OFFICE OF INFORMATION AND TECHNOLOGY

OneVA EA Architecture Style Guide (ASG)

Pre-Decisional

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VA

U.S. Department of Veterans Affairs
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1 Introduction

The OneVA EA Architecture Style Guide (ASG) is developed for the internal use of the architects, analysts and modelers at the Veterans Affairs (VA) and interfacing external organizations as a guide to describe the methods, rules, and modeling conventions to be used for the development of the architecture models that comprise the federated Veterans Affairs Enterprise Architecture (OneVA EA). The OneVA EA is at the enterprise level architecture level for the Veterans Affairs which is federated to the Segment and Solution Architecture levels.

The ASG is directed to develop architecture models that are framework independent; that is, the models are not specific to any enterprise architecture framework such as the DoD Architectural Framework 2.0 (DoDAF 2.0). However, the models created for the OneVA EA are based on established information architecture practices and techniques. The content can be transformed to conform to other US Government specific frameworks including the DoDAF Metamodel (DM2) construct.

The ASG is in conformance with *The Common Approach to Federal Enterprise Architecture May 2, 2012*. The required core artifact list specified in that document is in the following table with the aligned with the appropriate ASG models.

Table 1. Conformance to Common Approach to Federal Enterprise Architecture

Sub Architecture Domain	**Required Core Artifact**	**OneVA EA Model**
Strategy	Concept Overview Diagram	Business Concept Diagram and Strategic Plan Objects
Business	High-Level Process Diagram	Business Reference Model
Data	High-Level Logical Data Model	Conceptual Data Model
Applications	Application Interface Diagram	Systems Interface Model
Infrastructure	High-Level Network Diagram	Technical Architecture
Security	Control List	Security

The ASG is more detailed than that *The Common Approach to Federal Enterprise Architecture* because the ASG is more than a reference model, it describes how the models are developed and how they are linked to create an integrated architecture. Also, the ASG includes Laws, Regulations and Policies which are forces that drive the content of enterprise architecture in the Federal government.

The development of the OneVA EA is an iterative process for model development, evolution of models, and development of baseline and target environments. This version of the ASG only contains a description of the September 2013 deliverables of the OneVA EA. These deliverables are described in the following sections of this document.

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- Section 3: Overview and Summary Information (OSI)
- Section 4: Business Concept Graphic (BCG)
- Section 5: Business Reference Model (BRM)
- Section 6: Conceptual Data Model (CDM)
- Section 7: Business Process Model (BPM)
- Section 8: Business Capability Model (BCM)
- Section 9: Strategic Planning Objects (SPO)
- Section 10: Systems Interface Model (SIM)
- Section 13: Laws, Regulations and Policies (LRP)
- Section 12: Requirements and Rules Model (RRM)
- Section 13: Enterprise Technical Architecture (ETA)
- Section 14: Data Dictionary (DD)

1.1 Purpose and Scope

The purpose of the ASG is to provide architects, modelers and analysts with a user guide that describes how to define, create, update, and interpret models within the OneVA EA. For each OneVA EA model and associated elements, the ASG contains a section that provides a summary description of the purpose, structure, relationship to other OneVA EA models, and model definitions. Each section also includes procedures and tasks required to develop each model that can be applied independent of the encyclopedia and development tool used. Finally, each section identifies the applicable modeling standards and conventions required for developing graphical representations of the architectural information.

The ASG is intended for an audience that understands enterprise architecture and has OneVA EA tool set training and/or experience.

Section 2 of this document reviews key concepts from a high level perspective. Sections 3 through 8 describe the specific modeling methods. The Appendices provide templates, checklists and reference tools to complement the guidelines set forth in this document to support quality reviews for completeness and accuracy of the products.

The primary information sources used to develop, revise and update this document are: Institute of Electrical and Electronics Engineers (IEEE), Object Management Group (OMG) Semantics of Business Vocabulary and Business Rules (SBVR) v1.0, Business Process Modeling Notation v2.0 (BPMN) and other OMB guidance.

1.2 Relationship to Other Documents

This document is intended to provide OneVA EA practitioners the guidance and knowledge needed to maintain and extend the OneVA EA. This document provides supporting details on how to model relevant architecture models and compiles best practices that have been tried and tested across enterprise development lifecycle. This document provides guidance on specific documentation, approvals and sequencing of OneVA EA development tasks. Changes to the OneVA EA models are subject to the process described in the *Configuration Management Document (CMD)*.

The content of the OneVA EA is partly driven by the *Department of Veterans Affairs Strategic Plan Refresh 2011-2015.* That plan describes the strategic planning framework which includes goals, objectives and initiatives that can impact the EA content required to meet the goals, objectives and initiatives.

2 Key Concepts

The OneVA EA is the enterprise architecture for the Department of Veteran Affairs. The OneVA EA is developed using the Department's business transformation priorities, the business capabilities required to support those priorities and the combinations of systems and initiatives that enable these capabilities. The *Department of Veterans Affairs Strategic Plan Refresh FY 2011-2015* is a major input source for the content of the OneVA EA.

This section describes key concepts required to understand the OneVA EA guidelines for developing the set of integrated models relevant to the OneVA EA.

2.1 Architecture Conventions

The OneVA EA in itself is an integrated architecture that consists of models and products. For example, the *Business Reference Model* is a model while the *Requirements and Rules* is a product. The OneVA EA is integrated meaning that each model or product is linked to other appropriate models and products. An architecture is deemed integrated when development of its models and constituent architecture products enable the architecture objects defined in one model to be identical (have the same name, definition and properties) when the same object is referenced in another model. However, as described later in this document, the OneVA EA is also federated to the Segment and Solution Architectures which assumes each tier will be integrated within its own architecture.

VA has adopted a policy of developing the OneVA EA using models that are neither frame work nor tool specific, but rather are general across all typical frameworks and tools. This was done to allow the flexibility to adopt any new technology, practice or technique that is of benefit to the VA.

2.1.1 OneVA EA Purpose

The OneVA EA is developed as an overarching framework enabling the development of models and products that create an integrated architecture. The OneVA EA focuses on architectural data and information required by key VA information technology (IT) decision-makers. Managers at all levels can use OneVA EA in support of more effective decision-making through organized information sharing across the VA and Project boundaries.

2.1.2 OneVA EA Description

The following figure is a representation of the content available through the OneVA EA. That is, in a top-down manner, the OneVA EA Enterprise level functionality is mapped to the expanded detail functionality in the Segment and Solution Architectures. Federation is the technique used to discover content from the OneVA EA to the Segment and Solution Architectures. That is, OneVA EA high level business functions will be mapped to Segment business functions that will contain more detailed business functionality.

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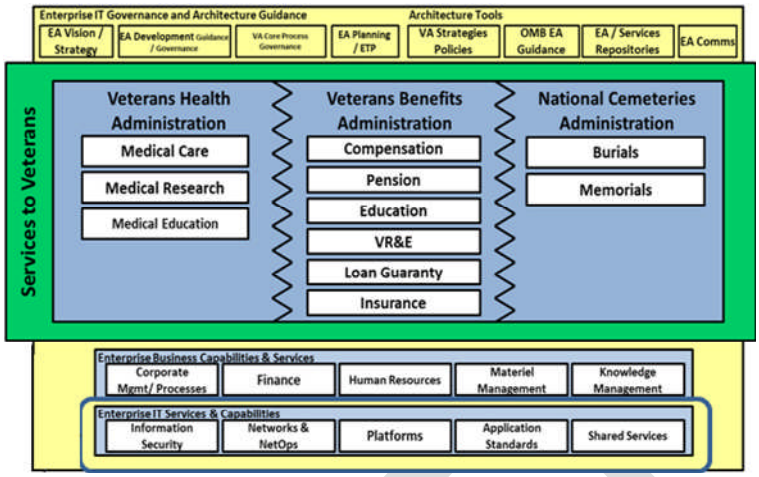
Figure 1. OneVA EA Operational Content



The OneVA EA captures and organizes content to allow a process of translating business vision and strategy into effective enterprise change by creating, communicating and improving the key requirements, principles and models that describe the enterprise's future state and enable its evolution.

An enterprise architecture should be robust to transcend organizational and environmental changes. The OneVA EA is organized into general areas as described in the following figure. A product developed in one of the areas is linked to appropriate products in other areas to create an integrated architecture.

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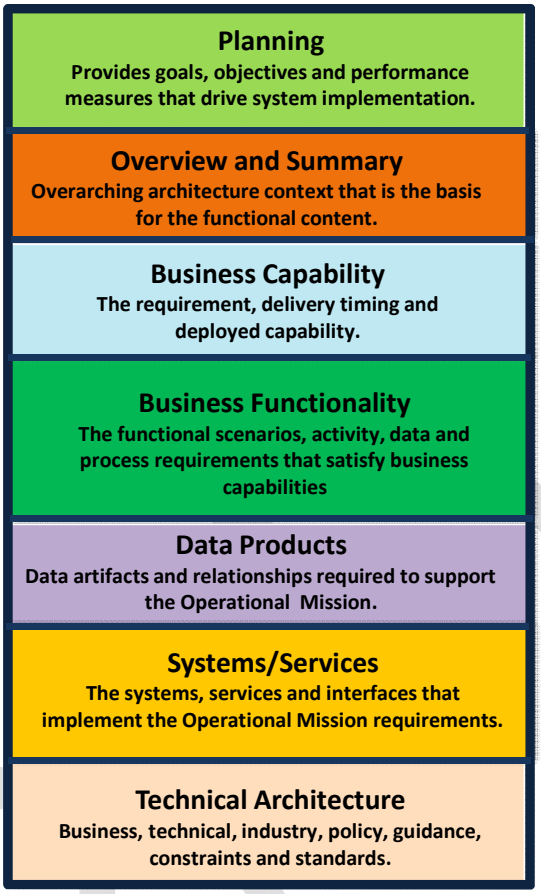
Figure 2. OneVA EA Major Areas



To achieve consistency and ensure integration, OneVA EA requires that the architecture provide consistent data among the products supporting each area. The subsections that follow provide a more detailed description of each of the areas and its application to the OneVA EA.

2.1.3 *Planning Area*

The Planning Area contains the elements of a strategic plan that guides the content and use of the OneVA EA. The *Strategic Plan Refresh FY2011-2015* is the major contributor to this area. Information such as the mission, goals, objective, Initiatives and performance measures are captured and managed in the OneVA EA.

2.1.4 *Overview and Summary Area*

The Overview and Summary Area provides information pertinent to the entire architecture description, such as the scope and context of the enterprise architecture. The Overview and Summary Area includes the Overview and Summary Information, the Business Concept Diagram and the Data Dictionary which is an integrated dictionary of terms used in the OneVA EA.

2.1.5 *Business Capability Area*

A *Business Capability* is an ability or capacity that an enterprise may possess or exchange to achieve a specific purpose or outcome. A Business Capability is not just a Process (a process delivers a capability using a mixture of people, technology, and location) nor just a Business Function (business function describes what the enterprise does). The Business Capability Area captures the enterprise information needs associated with the overall vision

for executing a specified course of action, or the ability to achieve a desired effect under specific standards and conditions through combinations of means and ways to perform a set of tasks. The VA Mission Initiatives are examples of Capabilities.

2.1.6 *Business Functionality Area*

The Business Functionality Area is a representation of the business functions, tasks performed and related operational data required to accomplish the VA business functions. The representation includes graphical and textual models that describe the enterprise business requirements needed to achieve the capabilities and outcomes of the Department.

2.1.7 *Data Products Area*

The Data Products consists of a set of a models and products that capture the business data requirements needed to support the Business Functions.

The OneVA EA includes a single integrated Conceptual Data Model (CDM). It is used to capture the conceptual requirements across all of the VA. The Logical Data Models (LDM) and Physical Data Models (PDM) reside at the project level in Segment/Solution Architectures. The OneVA EA CDM is mapped to the Segment/Solution Architectures Logical Data Model. Each Solution Architecture Physical Data Model should be generated from the Solution Architecture Logical Data Model.

2.1.8 *Systems/Applications/Services Area*

The Systems/Applications/Services Area contains the systems, applications, services and interfaces that support business functionality contained within the OneVA EA.

The Systems/Applications/Services Area consists of a set of graphical and textual models that describe systems, applications and services, including their business functions and interfaces. These models associate systems, applications and service capabilities to the business functions. These system capabilities support the business functions and facilitate the exchange of information between systems. Typically, one system may support a wide range of business functionality.

2.1.9 *Technical Architecture Area*

The Technical Architecture Area contains the enterprise implementation requirements that govern the infrastructure, interaction, security and interdependency of implemented business systems and their components.

The Technical Architecture Area includes hardware, system software, communications components, application development practices and release architecture. The Technical Architecture Area provides the technical systems implementation guidelines, engineering specifications and common building system blocks. Furthermore, the Technical Architecture Area organizes criteria into profiles that govern systems and system elements for use across the VA.

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3 Overview and Summary Information (OSI)

3.1 Summary Description

This section describes the OSI architecture model, its relationship to other OneVA EA models, the development method, and the guidelines used for its development.

3.1.1 Model Purpose

The OSI document provides executive-level information in a consistent form to identify the Purpose and Viewpoint, Context and Scope of each OneVA EA release. OSI serves two additional purposes. In the initial phases of architecture development, it serves as a planning guide. Upon completion of a OneVA EA release, the OSI provides the Findings and Recommendations discovered during the development of the architecture.

3.1.2 Model Structure

The OSI product is a text document without diagrams. The OSI template is provided in an appendix to this document. The template can be modified to support the purpose and use of the architecture.

3.1.3 Relationship to Other OneVA EA Models

The OSI is the overall summary document for the OneVA EA and sets the context for all the other OneVA EA models. In particular:

- Any OSI related term with specialized meaning must be listed within the data dictionary and any acronyms introduced on the OSI must be listed within the Data Dictionary Acronym list.
- The OSI describes the scope, purpose, intended users, and environment depicted in the OneVA EA.

3.1.4 OSI Model Definitions

The OSI does not have specific modeling standard as it is text document. The OSI templates contain the standard descriptions used in the OSI.

3.2 Developing the OSI Model

This section describes the approach to develop the OSI model.

The VA is composed of the three administrations that are concerned with Veterans:

1. National Cemeteries Administration (NCA)
2. Veterans Benefit Administration (VBA)
3. Veterans Health Administration (VHA)

These functional areas are supported by cross-cutting enterprise capabilities and services including *Strategies and Policies, Finance, Acquisitions and Human Resources* as depicted in the previous *Figure 2.1 OneVA EA Operational Content*.

The VA Strategic Plan includes inter-functional and inter-agency development efforts called Major Initiatives (MI). MIs have been identified as the highest priority transformation initiatives at the VA Enterprise level and are

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included in the OneVA EA development effort. The term “Stakeholder” is used in subsequent sections of this document to define the users and contributors to the OneVA EA.

3.2.1 Pre-Development Tasks

An OSI document is developed for each Stakeholder to serve as a planning guide during the initial phases of architecture development. The initial OSI Overview and Summary document describes the scope of the work planned. The OSI is the basis for defining the focus or initial development efforts to be addressed in the projected release of the OneVA EA.

3.2.2 Development Tasks

During development of the specific OneVA EA products, the OneVA EA OSI and the Stakeholder OSIs are used as reference documents to guide development efforts and ensure that the actual development work stays within the scope planned.

3.2.3 Post-Development Tasks

The OneVA EA OSI and Stakeholder OSIs are also used as a reporting mechanism for identifying Findings and Recommendations (F&R) during the final phases of the deliverable cycle after all development and integration work has been completed. The F&Rs section of the Stakeholder OSI comprises two parts:

- Part 1 is a review of the work identified for completeness and specific mappings of architecture achievements to Stakeholder objectives.
- Part 2 includes other F&Rs for additional future development efforts. New F&Rs are developed, previously documented F&Rs are updated, and a disposition of previous F&Rs is reported.

The initial Stakeholder OSI and the F&R (Parts 1 and 2) encompass the final Stakeholder OSI document.

