

COMMONWEALTH OF VIRGINIA



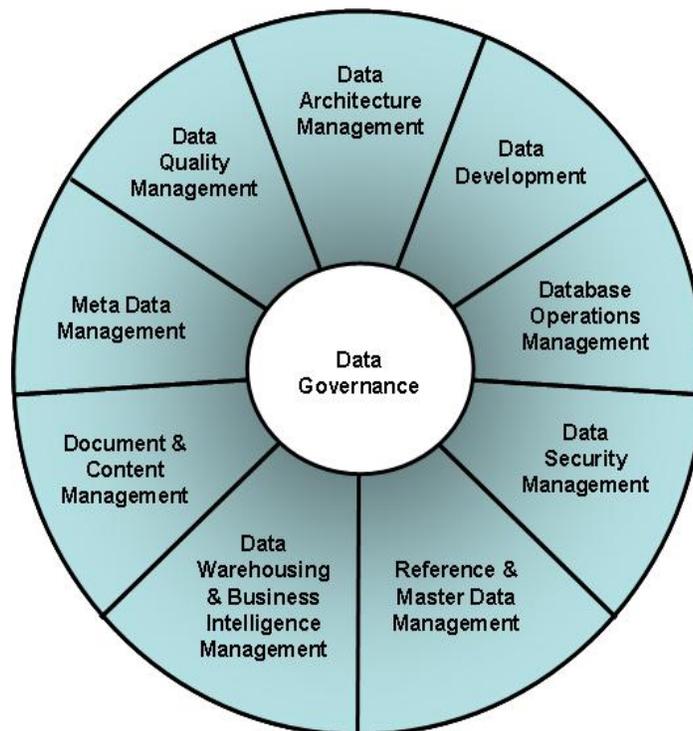
DATA MANAGEMENT PROGRAM PLAN DOCUMENT

FINAL PLAN

Introduction

In order to conduct daily business in a successful manner, the Commonwealth of Virginia (COV) manages vast amounts of data. Data that is, could, or needs to be shared across the enterprise needs to be managed in a manner that removes barriers to data sharing and provides quality data when and where it is needed. Proper data management ensures consistency between redundant data resources, provides for protection of data, improves operational and analytical data processes and safeguards data integrity.

Data management is a set of disciplines for managing data within an organization. An official definition from the Data Management Association (DAMA) states that data management "is the development and execution of architectures, policies, practices and procedures that properly manage the full data lifecycle needs of an enterprise." The diagram below was created by DAMA and it represents a standard industry view of data management functions.



The COV Data Management Program will initially focus on 3 areas:

- **Data Architecture Management** - data model management and data exchange
- **Metadata Management** - capturing, managing and leveraging metadata
- **Governance** - governing data management activities

Initiatives addressing Business Intelligence and Enterprise Content Management are already underway within the Virginia Enterprise Application Program (VEAP).

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SECTION I Program Stakeholders

- This document presents a plan for establishing a Data Management Program for the Commonwealth of Virginia and is intended for internal and external use across state agencies.
- As a collaborative effort across state agencies, the Data Management Program has several business stakeholders. The stakeholders for the Data Management Program are as follows:

David VonMoll	Department of Accounts
Sara Wilson	Department of Human Resources
Richard Sliwoski	Department of General Services
Dan Timberlake	Department of Planning and Budget
Robert Young	Department of Treasury
Greg Whirley	Department of Transportation
Peggy Feldmann	Virginia Enterprise Applications Program
Lem Stewart	CIO of the Commonwealth

SECTION II Program Drivers and Benefits

Numerous business drivers exist for establishing a Data Management Program for the Commonwealth of Virginia. Several business drivers and their benefits follow:

Program Driver	Business Problem	Business Benefit
Streamline government	Need to identify business processes that can be streamlined across the state agencies	Data requirements are driven by a business need (process). Defining data standards will aid in identifying possible opportunities for data sharing and business process re-engineering across the enterprise.
Simplify interactions with our citizens	Need to create a more user-friendly way for citizens to do business with the Commonwealth for example, Business One Stop	Establishing and promoting data standards will aid the COV in enhancing its enterprise viewpoint for the business.

