EAB

Who Should Read

President's Council
Data Governance Lead
Unit Data Stewards

Defining Enterprise Data Terms for Campus

Strategy Frameworks, Definition Templates, and Design Principles to Help Build Your Enterprise Data Dictionary

PREPARE | DESIGN | DEFINE | DELIVER

IT Forum
Data Governance Center of Excellence

How to Use This Playbook

EAB Center of Excellence: Data Governance

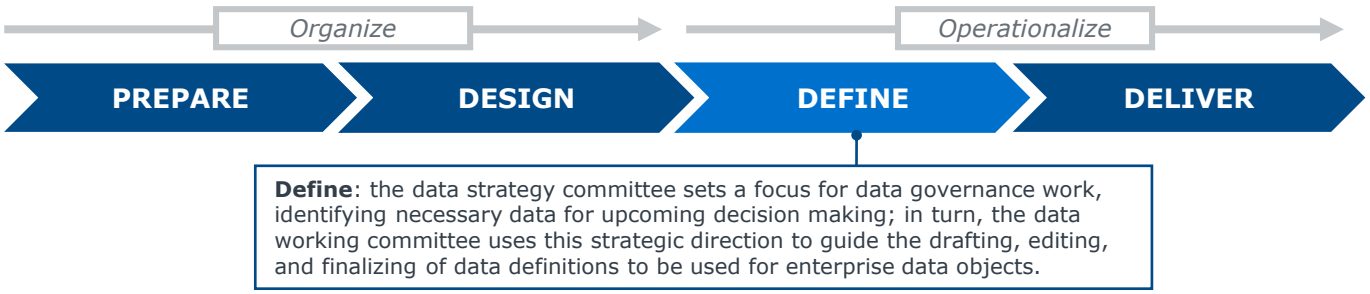
Plug-and-Play Resources to Guide Your Data Governance Initiative

While the IT Forum has traditionally focused on insights and best practices from the frontiers of IT management to address top-of-mind issues for CIOs and their direct reports, our new "Centers of Excellence" are built to provide end-to-end support on some of the perennial issues facing technology leaders in higher education.

In this Center of Excellence, leaders will find coverage of the processes involved in establishing an enterprise data governance capability. It includes basic concepts and tutorials to educate peers and stakeholders who may be unfamiliar with the process, as well as advanced practices proven effective among diverse higher education institutions, and the toolkits, exercises, and templates to replicate those practices on your campus.

Define Playbook

Data definition is performed during the **Operationalize** phase of data governance. Iterative, strategic oversight directs working group attention toward creating definitions for high-demand enterprise data. Working committees use standardized templates to capture definitions and appropriate metadata, and compile this information into user-friendly data dictionaries for campus decision makers to access.



Included in This Playbook

Data Dictionary: A Hub for Standard Data Definitions

The creation and maintenance of a central campus data dictionary is an ongoing process for the data governance teams. Hundreds of terms cannot be defined overnight, and so the data strategy committee must put in the work to prioritize data domains for the working group to focus on during the initial phases of the process.

With appropriate direction from the data strategy committee, the data working committee can focus on identifying appropriate data sources, and then drafting, editing, and finalizing appropriate campus-wide definitions for terms.

By tackling enterprise data through prioritized strategic issues, campuses can build momentum by moving some domains into use more quickly. Once elements of enterprise data are accurately defined and made available to campus users, the institution can begin to build a culture of enterprise data use and build out capabilities for improving data quality while adding new objects to the dictionary.