Also at the end of the development cycle the OneVA EA OSI is finalized by updating the initial Overview and Summary Information as needed and by reviewing comments, findings and recommendations from all OneVA EA Stakeholders, and combining them into the OneVA EA level F&Rs that are added to the final OneVA EAOSI document.

The *OneVA EA Development Methodology* (VADM) describes the OneVA EA Change Request process and the development cycle.

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4 Business Concept Graphic (BCG)

4.1 Summary Description

The BCG is a description or scenario of the mission of the enterprise. It shows the main operational concepts and any interesting or unique aspects of the operational characteristics of the enterprise. It describes the interactions between the subject architecture and its environment, and between the architecture and external systems. The BCG is the pictorial representation of the written content of the OSI.

The BCG provides a graphical depiction of what the architecture is about and an idea of the players and operations involved. A BCG can be used to orient and focus detailed discussions. Its main use is to aid human communication, and it is intended for presentation to high-level decision-makers.

4.1.1 Model Purpose

The purpose of BCG is to provide a quick, high-level description of what the architecture is supposed to do, and how it is supposed to do it. A BCG can be used to orient and focus detailed discussions. Its main utility is as a facilitator of human communication, and it is intended for presentation to high-level decision-makers. A BCG identifies the enterprise mission or scope as covered in the OSI Architectural Description. BCG conveys, in simple terms, what the Architectural Description is about and an idea of the players and operations involved.

The intended uses of the BCG include:

- Putting operational situations or scenarios into context.
- Providing a tool for discussion and presentation; for example, aids industry engagement in acquisition.
- Providing an aggregate illustration of the details within the published high-level organization of more detailed information in published architectures.

4.1.2 Model Structure

The BCG consists of a graphical executive summary with accompanying text for the OSI Architectural Description. The content of a BCG depends on the scope and intent of the Architectural Description, but in general it describes the business functions, high-level operations, organizations, and geographical distribution of assets. The model frames the operational concept (what happens, who does what, in what order, to accomplish the mission) and highlight interactions to the environment and other external systems. However, the content is at an executive summary-level as other models allow for more detailed definition of interactions and sequencing.

It highlights the key operational concepts and interesting or unique aspects of the concepts of operations. It provides a description of the interactions between the Architectural Description and its environment, and between the Architectural Description and external systems. A textual description accompanying the graphic is crucial. Graphics alone are not sufficient for capturing the necessary architectural data.

The following figure depicts the extensive operational scope of the VA. The dots on the map indicate the clustering of the VA facilities in the United States, US Territories and the Philippines.

Figure 3. VA BCG Operational Scope

The Department of Veterans Affairs has more than 10,000 employees that provide high quality services and benefits to Veterans. The VA manages facilities and offices in the United States, US Territories and the Philippines that include 153 Medical Centers, 773 Community-Based Outpatient Clinics, 57 Regional Offices, 260 Vet Centers and 131 National Cemeteries. A complete directory of services, benefits, facilities and offices can be viewed at www.**va**.gov/directory/guide/home.asp.

4.1.3 Relationship to other OneVA EA Models

Shown in the following table are the relationships of the OSI to other OneVA EA models.

Table 2. Relationships between OSI to other OneVA EA Models

Model	**Relationship**
OSI	The BCG should depict the scope presented in the OSI.
Systems/Applications/Services	The Systems/Applications/Services model should include the Systems,

	Applications and Services that are included in the scope presented in the BCG.
BRM	The Business Reference Model should include all of the high level Business Functions performed within the operational scope.
CDM	The Conceptual Data Model should include all of the high level Subject Areas required by the Business Functions.

4.1.4 BCG Definitions

The BCG does not have specific modeling terms as it is a graphic only.

4.2 Developing the BCG Model

4.2.1 Pre-Development Tasks

The OSI is reviewed and analyzed. The contents of the BCG should be within the scope specified by the OSI. The BCG may be developed simultaneously with the OSI. During the course of developing the OSI, several versions of a BCG may be produced. An initial version may be produced to focus the effort and illustrate its scope.

The BCG is useful in establishing the context for a suite of related models. This context may be in terms of phase, a time period, an initiative and/or a location. In particular, this provides a container for the spatial-temporally constrained performance parameters (measures).

4.2.2 Post-Development Tasks

After other models within the scope of the OSI have been developed and verified, another version of the BCG may be produced to reflect adjustments to the scope and other OSI details that may have been identified as a result of the architecture development. After the OSI has been used for its intended purpose and the appropriate analysis has been completed, yet another version may be produced to summarize these findings to present them to high-level decision-makers.

4.2.3 Modeling BCG Objects

The BCG model is developed using graphical software and does not use any specific architecture tool set. The objects placed on the BCG are specific to the business functionality of the VA that is contained in the OSI.

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5 Business Reference Model (BRM)

5.1 Summary Description

This section describes the BRM, its relationship to other OneVA EA models, the development method, and the modeling guidelines used.

5.1.1 Model Purpose

The BRM is the cornerstone architecture model for the OneVA EA. It is used to describe the business functions in a hierarchical decomposition tree format that are normally executed in the course of achieving a business capability.

The BRM describes the business functions and the scope of what the VA does, but does not address how the business functions are performed or the sequence of those business functions. Other Enterprise Architecture models are built from and aligned with the BRM. For the OneVA EA, there shall be a single enterprise level BRM to represent the VA Business Functionality. The Segment and Solution Architectures will also have business function decomposition models that extend in detail the OneVA EA BRM using the concept of federation.

The BRM can be used to:

- Support alignment of services, systems and solutions to the prioritized strategic capabilities of the Department.
- Enable federation to the Segment and Solution Tiers
- Distinguish Stakeholder specific Business functions.
- Define or flag issues, opportunities, or information dependencies among functional areas that need to be scrutinized further.
- Identify data pertinent to the Enterprise. Note: The CDM has a relationship to the BRM as a business function uses business data to support the functionality.
- Identify the context or framework of how certain aspects of the business will be performed.

5.1.2 Model Structure

The BRM is depicted as one hierarchical decomposition diagram of the business functions.

5.1.2.1 BRM Diagram

Typically, the first diagram constructed during development of the architecture is the BRM, a functional, hierarchical decomposition of Enterprise-level Business Functions. The business functions are created and defined to meet the following objectives:

- Adherence to VA business needs.
- Compliance with VA Enterprise Standards.
- Alignment with the direction of the “To Be” world.
- Alignment with the Federal Enterprise Architecture (FEA) Business Reference Model (BRM), where possible.

The following figure illustrates the proper form for a Business Function diagram. (It should not be considered as the current BRM.) The figure depicts the complete model and a snippet that is more legible.

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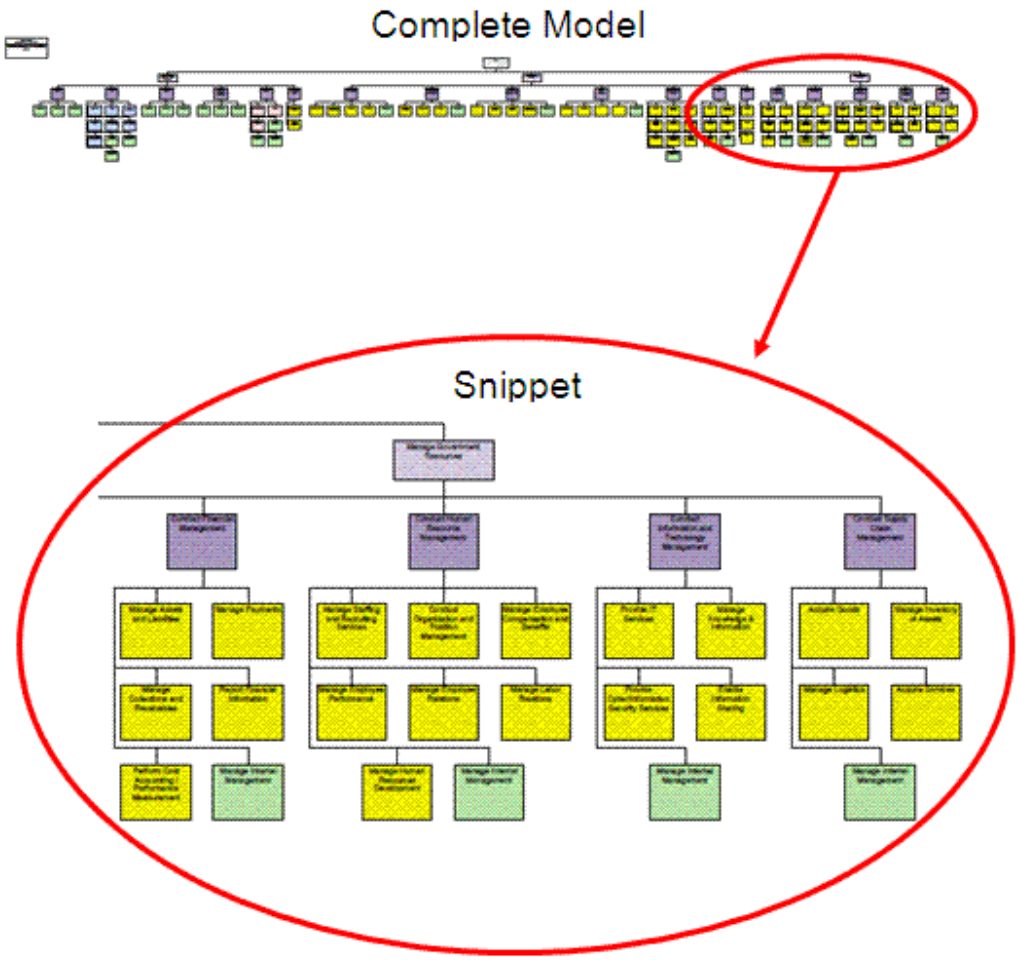
There will be a single BRM diagram for each OneVA EA release.

Figure 4. BRM Diagram Example



All Business Functions definitions must be distinct and expressed at their level of decomposition. The Business Function definitions will be updated during future work, such as during workshops.

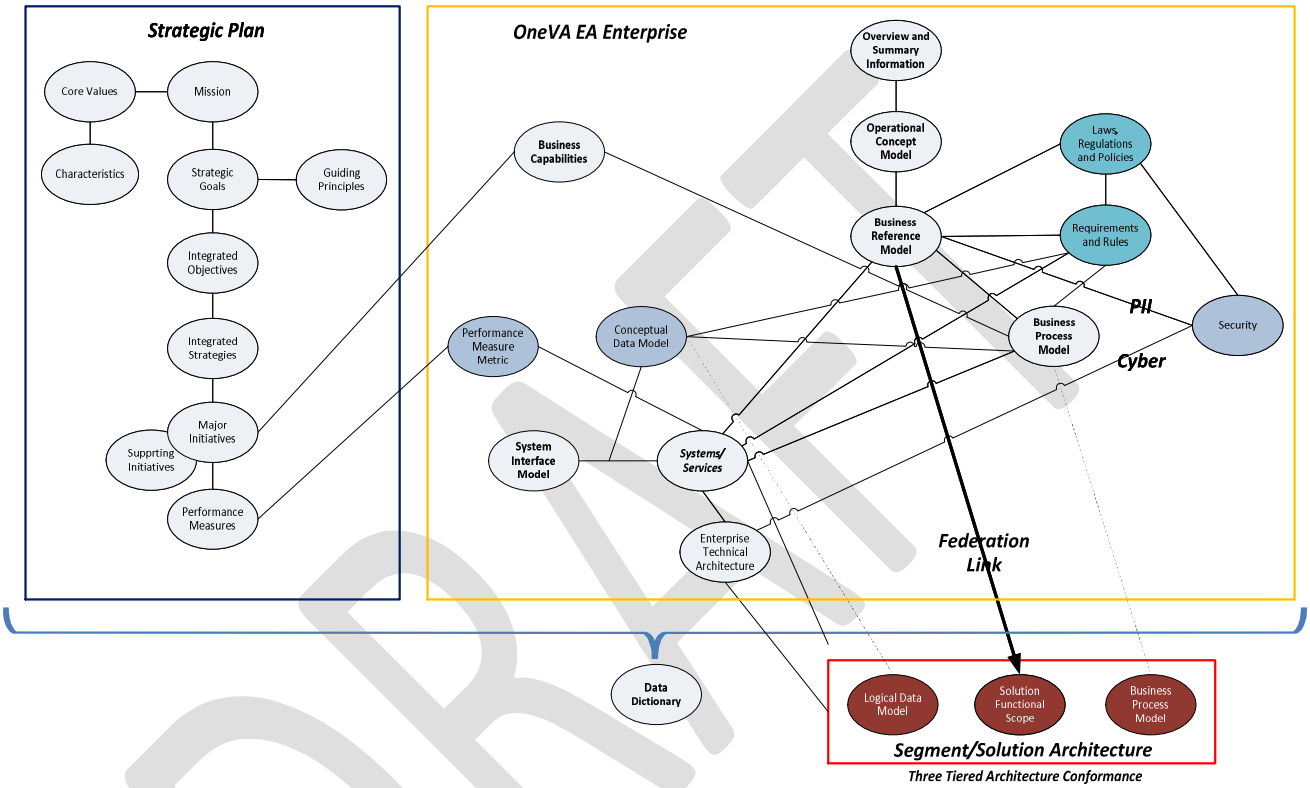
The BRM is decomposed to a level that identifies the lowest-level business functions that are performed at the Enterprise-level to support associated Business Capabilities. While multiple Stakeholders may be identified for a Business Function, meaning the activity is relevant to them, a primary Stakeholder is responsible for defining its basic content. Further decomposition below the Enterprise Architecture level is not within the province of the OneVA EA, but is the responsibility of the Segment Architectures with a goal towards identifying Federation touch points to the Enterprise Architecture level.

5.1.2.2. Federation Technique

Ideally, a Segment/Solution Architecture is an implementation level architecture of a single business function. However, typically a Segment/Solution Architecture is a cross-functional implementation architecture. Consequently, there can be multiple Federation touch points between the OneVA EA BRM and the Segment/Solution Architecture Business Reference Models.

The following figure illustrates the OneVA EA federation technique. Business Functions are the explicit linking objects between the architectures that form the federations. All other enterprise objects are implicitly linked through the Business Functions. For example, an OneVA EA Business Function may be mapped to an OneVA EA Subject Area. That OneVA EA Business Function may have a federation link a Business Function in a Segment Architecture. The Business Function in the Segment Architecture may be mapped to Entities. Thus, the OneVA EA Subject Area is implicitly linked to the Segment Architecture Entities.

Figure 5. OneVA EA Meta Model and Federation Technique



5.1.3 Relationship to other OneVA EA Models

Shown in the following table are the BRM relationships to other OneVA EA models.

Table 3. Relationships of BRM to other OneVA EA Models

Model	Relationship
OSI	The scope of the development effort for each Stakeholder for a development cycle, as disclosed in the OSI, will determine if the BRM is affected in the release.
DD	All BRM terms with specific meaning must be defined in the DD Term definitions report. These terms must include, at a minimum, all the following object types: • Business Function Definitions All acronyms used in the BRM descriptions must be listed and spelled out in the DD Acronym Definitions report.
Systems/ Applications /Services	Systems and Services implement business functions included in the BRM.

5.1.4 BRM Definitions

The following are definitions of the key elements contained in the BRM:

- **Parent Function:** A Parent Business Function that is decomposed into two to nine Business Functions or Child Business functions. The definition of the Parent Activity is the sum of the child Business Functions and serves to set the scope of its decomposition.
- **Child Function:** A Business Function that is a decomposition of a Parent Business Function. It represents a functional subset of its Business Function.
- **Hierarchy Chart Connector:** This is a line that connects a Parent Function to a Child Business Function that shows the relationship between Business Ffunctions.

5.2 Developing the BRM Model

5.2.1 Pre-Development Tasks

Reviewing and updating the BRM is the first modeling step when implementing any OneVA EA Improvement Proposal. The BRM shows in a hierarchical fashion the proper grouping and decomposition of business functions. The BRM is decomposed to a level that identifies the lowest-level business functions that are performed at the Enterprise level.