SECTION II

Program Drivers and Benefits

Program Driver	Business Problem	Business Benefit
Provide transparency to our citizens	Need to illustrate transparency to our citizens by showing them how tax dollars are being invested in state programs and initiatives	Defining business information about data is in essence like defining a COV language. What do we mean when we say Vendor or Account or Fund? What is the relationship, if any, between these entities? Defining a common language improves communication, collaboration and the ability to aggregate data accurately.
Reduce data redundancy	Need to reduce the amount of shared data that is replicated across agencies. There are real business costs and risks associated with data redundancy	Defining and reducing the amount of data redundancy will reduce storage costs and minimize the risk of data being inaccurate and mismanaged.
Reduce the cost of impact analysis	Need to understand the impact of legislation is critical to managing the business (For example, COV must start minimizing the storage and use of social security number going forward)	Performing impact analysis can be costly and cumbersome if data and metadata is not well managed. Managing and making enterprise metadata more accessible will make impact analyses quicker, easier, cheaper and more accurate.
Maintain Virginia’s best managed state status	The need to illustrate Virginia’s commitment to continuous improvement. An example of an internal data management opportunity: VA universities want to be able to have students research and analyze publicly available COV data. However, they do not have access to agency metadata that tells them what data is public, where we store it and who owns it to provide access.	Better data and metadata management at the enterprise level could easily address this business need/opportunity.
Implement an integrated ERP solution for COV	The need to understand COV data at an enterprise level so business partners can evaluate and implement the best ERP solution.	By defining an enterprise viewpoint, COV will understand the business and data requirements which will lead to a more successful implementation of an enterprise solution.

In addition to the drivers listed above, the Code of Virginia 2008-2010 Budget Bills 460 and 63 identify deliverables for data standards. Reference to the Code of Virginia is provided in the Appendix of this document.

In August 2008, VEAP discussed our interpretation of the Budget Bill language with the Auditor of Public Accounts (APA) and there was agreement that VEAP should lead the Central Agencies in planning and establishing a Data Management Program for the Commonwealth.

The Central Agencies involved in this Program are as follows:

Department of General Services (DGS),
Department of Treasury (TRS),
Department of Human Resource Management (DHRM),
Department of Planning and Budget (DPB), and
Department of Accounts (DOA).

The deliverables in the first phase of the Data Management Program support the Virginia Department of Transportation's (VDOT) initiative to modernize their current financial management system and establish a new enterprise base financial system for the Department of Accounts. VDOT business resources will be a partner to the Central Agencies as the program is developed.

SECTION III Program Objectives

The objectives for the Data Management Program are as follows:

- Define and publish enterprise data requirements for all COV common and sharable data entities (such as Vendor, Employee, and Citizen).
- Establish data management policies, standards, procedures and recommended practices to be used by all enterprise initiatives.
- Define data governance roles and responsibilities, and identify key resources to manage the execution of the Data Management Program.
- Create a process infrastructure of workflows and tools to support the resources performing data management activities.
- Create an education program in support of data management roles.

SECTION IV Scope

The scope of the Data Management Program is to define data standards for all the data entities that are categorized by the Commonwealth as “enterprise” data entities. An enterprise data entity is data that is shared across agencies in the executive branch of the Commonwealth of Virginia.

Initial Scope for the Data Management Program - Phase I

- The initial scope for the work team will focus on defining the enterprise subject areas related to the Financial Management, Planning and Budgeting, Human Resources Management and Supply Chain Management lines of business that are needed to support our partnership with VDOT to define data standards for an enterprise financial system. This includes defining data standards to meet related mandates identified in the Appropriation Act.
- The Finance subject area will contain all the high level data entities and their relationships which are required for the functions in these lines of business. For example, the Finance Management line of business will define Agency, Fund, Vendor, Service Area, Employee, Payee, etc.
- Based upon the information reviewed to date, VEAP recommends that the work team start reviewing the Chart of Account data entities first, while other resources draft the data entities needed for Procurement and Human Resources to support Accounts Payable and Time and Labor processes. VEAP will leverage central agencies’ data stewards and their IT resources to draft data entities for review.