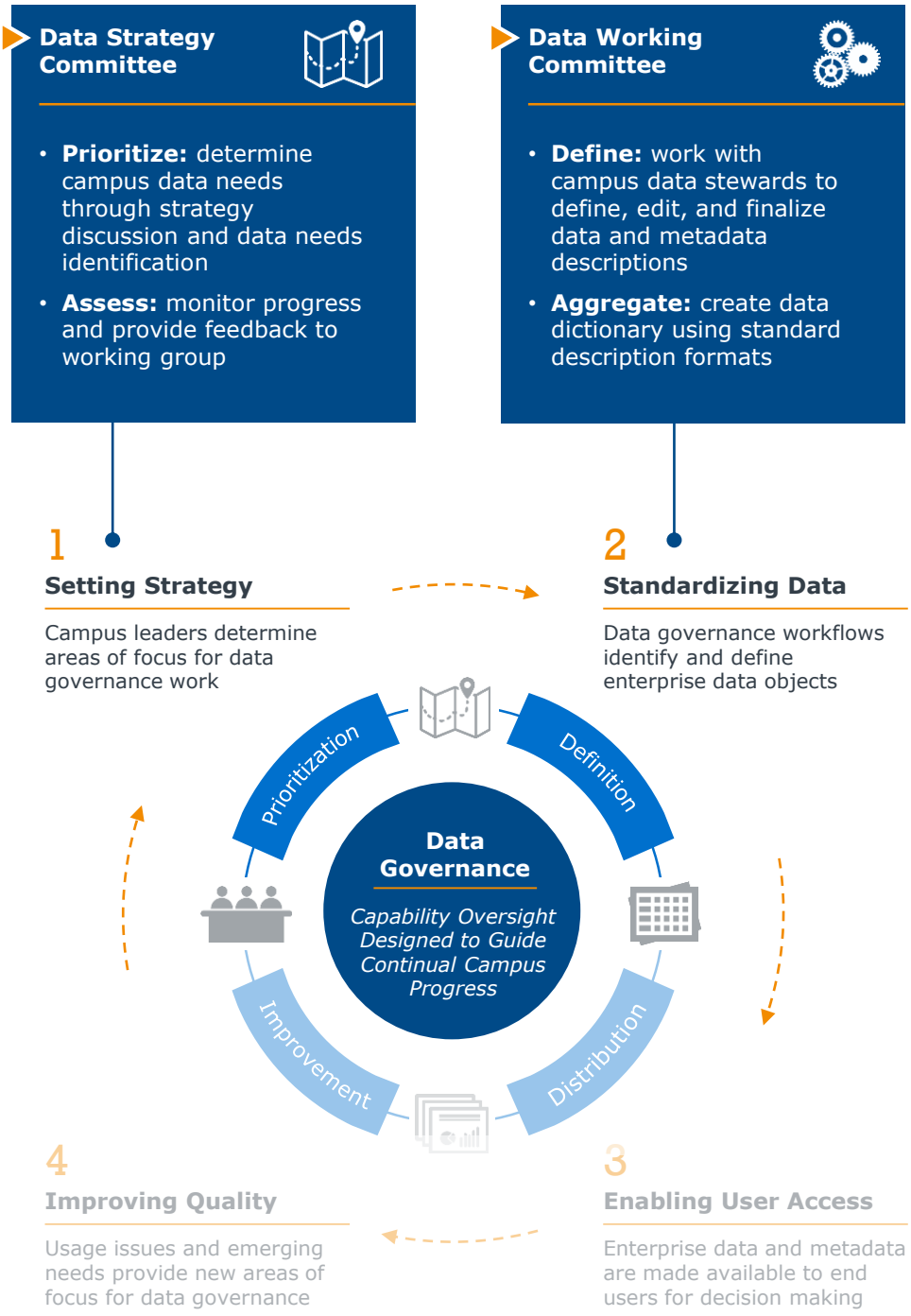
Focusing on High Use Data First Creates Quick Wins, Builds Momentum for Expansion and Improvement

Data Strategy Committee

- **Prioritize:** determine campus data needs through strategy discussion and data needs identification
- **Assess:** monitor progress and provide feedback to working group

Data Working Committee

- **Define:** work with campus data stewards to define, edit, and finalize data and metadata descriptions
- **Aggregate:** create data dictionary using standard description formats



Source: EAB interviews and analysis.

Fast-Tracking Progress in Data Dictionary Creation

When embarking on the process of building out an enterprise data dictionary, leaders should assess campus strategic priorities and tackle high-use data as a first step. As the initiative progresses, leveraging the same processes to expand and improve the available data enables campuses to maintain the same workflows over time, embedding the capability into a continuous improvement framework.