The tasks that must be completed prior to maintenance are:

1. The leaf-level Business Functions within each branch of the BRM are linked to Business Capabilities and to Sub functions of the FEA BRM. These linkages are maintained in the OneVA EA, as described in Section 6. The BRM is updated in workshops as a cooperative effort between Stakeholders and appropriate enterprise architects.
2. During development of the BRM, Stakeholders shall be identified on the appropriate tab in the Business Function definition.
3. Use the procedure below to maintain the BRM:
   - Create and define Business Functions that cover the scope areas based on approved sources. Approved sources include existing approved FEA BRM Lines of Business and Sub-function definitions.
   - Arrange business functions in the BRM and normalize the arrangement by eliminating overlapping and redundant business functions. The top level of the BRM shall have one Business Function, which sets the scope of the OneVA EA in general and the BRM architecture model in particular.
   - Align the leaf level Business Functions with the Sub-functions in the current FEA BRM that should be reflected in the BRM. Gaps in the FEA BRM should be noted as feedback to the FEA BRM community; gaps in the OneVA EA itself should be noted as areas for possible future OneVA EA improvement. In order to address any gaps in the BRM, other sources of EA business function names and descriptions should be reused wherever possible.
   - Review products from prior approved versions of the OneVA EA relevant to current or new BRM development. Create or refine existing definitions of Business Functions based on this review.
   - Validate the resulting Business Function definitions.

5.2.2 Map BPM Process Steps to Business Functions

This task maps BPM Process Steps to Business Functions. These mappings will be identified during BPM workshops with the appropriate Stakeholders in attendance. A BPM Process Step can be mapped to one or more

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Business Functions. A Business Function can be mapped to one or more BPM Process Step. Once the correct mappings are identified, the mapping to the Business Function is created.

5.2.3 *Map FEA BRM Sub-functions to Business Functions*

This task maps FEA BRM Sub-functions to leaf-level Business Functions, as follows:

- Assign new FEA BRM Sub-functions to Business Functions, in collaboration with appropriate Stakeholders.
- Assign new Business Functions to existing FEA BRM Sub-functions.
- Reassign Business Functions to deleted FEA BRM Sub-functions.

5.2.4 *Model Clean-up*

This activity is used to provide analysis/review support to the final delivery of BRM models and modeling objects. The models are assessed using numerous tools and checklists to uncover discrepancies.

BRM is validated against the following:

- Stakeholder OSI.
- Change Request Content Summary.
- Model Checklists.
- Relevant OneVA EA reports.
- Encyclopedia Compare Reports.

5.2.5 *Post-Development Tasks*

These tasks are completed after the work has been approved by the Stakeholders:

- Incorporate additional updates to the BRM based upon subsequent work sessions
- Incorporate quality control and architecture verification changes into the OneVA EA.
- Incorporate additional Stakeholder updates based on their review.
- Incorporate additional executive management updates based on their review.

5.3 Modeling the BRM Model

5.3.1 *Modeling Conventions and Use of Color, Size and Lines*

The following modeling conventions must be used to create the BRM. The BRM diagrams use a standard color scheme, font and line size as follows:

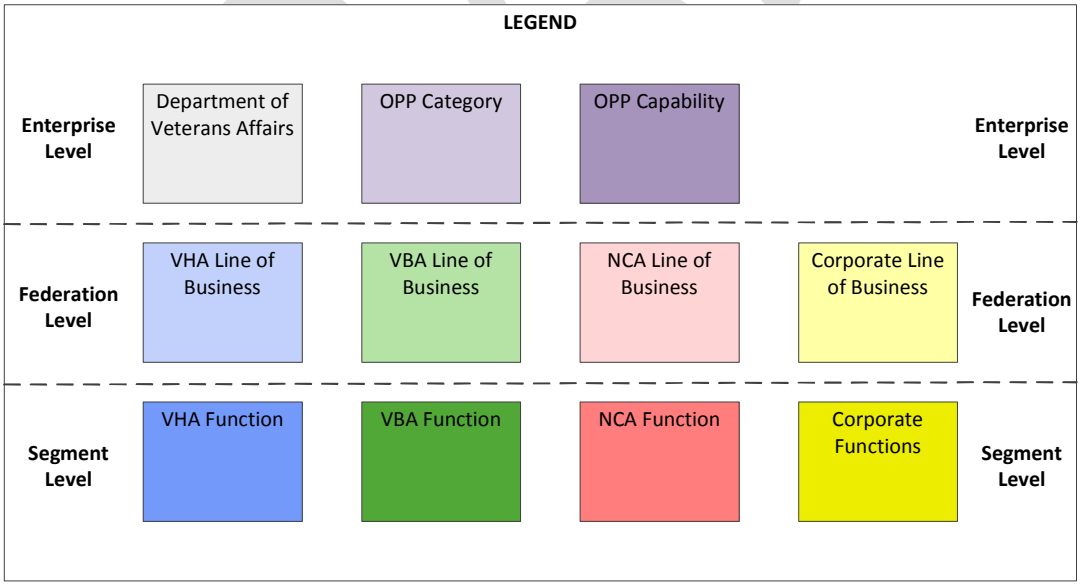
Table 4. Modeling Guidelines for BRM

Element	**Symbol**	**Format**
Documentation Block	Text Box	Position: Upper Left Corner Border: Solid Black Fill: None Text:

Element	Symbol	Format
		Color: Black Font: Arial Size: Default
Business Functions	Rectangle	Border: Solid Black Fill: Business Function on Node Tree Color coded as shown in the following figure. Text: Color: Black Font: Arial Size: Default

A Business Function is colored to denote the line of business to which it belongs. The following figure contains the color for each of the lines of business and Level as defined in the OneVA EA.

Figure 6. OneVA EA Business Function Colors



The color specification for each function is as follows:

- Department of Veterans Affairs: Light gray fill and a black border.
  The custom settings are: Red/Green/Blue – 239/239/239
- OPP Category: Light purple fill and a black border.
  The custom settings are: Red/Green/Blue – 210/201/222

- OPP Capability: Dark purple fill and a black border.
  The custom settings are: Red/Green/Blue – 167/150/190
- VHA Line of Business: Light blue fill and a black border.
  The custom settings are: Red/Green/Blue – 194/210/254
- VBA Line of Business: Light green fill and a black border.
  The custom settings are: Red/Green/Blue – 182/227/166
- NCA Line of Business: Light pink fill and a black border.
  The custom settings are: Red/Green/Blue – 255/213/213
- Corporate Line of Business: NCA Function: Light yellow fill and a black border.
  The custom settings are: Red/Green/Blue – 255/255/166
- VHA Function: Dark blue fill and a black border.
  The custom settings are: Red/Green/Blue – 116/153/252
- VBA Function: Dark green fill and a black border.
  The custom settings are: Red/Green/Blue – 83/169/54
- NCA Function: Dark pink fill and a black border.
  The custom settings are: Red/Green/Blue – 255/125/125
- Corporate Function NCA Function: Dark yellow fill and a black border.
  The custom settings are: Red/Green/Blue – 239/239/0

5.3.2 Object Naming Conventions

The following are the conventions to name the Business Function objects:

- Business Functions shall be named as verb-noun objects. They should represent succinct expressions of what the Business Function does, suitable to the level of Business Function decomposition. The names of the Business Function must be unique and use only approved acronyms, as contained in the OneVA EA DD. New acronyms must be added to the Acronym Definition according to the DD checklist.
- Use Title Case; the first letter of each word in an object name shall be uppercase; other letters should be lowercase. Incidental words, such as prepositions within the object name (“with,” ‘‘at,’’ ‘‘in,’’ ‘‘and’’ or ‘‘the’’), shall be all lowercase.
- Object names shall use the singular form (no plurals).
- Object names shall be spelled correctly and shall not use future tense.

5.3.3 Modeling BRM Objects

The following subsections provide guidelines for the individual elements or components that comprise the BRM Diagram.

5.3.3.1 Business Functions

All Business Functions must be defined. Definitions should reflect the information transformation, creation and consumption actions performed by the Business Function. Each definition must be clear, concise, use active voice, and comprise complete, grammatically correct sentence.

The following is an example of a good definition of a Business Function:

Manage Entitlement: This activity includes a calculation of the amount to be paid as a result of a commercial vendor having provided materiel or services to the Department of Veteran Affairs. The activity verifies funding availability for payment along with conducting a three-way match between the contract, the receiving report, and the certified invoice. The activity also applies any outstanding debt, such as a credit, for monies owed to a federal, commercial, and VA entity against open invoices. The activity calculates interest and discounts in accordance with the contract and the Prompt Payment Act and generates a Certified Business Partner Pay file with applicable banking information, which is sent to a disbursing activity.

- The Business Function label shall begin with a RETURN so that the label does not touch the upper border of the Business Function Box.
- The Business Function box label must fall within the Business Function box border when printed.
- The Business Function box border shall be a solid black line.
- The Business Function box numbers must be sequential. The Business Function Box numbers shall be positioned in the lower right corner of the Business Function box.
- Business Functions are mapped to one or more Stakeholders that have a stake in that Business Function, one of which is the owner.
- Leaf-level Business Functions will be associated with a BRM Sub-function(s) where appropriate.
- All Business Reference Modeling decompositions should follow the “2 to 9 Function box” rule with the exception of the top-level of the BRM.

5.3.3.1 BRM Common Pitfalls

The following are common mistakes made to the BRM models that must be avoided. Checking for these mistakes is included in the BRM Checklist on Appendix B.

- Incorrect use of acronyms.
- Subject Areas not at same level of decomposition.

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6 Conceptual Data Model (CDM)

6.1 Summary Description

Generally accepted data modeling practice defines the following three classes of data models:

1. Conceptual Data Model (CDM)
2. Logical Data Model (LDM)
3. Physical Data Model (PDM)

The CDM is a high level view of entities and relationships of the data that is required to support Business Functions. The LDM contains more detail than a CDM and primarily consists of entities, attributes and relationships based on the functional operational and structural business rules required to support the Business Functions. The PDM primarily consists of tables, columns and referential integrity constraints that are instantiated in a physical database. Typically, the PDM should be automatically generated from the LDM.

This section describes the CDM which is a high level view of Entities that are required to support the Business Functions of the OneVA EA.

6.1.1 Model Purpose

The CDM describes the general groupings OneVA EA data in terms of Entities and Relationships between the Enteritis. The CDM comprises single data model. The Entities are mapped to high level OneVA EA Business Functions to indicate the cross functional use of VA data.

The CDM:

- Enables effective management of data resources by providing a single set of consistent data definitions of Entities for integration purposes.
- Serves as data reference architecture to support the sharing of data between each VA Segment and Solution Architectures.

6.1.2 Model Structure

A CDM consists of high level Entities and Relationships. The LDM and PDM structures are within the realm of the Segment and Solution Architectures.

The following figure is an illustrative example of a CDM.

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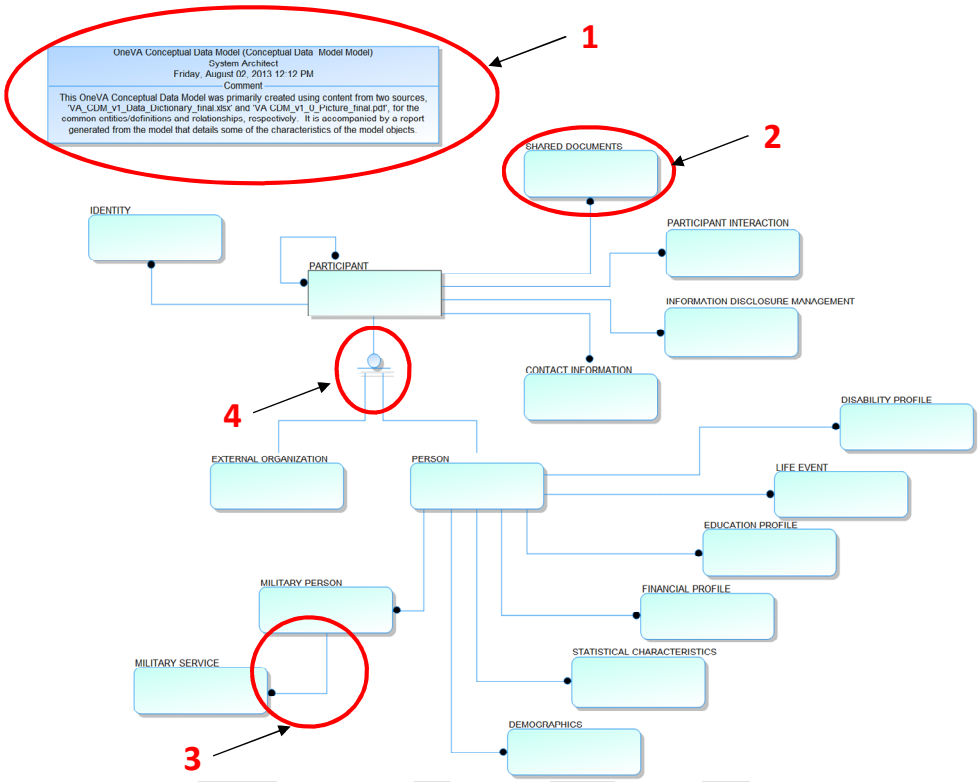
Figure 7. Example of the OneVA EA Conceptual Data Model



6.1.3 CDM Model Definitions

The following are definitions of the key elements contained in the CDM. The following numbered objects refer to Figure 6-1, Example of a OneVA EA Conceptual Data Model. The main features of this diagram are as follows:

- **Documentation Block (1)**, also known as a Title Block, contains the diagram name, last modification date and a brief description of the contents of the diagram. It is located in the upper left corner of the diagram.
- **Entity (2),** each refers to a grouping of data based on Business Functionality. Each Entity is assigned to one Stakeholder based on Business Functionality that creates occurrences of the data.
- **Relationship (3),** is a connection between two Entities based on a structural business rule. Typically, one Entity is the independent or parent entity and the other is the dependent or child entity. This type of relationship is commonly known as a "one-to-many" relationship. A special case relationship of a "many-to-many" is permissible in the CDM with the understanding that it will be resolved in a LDM.
- **Supertype/Subtype (4),** is a special relationship between two entities where the dependent entity inherits characteristics from the independent entity.s

6.1.4 Relationship to Other OneVA EA Models

Shown in the following table are the CDM relationships to other OneVA EA models.

Table 5. Relationships of CDM to other OneVA EA Models

Model	Relationship
OSI	The scope of the development effort for each Stakeholder for a development cycle, as disclosed in the OSI, will determine if the CDM is affected in the release.
DD	All CDM terms with specific meaning must be defined in the DD Terms. These terms must include, as a minimum, all object types included in the deliverable. The CDM deliverable objects that must be listed and defined in the DD are: • Entity definitions All acronyms used in CDM names and descriptions must be listed and spelled out in the DD.
BRM	Each Entity must be mapped to one Business Function.
BPM	An Entity may be mapped to a Data Object in a Process Model.
SIM	An Entity may be mapped to a System Interface.

6.2 Developing the CDM

The OneVA EA Development Team works with Stakeholders to identify the VA data requirements. The team then captures these data requirements in the CDM. The team participates in collaborative working sessions with Stakeholders to support their needs and ensures proper integration with other OneVA EA models.

The following is a list of required background material each modeler must understand to ensure a proper CDM development:

- The Business Functions of the BRM as each Entity must be linked to a Business Function.
- The SIM diagrams as Entities can be assigned to System Interfaces on the SIM diagrams.
- The CDM is used for concept refinement and Stakeholder comprehension of the data and information requirements.
- Stakeholder contributed CDM are incorporated into the OneVA EA CDM to support the level of decomposition of the supporting BRM.

6.2.1 Pre-Development Tasks

Develop a thorough understanding of the scope, context, constraints, objectives and model deliverables of the IP. The following items are the responsibility of the individual architects assigned to each IP:

- Using the OneVA EA HTML, determine existing content from the BRM and identify the leaf-level Business Functions supporting the IP. (This represents the existing scope of the IP within the OneVA EA.) .
- Review BPM Process Steps and their associated Business Rules to determine additional constraints on the CDM.

