

Commonwealth of Virginia
Data Management Program



September 2008

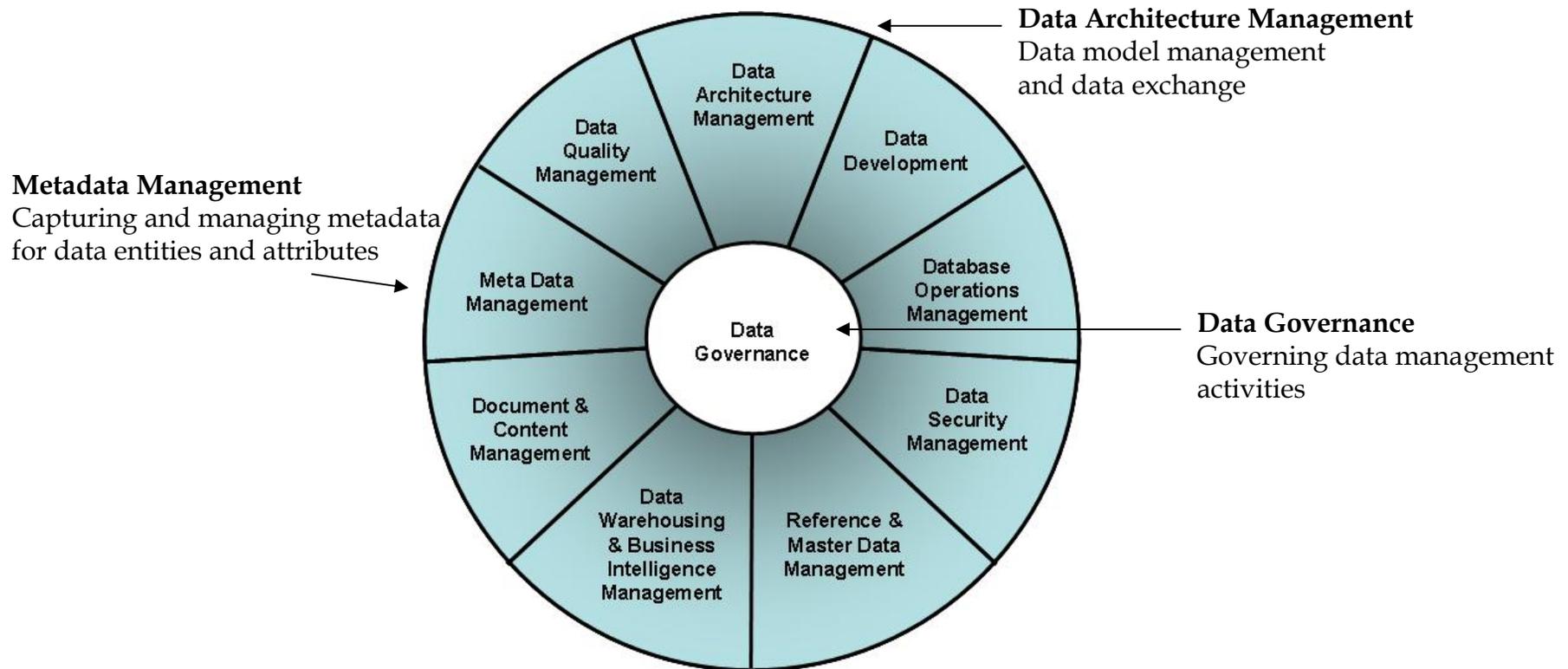
Final Plan

- Introduction
- Stakeholders
- Program Drivers & Benefits
- Program Objectives
- Scope
- Assumptions
- Approach & Deliverables
- Participants
- Near Term and Future Deliverables
- Reference - Budget Bill and Example Data Entities

- The data that is shared across the Commonwealth needs to be managed in a manner that provides quality data when and where it is needed.
- Data Management is a set of disciplines for managing data within an organization.
- 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 Functions

The diagram below was created by the Data Management Association (DAMA) and it represents a standard industry view of data management functions. The COV Data Management Program will initially focus on 3 areas:



- 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 executive branch central 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 Whirely	Department of Transportation
Peggy Feldmann	Virginia Enterprise Applications Program

- Numerous business drivers exist for establishing a Data Management Program...

Program Driver	Business Problem	Business Benefit
<ul style="list-style-type: none"> • Streamline government 	<ul style="list-style-type: none"> • Need to identify business processes that can be streamlined across the state agencies 	<ul style="list-style-type: none"> • Data requirements are driven by a business need. Defining data standards will aid in identifying duplicate processes across the enterprise.
<ul style="list-style-type: none"> • Simplify interactions with our citizens 	<ul style="list-style-type: none"> • Need to create a more user-friendly way for citizens to do business with the Commonwealth, for example, Business One Stop 	<ul style="list-style-type: none"> • Establishing and promoting data standards will aid COV in establishing an enterprise viewpoint for the business.
<ul style="list-style-type: none"> • Provide transparency to our citizens 	<ul style="list-style-type: none"> • Need to illustrate transparency to our citizens by showing them how tax dollars are being invested in state programs and initiatives 	<ul style="list-style-type: none"> • Defining business information about data is in essence like defining a COV language. A common language improves communication, collaboration and the ability to summarize data accurately.
<ul style="list-style-type: none"> • Reduce data redundancy 	<ul style="list-style-type: none"> • Need to reduce the amount of data that is replicated across agencies. There are real business costs and risks associated with data redundancy. 	<ul style="list-style-type: none"> • Defining and reducing the amount of data redundancy will reduce storage costs and minimize the risk of data being inaccurate and mismanaged.



