

Data Management

Contents

Foreword.....	1
Introduction.....	2
Scope	2
Overview	3
Terminology.....	4
References.....	5
1.0 Principle: Define the Enterprise Relevant Scope of Data Management	7
2.0 Principle: Plan for, Acquire, and Provide Data Responsive to Customer Requirements..	11
Introduction.....	11
2.1 Enabler: Establish General Requirements for Data.....	12
2.2 Enabler: Develop Data Strategy and Data Concept of Operations.....	13
2.3 Enabler: Determine Specific Data Requirements	14
2.3.1 Determine the Needs for Data	14
2.3.2 Identify the Users of the Data and Establish the Frequency of Data Delivery	17
2.3.3 Relate Data Requirements to the Functional Areas Responsible for Data Generation and Distribution	17
2.4 Enabler: Perform Risk Analysis	18
2.5 Enabler: Authenticate Data Requirements.....	20
2.6 Enabler: Contract for Data	20
3.0 Principle: Develop DM Processes to Fit the Context and Business Environment in Which They Will Be Performed.....	22
Introduction.....	22
3.1 Enabler: Determine the Complete Set of Requirements that the DM Solution Must Address	23
3.2 Enabler: Determine the Shape of the DM Solution.....	25
3.3 Enabler: Compare the Proposed, Best Solution to Existing and Planned Enterprise Capability (Infrastructure and Processes).....	28
3.4 Enabler: Make Needed Adjustments in Processes, Practices, Policy, Organizational Alignment, and Infrastructure.....	29
4.0 Principle: Identify Data Products and Views So Their Requirements and Attributes Can Be Controlled.....	31
Introduction.....	31
4.1 Enabler: Develop Consistent Methods for Describing Data.....	32
4.1.1 Ensure Data Interoperability Among Team Members	33
4.1.2 Apply Processes to Characterize Data and Data Products to Ensure Adequacy and Consistency	33

4.2	Enabler: Establish Relevant Attributes to Refer to and Define Data	34
4.3	Enabler: Assign Identifying Information to Distinguish Similar or Related Data Products from Each Other	36
5.0	Principle: Control Data, Data Products, Data Views, and Metadata Using Approved Change Control Processes.....	38
	Introduction.....	38
5.1	Enabler: Control the Integrity of Data, Data Elements, Data Structures, and Data Views.....	39
5.1.1	Establish a Change Control Process that Imposes the Appropriate Level of Review and Approval.....	40
5.1.2	Provide a Systematic Review of Proposed Changes within the Change Process...41	
5.1.3	Determine the Impact of Change to Include Associated Products, Data, Data Elements, Data Structures, and Data Views	42
5.1.4	Gain Approval or Disapproval of Changes to Data, Data Elements, Data Structures, and Data Views (Data Products) by a Designated Approval Authority	43
5.2	Enabler: Establish and Maintain a Status Accounting Process, Reporting Tool, and Mechanism.....	44
5.3	Enabler: Establish and Maintain an Internal Validation Mechanism.....	46
6.0	Principle: Establish and Maintain a Management Process for Intellectual Property, Proprietary Information, and Competition-Sensitive Data	48
	Introduction.....	48
6.1	Enabler: Establish and Maintain a Process for Data Access and Distribution.....	49
6.1.1	Define Access Requirements	50
6.1.2	Ensure Entitlement to Access and Use of Data Is Validated and Documented by the Proper Authority	51
6.2	Enabler: Establish and Maintain an Identification Process for IP, Proprietary Information, and Competition-Sensitive Data	52
6.2.1	Distinguish Contractually Deliverable Data	52
6.2.2	Establish and Maintain Identification Methods	52
6.2.3	Establish and Maintain Tracking Mechanisms for Identification of Data	53
6.2.4	Ensure Compliance with Marking Conventions and Requirements	53
6.3	Enabler: Establish and Maintain an Effective Data Control Process	54
6.3.1	Establish and Maintain Control Methods.....	54
6.3.2	Establish Mechanisms for Tracking and Determining Status of Data	54
7.0	Principle: Retain Data Commensurate with Value	55
	Introduction.....	55
7.1	Plan to Ensure Data Are Available When Later Needed	55
7.2	Maintain Data Assets and an Index of Enterprise Data Assets	57
7.3	Assess the Current and Potential Future Value of Enterprise Data Holdings	59
7.4	Dispose of Data.....	61