- Review BPM Data Objects, Message Flows and Message Events and their associated Business Rules to determine additional constraints in the CDM.
- Identify existing/proposed solutions to the CRs in support of the IP.
- Identify existing/proposed Structural and Operational Business Rules that impact the content of the CDM as are required to achieve the desired outcome of the IP.
- Determine all Entities required supporting the IP.
- Model an integrated straw-man representation of the CDM that includes all items identified above.
- Review work within the OneVA EA Development Team to ensure that new Entities properly integrate into the CDM model and the other viewpoint models within the OneVA EA.
- Identify requirements for required HTML and meta-model CRs to ensure the successful implementation of a IP.

6.2.2 Development Tasks

The development and maintenance of the CDM is accomplished offline through working sessions with Government Stakeholders. Proposed architecture enhancements are pre-briefed with directly impacted Stakeholders in closed working sessions. Once a proposed solution is finalized and is acceptable to directly impacted Stakeholders; the proposed changes are vetted with all OneVA EA Stakeholders in facilitated workshops. These workshops need to include Stakeholder participation to address content and validate results. The following subsections describe the approach used to develop the CDM for the OneVA EA. Each subsection sets forth the specific tasks that must be accomplished in each stage of the development phase. Although most of these steps are sequential, it is common to start some steps before a previous step is completed.

All of these tasks must be completed while developing the CDM and are all the responsibility of the individual architects who work with the Stakeholder representatives on the development and refinement of the Business Rules, Data Objects and SIM System Interfaces and ensure their proper representation within the CDM.

6.2.2.1 Creating/Modifying the CDM

Select impacted diagrams or create new diagram(s) as required.

- Model new/revised Entities to capture the functional requirements of the Stakeholders and meet the objectives of the IP.
  - Determine the level of abstraction required to successfully meet the objectives of the IP in the context of the Entities.
    - Treat conceptual requirements with Entities and Business Functions modeled at the highest level of abstraction available to capture the high-level business requirements.
    - Test the resulting CDM with Stakeholders to uncover requirement gaps and design flaws.
    - Adjust the CDM and make refinements as required.
- To ensure that there is no duplication of Entities:
  - Do not duplicate existing Entities within the CDM.
  - Indirectly support the System Interfaces required with Structural or Operational Business Rules that are required to create or constrain the contents associated with System Interfaces.

- Review work with Stakeholders, OneVA EA Development Team/Technical Lead, Independent Verification and Validation (IV&V) and Architecture Verification team to ensure that CDM is properly integrated within the OneVA EA.
- Integrate the approved work models into the OneVA EA.
- Validate the depiction of the content within the CDM with the Stakeholders.

6.2.2.2 Diagram/Model Coordination with Stakeholders

- Allof these tasks are completed in the development phase for the CDM. These tasks are all the responsibility of the individual CDM architects.
- Integrate the approved work CDM into the OneVA EA.
- Incorporate additional change modifications that impact the Stakeholders' data representation caused by subsequent work sessions.
- Identify Entities for incorporation into the CDM from the Stakeholder-approved content.
- Ensure that all System Interfaces have Entities that cover the definitions of the leaf-level Business Functions that fall within the scope of the developmental effort. Coordinate with other OneVA EA Development Team members assigned to other IPs to ensure consistent refinement across all products. Have the refinements validated by the Stakeholders.
- Review work with Stakeholders, OneVA EA Development Team/Technical Lead, IV&V and Architecture Verification team to ensure that the CDM is properly integrated within the OneVA EA.

6.2.2.3 Diagram/Model Clean-up

- Ensure that, at 21% zoom, all names on the diagram can be read..
- Ensure that all diagram descriptions, including the text for the diagram Documentation Blocks, diagram notes, diagram names, object names and object descriptions are spell checked and none are truncated.
- Ensure that all Entities have correct colors.
- Ensure that required Acronyms appear in the DD and that they are defined as Terms in the DD.
- Ensure that words in the "Terms" list of Entities are correctly and consistently represented in all object names and descriptions. Ensure that other definitions do not redefine the Terms.
- Address all items in the CDM Checklist; Diagrams, Definitions and Integration.
- Ensure that the CR packet includes all necessary items.
- Remove CDM objects from the encyclopedia that are not shown on or associated with the CDM.

6.2.3 Post-Development Tasks

- Incorporate additional updates to the CDM based upon approved CRs.
- Document known deficiencies to be resolved within the next release.

6.3 Modeling the CDM

6.3.1 CDM Modeling Conventions

The following modeling conventions shall be used to create the CDM.

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6.3.1.1 Use of Color in CDM Diagrams

Each of the Stakeholder areas has a specific color scheme and identifier to be used on the CDM. The colors and identifiers are applied to Entities within CDM Diagram as shown below.

Table 6. Modeling Guidelines for Conceptual Data Model

Element	**Symbol**	**Format**
Documentation Block	Text Box	Position: Upper Left Corner Border: Solid Black Fill: None Text: Color: Black Font: Arial Size: Default
Entity	Rounded Rectangle or Rectangle	Border: Solid Black Fill: Light blue Text: Color: Black Font: Arial Size: Default
Relationship		Text: Color: Black Font: Arial Size: Default
Supertype/Subtype		

The Documentation Block representing header information for the diagram (including the diagram name and date last updated) is placed on the diagram.

- A Documentation Block is placed in the upper left-hand corner of every diagram as close to the corner as the printer margins will permit.
- The dimensions of the Documentation Block are adjusted so truncation indicators (dots) are not displayed and all text is visible.

- A black border and no fill color are selected for the Documentation Block.
- Borders are not needed for the CDM diagrams.
- The Entities should be grouped by relationships to minimize crossing relationship lines to make the diagram more readable and understandable.
- The Title of the diagram shall include the following:
  - Be centered on the top of the diagram and in title case (determine center placement by printing single page printable diagrams on 8.5”x11” paper, and folding sheet in half side to side).
  - Not be underlined or bolded.
  - Be in Arial font with appropriate font size so the title is in proportion to all other diagrams when single page printable diagrams are printed on 8.5”x11” paper.
  - Be an exact match of the Diagram Name.

6.4 Modeling CDM Objects

The following guidelines are used to create or modify the CDM diagram.

6.4.1 Entity

Each Entity is owned by a Business Function in the Enterprise that uses the data to fulfill the specified business requirements.

- Entity Name: Each Entity name must:
  - Be a singular noun or noun phrase.
  - Presented in CamelCase with no special characters; for example, *PersonDemographic*.
  - Only contain abbreviations in the acronyms list in the DD.
  - Not contain articles (a, an, the) or prepositions (at, by, for, from, in, of, to).
- Entity Definition: Each Entity must have a definition and each definition must:
  - Describe the Entity in ordinary business language.
  - Define what the Entity is, not how, where, or when the Entity is used, or who uses it.
  - Be precise and unambiguous. The exact meaning and interpretation of the defined concept should be apparent from the definition. A definition must be clear enough to allow only one possible interpretation. (Examples may be included to clarify the meaning.) Describe a term in such a way that it has only one meaning within its definition.
  - Avoid using any word that appears in the Entity name. Instead, paraphrase or use synonyms whenever possible.
  - Not be defined in the terms of another Entity. (That is, no circular definition.)
  - Describe one instance, not a group of instances. For example, begin the definition with “A” or “An.”
  - Be stated in terms of the thing of interest to the business, not in terms of the data captured about the thing of interest.

6.4.2 Relationship

Each Relationship is between two Entities.

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- A Relationship has a cardinality of either a “one-to-many” or a “many-to-many”. In a “one-to-many” Relationship the Entity on the “one” side is known as the independent Entity and the Entity on the “many” side is known as the dependent Entity. Each “many-to-many” relationship is meant to be resolved in the corresponding LDM.
- Each Relationship must have a meaningful name that denotes the structural rule for the relationship.

6.4.3 Supertype/Subtype

The Supertype/Subtype construct is a special relationship where the dependent Subtype Entity inherits data from the independent Supertype Entity.

- The implied cardinality between the Supertype Entity and the Subtype Entity is “one-to-one”.
- There is no name associated with the Supertype/Subtype construct.

6.5 CDM Best Practices

This section discusses best practices, including lessons learned from previous architecture development efforts and common modeling pitfalls to avoid.

6.5.1 CDM Lessons Learned

- Monitor changes in the SIM System Interfaces for potential impact within the CDM.
- Changes in the BRM development need to be closely monitored to catch potential impacts on the Entities within the CDM.
- Work with the Stakeholders to determine the rules that govern the content of the CDM and explain the proposed solutions to these same Stakeholders to validate the model content.
- Comparison results must be reviewed and validated with functional Stakeholders prior to the completion of the CDM workshops.
- Standard color coding of diagrams during the workshop is useful for participants to identify where content was added, changed or deleted.
- All exception reports must be reviewed and resolved.

6.5.2 CDM Common Pitfalls

- Failure to follow the rules of normalization.
- Use of acronyms not appearing in the acronym list and/or using an acronym without checking the Term definition.
- Invalid placement and formatting of CDM diagram objects.
    - First, set display to 21% zoom to verify that:
    - Second, repeat the first step from the single page printable diagrams on a color printer, checking plots at 8.5”x11” and 11”x17”. Correct any additional diagram errors uncovered.

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7 Business Process Model (BPM)

7.1 Summary Description

This section describes the BPM, its relationship to other VA EA models, the development method, and the modeling guidelines to be followed. The BPM is BPMN 2.0 compliant which is an accepted industry standard published by the Object Management Group. The BPMN specification, Version 2.0, used for the VA EA BPM, is available at www.BPMN.org.

7.2 Model Purpose

The BPM provides a sequence-ordered examination of Business Process Steps to achieve a Business Capability. The Model represents the "To Be" Operational View of a Business Process, displaying a series of business steps that are executed sequentially, or in parallel, in response to business events, to produce a specific business result.

Secondary purposes include:

- Aligning LRP requirements and Business Rules with specific Business Processes.
- Providing a basis for capital planning and assessing the value of potential investment.
- Setting the foundation for controlled, systematic transformation.
- Establishing a basis for measuring the progress toward achieving transformation objectives.
- Establishing key criteria for testing and evaluating transformation solutions.
- A Business Process should produce a measurable improvement to a product or service. If the effect of a process cannot be measured, then it would be impossible to measure its effectiveness and would also be difficult to control.
- A Business Process should be as autonomous as possible. Tightly linked activities are less flexible and harder to change.
- A Business Process should add value to a product or service. If they are not doing so, then the reason for their existence should be questioned.
- Linking Transaction Types to specific Business Processes.

7.2.1 Model Structure

The BPM model is depicted as a set of diagrams. It comprises BPM models that are developed using the BPMN. BPMN is a standard notation used across industry and Government to document Business Processes and is promoted by the Object Management Group. This standard has been developed specifically to model collaboration across organizations and support the implementation of a service-oriented architecture (SOA). The primary goal of BPMN is to provide a standard notation that is readily understandable by all business stakeholders; the business analysts who create and refine the process; the technical staff responsible for designing and developing the software and infrastructure to support the process; and the business managers who implement, manage and monitor it. Consequently BPMN is intended to serve as common language to bridge the communication gap that frequently occurs between business process design and implementation.

7.2.2 Relationship to Other VA EA Models

Integrated architectures provide a structured and organized approach for defining capabilities and understanding the underlying relationships and requirements for achieving those capabilities. The full spectrum

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of the business can be effectively modeled and related in the BPM, so that detailed analyses and decisions can be supported by describing the sequence of business activities, tying them to Operational Nodes (representing functional areas, organizations or human roles), relating them to supporting systems or System Functions, and specifying the actions, events and related guard conditions or Business Rules that constrain those activities.

Shown in the following table are the relationships between the BPM and other OneVA EA models.

Table 7. Relationships of BPM to other OneVA EA Models

Model	**Relationship**
OSI	The scope of the development effort for each CBM for a development cycle, as disclosed in the OSI, will determine if the BPM is affected in the release.
DD	All BPM terms with a specific meaning must be included in the DD Term Definitions report. These terms must include, as a minimum, the following object types: • Events • Process Steps • Gateways • Data Objects All acronyms used in the BPM descriptions must be listed and spelled in the DD Acronyms Definitions List.
BRM	Process Steps in the BPM are derived from and linked to leaf-level Business Functions in the BRM Business Function Decomposition Tree.
RRM	Each Process Step may be linked to one or more RRM Business Rules. Action Assertion Business Rules from the RRM help to define and are linked to Process Steps and Gateways in the BPM.

7.2.3 BPM Model Definitions

The BPM model consists of a set of VA EA Event Trace Diagrams, which may drill down in detail. The VA EA repository contains descriptions, attributes and linkages to objects in other VA EA models described in this document. The BPM Diagram objects, as shown in the following figure are characterized into four major groups:

- Flow Objects,
- Connection Objects,
- Participants and
- Artifacts.

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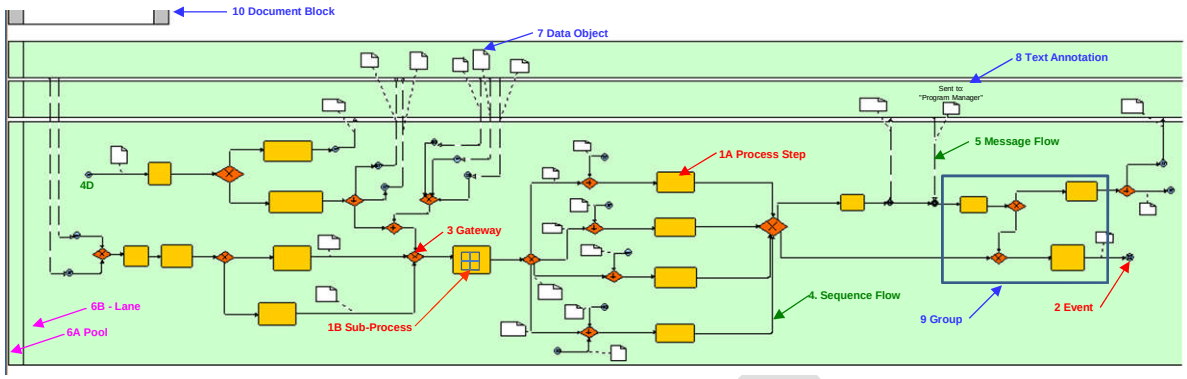
Figure 8. Objects of an BPM Diagram



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7.2.3.1 Flow Objects

Flow Objects actually perform the work and produce the models, synchronize the Process Steps, and direct the process flow. Red numbers identify the Flow Objects on the above diagram. The Flow Objects are:

- A **Process Step** performs the work and produces the model. A Process Step is also called a *task* **(1A)**. A Process Step that is further decomposed into subtasks is called a *Sub-Process* **(1B)**. A Sub-Process is identified with a "+" sign at the bottom center of the Process Step symbol. Sub-Process detail is included in a separate Diagram. The BPMN specification identifies Process Step attributes that address the association between Process Steps and Data Objects Input Data Objects, Output Data Objects, and IO Rules.[1]
- **An Input Data Object** is simply a group of BPMN artifacts, which define the data requirements for input to the Process Step. [2] (Note that a Process Step may have more than one Data Object.) An Input Data Object has an attribute, *Required For Start*, which, when set to *True*, denotes that the Data Object is required for the Process Step to start.[3]
- **An Output Data Object** is simply a group of BPMN artifacts which define the data requirements for output from the Process Step.[4] (Note that a Process Step may have more than one Output Data Object.) An Output Data Object has an attribute, *Produce at Completion*, which, when set to *True*, denotes that the Data Object is produced when the Process Step has been completed.[5]
- **IO Rules** specify the required relationship between one Input Data Object and one Output Data Object. That is, if the process activity is started with a specified input, that Process Step shall complete with the specified output.