Subsequent Phases for the Data Management Program

- After the Finance Subject Area has been defined by the work team, VEAP will work with the data owners to decide which subject area to address next. The data standardization effort will be repeated until all the “shared” data entities are defined.

The Data Management Program will also define best practices for data management activities such as governance, metadata management and data modeling.

As the Data Management Program evolves,

- VEAP will be responsible for integrating other data management functions such as Business Intelligence and Enterprise Content Management.

- VEAP will work with the business, as the Program matures, to expand the scope to address other data management functions such as Data Quality, Data Development and Master Reference Management.

SECTION V Assumptions

1. Phase I of the Data Management Program will begin with the Future State deliverables created by the Central Agencies, VEAP and VDOT in 2007. These deliverables define the enterprise business requirements for Financial Management and Performance Budgeting. The following business functions were defined: general accounting (general ledger), accounts receivable, accounts payable, time and attendance, labor distribution and leave, cost accounting (project accounting).
2. Agencies will continue to manage their agency specific data. The data standards established as part of Phase I, will not impact agency specific data. The standards will apply to the central agency data that is shared across the Commonwealth.
3. The business Data Stewards from the Central Agencies will collaborate together to define data standards for COV's data entities and support the development of a Data Management Program.
4. Issues raised by the business Data Stewards will be resolved, in a timely manner, by the Data Owners from the Central Agencies.
5. The metadata created as part of this Program will be managed by the Data Stewards and Data Owners for the use and consumption of the enterprise.
6. When appropriate, business leaders across the agencies will adopt best practices for data management within their own agency-specific business solutions.

SECTION VI Approach, Goals and Deliverables

The tasks for establishing the Data Management Program will be broken down into four tracks of work. The four tracks are as follows:

1. Data Standardization
2. Organization/Governance
3. Policies and Procedures
4. Infrastructure

Each track will be defined in detail by an MS Project work plan. Listed below are the goals and deliverables for each track.

Track 1: Data Standardization Track

The Data Standardization Track is the largest component of work for the Data Management Program. This work track is ongoing. Since the data standardization process is driven by the business, it will be revisited and extended as the business needs of the Commonwealth evolve.

The work team of Phase I will consist of data stewards from the Central Agencies and VEAP resources identified in the participants section of this document.

Listed below are the overall goals for the data standardization track.

Goals

- Establish a regular schedule for the work team.
- Identify and prioritize enterprise data entities for review.
- Define the metadata that will be captured initially. VEAP anticipates the work team adding new metadata requirements as the process evolves.
- Follow the COV data standardization process to review enterprise data entities and draft a data standard package for review.

Deliverables

- Data standard package(s). The contents of this package will be defined by the work team, based upon the data standardization process that is adopted. The package will most likely include the following artifacts: a logical data model with definitions and defined relationships, and a data dictionary with information like aliases, business rules, ownership and security. It may also include data attribute level detail, when appropriate.
- Review and incorporate feedback on the data standard package with the broader data community.
- Adopt and publish data standards.

SECTION VI Approach, Goals and Deliverables (continued)