Creating data dictionaries that support widespread use and understanding of enterprise data assets means providing thorough definitions and accessible, jargon-free metadata in a user-friendly and easily accessible format.

The rest of this *Define Playbook* contains resources gathered from leading higher education institutions to help guide your data dictionary creation process across the following three domains:

- Strategic Focus Areas for Data Definition;
- Data Definition Processes and Standards;
- Data Dictionary Design Principles.

Implementation Considerations to Focus Efforts, Standardize Definitions, and Enhance Usability

1 How Should We Prioritize Our Data Governance Work?

Best Practice Solutions:

- Standardize definitions for high-use terms early during governance efforts
- Focus definition work around strategic analyses for iterative expansion

Strategic Focus Areas for Data Definition

Turn to **p. 5**.

2 How Should We Standardize Data Definitions and Metadata?

Best Practice Solutions:

- Codify decisions rights and provide opt-outs to speed time-to-consensus
- Follow standard templates for data definition fields across all domains

Data Definition Processes and Standards

Turn to **p. 12**.

3 How Can We Make the Data Dictionary Accessible to All of Campus?

Best Practice Solutions:

- Leverage user-centric design principles to create one central repository
- Provide consistent and intelligible metadata for all enterprise objects

Data Dictionary Design Principles

Turn to **p. 17**.

Source: EAB interviews and analysis.

Strategic Focus Areas For Data Definition

Tools and Examples to Narrow the Scope of Data Definition Work

SECTION 1

Narrowing Down Data Areas of Focus

Align Data Definition Work to Priority Areas of Analysis for Campus

Thousands of data points exist across the institution, and standardizing them all will take data governance groups a long time to implement. To help narrow the focus for working groups, data governance strategy groups should select strategic focus areas for data analysis, to provide working groups with data areas for their attention.

Tips to Help Select Strategic Focus Areas

Consider what data users are interacting with most often

- *What areas will benefit the most from having standardized definitions of data?*

Focus on the end goal of institutional data standardization

- *What data will help move forward a strategic goal if standardized?*

Think about how data is being used on campus

- *What data could be used for high-impact analyses to promote a strategic initiative?*

Student Success as a Sample Strategic Focus Area

For many institutions, student success initiatives are a key end goal of institutional data standardization. Leaders recognize that clean, enterprise-level data is crucial to guide appropriate interventions and support students in their education pathways.

Potential Data Definitions to Be Standardized:

- Student enrollment-related terms (p. 7)
- Course registration-related terms (p. 8)
- Faculty-related terms (p. 9)
- Staff-related terms (p. 10)

Potential High Impact Analyses:

- Identify high drop-fail-withdrawal courses
- Respond to section capacity red flags
- Map term-to-term retention
- Identify the impact of application timing
- Measure advising process completion
- Isolate late major declaration
- Encourage full credit load
- Identify potential credit over-accumulation
- Track term-to-term GPA
- **Enable standardized course attendance tracking**

Example on **page 11**

Source: EAB interviews and analysis.

Terms Commonly Used for Analysis

Student Enrollment-Related Terms Defined by the University of Notre Dame

At the University of Notre Dame, data governance groups focused on defining a selection of common-use terms to kick off their enterprise data efforts, looking first to build out common definitions for a selection of student enrollment, course registration, faculty, and staff terms.