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[1] BPMN v1.1, Appendix B.6.1, Common Activity Attributes
[2] BPMN v1.1, Appendix B.11.10, InputSet
[3] BPMN v1.1, Appendix B.11.1, ArtifactInput
[4] BPMN v1.1, Appendix B.11.13, OutputSet
[5] BPMN v1.1, Appendix B.11.2, ArtifactOutput

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- An **Event** acts like traffic signals and holds up the process or allows it to proceed in response to things that happen, called *triggers*. A *Start Event* starts the process in response to a trigger (in this case receipt of one of many allowable messages, shown by the envelope stereotype). An *End Event* **(2)** signifies the completion of the process. There are three types of Events, based on when they affect the flow, *Start, Intermediate* and *End.*
    - **Start Event** – A Start Event indicates where a particular process will start. In terms of Sequence Flow, the Start Event starts the flow of the process, and thus, will not have any incoming Sequence Flow. A Trigger is a mechanism that signals the start of a Business Process. A Start Event shall have a Trigger, indicating how the process starts: Message, Timer, Rule, Link, or Multiple. The Start Event shares the same basic shape of the Intermediate Event and End Event, a circle, but is drawn with a single thin line.
    - **Intermediate Event** - Intermediate Events occur between a Start Event and an End Event. This is an Event that occurs after a process has been started; it will affect the flow of the process but will not start or (directly) terminate the process. The Intermediate Event shares the same basic shape of the Start Event and End Event, a circle, but is drawn with two thin lines.
    - **End Event** - The End Event indicates where a process will end. In terms of Sequence Flow, the End Event is the end of a Task or an output that concludes the process, and thus, will not have any outgoing Sequence Flow. An End Event can have a specific Result that will appear as a marker within the center of the End Event shape. End Event Results are Message, Error, Compensation, Link and Multiple.

  If there is more than one starting or ending Event for a process, combine them into a single Multiple (start or end) Event. Link all Initiating Events or Ending Events to the definition of the Multiple Event. Create a graphic comment on the Event that starts with "Initiating Events:" and list each initiating Event in quotes on a new line. If there is more than one Sequence Flow from the Start Event, use "Initiating Events" followed by a list of Initiating Events for that process. Follow this by a blank line and repeat for each process.

    - **Gateways** control the divergence and convergence of a flow. Thus, it determines decisions, as well as the forking, and merging paths. The following types of Gateways may be used, depending in the conditions.

  Parallel Gateway (Parallel Split/Merge) - Parallel decision Gateways take only one (of many possible) outgoing paths regardless of the input Sequence Flow. Parallel Merge Gateways take the single output Sequence Flow when any (of many possible) input Sequence Flow occurs.

  Event-Based Exclusive Gateway - The Business Process may need to make a decision based on an Event, such as the receipt of a message or the passage of time. Use an *Event-Based* Gateway. The Event triggers determine the course of action. The *Event-Based* decision Gateway must be used when the passage of time is not data-dependent.

  Inclusive Gateway (Inclusive OR Split/Merge) - Inclusive Gateways take more than one Sequence Flow when more than one decision condition evaluates as True. Think of each condition independently activating its own Sequence Flow. The major difference between Inclusive and Exclusive Gateways is that the Exclusive Gateway only takes one Sequence Flow when more than one condition evaluates as true, while the inclusive Gateway takes all the Sequence Flows.

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Data based Exclusive Gateway (Exclusive OR Split/Merge) – Indicates a complex or compound set of conditions that determine the Sequence Flow of the Process, commonly used to simplify and replace a set of linked Gateways. Process Architects provide complex expressions that determine the merging/splitting behavior of the Gateway. Back-to-back Gateways should be avoided unless their use clarifies the process flow.

7.2.3.2 Connection Objects

Connection Objects are represented by arrows that show the flow via sequence or by synchronizing messages between different organizations. These are identified on the above figure with green numbers. The two types of Connection Objects are:

- **Sequence Flows**, shown by solid arrows, indicate the direction of the Process, from one Process Step to the next. Displaying the name of a Sequence Flows **(4)** is optional. Some Sequence Flows have an *initiating Event* **(4D)** that triggers the Sequence Flow, such as the receipt of a message.
  - A Process Step has one input Sequence Flow and one output Sequence Flow. An exception is when a Process Step also contains a throwing Event such as a timer or an exception2.
  - Gateways are used to control multiple input Sequence Flows and direct multiple output Sequence Flows.
- **Message Flows**, shown by dotted arrows, denote messages between Participants (represented by separate *Pools*) that synchronize their separate internal processes. Message Flows are graphical representations of IEs or subsets of IEs on the BPM.

7.2.3.3 Participants

Participants and their roles are represented, respectively, by Pools and Lanes within Pools.

- **A Pool (6A)** is represented by an open rectangle with a *Participant's* name on the left. The Pool contains the processes performed by a Participant. A Pool also acts as a graphical container for portioning a set of Process Steps from other Pools.
- A **Lane (6B)** is a subdivision of a Pool, if it is necessary to show *Roles* within the Pool.

A Pool represents a Participant in a work flow collaboration. A Pool is a container for partitioning a Process from other Pools/Participants. A Pool is not required to contain a Process. That is, it can be thought of as a "black box". However, such a Pool must have a Message Flow.

A Participant is a business entity such as a company division, customer or business role that controls or is responsible for a business process or workflow. When Pools are modeled a specific Participant is associated with only one Pool.

7.2.3.4 Artifacts

The diagram may contain *Artifacts*; notations that do not affect the process flow, but provide clarity to the reader. With the exception of the Document Block, Artifacts should be used only when necessary. Artifacts on the RRM diagram include:

- A **Data Object** is represented by a folded paper icon and reflects data that is consumed or produced by a Process Step. A Data Object is the mechanism to show what data is consumed or produced by a Process Step.
- A **Text Annotation** is a comment provided on the diagram for clarification. The BPM analyst frequently uses this artifact to show where Messages, Sequence Flows, or Data Objects come from or go to.

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- A **Group** is shown as a box enclosing several diagram objects to indicate a logical cluster of diagram objects. A Group does not affect the Sequence Flow and is used for documentation or analysis purposes. A Group may also be used to identify the objects related to a distributed transaction that is shown across Pools.
- **Document Block** is a text box located in the upper left corner of the diagram containing the diagram name and the last update date.
- An **Association** is represented by a dotted line with an arrowhead and indicates data, text, or other Artifacts associated with a Flow Object. An Association is used to show the inputs and outputs of Process Steps.

7.3 Developing the BPM

A top down modeling approach is used. At each level of decomposition, more detailed information is added. Stakeholders and architects enhance and extend the current models as gaps and or new capabilities are identified.

Model development or extension of a current BPM Event Trace Description is accomplished in facilitated workshops to address model content and provide preliminary validation of the results. The remainder of this subsection describes in detail the approach to develop the BPM. Each subsection represents a step in the approach, and the specific tasks that must be accomplished to complete a given step. Although most of these steps are sequential, some may be started before the previous step is completed.

7.3.1 Pre-Development Tasks

7.3.1.1 Analyze VA EA Improvement Proposal

If there is an existing BPM for the Capability related to the IP ensure that Business Functions identified in the Decomposition Tree as supporting the IP are represented as Process Steps in the BPM and are sequenced correctly.

7.3.2 Development Tasks

The primary source for changes to the BPM is the VA EA Stakeholder working group. Each team will conduct workshops with appropriate Stakeholders and business analysts from the VA EA Stakeholder community. During the workshops, business analysts capture proposed changes to models and/or object descriptions. The business analysts conduct detailed analysis of approved changes and raise integration issues for resolution.

After revising all available materials and assessing the requirements, the BPM architect may develop new/revised BPM objects, based on the architectural standards in this document, in cooperation with the VA EA Stakeholder analyst. The objects are driven by Stakeholder requirements in accordance with the configuration management procedures. This may involve updating existing symbols/definitions or creating new ones.

7.3.2.1 Creating/Modifying the BPM Models

Create a new diagram if the diagram is a decomposition of a process or Sub-Process. Modify existing diagrams if the modifications are a result of a workshop review.

- **Process Diagrams**

Create or modify an existing diagram. If the new diagram is a decomposition of an existing Process Step, the new diagram shall be created as a child to the existing Sub-Process. The new diagram should inherit the same name as the parent Sub-Process. For each newly created diagram, the VA EA Stakeholder representatives should develop a summary of the process model in the diagram “properties” dialog box.

When creating a new diagram, ensure SME provides proper name and description. If the diagram already exists and content is added or changed, update name and description as required.

Make sure a Document Block is in the upper left hand corner of the diagram and it contains all pertinent information including a Diagram Title and Diagram Type.

- **Participants**
  - Create new roles (Lanes) or modify existing ones per CBM guidance.
  - Individual Stakeholder teams may design role-based Lanes within its CBM Pool.
  - Each process has one or more CBM Stakeholders assigned.
- **Events**
  - Create/Revise Events (start, intermediate, and end). Each Event shall have clear and concise name and a well-formulated description that identifies and describes the trigger for start and intermediate Events and the result for End Events. Every diagram must have at least one start and one End Event. The following are the primitive events used in the VA EA.
  - Start Event: A start event indicates the first node of a process.
  - Message Start Event: A message start event indicates that the process will start once a particular message has been received.
  - Signal Start Event: A signal start event indicates that the process will start once a broadcast message has been observed.
  - Timer Start Event: A timer start event indicates that the process will start at a specific time (or after a specific delay).
  - Conditional Start Event: A conditional start event indicates that the process will start when a set of rules (conditions) evaluates to true.
  - Intermediate Message Catching Event: An intermediate message catching event indicates that the execution of the process will halt until a specific message has been received.
  - Intermediate Timer Catching Event: An intermediate timer catching event indicates that the execution of the process will halt until a specific message has been received.
  - Intermediate Signal Catching Event: An intermediate signal catching event indicates that the execution of the process will halt until a broadcast signal has been observed.
  - Intermediate Conditional Catching Event: An intermediate conditional catching event indicates that the execution of the process will halt until a specific set of rules evaluates to true.
  - Intermediate Message Throwing Event: An intermediate message throwing event indicates that the process will send a message to a specific recipient at the point specified.
  - Intermediate Signal Throwing Event: An intermediate signal throwing event indicates that the process will send a broadcast signal at the point specified.
  - End Event: An end event indicates the last node of a process.
  - End Message Event: An end message event sends (throws) a message at the end of the process.
  - End Signal Event: An end signal event broadcasts (throws) a signal at the end of the process.

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- **Process Steps**
  - **Create/Revise Process Steps, Sub-Processes, and Tasks**: All processes shall have a clear and unambiguous description which describes in detail how the following participate within the Process Step:
  - **Inputs**: what is consumed or used as reference.
  - **Pertinent Business Rules:** Value-added action; what is performed, what decisions are to be made.
  - **Outputs:** what is created or altered. Place Process Steps from left to right and top to bottom when possible.
- **Data Objects**
  - Data Objects may be associated to Sequence Flows, Message Flows, or as inputs or outputs to Process Steps. SA allows multiple Data Objects to be associated to a Sequence Flow or Message Flow in the Flow Objects definition.
  - Not every Message or Sequence Flow needs to have a Data Object associated with it. Add Data Objects only when it adds clarity to the process.
- **Sequence Flows**
  - Sequence flows are BPMN Connecting Objects that relate BPMN Flow Objects (Events, Process Activities, or Gateways) that are in the same Pool.
  - Sequence Flows are not required to have names unless the name adds clarity.

  Place Sequence Flow names above the flow line and close to the arrowhead, whenever possible.

  Note: A sequence flow name uniquely identifies a sequence flow SA artifact. It may be referenced (by a symbol) multiple times either in one diagram or in other diagrams, but its attributes are the same for all instances.
- **Message Flows**
  - Message Flows are BPMN Connecting Objects that relate BPMN Participants that are not in the same Pool. The Participants involved in a Message Flow are two Pools or optionally two Process Activities that are not in the same Pool or a combination of both – a Pool and a Process Step in a different Pool.
  - Message Flows cannot originate from a start Event
  - A message Flow to an external (remote) Pool and must be to the Pool and not to a Process Step in the external Pool.
  - Message Flows may only be drawn between Pools or Processes in the Pools and not to Data Objects. Place Message Flow names above the flow line and close to the arrowhead, whenever possible
  - Message Flow properties include:

    Source and target Pools or Processes

    Definition of the message passed

Note: Message Flows are graphical representations of IEs or subsets of IEs on the BPM. A message flow name uniquely identifies a message flow SA artifact. A message flow may be referenced (by a symbol)

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multiple times either on the same diagram or different diagrams, but its attributes remain the same for all instances.

- **Gateways**
  - Create Gateways to represent a merge or split of the process flow. The following are the primitive gateways used in the VA EA.
  - Parallel Gateway (Parallel Split/Merge): A parallel gateway splits one process thread into multiple concurrent threads or merges multiple concurrent threads into one thread via a synchronized join (i.e. the outgoing sequence flow will only be activated once all incoming sequence flows have been activated).
  - Data-based Exclusive Gateway (Exclusive OR Split/Merge). A data-based exclusive gateway when used as a split routes the sequence flow from one incoming flow to exactly one of multiple outgoing flows.
  - Inclusive Gateway (Inclusive OR Split/Merge): An inclusive gateway when used as a split activates one or more branches based on branching conditions. When used as a merge, it awaits all active incoming branches to complete.
  - Event-based Exclusive Gateway: An event-based exclusive gateway is always followed by catching events or receiving tasks. Sequence flow is routed to the subsequent event/task which happens first.
  - When the results of a Gateway split are merged, the Gateway type used to create the split must be used to merge the results.
  - Diagram layout should highlight logical structure by using standard patterns to show parallel or alternate paths and iteration.
  - The condition of the Gateway should be expressed in the form of a question, as specific and succinct as possible. The question and answers must set forth the context of the gateway, and the set of answers must be global.
  - Business Rules should be identified, whenever appropriate, to address the logic of the Gateway.
  - The Gateway should be identified as a Data-based Gateway or as an Event–based Gateway.
  - Data-based Gateways use the values of process data to determine which path should be taken.
  - The Event-Based Gateway uses the basic idea that the Decision represents a branching point in the process where the alternatives are based on Events that occur at that point in the process, rather than the evaluation of expressions using process data. A specific Event, usually the receipt of a message or expiration of a timer, determines which of the paths will be taken.
  - Whenever possible, use complex Gateways to avoid using back-to-back Gateways.
  - All diagram objects must have a clear and concise description except un-named Sequence Flows, all Message Flows, and all Event-Based Gateways.

7.3.2.2 Main Pool and Remote Pool Process Messaging Modeling Conventions

Processes in the Main pool can send and receive messages from Processes in Remote Pools where the Remote Pool is not the primary object being modeled. Processes in the Remote Pool should be shown when constraints or dependencies are being documented. There are three variations to messaging modeling between Pools.