8.0 Principle: Continuously Improve Data Management62
 Introduction.....62
 8.1 Enabler: Recognize the Need to Continuously Improve the Quality of Data62
 8.2 Enabler: Establish and Maintain a Metric Process and Reporting Strategy63
 8.3 Enabler: Monitor the Quality of Data to Improve Data and Processes64
 8.4 Enabler: Improve Data Management Through a Systematic and Self-Diagnostic
 Process65
 8.5 Enabler: Establish the Necessary Tools and Infrastructure to Support the Process and
 Assess the Results.....66
 9.0 Principle: Effectively Integrate Data Management and Knowledge Management67
 Introduction.....67
 9.1 Enabler: Establish the Relationship Between Data Management and Knowledge
 Management67
 9.2 Enabler: Cooperate with Knowledge Management Where DM and KM Intersect as KM
 Methods Develop68
 9.2.1 Understand the State of KM in the Enterprise69
 9.2.2 Coordinate DM and KM Efforts.....69
 10.0 Application Notes.....70
 Annex A. Participants71
 Annex B. GEIA-859 Glossary73
 Annex C. Data Management Function Table77
 Annex D. Non-Commercial Practices for Data Management.....79

List of Figures

Figure 1. Data Management Principles3
 Figure 2-1. Contemporary Data Management Model.....11
 Figure 2-2. Principle 2 Enablers——12
 Figure 2-3. Data Environmental Assessment.....13
 Figure 2-4. Review Project Life Cycle to Identify Data Requirements and Determine the Needs
 for Data16
 Figure 2-5. Identify Users of the Data Products and Establish When Data Will Be Needed17
 Figure 2-6. Relate Data Requirements to the Functional Areas Responsible for Generating the
 Data.....18
 Figure 2-7. Example Risk Portrayal.....19
 Figure 3-1. DM Requirements22
 Figure 3-2. Process for Understanding Requirements23
 Figure 3-3. Process for Determining the Shape of the DM Solution26
 Figure 3-4. Process for Comparing Proposed Solution to Existing and Planned Enterprise
 Capability29

Figure 3-5. Process for Making Needed Adjustments in Processes, Practices, Policies, Enterprise, and Infrastructure30

Figure 4-1. Data Product Identification Enables the Control of Requirements and Attributes31

Figure 4-2. Process for Consistently Describing Data.....32

Figure 4-3. Develop a Process for Selecting Attributes35

Figure 4-4. Assign Identifying Information to Distinguish Among Similar Data Products.....36

Figure 5-1. Establishing Control39

Figure 5-2. Example Change Control Process.....41

Figure 5-3. Maintenance of Metadata for Project Use in a Status Accounting Database45

Figure 5-4. Validation of Status Accounting Data and Stored Data to Ensure Integrity46

Figure 6-1. Principle 6 Flow Diagram48

Figure 6-2. Process for Managing Data Access to Intellectual Property, Proprietary Information, and Competition-Sensitive Data50

Figure 6-3. Process for Identifying, Controlling, Tracking, and Protecting Intellectual Property, Proprietary Information, and Competition-Sensitive Data.....52

Figure 7-1. Planning Decision Tree for Data of Sustained Value.....55

Figure 8-1. Improving Data Management.....62

Figure 8-2. Process and Reporting Strategy63

Figure 8-3. Monitoring Data Quality.....64

Figure 8-4. Improvement Strategy.....64

Figure 8-5. Self-Diagnostic Process65

Figure 8-6. Development of Objective Evidence of Improvement.....65

Figure 8-7. Process to Establish Tools and Infrastructure to Support the Process and Assess Results66

Figure 9-1. Understanding the Interdependence of DM and KM67

List of Tables

Table 1. Types of Data2

Table 1-1. Common Functions of Traditional Data Management7

Table 1-2. Overview of Data Management Tasks, Subtasks, and Needed Skills.....9

Table 3-1. Creation and Acquisition of Data.....24

Table 3-2. Responsibility for Updating and Disposing of Data.....24

Table 3-3. Interdependent Requirements.....27

Table 4-1. Metadata Examples.....34

Table 5-1. Example Elements of Database Functionality46

Table 7-1. Representative Refresh and Migration Intervals.....59

Table 8-1. Examples of Data Management Metrics63

Table 9-1. Relationship Between Data and Knowledge67