Student-Enrollment-Related Terms

1. Academic Degree
2. Academic Term
3. Academic Year
4. Active Student
5. Campus Residence Status
6. College
7. Degree Seeking Status
8. Student Classification
9. Student Continuation Type
10. Student Level
11. Student Time Status
12. US Citizenship Status
13. Credit Hours, Total
14. Gender
15. Grade Point Average (GPA), Cumulative
16. Grade Point Average (GPA), Level
17. Grade Point Average (GPA), Term
18. Legacy Status
19. Minority Status
20. Minority Status, Historically Underrepresented
21. Name, First
22. Name, Full
23. Name, Middle
24. Name, Last
25. National Collegiate Athletic Association (NCAA) Athlete Status
26. Place of Origin
27. Race/Ethnicity
28. Religion
29. Semester
30. Academic Division
31. Academic Unit
32. Campus
33. Credit Hours, Grade Point Average (GPA)
34. Deans List Status
35. Field of Study
36. Field of Study Type
37. Permanent Residence
38. Residence Hall
39. Reserve Officer Training Corps (ROTC) Participation
40. Reserve Officer Training Corps (ROTC) Program Type
41. Student Classification Detail
42. Student Entering Cohort Term
43. Student Entering Cohort Year
44. Academic Standing
45. Academic Term Type
46. Age
47. Age Banding, Student
48. Credit-Bearing Student
49. Enrolled Semester Count
50. Enrolled Semester Count by Student Level
51. Enrolled Semester Count by Academic Degree
52. Enrolled Summer Session Count
53. Enrolled Summer Session Count by Student Level
54. Enrolled Summer Session Count by Academic Degree
55. Externally Reportable Enrolled Student
56. Grade Point Average (GPA) Banding
57. Growth, Simple
58. Growth, Change in Percentage
59. Non-Returning Student
60. Student Attrition Type

Source: University of Notre Dame; EAB interviews and analysis.

Terms Commonly Used for Analysis

Course Registration-Related Terms Defined by the University of Notre Dame

1. Active Course
2. Course ID
3. Course Number
4. Course Subject Code
5. Course Title
6. Credit Hour
7. Course Section Academic Term
8. Course Section Credit Hours
9. Course Section Number
10. Course Section Title
11. Credit Hours Generated
12. Course Academic Division
13. Course Academic Unit
14. Course College
15. Course Section
16. Class
17. Course Section Assigned Instructor Percent Responsibility
18. Course Section Primary Instructor
19. Course Section Contact Minutes
20. Class Contact Minutes
21. Course Section Meeting Time
22. Course Section Registration
23. Course Section Registration Credit Hours
24. University Core Requirement
25. Class Enrollment
26. Class Enrollment Banding Registrar
27. Class Enrollment Banding US News and World Report (USNWR)
28. Class For-Credit Enrollment
29. Class Seats Offered
30. Class Seats Offered Banding Registrar
31. Class Seats Offered Banding US News and World Report (USNWR)
35. Course Section Enrollment
36. Course Section Enrollment Percentage College
37. Course Section For-Credit Enrollment
38. Course Section Seats Offered
39. Final Grade
40. Mid-Term Grade
41. Class Average Grade
42. Class Session Meeting Pattern
43. Course Average Grade
44. Class Prime Time Status
45. Course Category
46. Course Category Banding
47. Course Number Level
48. Satisfactory Academic Progress
49. Sport
50. Course Section Part of Term
51. Gradable Course Status
52. Repeatable Course Status
53. Variable Credit Status
54. Course Section Cross-List Group Code
55. Course Section Cross-List Type
56. Course Section Instructor Indicator
57. Registrar Classroom Needed Indicator
58. Course Section City
59. Course Section Country
60. Course Section Program Location
61. Course Section Region
62. Non-Variable Credit Hours
63. Variable Credit Hours
64. Class Enrollment Percent
65. Class Enrollment Percent Banding
66. Course Grade Mode
67. Course Section Grade Mode
68. Registration Course Grade Mode
69. Course Reference Number
70. Course Section End Date
71. Course Section End Time
72. Course Section Start Date
73. Course Section Start Time
74. Registered Student
75. Student Degree College
76. Undergraduate Contact Minutes Percentage
77. Zero Enrollment Class
78. Zero Enrollment Course Section

Source: University of Notre Dame; EAB interviews and analysis.