Virginia Enterprise Applications Program

Program Drivers & Benefits

- More business opportunities...

Program Driver	Business Problem	Business Benefit
<ul style="list-style-type: none"> Reduce the cost of impact analysis 	<ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> Managing and making enterprise metadata more accessible will make impact analyses quicker, easier, cheaper and more accurate.
<ul style="list-style-type: none"> Maintain Virginia's well managed state status 	<ul style="list-style-type: none"> Need to illustrate Virginia's commitment to continuous improvement. Example: Universities want to research publicly available COV data. However metadata is scarce about what data is publicly available, what it means, who owns it. 	<ul style="list-style-type: none"> Better data and metadata management at the enterprise level could easily address this business need/opportunity.
<ul style="list-style-type: none"> Implement an integrated ERP solution for COV 	<ul style="list-style-type: none"> The need to understand COV data at an enterprise level so business partners can evaluate and implement the best ERP solution. 	<ul style="list-style-type: none"> 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, the Code of Virginia 2008-2010 Budget Bills 460 and 63 identify deliverables for data standards.
- 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).
- Phase I deliverables support VDOT's initiative to modernize their financial management system and establish a new enterprise base financial system for the Department of Accounts.

- Publish enterprise data standards for all data entities that are *shared* across COV agencies. Data entities like Vendor, Employee, and Citizen.
- Establish data management policies and best practices to be used by all enterprise initiatives.
- Define roles and align resources to manage and govern enterprise data and metadata.
- Create an infrastructure of workflows and tools to support the resources performing data management activities.
- Create an education program in support of data management roles.

- Define data standards for all the data entities that are categorized by the Commonwealth as “enterprise” data entities.

An enterprise data entity is data deemed critical to the business of several agencies or across all agencies in the Commonwealth of Virginia.

- Initial Scope –Phase I
 - Define data standards for the enterprise subject area of Finance.
 - Document all high level data entities and their relationships required for Finance.
 - For example, the Finance subject area will define data entities such as: Agency, Fund, Service Area, Employee, Payee, etc.
 - VEAP recommends reviewing the Chart of Account data entities first, while resources draft the data entities needed for Procurement and Human Resources to support Accounts Payable and Time and Labor processes.
- Subsequent Phases
 - VEAP and the data owners will decide which subject area to address next.
 - Data standardization effort will be repeated until all the “shared” data entities are defined.

- This initiative must also define best practices for data management activities such as governance, metadata management and data modeling.
- 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.

- 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.
- 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.
- 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.
- Issues raised by the business Data Stewards will be resolved, in a timely manner, by the Data Owners from the Central Agencies.
- The metadata created as part of this initiative will be managed by the Data Stewards and Data Owners for the use and consumption of the enterprise.
- When appropriate, business leaders across the agencies will adopt best practices for data management within their own agency-specific business solutions.

- VEAP's approach is to breakdown the initiative into four tracks of work:
 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. Dependencies across tracks will be identified.

- Data Standardization Track
 - largest component of work, ongoing effort
 - process will be revisited and extended as the business needs evolve
 - Work team for Phase I: Central Agency data stewards and VEAP resources

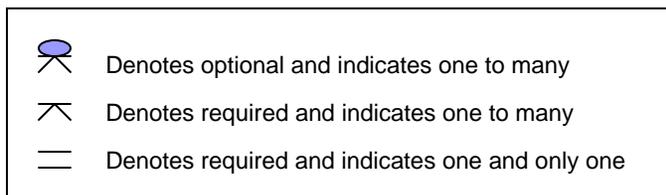
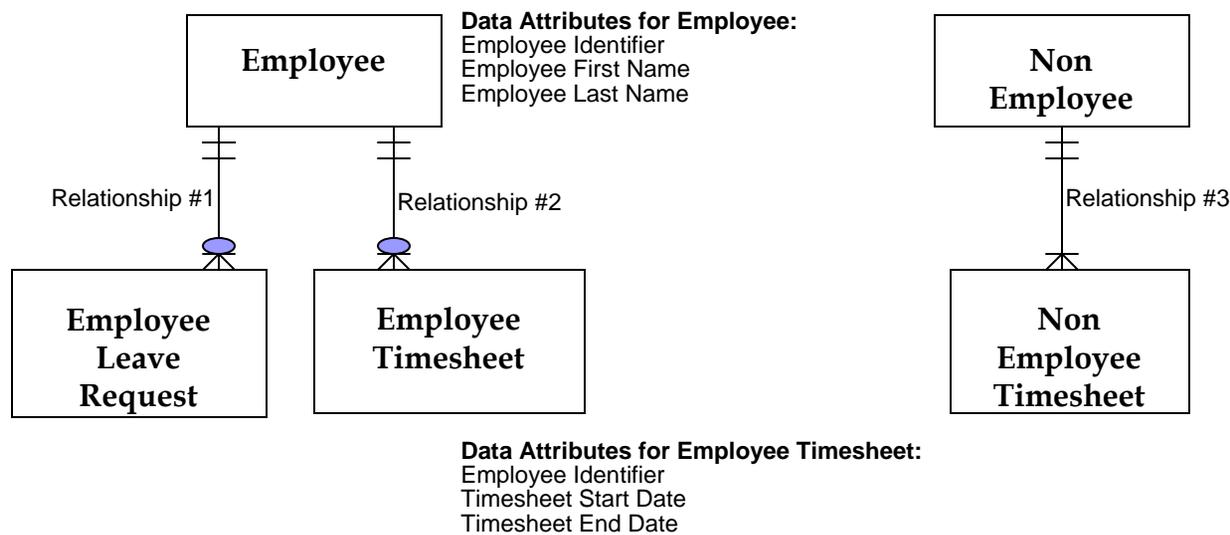
■ **Goals**

