository / tool(s) must leverage available roles and permissions to limit access to sensitive metadata and control changes to business and technical metadata

4. Supporting Guiding Principles

The following principles are fundamental to data governance and stewardship activities, processes, and initiatives as they enable stakeholders to establish governance capabilities and resolve data-related conflicts:

- **Transparency:** Data Governance and Stewardship processes related data decisions and controls should be readily available and clear to all participants and auditors. Data Governance team members will be completely open and transparent when voicing individual opinions and recommendations and not promote hidden agendas that are not in the best interest of all stakeholders.
- **Auditability:** Data-related decisions, processes, and controls subject to Data Governance will support compliance-based and operational auditing requirements and be accompanied with the appropriate documentation.
- **Accountability:** The Data Governance program team is accountable for taking actions and addressing issues related to data quality management across Institution and IT.
- **Checks and Balances:** Data Governance will define accountabilities in a manner that introduces checks-and-balances between teams that create/collect information, those who manage it, those who use it, and those who introduce standards and compliance requirements.
- **Leverage:** Utilize existing data, project management governance policies, practices, processes, controls, etc., whenever possible.

- **Appropriate Controls**: Processes, reports and data sets must have the appropriate level of control based on regulatory, statutory, legal, and internal compliance requirements.
- **End-to-End Control:** Establishes a set of integrated processes, controls, metrics, and dashboards used to manage compliance against institution level controls and performance objectives.

5. Data Design Guidelines

Example – NOT APPROVED	
Name	Currency values should be stored to the 4th decimal place
Description	When designing database tables, any field which will store currency values must allot two additional decimal places beyond the cent, such that values can be stored to the fourth decimal place.
Rationale	While US currency is only available to the cent, when division calculations are performed on numbers natural rounding will occur which can potentially cause loss of currency details.
Example	Four hundred twenty-three dollars and sixteen cents should be stored as 423.1600
Scope	All systems which store currency data and are an input to the financial accounting systems.

6. Glossary of Key Terms

Term	Abbreviation	Definition
Master Data Management	MDM	Master Data Management (MDM) is the practice of creating a single master reference source for all critical Institution data (e.g., customer, product, financial reporting structures), leading to higher quality data and less redundancy in Institution processes.
Data Domain		Data Domains are high-level categories of enterprise data for the purpose of assigning accountability and responsibility for the data.
Data Attribute / Element		Data Attribute is a characteristic of data that sets it apart from other data (e.g., description, length, or type).
Common Data Matrix		Matrix that documents the ownership of data domains (and sub-domain) data.
Create, Review, Update, Delete	CRUD	Captures the four major stages of data management: Create, Review, Update, and Delete
Critical Data Element	CDE	A Critical Data Element (CDE) is a data attribute that is a required field in one or more the business unit's key business processes. For example, the billing address would be a CDE for the invoicing process.