Terms Commonly Used for Analysis

Faculty-Related Terms Defined by the University of Notre Dame

1. Active Faculty
2. Adjusted Service Date
3. Calendar Month
4. Calendar Month Abbreviation
5. Calendar Month Number
6. Calendar Quarter
7. Calendar Year
8. Calendar Year Month
9. E-mail Address
10. E-mail Address Type
11. E-mail Address Preferred
12. Emeritus Faculty
13. Employee Original Hire Date
14. Employee Separation Category
15. Employee Separation Date
16. Employee Separation Reason
17. Faculty Appointment
18. Faculty Appointment Academic Term
19. Faculty Appointment Begin Date
20. Faculty Appointment End Date
21. Faculty Appointment Reason
22. Faculty Cohort
23. Faculty Cohort Type
24. Faculty Cohort Year
25. Years of Service
26. Active Dean
27. Active Department Chair
28. Active Fellow
29. Appointment Approving Academic Unit
30. Appointment Granting Academic Unit
31. Census Unit
32. Dean Type
33. Department Chair Type
34. Externally Reportable Faculty Rank
35. Faculty Category
36. Faculty Rank
37. Faculty Rank Modifier
38. Faculty Status
39. Faculty Terminal Year Indicator
40. Home Unit
41. Primary Faculty Appointment Indicator
42. Secondary Faculty Appointment Type
43. Tenure Effective Date
44. Tenure Granting Academic Unit
45. Tenure Home Academic Unit
46. Tenure Status
47. Tenure Track Begin Date
48. Years in Faculty Category
49. Years in Faculty Category Banding
50. Years in Rank
51. Years in Rank Banding
52. Country of Birth
53. Country of Citizenship
54. Deceased Status
55. Marital Status
56. Reserve Officer Training Corps (ROTC) Faculty
57. Terminal Degree Status
58. Academic Degree Level
59. Benefit Type
60. Cash Earnings Type
61. Job Affiliation Type
62. Job Salary
63. Job Type
64. Named Title
65. Position Sponsorship Status
66. Recognized Benefaction Sponsored Faculty
67. Total Benefits
68. Total Cash Earnings
69. Total Compensation
70. Total Faculty Job Salary
71. Total Salary
72. Job Salary Funding Percentage
73. Job Salary Funding Source
74. Job Salary Change
75. Job Salary Change Percent
76. Job Salary Labor Distribution
77. Salary Change Percent Banding

Source: University of Notre Dame; EAB interviews and analysis.

Terms Commonly Used for Analysis

Staff-Related Terms Defined by the University of Notre Dame

1. Active Staff
2. Adjusted Service Date
3. Equal Employment Opportunity (EEO) Skill Code
4. Equal Employment Opportunity (EEO) Skill Description
5. Exempt Indicator Code
6. Exempt Indicator Description
7. Job Suffix
8. Reported Race Ethnicity Code
9. Birthdate
10. Gender Code
11. Overall Performance Rating
12. Performance Review Year
13. Employee Current Hire Date
14. Separation Age
15. Employee
16. Calendar Quarter End
17. Calendar Quarter Start
18. Calendar Year End
19. Calendar Year Start
20. Career Level
21. Career Stream
22. Job Family
23. Job Sub-Family
24. Month End
25. Month Start
26. Position
27. Position Number
28. Position Title
29. Staff New Hire
30. Staff Promotion
31. Staff Separation
32. Staff Transfer
33. Working Title
34. Staff Promotion Date
35. Staff Transfer Date
36. Job Number
37. Job Org Code
38. Job Salary Annualized
39. US Census Year
40. Years of Service Banding
41. Performance Review Manager Name
42. Overall Goals Performance Rating
43. Overall Values Performance Rating
44. Full Time/Part Time Indicator
45. Labor Distribution Fund
46. Labor Distribution Org
47. Age Banding, Retirement
48. Core Job Department
49. Department Code
50. Age
51. Age Banding, Adult
52. Benefit Type
53. Calendar Month Number
54. Calendar Year
55. Calendar Year Month
56. Calendar Year Quarter
57. Employee Separation Category
58. Employee Separation Date
59. Employee Separation Reason
60. Fiscal Quarter
61. Fiscal Year
62. Gender
63. Marital Status Description
64. Middle Initial
65. Minority Category (Minority Status)
66. Name, First
67. Name, Full
68. Name, Last
69. Race Ethnicity
70. Religion Description
71. Years of Service

Source: University of Notre Dame; EAB interviews and analysis.

Sample Priority Analysis for Higher Education

Enable Standardized Course Attendance Tracking

Student success analyses are a key component of most higher education analytics efforts, but accurate analysis relies on clean, consistent data. Using specific, desirable student success metrics to guide data definition work can help institutions move faster towards improved outcomes, and therefore generate buy in for expanding and supporting the data governance initiative. The example below explores the data definition work that would be required to enable standardized course attendance tracking.