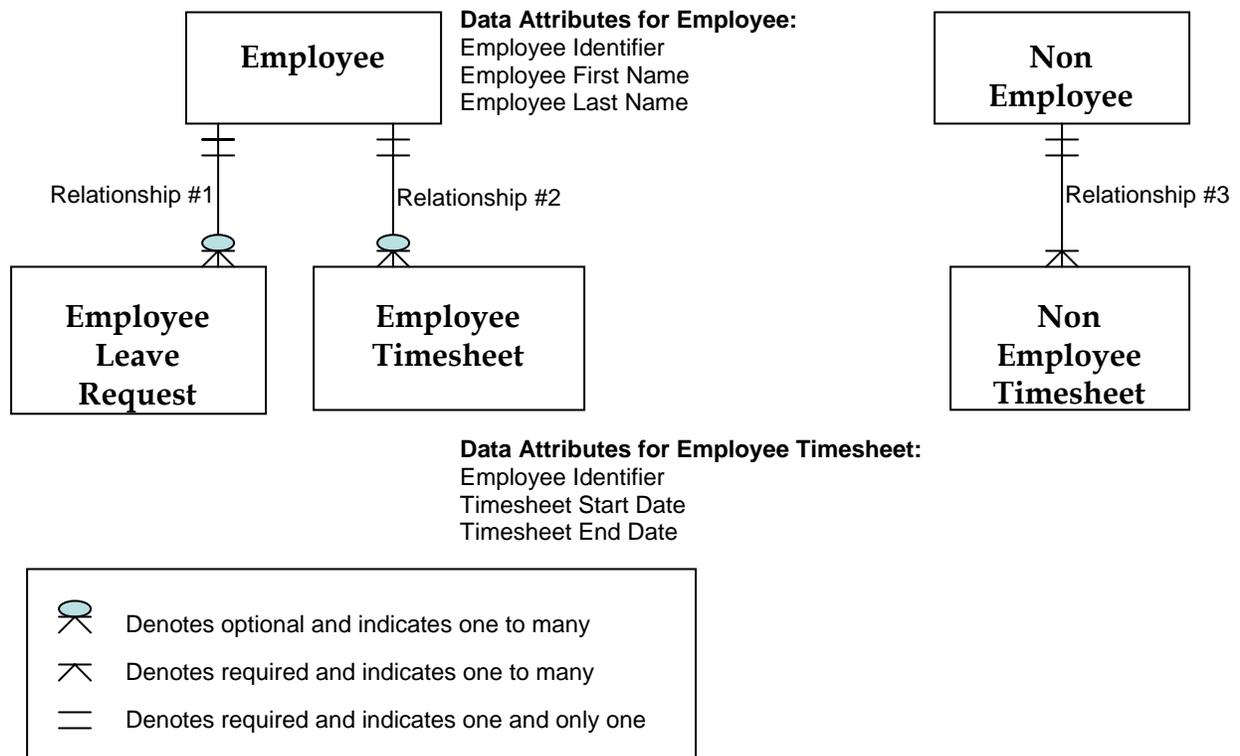
Track 1: Data Standardization Track (continued)

Deliverables

- A COV metadata model. This model defines all the metadata requirements for the business.

The following page presents an example data model to illustrate how data entities, data attributes and their relationships are modeled. A Logical Data Model defines the data entities and their relationships based upon the business rules. Technology solutions should not be considered when defining data standards.

A simple example of data entities and their relationships is provided below.



The following objects are identified within the example:

Data Entities - definitions will be assigned to each data entity

- Employee
- Employee Leave Request
- Employee Timesheet
- Non Employee
- Non Employee Timesheet

Data Relationships - relationships between data entities will be defined

Relationship #1

- An Employee may submit one to many Employee Leave Requests.
- An Employee Leave Request must be submitted by one and only one Employee.

Relationship #2

- An Employee may report one to many Employee Timesheets.
- An Employee Timesheet must be reported by one and only one Employee.

Relationship #3

- A Non Employee must report one to many Non Employee Timesheets.
- A Non Employee Timesheet must be reported by one and only one Non Employee.

Data Attributes - Examples provided above. Attributes will be defined, as required, to establish data standards.

Track 2: Organization / Governance Track

The organization / governance track will define roles and responsibilities for data management activities and governance. This work track will also address opportunities related to change management.

Goals

- Define specific roles and responsibilities for enterprise data management.
- Define the organizational reporting and governance structure for data management.
- Assess current skill sets and determine training needs.
- Align existing resources to the Data Management Program.

SECTION VI Approach, Goals and Deliverables (continued)

Track 2: Organization / Governance Track (continued)

Deliverables

- Established work teams and governance group(s) defined by a data management organizational chart and responsibility matrix.
- Develop Data Standardization Process.
- Documented data management skills matrix.
- Recommendations to address training needs.