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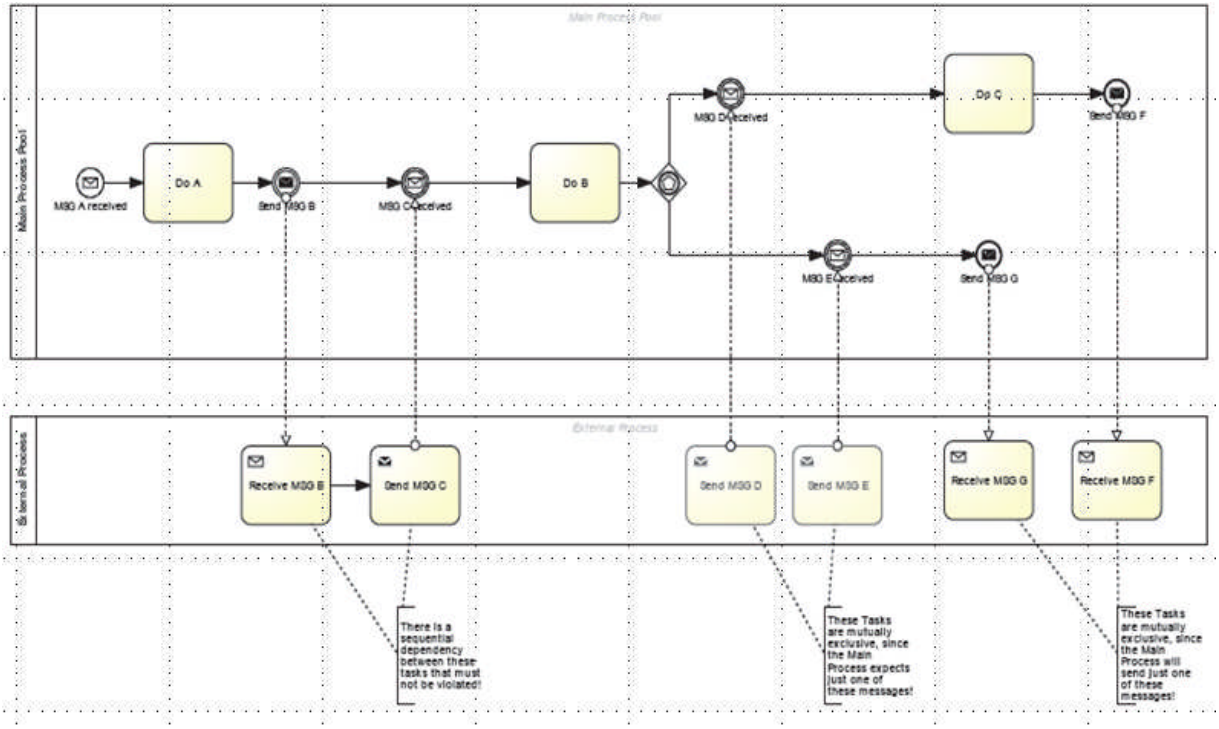
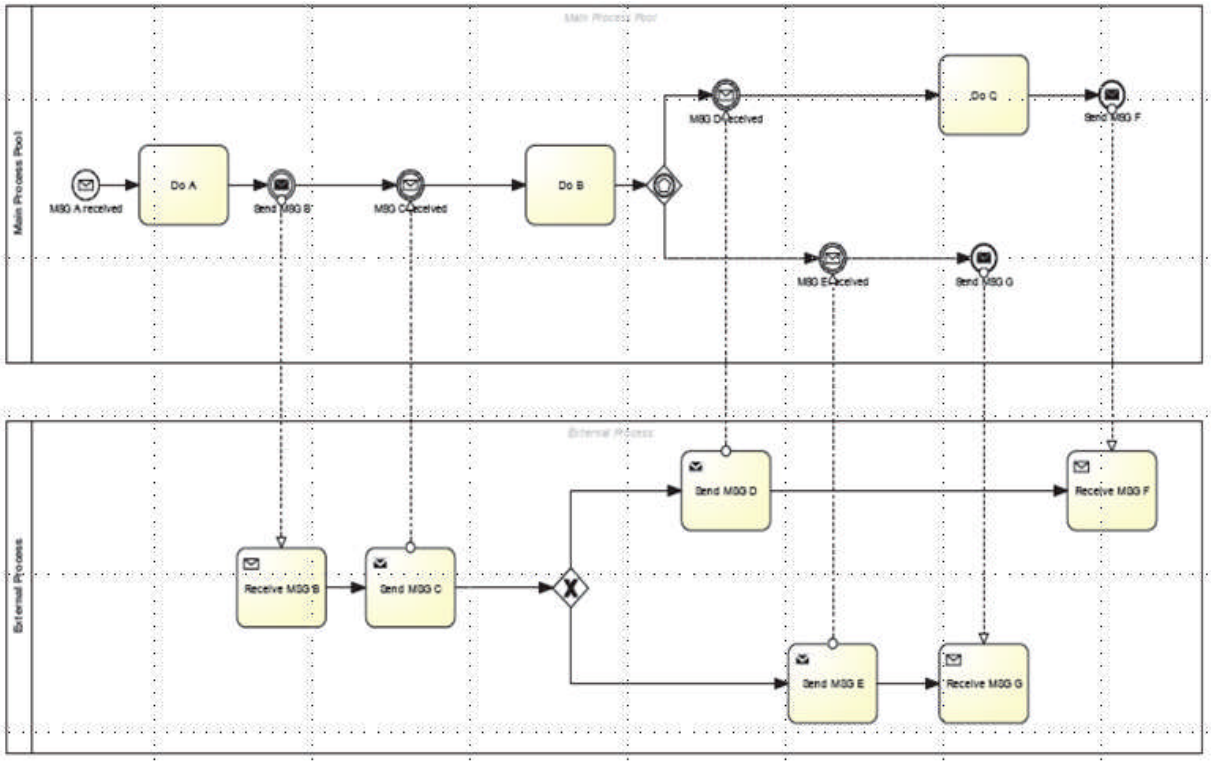
The first variation is shown below where the Processes in the Remote Pool are not connected with each other. This convention is used when the Processes in the Main Pool are not dependent on the workflow in the Remote Pool.

Figure 9. Main Pool Not Dependent of Remote Pool Workflow - First Variation



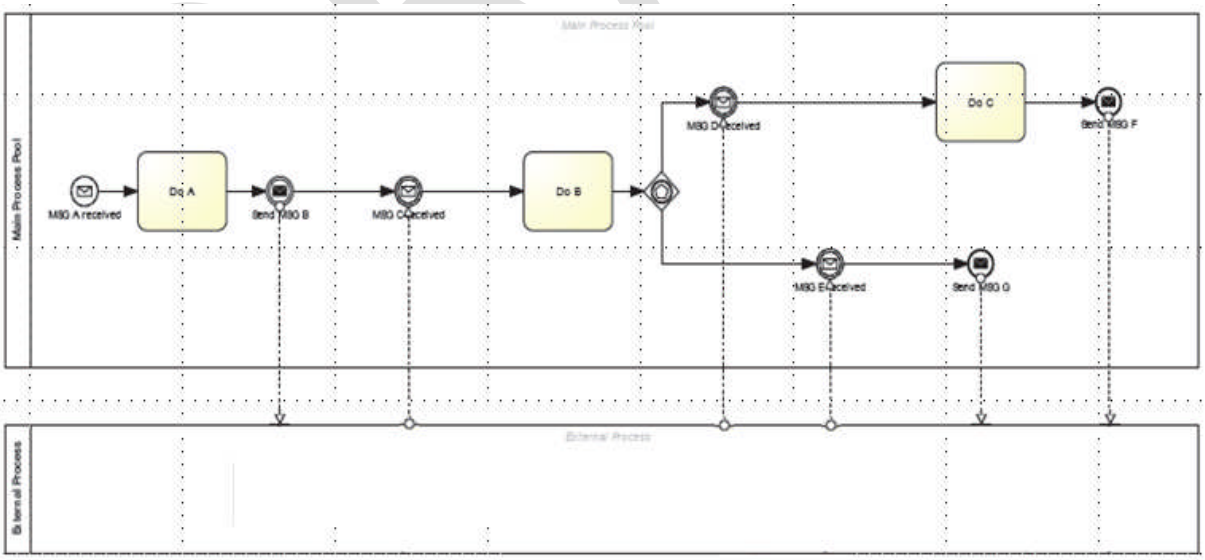
The second variation is shown below where the Processes in the Remote Pool are connected with each other. This convention is used when the Processes in the Main Pool are dependent on the workflow in the Remote Pool.

Figure 10. Main Pool Dependent of Remote Pool Workflow – Second Variation



The third variation is shown below where the Remote Pool does not contain any Processes and the Message Flows are to and from Processes in the Main Pool to and from the Remote Pool container.

Figure 11. Main Pool Dependent of Remote Pool Processes – Third Variation



7.3.3 Post-Development Tasks

These tasks are performed after changes to the BPM have been approved by the VA EA Stakeholders to ensure integration of the architecture:

- Use Microsoft Word to check the spelling and grammar of all objects in the diagram by exporting all object names, descriptions and graphic comments onto a Word document. Verify that all objects are connected via Sequence Flows, Message Flows or associations, as appropriate.
- Remove orphan objects, which do not appear on any diagram or are not connected to or contain any other object.
- Verify that only relevant Pools are included in the diagram.
- Verify that all Process Steps are mapped to an BRM Business Function.
- Incorporate additional updates to the BPM based upon subsequent VA EA Stakeholders working group sessions.
- Incorporate peer reviews, quality control reviews, IV&V reviews and architecture verification changes into the VA EA.

7.4 Modeling the BPM Using SA

7.4.1 BPM Modeling Conventions

This section is a brief overview of the BPM and the notation used in System Architect selected to model VA Business Processes.

VA selected BPMN to depict Business Processes in the OneVA EA. BPMN is a standard notation and is utilized across industry and the government to document their Business Processes. The Business Process Management Initiative developed BPMN.

An BPM diagram consists of a set of graphical elements. These elements enable the development of diagrams that have a familiar look to most business analysts (for example, a flowchart diagram). *The diagram elements are chosen to be clearly distinguishable from each other and to utilize shapes that are familiar to most process architects*. For example, Process Steps are represented by rounded rectangles and Gateways by diamonds. It should be emphasized that one of the drivers for choosing BPMN is that it facilitates development of simple business process models, while handling the complexity inherent to real Business Processes.

BPMN provides a graphical notation for expressing Business Processes in an Business Process Diagram. The objective is to support process management for both technical and business users by providing a notation that is familiar and understandable to business users, yet able to represent complex process semantics.

The BPM provides the capability of understanding internal business procedures in a graphical notation and gives organizations the ability to communicate these procedures in a standard format.

The BPM should not represent Data Flow modeling. However, the BPM may depict the flow of data (messages).

While the general flow of objects within diagrams will be from left to right and top to bottom, due to programmatic and space constraints, objects may be connected to other objects in a manner that to make the diagram more logical and readable.

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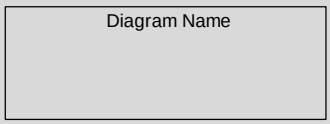
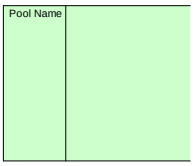
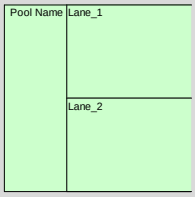
Table 8. Modeling Guidelines for BPM

Element	Symbol	Format
Document Block		Position: Upper Left Corner Border: Solid Black Fill: None Text: Color: Black Font: Arial Size: Default
Pool		Border: Solid Black Fill: Light Green Text: Color: Black Font: Arial Size: Default
Lane		Border: Solid Black Fill: Light Green Text: Color: Black Font: Arial Size: Default
Event Primitives		Border: Solid Black Fill: Light Brown Text: Color: Black Font: Arial Size: Default

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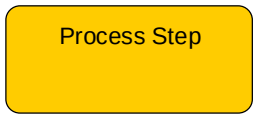
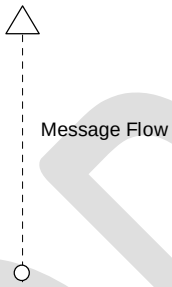
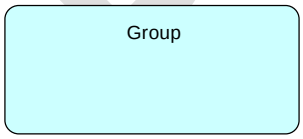
Element	Symbol	Format
Gateway Primitives		Border: Solid Black Fill: Light Brown Text: Color: Black Font: Arial Size: Default
Process Step		Border: Solid Black Fill: Gold Text: Color: Black Font: Arial Size: Variable
Sequence Flow		Line: Solid Black Text: Color: Black Font: Arial Size: Default
Message Flow		Line: Dashed Black Text: Color: Black Font: Arial Size: Pen 7
Data Object		Border: Solid Black Fill: White Text: Color: Black Font: Arial Size: 10
Group		Border: Solid Black Fill: Contrasting light pastel Text: Color: Black Font: Arial Size: Default

7.4.2 Modeling BPM Objects

7.4.2.1 Diagram Conventions

All Diagrams must be clearly named and defined.

Diagram Names shall contain at least one (1) verb and one (1) noun, unless the diagram is the Enterprise Process Model or one of the CBM threads.

Avoid using generic terms such as “Manage”, “Perform”, “Execute”; instead use:

- For “Manage”, use “Handle”, “Collaborate”, “Sustain”, “Maintain”, “Monitor”, etc.
- For “Perform”, use “Implement”, “Develop”, “Produce”, “Distribute”, “Publish”, etc.
- For “Execute”, use “Initiate”, “Finalize”, etc.

Diagrams that depict a Sub-Process should be named for the Sub-Process. However, it is recognized that in the case of Reusable Sub-Processes this is not always possible.

Each BPM Diagram shall include a description to provide a clear understandable narrative of what the Diagram portrays. This information should be included in the Diagram Properties.

The Diagram description must be clear, concise and unambiguous. The description shall include, as a minimum, a summary of the main Process Thread, a reference to the Events and their relationship to other diagrams, a reference to the Gateways and the decisions made, and a summary of the major Business Rules that impact the diagram.

Participants, Data Objects, and Process Steps must have labels containing name and/or other attributes placed inside the shape. Events, Gateways Sequence Flows and Message Flows labels should be placed above the shape as much as possible. However, labels may be placed below or to the right or left of the object to enhance readability of the Diagram.

While extensible, BPM diagrams still have the basic look and feel for any viewer to easily understand a diagram created by any process architect. Thus, the footprint of the basic flow elements (Events, Process Steps and Gateways) should not be altered.

7.4.2.2 Object Naming Conventions

Objects in the BPM diagrams shall have a concise and intuitive name according to the following standards:

- All BPM object names shall be title-case. Nouns must be singular, unless the plural form is required to correctly describe the object. Use only approved acronyms.
- Process Steps must be clearly named and defined. The Process Step name shall contain at least one verb in the present tense and one (1) noun; for example, “Analyze Record.”
- Events shall be clearly defined and labeled. Event names shall consist of at least one noun and one verb or adjective, for example, “Record Analyzed”, “Booking Successful.” Event names shall be as specific as possible, avoiding generic names such as “End”, “Stop”, or “Start.” Do NOT use verb-noun names for Events; for example, “Send Notification” is not a proper name for an Event.
- Data Objects shall be clearly named and defined. The name must have at least one noun that accurately describes the Data Object. A Transition State may be used as necessary to identify changes in Data Objects content or State.
- Decision Gateways must be clearly named and defined with a combination of nouns and verbs conveying a question or query, ending in a question mark. The question and answers must include the context, as the answer must be global in nature.

  Example: The question “Adjustment required?” with the answers “Adjustment not required” and “Adjustment required” are not acceptable because they may also refer to other unrelated adjustments elsewhere in the architecture. A more specific question incorporating context would be “Adjustment to

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cost model required?" with the answers being "Adjustment to cost model required" and "Adjustment to cost model not required" would be better.

- Gateway Control Types should be displayed consistently.
- Participants (Pools) and Roles (Lanes) names shall be composed of nouns, and adjectives, where appropriate, and must be clearly defined.
- Groups may be used to cluster related objects. A name shall be assigned to the Group, defined using appropriate nouns and verbs.
- All Object names shall be less than 80 characters long.
- The following special characters shall not be used in object names:
  - "*"
  - "(" or ")"
  - "-"
  - "/"
  - "&"
  - "?" (except in Gateways)
- Use initial uppercase for all object names. Incidental words, such as prepositions within the object name ("with", "at", "in", "and", "no", "not", "a", "an", "to", or "the"), shall be all lowercase.
- Object names shall be spelled correctly and shall not use future tense.
- Refer to the DD for the approved list of acronyms and abbreviations.

7.5 BPM Best Practices

This section discusses best practices, including lessons learned from previous architecture development efforts and common modeling pitfalls to avoid.

7.5.1 BPM Lessons Learned

- When decomposing a Process Step into a Sub-Process, ensure that all of the objects in the decomposition diagram support the purpose of the diagram.
- Account for multiple Data Objects associated with a Sequence Flow or Message Flow as they show up incorrectly as orphans on the current BART reports.
- Account for initiating Events that only show up on Message Flows or Sequence Flows; they show up incorrectly as orphans on the current BART reports.
- Delete a Pool on a diagram when all objects are removed from it and no Message Flows touch it.
- Remove the object from the encyclopedia after the symbol has been removed from the diagram, after first determining that the object has not been referenced in any other diagram.
- Verify that comparison reports are run using the most up to date correct baseline VA EA modeling tool encyclopedia.
- Use Microsoft Word to check description spelling and grammar.
- Track version dates of the baseline and approved models.

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- Ensure correct Gateway stereotypes are used.
- Ensure correct Event stereotypes are used.
- Standard color coding of diagrams during the workshop is useful for participants to identify where content was added, changed or deleted. Standard color coding should be in line with that used in the VA EA Compare reports.
- Ensure that all exception reports have been reviewed and resolved.