Summary of Analysis

Past analyses have often identified that course attendance is highly predictive of critical student success metrics like GPA, retention, and graduation; students that go to class tend to do better, across academic preparation levels. With the correct analysis, institutions can gather the appropriate data and be able to implement a best practice around tracking absences for students in need of advising. This requires standardized data definitions in order to make the analysis accurate and a sustainable resource moving forward.

Requirements for Analysis

Sub-metrics

- Number of courses not attended
- Average missed courses
- Number and percentage of faculty that record attendance

Measured by

- College
- Department
- Major
- Course
- Section

Data Terms to Define and Standardize

- Active Course
- Course ID
- Course Number
- Course Subject Code
- Course Title
- Course Section Number
- Course Section Title
- Course Academic Division
- Course Academic Unit
- Course College
- Course Section
- Class
- Course Section Primary Instructor
- Course Section Meeting Time
- Course Section Registration
- Class Enrollment
- Class Seats Offered
- Course Section Enrollment
- Course Section Seats Offered
- Class Session Meeting Pattern
- Course Category
- Course Section Part of Term
- Course Section Cross-List Type
- Class Enrollment Percent
- Course Reference Number
- Course Section End Date
- Course Section End Time
- Course Section Start Date
- Course Section Start Time
- Registered Student

For more examples, see the IT Forum's ***Priority Data Analyses to Promote Student Success***

Source: EAB interviews and analysis.

Data Definition Processes and Standards

Frameworks and Templates to Speed Definition Standardization

SECTION 2

Lightweight Definition Decision Framework

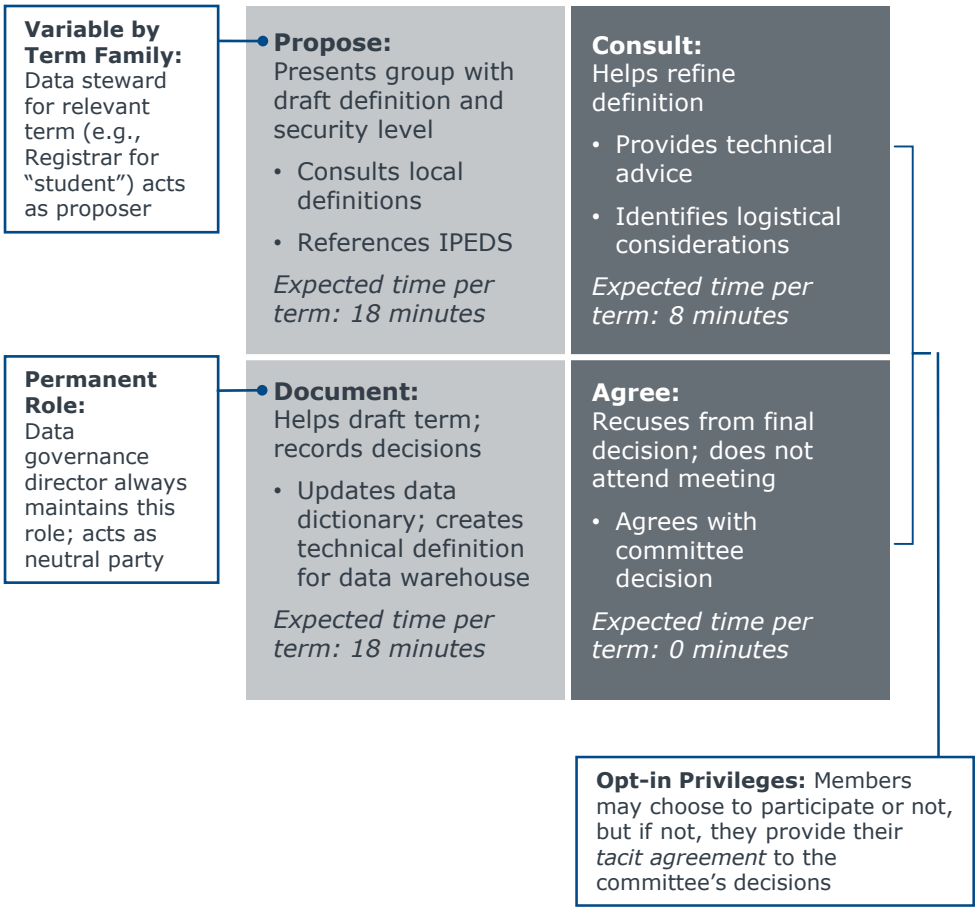
Committee Members Choose How Involved (or Not) to Be