Track 3: Policies and Procedures Track

The policies and procedures track focuses on defining, reviewing and publishing COV's data management policies and procedures. VEAP will work with the Policies, Practices, and Architecture group within VITA to leverage and extend work products that have been defined internally and externally. The policies will be reviewed by the extended data community prior to being declared a COV standard. This work track will also address opportunities related to change management.

Goals

- Gather and assess existing agency data standards and procedures.
- Review data management standards in use outside COV (best practices).
- Define COV's standards, policies, procedures and guidance for
 - data standardization,
 - data modeling and model management,
 - data exchange, and
 - data and metadata documentation
- Develop multiple levels of training on policies and procedures for the work team and the extended data community.

Deliverables

- Defined COV data management policies and procedures.
- Materials for educating data community on enterprise policies and procedures.

SECTION VI Approach, Goals and Deliverables (continued)

Track 4: Infrastructure Track

The infrastructure track focuses on the toolsets that will be used for data management. Tools will be needed for data modeling, model management, metadata capture, reporting and analysis.

Goals

- Gather and assess existing toolsets being used to model data and manage metadata.
- Review lessons learned from resources and organizations inside and outside COV (best practices).
- Define COV's business requirements for managing the infrastructure. Identify the business and technical user requirements for the tools that will help them manage models and metadata.
- Review the metadata model defined by work team.
- Define and implement the supporting infrastructure.
 - data modeling toolset that supports the creation and maintenance of conceptual, logical and physical data models.
 - workflow processes for integrating models with other kinds of metadata.
 - enterprise repository solution supporting metadata management, analysis, and reporting.
- Identify training requirements.

Deliverables

- Implemented enterprise toolsets for data model and metadata management.
- Defined workflows for model and metadata management.
- Recommendations for training.

SECTION VII Participants

The Central Agencies offered resources to VEAP, as participants, for the Data Management Program. VEAP has classified these resources into distinct roles.

Data Owner

A data owner owns data and metadata and has the authority to make decisions related to this data on the behalf of the Commonwealth of Virginia.

Data Steward

A data steward works on behalf of their data owner. Stewards are knowledgeable on the business use (operational and/or analytical) of their data. Stewards are the primary managers of business data and metadata.

IT Data Architect/Data Modeler/Data Analyst/ or Database Administrator

The role of the IT Participant can vary depending upon the agency. Typically a data steward will leverage a data architect, data modeler, data analyst or database administrator for clarification of data requirements or issue resolution.

For the purposes of this effort, VEAP will rely on the Data Steward to leverage the appropriate IT resources that possess the knowledge needed to define data standards.

Listed below are the resources, by agency and categorized by role, which will participate in the Data Management Program.

Agency	Data Owner	Data Steward	IT Participants
DHRM	Rueyenne White	Bob Weaver	Belchoir Mira
DOA	David VonMoll Randy McCabe	Randy McCabe (Finance) Lora George (Payroll) Martha Laster (Payroll)	Dick Salkeld
DPB	Don Darr	Mitch Rosenfeld Gary Janak (interim)	JoJo Martin Scott Hubbard
DGS	Joe Damico (Finance) Ron Bell (Purchasing)	Bryan Wagner (Finance) Bob Sievert (Purchasing)	Jan Fatouros Marion Lancaster
TRS	Robert Young	Kristin Reiter	Patrick Cornish

SECTION VII Participants (continued)

Additional Participants

- VEAP resources supporting the Program are as follows:

VEAP Data Management Lead – Nadine Hoffman

The VEAP Data Management Lead will manage the four tracks of work for establishing the Data Management Program.

VEAP Data Modeler - TBD

The VEAP Data Modeler will create and manage the data models and metadata associated with them based upon input from the Data Stewards.