7.5.2 BPM Common Pitfalls

- Events are duplicated on parent and child diagrams.
- Sequence Flow and Message Flow lines cross each other unnecessarily.
- Object labels are hidden.
- All condition expressions out of a Gateway are not identified.
- Child diagrams are not associated with their parent Process Step.
- Object descriptions are not comprehensive.
- Object naming conventions are not followed.
- Process Steps are not associated with Business Functions.
- Sequence Flows between pools.
- Message Flows between objects in a pool.
- Message Flows to Process Steps in external (remote) Pools.
- Conditional Sequence Flows.
- Multiple input Sequence Flows.
- Multiple output Sequence Flows.
- Missing Start Event.
- Merge Gateway type incorrectly matched with Split Gateway type.
- Missing alterative flow from a Split Gateway type.
- Start Event used as an intermediate Event.

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8 Business Capability Model (BCM)

8.1 Summary Description

A *Business Capability* is an ability or capacity that an enterprise may possess or exchange to achieve a specific purpose or outcome. A Business Capability is not just a Process (a process delivers a capability using a mixture of people, technology, and location) nor just a Business Function (business function describes what the enterprise does). Business Capabilities are a combination of processes, business functions, people (organization, knowledge and skills, culture), technology solutions, and assets (facilities, funds, etc.) aligned by strategic performance objectives to fulfill an information need.

A Business Capability describes the business capabilities expressed via the business systems/services of an enterprise and the units of the organization that are performing those functions. As such, a Business Capability is comprised of appropriate Business Functions implemented through Process Steps that satisfy an information need of the enterprise. There can be customer-facing capabilities, supplier-related capabilities, core business execution capabilities, and business management capabilities.

A Business Capability can be directly tied to business strategy, creating a mechanism to directly connect Enterprise Architecture to Business Strategy. A Business Capability also provides a natural way to segue objectives from a strategic to tactical level.

A changing business environment can cause changes to existing Business Capabilities or can create new Business Capabilities. Changes can also be caused by Laws, Regulations and Policies as well as information needs from external organizations.

A Business Capability can be composed of several smaller Business Capabilities. Initially, the OneVA EA only describes the highest level Business Capabilities. The OneVA EA BCM diagram will evolve and mature over time. The VA is a mature enterprise with existing systems and processes in place. The evolution of the OneVA EA BCM diagram will be in lock step with the evolution of the VA to SOA as a Business Capability which can be implemented as a Service.

8.1.1 Business Capability Model Purpose

The intended usage of the model includes:

- Identifying Business Capability requirements.
- Identifying Business Capability gaps.
- Deriving cohesive sets of user requirements.
- Providing reference Business Capabilities for other architectures.

8.1.2 Business Capability Model Structure

The Business Capability Model structure in the OneVA EA is a sequence diagram as shown in the following figure; however, a Business Capability can stand alone as illustrated below.

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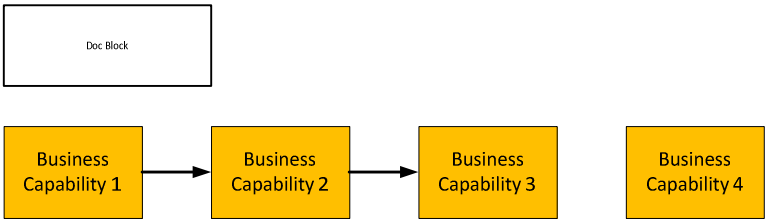
Figure 12. Example of a Business Capability Model



As indicated in the above figure, the objects or main features used to represent the Capability Taxonomy are:

- **Doc (title) Block:** Located in the upper left corner of the diagram. The title block contains the diagram name and type in the format "OneVA EA Business Capabilities".
- **Business Capability:** Shown as the orange rectangular shape in the diagram is an enterprise Business Capability. **Orchestration:** Shown as an arrow from one BC to another BC at the same level.

8.1.3 Relationship to other OneVA EA Models

Integrated architectures provide a structured and organized approach for defining capabilities and understanding the underlying relationships and requirements for achieving those capabilities. Shown in the following table are the relationships between the BCM and other OneVA EA models.

Table 9. Relationships between BCM and other OneVA EA Models

Model	**Relationship**
DD	All Each term used in the BC definitions with a specific meaning must be included in the DD Term Definitions report. Each acronym used in the BC descriptions must be listed and spelled out in the DD Acronyms Definitions List.
SPO	A Business Capability can be initiated by an objective of the Strategic Plan.
BPM	The BPM Processes are mapped to a Business Capability. Business Functions are implemented by Process Steps. Process Steps are implemented by Systems/Applications/Services.

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8.1.4 *Business Capability Definitions*

The following are definitions of the key elements contained in the Business Capability Taxonomy:

- **Business Capability: A** Business Capability is a combination of processes, functions, people (organization, knowledge, skills and culture), technology solutions, and assets (facilities, funds, etc.) aligned by strategic performance objectives to fulfill an information need.
- **Sequence Connector:** A line that connects a one BC to another BC that denotes the sequence of operation.

8.2 Developing the Business Capability Model

This section describes the approach to develop, extend and to maintain the Business Capabilities in the OneVA EA. The OneVA EA defines the Department's Business Capabilities to support transformation priorities through the Stakeholders and the combination of systems and initiatives that enable those capabilities. The Business Capabilities can be used for investment decision making and portfolio management.

8.2.1 *Pre-Development Tasks*

Business Capabilities are the building blocks of an enterprise and have relationships to each other and to the environment. Together, people, process, business functionality, technology and performance management creates a Business Capability that satisfies an information need. The Stakeholders must be well versed in the following three steps.

- **Start with Business Outcomes.** The Strategic Plan may identify new business outcomes which may require new Business Capabilities to be developed. Changes to Laws, Regulations and Policies may also cause new Business Capabilities to be developed or current Business Capabilities to be amended.
- **Review BRM Business Functions.** A Business Capability model is good, but if it cannot be carried through to implementation, if it is only a picture. Business Capabilities are linked to BPM Processes which, in turn, are linked to Business Functions that are implemented as Systems/Applications/Services. A Business Capability can span existing Systems/Applications/Services or cause new ones to be developed.
- **Evolve Business Capabilities.** Business Capabilities should be implemented using an integrated, operational, measurable combination of people, business functions, processes, technology, and physical resources. Business Capabilities should be implemented in an evolutionary manner.

8.2.2 *Development Tasks*

The Stakeholders must determine the taxonomy and lexicon of the Business Capabilities for incorporation into the Business Capability Model. Initially, this requires identification of the high level with the intent of decomposition in the future.

Each new functional tier defined for Business Capabilities will require a Business Capability diagram to reflect the functional tier and its decomposition.

A Business Capability is not a process step or task but can be orchestrated in concert with other Business Capabilities to achieve a desired outcome. This orchestration is depicted by a directional arrow from one Business Capability to another. The arrow does not imply a transient data interface.

The following tasks must be performed to create or modify Capability Diagrams:

- Review the Business Capability Model for internal consistency.

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- Compare and contrast the current Business Capability Diagrams to the latest set of Business Capabilities derived from the Strategic Plan or from Laws, Regulations and Policies.
- Validate Business Capabilities definitions and linkages to BPM Processes against requirements submitted by the Stakeholders.
- Validate Business Capabilities linkages to Strategic Plan Objectives against requirements submitted by the Stakeholders.
- Create the Business Capability Diagram
- Identify and validate an authoritative list of Business Capabilities with the Stakeholders to load into the EA tool.
- Update the Business Capability Model.

Changes and deletions to the Business Capability Diagrams are made to conform to the Stakeholder changes.

8.2.3 Post-Development Tasks

The updated Business Capability Model is compared to the previous Business Capability Model with the intended Stakeholder changes to determine that all changes have been implemented. Each Business Capability must have a name and definition. All acronyms used in name or definition must be included in the Acronym list.

8.3 Modeling the Business Capability Model

8.3.1 Business Capability Modeling Conventions

The following modeling conventions shall be used to create an efficient and effective Business Capability Model.

Use of Color, Size and Lines in a Diagram

Table 10. Modeling Guidelines for Business Capability Diagram

Element	Symbol	*Format*
Doc Block	Text Box:	Position: Upper Left Corner Border: Solid Black Fill: None Text: Color: Black Font: Arial Size: Default
Parent Capability	Rectangle:	Border: Solid Black Fill: Orange Text: Color: Black Font: Arial Size: Default

Element	Symbol	*Format*
Orchestration	*Arrow:*	Border: Solid Black Fill: N/A Text: Color: Black Font: N/A Size: N/A

The following are the Diagram Conventions:

- There is one Business Capability Model in the OneVA EA.
- A Business Capability diagram shall include a diagram description that shall be stored in the Description attribute under Diagram Properties.
- All modeling objects shall have no truncated entries on the diagram.
- The Business Capability box label shall use title case (first letter of each word capitalized, other letters lowercase) should be non-plural (exception approved by VA), and can use only the special character "-". Any acronyms used in the Business Capability name must be from the approved acronym list that is part of the OneVA EA DD. New Acronyms will be added to the Acronym list in the DD.
- The Business Capability box label shall fall within the Business Capability box border when printed.
- The Business Capability box label shall not contain truncation indicators (dots) signifying that there is additional text not visible.
- Business Capabilities must have a definition that is clear, concise and uses active voice.
- The diagram shall be centered (as permitted by the tool) on the diagram.
- A Doc Block representing header information for the diagram (including the diagram name and date last updated) shall be placed in the upper left-hand corner of every diagram with no white space above or to the left of the Block. No graphic comment shall be included. The Doc Block shall be enlarged so there are no truncation indicators (dots) signifying that there is additional text not visible. The Doc Block shall be a box with no fill color and a black border.
- The diagram is not bounded by a border.

The following are the Object Naming Conventions:

- Capabilities shall be named as verb-noun objects. They should represent succinct expressions of what the Business Capability provides, suitable to the level of decomposition. The Business Capability names must be unique and use only approved acronyms, as contained in the OneVA EA DD. New acronyms must be noted and passed to the DD model team lead for inclusion in the model.
- The only special characters allowed are "-" and " ' ".
- Use Title Case; the first letter of each word in an object name shall be uppercase; other letters should be lowercase. Incidental words, such as prepositions within the object name ("with," ''at,'' ''in,'' ''and'' or ''the''), shall be all lowercase.

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- Object names shall use the singular form (no plurals) with exceptions approved by the Chief Architect.
- Object names shall be spelled correctly and shall not use future tense.

8.3.2 Modeling Business Capability Objects

The following subsections provide guidelines for the individual elements or components that comprise the Business Capability Taxonomy.

- Each Business Capability must be defined. The definition should reflect the information transformation, creation and consumption actions performed by the Business Capability. Each definition must be clear, concise, use active voice, and comprise complete, grammatically correct sentence.
- The Business Capability label shall begin with a RETURN so that the label does not touch the upper border of the Business Capability Box.
- The Business Capability box label must fall within the Business Capability box border when printed.
- The Business Capability box border shall be a solid black line.
- The Business Capability box numbers must be sequential. The Business Capability Box numbers shall be positioned in the lower right corner of the Business Capability box.

8.3.3 Business Capability Model Best Practices

This section discusses best practices, including lessons learned from previous architecture development efforts and common modeling pitfalls to avoid.

7.3.3.1 Business Capability Lessons Learned

The following are lessons learned from developing Business Capability Models.

- Standard color coding of diagrams during the workshop is useful for participants to identify where content was added, changed or deleted.
- All exception reports must be reviewed and resolved.

7.3.3.1 Business Capability Diagram Common Pitfalls

The following are common mistakes made to the Business Capability Diagrams that must be avoided.

- Ineffective use of diagram space.
- Business Capability boxes too large or too small.
- Diagram overly dense or too spread out.
- Inappropriate color coding of diagram objects.
- Business Capability diagram description not properly defined.
- Business Capability definitions do not conform to guidance.
- Incorrect use of Acronyms.

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9 Strategic Plan Objects (SPO)

9.1 Summary Description

This section describes the SPOs and their relationship to other OneVA EA models, the development method, and the guidelines used for development.

9.1.1 Model Purpose

The *Department of Veterans Affairs Strategic Plan Refresh FY 2011-2015* lays out how the VA will work together over the next five years to achieve a transformation to a *people-centric*, *results-driven* and *forward-looking* organization. The plan is framed by ensuring the VA current environment is understood as the starting point and then carefully reviewing the complex changes underway in the community of Veterans and their families, the external environment and the internal operations of the VA.

The Strategic Plan is a driver of the content in the OneVA EA. Currently implemented Systems, Applications and Services are linked to the SPO through the integrated products of the OneVA EA. Consequently, the impact of changes to Systems, Applications, and Services due to changes in the Strategic Plan can be evaluated. The Strategic Plan provides guidance to the implementation of Systems and Services by changing the OneVA EA.

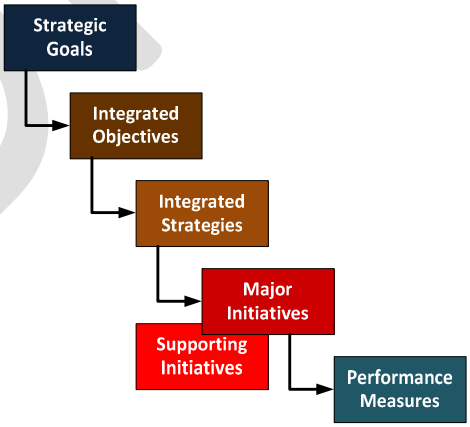
The SPO can be used to:

- Support alignment of services, systems and solutions to the prioritized strategic capabilities of the Department.
- Define or flag issues, opportunities, or information dependencies among functional areas that need to be scrutinized further.
- Identify the context or framework of how certain aspects of the business will be performed.

9.1.2 Model Structure

The SPO model is a text report that is based on the Strategic Planning Framework as described in the Strategic Plan. The Strategic Planning Framework is shown in the following figure.

Figure 13. SPO Objects



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The Strategic Planning Framework essentially is a hierarchical structure starting with Strategic Goals and ending with Performance Measures. The observed Performance Measures can indicate the operational success of the Strategic Plan.

The Strategic Plan defines all of the objects in the SPO model as listed below.

- Strategic Goals
- Integrated Objectives
- Integrated Strategies
- Major Initiatives
- Supporting Initiatives
- Performance Measures

The name and definition of each object and the association between the objects are specified in the Strategic Plan.

9.1.3 Relationship to other OneVA EA Models

Shown in the following table are the relationships between the SPO and other OneVA EA models.

Table 11. Relationships between OSI and other OneVA EA Models

Model	Relationship
DD	All SPO terms with specific meaning must be defined in the DD Term definitions report. These terms must include, at a minimum, all the following object types: • SPO Definitions All acronyms used in the SPO descriptions must be listed and spelled out in the DD Acronym Definitions report.
BCM	SPO Major Initiatives are linked to the Business Capabilities they support.
System/Applications/ Services	SPO Performance Measures are linked to Systems/Applications/Services

9.1.4 SPO Definitions

The following are definitions of the key objects of the *Department of Veterans Affairs Strategic Plan Refresh FY 2011-2015*contained in the SPO:

- **Strategic Goals:** Statements that are major outcomes to be achieved by through the implementation of the Integrated Objectives to produce a crosscutting transformational end state.
- **Integrated Objectives:** Provide a common set of premises upon which strategies and initiatives are based.
- **Integrated Strategies:** Define the ways and means, or courses of action, that have been designed to realize the Integrated Objectives.
- **Major Initiatives:** Identify the crosscutting business functionality and high-impact priority efforts that are designed to address the most visible and urgent issues in the VA.

- **Supporting Initiatives:** Describe in detail what actions must be undertaken at the organizational level to implement a particular Integrated Strategy.
- **Performance Measures:** Quantifiable expressions of the amount, cost, or result of implemented initiatives that indicate how much, how well, and at what level, products or services are provided to customers during a given time period.