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

- This data model example illustrates 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 definitions and rules.



Technology solutions should not be considered when defining data standards.

- **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** -attributes will be defined, as required, to establish data standards.

- Define the roles and responsibilities for data management activities and governance.

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.

Deliverables

- Established work teams and governance group(s) defined by a data management organizational chart and responsibility matrix.
- Defined process for data standards governance.
- Documented data management skills matrix.
- Recommendations to address training needs.

This work track will address opportunities related to change management.



Virginia Enterprise Applications Program

Policies and Procedures Track

- Defining, reviewing and publishing COV's data management policies and procedures.
- VEAP will leverage work products that have been defined internally and externally to present to the work team.
- Review with the extended data community prior to declaring a COV standard.

Goals

- Gather and assess existing agency data standards and procedures.
- Review data management standards in use outside COV (best practices).
- Define COV's 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.

This work track will address opportunities related to change management.

- 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.

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.

Data Stewards will leverage their owners and IT resources, as needed.



Virginia Enterprise Applications Program

Participants

Listed below are the participants in the Data Management Program.

Agency	Data Owner	Data Steward	IT Participant
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

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.

Additional Participants

- 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.
- 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.

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.
- 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.

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

- “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.”



Virginia Enterprise Applications Program

Budget Bill Item 63

- “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.”

- Data Entities for Finance Subject Area

- Time and Attendance

- Employee
 - Non Employee
 - Time Sheet
 - Leave Request

- Accounts Receivable

- Customer
 - Accounts Receivable Balance
 - Deposit

- Accounts Payable

- Payee
 - Payment

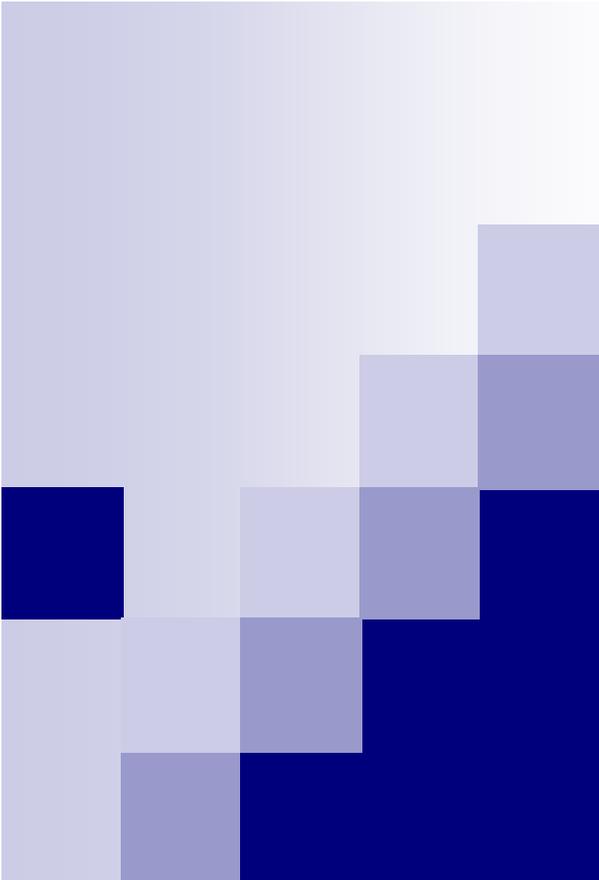
- Data Entities for Finance Subject Area

- General Ledger - Chart of Accounts

- Agency
 - Fund
 - Service Area
 - General Ledger Account
 - Expenditure
 - Revenue
 - Central Project
 - FIPS

- Purchasing

- Supplier
 - Solicitation
 - Requisition
 - Purchase Order
 - Contract
 - Commodity Code



Commonwealth of Virginia

Data Management Program

Direct your feedback on the Data Management Program to

Nadine Hoffman, VEAP Data Management Team Lead
804-786-0543 or nadine.hoffman@veap.virginia.gov

September 2008