- VDOT will contribute subject matter experts, as needed, to assist the data stewards in defining the data entities at an enterprise level. Stacy McCracken and Ned O'Neill are the Program's point of contact for VDOT.
- IT resources from VITA will be leveraged to help define policy and infrastructure. Eric Perkins and Michael Hammel are the Program's point of contact for VITA.
- Requests for participation beyond the central agencies will be considered by VEAP. Understanding data requirements from other agencies is important to establishing an enterprise standard. For example, Department of Forestry is identifying their requirements for time and attendance and would like to participate in discussions about this subject to ensure the enterprise solution meets their agencies' needs. VEAP will determine when best to bring in the broader Data Community for review.
- It is expected that participants might change over time, depending upon the data entities that are being reviewed.
- As part of this effort, VEAP will define the broader Data Community and the role it will play as part of the Organization / Governance work track.

SECTION VIII Near-Term and Future Deliverables

Listed below are the near term deliverables for the Data Management Program effort:

October 1, 2008 Deliverables

The Data Management Program work team will deliver the following items to Peggy Feldmann, CAO:

- An approved Plan for the Data Management Program.

This document serves as the proposed plan for the Data Management Program. VEAP has drafted and circulated this plan to all participants listed in Section VII for review and feedback. VEAP will present this plan to the Central Agency Data Owners and VDOT participants directly for their feedback and approval.

- A draft Data Standardization Process for defining data standards.
- A draft Data Standards Package for the Finance subject area.

Future Deliverables and Timeframes

Deliverables beyond October 2008 will be defined as part of a detailed work plan for each of the four Tracks of work (Data Standardization, Organization / Governance, Policies and Procedures and Infrastructure).

The detailed work plans will be created and reviewed by the work team during October 2008. A high level synopsis will be shared with the CAO and Data Owners in November 2008.

APPENDIX

The language, citing Data Standards, from the Code of Virginia, is provided below.

The Code of Virginia – 2008-2010 Budget Bill Item 460 states:

“The Department of General Services, the Department of the Treasury, the Department of Human Resource Management, the Department of Planning and Budget, and the Department of Accounts shall support the system modernization effort of the Department of Transportation through the adoption of statewide data standards. These data standards shall include, but not be limited to, vendor tables, agency identification information, state employee identification information, charts of accounts, receiving information, invoice information, purchase information including commodity codes, and any other essential data standards necessary to conduct business. The Departments of General Services, Treasury, Human Resource Management, Planning and Budget, and Accounts shall provide the Virginia Enterprise Applications Program (VEAP) Office Director and the Department of Transportation with such data standards by October 1, 2008, and the VEAP Office Director shall adopt these data standards as the Commonwealth's standards for future enterprise applications. Within 60 days of their adoption, the VEAP Office Director shall present such data standards to the Information Technology Investment Board for their approval as provided in § 2.2-2458, Code of Virginia. Upon approval by the Information Technology Investment Board, the Commonwealth shall use such data standards for all new Commonwealth information systems implementation projects including, but not limited to, Commonwealth enterprise application initiatives.”

The Code of Virginia – 2008-2010 Budget Bill Item 63 states:

“3. b. In addition to the processes and data standards used to support work performed for the Department of Transportation’s system modernization effort, the VEAP Office Director shall identify major Commonwealth financial and information collection processes and establish data standards for each process. On December 1, 2008, and every six months thereafter, the VEAP Office Director shall report and recommend to the Chief Information Officer and the Information Technology Investment Board, the processes reviewed and the data standards established which merit adoption as part of the § 2.2-2458, Code of Virginia. The VEAP Office Director shall also develop, along with the Chief Information Officer, a migration strategy to implement the data standards and provide such a strategy to the Governor and the Information Technology Investment Board for their review beginning December 1, 2008. As part of the migration strategy and its implementation, the VEAP Office Director shall identify agencies and institutions which have sufficiently modern accounting systems that can adopt and implement these data standards. All agencies and institutions shall cooperate with the VEAP Office Director in implementing the standards at those agencies and institutions with sufficiently modern accounting systems and the VEAP Office Director shall report, every six months after submitting the Plan to the Governor and the Information Technology Investment Board, those agencies and institutions having adopted the data standards and any agencies or institutions that have not cooperated with the implementation.”