While most institutions expect full attendance at every data governance meeting, the University of Notre Dame takes a different approach. During phases of data definition, committee members choose whether or not to be actively involved in defining each term. Attendance is non-negotiable only for people who are explicitly responsible for terms discussed (propose role) and data governance leadership (document role). Attendance only becomes mandatory for any committee member who opts in. Members who opt out give their tacit agreement to the committee's decisions.

Notre Dame leveraged a RACI matrix (stylized below) to divide members' responsibilities into four roles: propose, document, consult, and agree. While certain roles are codified (specific stewards must propose some term definitions), all remaining committee members self-select their roles through a survey, based on the terms presented for discussion in the next meeting.

Like flipped classrooms, this model benefits from work being done before meetings. The proposers draft definitions ahead of time with other subject matter expert input and coordination with the Data Governance Director. The convened group then discusses, revises, and finalizes the definitions.

Four Banded Roles Determine Participation Level[1]



1) EAB composite inspired by the University of Notre Dame's RACI matrix for data governance.

Source: Notre Dame RACI matrix; EAB interviews and analysis.

Lightweight Definition Decision Framework

Committee Members Choose How Involved (or Not) to Be

Matching the Right Stewards to the Right Terms

The bounded decision roles for data governance meetings at the University of Notre Dame help the committee achieve goals of not wasting personnel time while also not excluding critical perspectives. The example self-nomination grid below shows how committee members may choose their roles for each term, optimizing their engagement in meetings by only opting in for terms in which they have an interest.

Benefits of this process include personnel time savings (members who opt out need not attend all meetings) as well as efficiency (terms only need to be defined once since everyone signs off on meeting decisions—even those not present).

Opt-Out Decisions as Interesting as Opt-In Decisions

Legend:

P=Propose D=Document C=Consult A=Agree

Term	Data Gov. Director	Registrar	Strategic Planning and IR	HR	Student Affairs	Athletics
Credit-Bearing Student	D	P	C	-	A	-
Full-Time/ Part-Time Indicator	D	-	-	P	-	-
Birthdate	P/D	C	C	C	-	A
Academic Standing	D	P	A	C	A	C

Generic Terms Owned: Data governance director owns proposal for terms with no obvious owner, like "Birthdate."

Major Time Savings: Only HR and data governance director sign up for "Full-Time/ Part-Time Indicator;" no other committee members need to meet to define term.

Counterintuitive Results: Student affairs only desires input in 10% of student enrollment-related terms.

Errors Avoided: Athletics desires input into "Academic Standing;" group avoids need to redefine term later.

Source: EAB interviews and analysis.

Key Data Definition Elements

Keeping Everyone on the Same Page

The University of Nevada-Las Vegas's data dictionary hits all the elements of a skeptic-proof resource that users can understand and trust. The metadata is easily accessible and comprehensible. The data dictionary is web-based, and it can be found on the Office of Decision Support's website. Users can find it through a search engine and can bookmark the website.

The dictionary does not simply include the term and the definition but also includes further interpretation and usage notes, the kind of values that are acceptable for the term, the mechanism for pulling the term (in technical and nontechnical language), and the review status of the term.

The University of Nevada, Las Vegas' Data Definition Template

Example Term: Degree Level (Student)

Field	Description
Term	Degree Level (Student): The educational level of the degree a student is pursuing.
Interpretation/ Usage Notes	Degree Level (Student) is identified by a numeric two digit code representing the educational level of the degree(s) a student is pursuing. For example, all bachelor degrees are identified as 13, graduate certificates as 14, master degrees as 17, educational specialists as 18, and doctoral and professional degrees as 21. If no degree is associated with an academic plan, the field is blank.
Potential Values	The EDUCATION_LVL is defined in the PSXLATITEM table. The following are currently used values. If no degree is associated with an academic plan, the field is blank. 13 - Bachelor Degree 14 - Post Bachelors 17 - Master's Degree 18 - Post Master's 21 - Doctorate Degree
Source Description	*Provides source system information in SQL and with textual interpretation.*
Related Terms	Degree (Student); Degree Name (Student); Is Student Doctoral
Current Status	Under Steward Review

Source: University of Nevada, Las Vegas Data Dictionary; EAB interviews and analysis.

Data Definition Template

Use this Template to Define Data Terms at Your Institution

Field	Description
Term	
Interpretation/ Usage Notes	
Potential Values	
Source Description	
Related Terms	
Current Status	

Source: EAB interviews and analysis.

Data Dictionary Design Principles

Guidance to Promote Accessibility and Usability

SECTION 3

User-Centric Design Principles

Promote Accessibility and Clarity for All Users on Campus

Data dictionaries allow users to access, understand, and utilize the context surrounding institutional data, and are a crucial enabler of data-driven decision making. Data dictionaries that are designed with the user in mind will help to improve data governance efforts by making standardization and management of data more impactful across the institution. As the primary foundation for decision-making, it is imperative that data dictionaries follow "user friendly" design principles.

Six Guiding Principles to Create a "User Friendly" Data Dictionary

1

Aggregate Definitions in a Single Location

A one-stop online data dictionary for all of campus data helps users access definitions quickly, and makes it easier for governance teams to monitor the resource appropriately for upkeep.

2

Organize Definitions in Relevant Ways

Thoughtfully grouping like-terms helps users find the appropriate definition, as well as promoting other relevant definitions. Using tables organizes information into digestible chunks.

3

Grant Universal Access to Metadata

Openly available and easily-accessible metadata helps build transparency around data sources and meaning on campus, and provides essential context for those using data to make decisions.

4

Use Clear and Common Language

Jargon-free language that focuses on concise and recognizable words to explain terms promotes usage across all levels of technical ability. Language that is too technical frustrates general users.

5

Include an Effective Search Feature

Search functions that offer term recognition and suggestion completion help users find the appropriate terms for their use-case, as well as introducing new and related terms that may be missed in direct searching.

6

Keep Data Dictionary Definitions Up to Date

Returning to data definitions with regular check-ups to ensure that descriptions and metadata are current and fit-for-purpose provides ongoing support for those analyzing data, and builds trust in the governance team.

Source: EAB interviews and analysis.

Pop-Up Metadata

Tying the Dictionary to Reporting Provides Instant and Obvious Transparency

Tying definitions and metadata to reports generated ensures that the appropriate context of enterprise definitions is available during analysis and decision-making processes. To ensure that users have access to appropriate information, Oregon State University makes detailed metadata within every report accessible through clicking on columns and fields.

To do this, IT staff built a simple HTML- and jQuery-based function in the University's reporting web application. When users hover over the report, they are prompted to "click to view metadata." Clicking on a column brings up instant information about what that field means (rather than directing users elsewhere to find the data dictionary). In addition, users hovering over a calculated field can see the calculation that populated that field.

This simple add-on helps campus members better understand and use data for decision making, and turns an established data dictionary into a dynamic reference tool during analysis.

Oregon State University

Scrolling Over Data Fields Prompts Option for Metadata Display

Mouse-over prompts user with "Click to view metadata"

- Function built in a web application using HTML and jQuery
- Report data traceable back to source forms, easing report validation and increasing trust in data

Further Insight Available

Hovering over calculated fields will show the user the actual calculation (e.g., if the Six-Year Cohort Graduation Rate is 63.15 percent, a mouse-over will show the figures that created that number).

Source: Oregon State University Metadata view; EAB interviews and analysis.

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IT Forum

Project Director

Danielle Yardy, PhD

Contributing Consultants

Maggie Dwyer

Managing Director

Scott Winslow

Washington DC | Richmond | Birmingham | Minneapolis

202-747-1000 | eab.com