9.2 Developing the SPO Model

9.2.1 Pre-Development Tasks

The current version of the Strategic Plan should be reviewed and analyzed. The objects, names and definitions should be compared and contrasted to objects in the current version of the OneVA EA. Each difference should be noted as a change to the current version of the OneVA EA.

The linkage of SPO objects to other products in the current version OneVA EA should be reviewed and analyzed for potential changes.

Based on the reviews and analyses, the SPO objects are changed to be in alignment with the latest version of the Strategic Plan. The linking of the SPO objects to each other must follow the order indicated in the Strategic Plan.

9.2.2 Map SPO Objects to Other Products

Based on the reviews and analyses, the SPO objects are linked to other OneVA EA products. Each Major Initiatives is linked to a Business Capability and each Performance Measure is linked to a System or Service.

9.2.3 Model Clean-up

This activity is used to provide analysis/review support to the final delivery of SPO model.

SPO objects are validated against the current VA Enterprise Strategic Plan.

The Strategic Plan is created outside of the OneVA EA and the contents and structure can change from one release to the next**.**

9.2.4 Post-Development Tasks

These tasks are completed after the work has been approved by the Stakeholders:

- Incorporate additional updates to the SPO based upon subsequent work sessions.
- Incorporate quality control and architecture verification changes into the OneVA EA.
- Incorporate additional Stakeholder updates based on their review.
- Incorporate additional executive management updates based on their review.

9.3 Modeling the SPO Model

9.3.1 Modeling Conventions

The SPO model consists of textual definitions and linkages to other OneVA EA products. The SPO input window is invoked from the Definitions list and the following three data input fields are displayed:

- **Name:** Enter an alphanumeric text short name that uniquely identifies the object. This name is used to identify the object and to link the Major Initiatives and Performance Measures to other OneVA EA models and products.

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- **Long Name:** Enter an alphanumeric text field containing meaningful business name of the object. This name is used by the Stakeholders.
- **Description:** Enter an alphanumeric text field that outlines the purpose of the object.
- **SP Release:** Enter an alphanumeric text Strategic Plan document name which must include timeframe.

9.3.2 *Object Naming Conventions*

- The above **Long Name** and **Description** data fields are directly takenfrom the latest version of the Strategic Plan.
- The **Name** data field is created by the architect and is derived from the **Long Name**.
- Object **Long Name** and **Description** shall be spelled correctly.

9.3.3 *Modeling SPO Objects*

The following subsections provide guidelines for the individual elements or components that comprise the SPO Model.

The complete set of SPO objects must be validated for input to the OneVA EA:

- Strategic Goals
- Integrated Objectives
- Integrated Strategies
- Major Initiatives
- Supporting Initiatives
- Performance Measure

The hierarchical links between the above objects in the OneVA EA must correspond to the order in the Strategic Plan. The links should be specified: Goals to Objectives, Strategies to Objectives, Supporting Initiatives to Strategies, Measures to Major and Supporting Initiatives. This is implied through the framework in Figure 7-1 and explained as a hierarchical structure.

- The Performance Measure object must be linked to an OneVA EA System/Application/Service. The System/Application/Service provides the data for the performance measure

An Initiative object can be linked to a Business Capability. The initiative is a Business Capability that is implemented by Business Processes that invoke Business Functions.

9.3.4 *SPO Common Pitfalls*

The following are common mistakes made to the SPO models that must be avoided.

- Acronyms not included in the Acronym List.
- Replaced Acronyms not removed from the Acronym List.
- Terms not included in the Term List.
- Replaced Terms not removed from the Term List.
- Performance Measures not linked to Systems/Applications/Services

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10 Systems Interface Model (SIM)

10.1 Summary Description

This section describes the Systems Interface Model (SIM), its relationship to other OneVA EA models, the development method, and the modeling guidelines to be followed.

The SIM depicts System Nodes, the Systems and top level Services resident at these nodes and System Interfaces needed to implement the automated data exchanges between Systems and Services from node to node. In this section of the document the term "System" is used to represent both Systems and Services. Both are implementations of Business Functions and data. The primary differences are size and implementation.

10.1.1 Model Purpose

The SIM displays the relationships of Systems to System Nodes, and the interfaces between Systems. The SIM is a bridge between the functional products and system products of the architecture. The SIM System Nodes are linked by System Interfaces that designate integration data.

10.1.2 Model Structure

The SIM is depicted as a set of diagrams It comprises Systems and System Interfaces, as described in the following sections. For the OneVA EA, individual SIM diagrams are developed for each Stakeholder and for the External Node. Each Stakeholder has a System Node that represents a set of systems and functions performed by VA for a specific line-of-business.

The External Node represents non-VA systems and federally mandated systems that interface with the VA systems. In each SIM diagram, an oval in the center of the diagram represents the focus VA or External System Node. All other peripheral System Nodes, VA or External, that exchange information with the focus System Node are presented on the VA-specific SIM diagram.

The focus System Node includes the VA identified Enterprise Systems and Family of Systems along with their supporting system interfaces. Each peripheral system node will only include systems that interface to the focus node. The System Interfaces on each model depict both internodal and intranodal exchanges of information with the focus node in support of Business Functions. The following is an example of a SIM.

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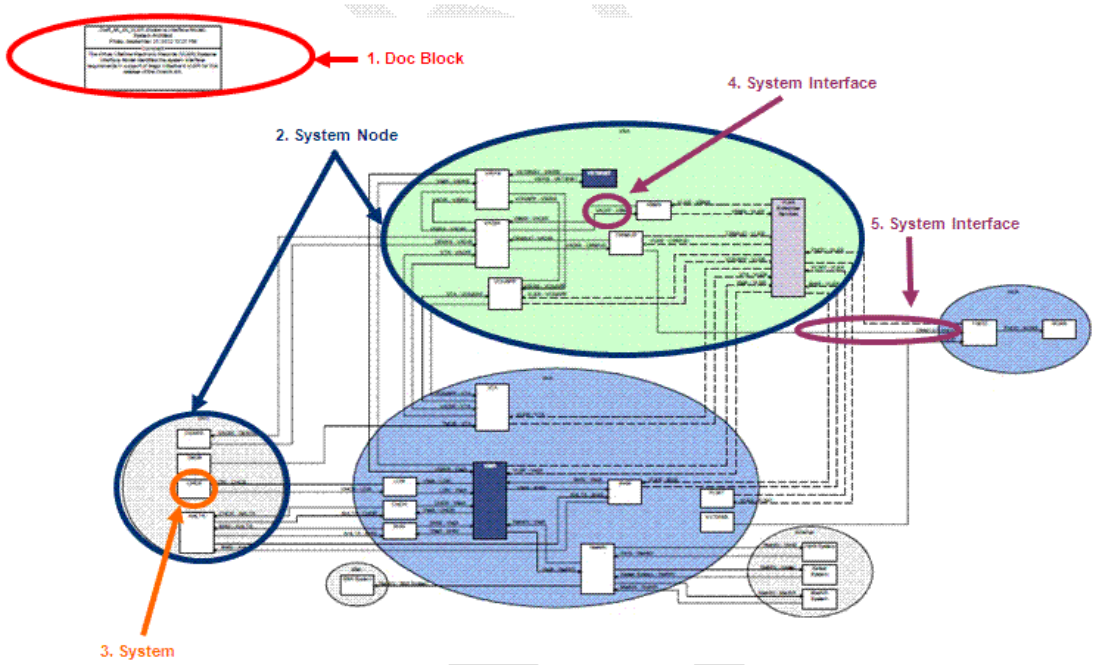
Figure 14. SIM Model Example



Individual SIM diagrams are developed for each Stakeholder and the External node. The objects used to represent the SIM model are numbered as shown in Figure 14. The main features of this diagram are:

- **Documentation Block (1)** is located in the upper left corner of the diagram. The title block contains the diagram name which includes the focus Stakeholder ("MI_4_ VLER"), type ("Systems Interface Model") and last modification date.
- **System Nodes (2)** are the large oval shapes in the diagram that are named after the Stakeholder. The SIM diagram name represents the focus System Node.
- **Systems/Applications/Services (3)** are the rectangles contained within each System Node. They represent the VA Stakeholder enterprise or System of Systems, and external systems including federally mandated systems.
- **System Interface (4), (5)** are the directional lines between the Systems. They represent intranodal communications between systems within a System Node (4) and internodal communications between systems across System Nodes (5).

10.1.3 Relationship to other OneVA EA Models

Shown in the following table are the relationships between the SIM and other OneVA EA models.

Table 12. Relationships between SIM and other OneVA EA Models

Model	Relationship
SPO	Currently implemented Systems, Applications and Services are linked to the SPO through the integrated products of the OneVA EA. Consequently, the impact of changes from the Strategic Plan to Systems, Applications, and Services can be evaluated. The Strategic Plan provides guidance for implementing Systems and Services changes in the OneVA EA.
DD	All SIM terms with specific meaning must be defined in the DD Terms Definition list. These terms must include, as a minimum, all object types included in the deliverable. All acronyms used in the SIM system interface descriptions must be listed and spelled out in the DD Acronym Definitions report.
Systems/Applications/Services	Top most Systems/Applications/Services are assigned to System Nodes.

Planned steps for either migrating the current suite of systems to a more efficient suite, or evolving a current system towards a future implementation are presented in the ETP. These future systems are identified as System on the SIM and are detailed in the System Migration Summary Spreadsheet, of the ETP. Once an enterprise system is fully implemented it is removed from the ETP but will remain within the OneVA EA architectural models until a replacement is identified.

10.1.4 SIM Model Definitions

The following are definitions of the key elements contained in the SIM:

- **System Node:** A OneVA EA System Node represents one or more systems that work together within a Segment to support the automated portion of the business requirements described in the Business Functions.
- **System/Application/Service:** A System represents VA systems and their key external system connections. An Application is a subset of a System. A Service is an executable, reusable component. In the OneVA EA, System can be identified as an enterprise systems, a System of Systems (SoS) or an external system. An enterprise system is a system that has been identified as the standard across the VA. The Family of Systems is a set or arrangement of independent systems that can be arranged or interconnected in various ways to provide different Stakeholder capabilities. A SoS is used in the OneVA EA to show connections between component and enterprise systems. An external system represents a system that is not in the OneVA EA but that does interface with systems within the OneVA EA.
- **System Interface:** System Interfaces represent the data exchanges between Systems.

10.2 Developing the SIM Models

This section describes the approach to develop, extend and maintain the SIM. The SIM is developed as a diagram.

The SIM model development is done in collaboration with the Stakeholders and, when necessary, VA Program Managers who are responsible for the enterprise systems. Pre-development sessions and formal workshops are held with Stakeholders to identify and define system functionality represented by Enterprise Systems in the OneVA EA.

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The SIM represents the system implementation of the business requirements.

During the pre-development period, the Stakeholders are provided with worksheets to collect information about their enterprise systems from the Program Managers and their community of interest. During development this information is analyzed, along with changes to functional models, to create the SIM models.

10.2.1 Pre-Development Tasks

The tasks that must be completed prior to SIM development and/or maintenance are:

- The Stakeholder representative is provided a copy of the existing SIM diagram and definitions. The Stakeholder representative is responsible for identifying the Stakeholder mission thread, defining information and data standards needed to implement the threads and defining the System Functions (automations) that systems provide in support of those threads.
- The Program Managers provide information on their respective Enterprise System to their Stakeholder representative. The Stakeholder representative reviews the information and provides it to the OneVA EA Development Team for analysis and inclusion in the OneVA EA.
- The Stakeholder representative determines the appropriate systems and, if applicable, contacts the responsible Program Manager for the following information about their enterprise systems:
    - System name and description
    - Interfacing systems and definition

As part of the pre-workshop activity the OneVA EA Development Team works with the Stakeholder representative to ensure that any new business requirements are represented in the system requirements and that any new system requirements are also reflected in the business requirements. A tight link between the SIM and the BRM is maintained to ensure that the SIM is integrated with the Stakeholder business requirements.

10.2.2 Development Tasks

The development and maintenance of the System Interface Diagram is accomplished in facilitated workshops that include Stakeholder participation to address content and validate results. The following subsections describe the approach used to develop the SIM in the OneVA EA. Each subsection sets forth the specific tasks that must be accomplished in each stage of the development phase. Although most of these steps are sequential, it is common to start some steps before a previous step is completed.

Prior to any changes, an impact analysis is conducted to assess the impact of new or revised business requirements to the SIM. The following impact analysis tasks are performed:

- For creation or any changes to Systems Nodes:
    - Assess impact to Major Initiatives.
    - Assess impact to other Stakeholder SIM diagrams.
- For creation or changes to Systems:
    - Assess impact to Major Initiatives.
    - Assess impact to System Nodes.
    - Assess impact to other SIMs diagrams.
    - Assess impact to Segment architectures.
- For creation or changes to System Interfaces:

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- Assess impact to System Interface name.
- Assess impact to Stakeholders.

The SIM must be reviewed for consistency. Because the Major Initiatives are so closely linked to the SIM, the SIM is only completed after the SPO has stabilized.

The following rule must apply for the creation of a valid SIM diagram: For each system interface the sending system must reside in the system node that corresponds to the Major Initiative.

After a new SIM diagram has been created or an existing SIM diagram has been opened, the following tasks are performed for creating the various elements of the SIM:

- To create System Nodes:
  - Create a System Node for each Stakeholder
  - Define System Node
- To create Systems/Applications/Services:
  - Name System/Application/Service.
  - Define System/Application/Service.
  - Assign System/Application/Service to System Node.
  - Assign Stakeholders.

Ensure all systems are represented as Systems.

- To create System Interfaces between systems:
  - Name System Interface. The abbreviation of the source system and destination system is concatenated to form the system interface name.
  - Define System Interface.

Following analysis of any changes to the Major Initiatives, existing SIM content shall be updated to reflect any impact of these changes. This may require creation or update of System Nodes, Systems, or System Interfaces to the SIM model.

10.2.3 Post-Development Tasks

These tasks are performed after changes to the SIM by the Stakeholders to ensure integration of the architecture.

- When a SIM diagram is updated, make updated diagrams available to the Stakeholders to review, identify corrections, and finalize acceptance of the model.
- Verify all SIM acronyms are in DD.
- Verify that all SIM systems are in the ETP.

Moreover, quality assurance checks are conducted to prepare for the formal quality assurance tasks conducted by IV&V group and Stakeholder review. The SIM Model Checklist is used to verify that the content is in accordance with the SIM modeling guidelines. The major checks to ensure compliance include:

- Spelling of all objects within the diagram is correct.

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- System Interfaces are connected to Systems/Applications/Services.
- Systems/Applications/Services are within System Nodes.
- System Nodes are associated with at least one System.
- Each System/Application/Service has a definition in the System dictionary.
- Complete the SIM Checklist.

10.3 Modeling SIM Models

10.3.1 Modeling Conventions

The following modeling conventions must be used to create the SIM. The SIM diagrams use a standard color scheme, font and line size as follows:

Table 13. Modeling Guidelines for SIM

Element	Symbol	Format
Documentation Block	Text Box	Position: Upper Left Corner Border: Solid Black Fill: None Text: Color: Black Font: Arial Size: Default
System/Application	Rectangle	Border: Solid Black Fill: Stakeholder Dependent Text: Color: Black Font: Arial 10, black Size: Default
Enterprise Level System	Rectangle	Border: Solid Black Fill: Yellow boxes with a black border. The custom color settings are: Hue/Sat/Lum – 40/240/192 or Red/Green/Blue – 255/255/153 Text: Color: Black Font: Arial 10, black Size: Default
Non-VA System	Rectangle	Border: Solid Black Fill: White boxes with a black border.

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Element	Symbol	Format
		Text: Color: Black Font: Arial 10, black Size: Default
System of Systems	Text Box	Border: Solid Black Fill: Blue fill with a black border. Custom color settings are: Red/Green/Blue – 49/133/155 Text: Color: Black Font: Arial 10, black Size: Default
Enterprise Level Service	Rectangular textbox	Border: Solid Black Fill: Lavender fill and a black border. The custom color settings are: Red/Green/Blue – 210/201/222 Text: Color: Black Font: Arial 10, black Size: Default
Central System Node	Elliptical	Border: Solid Black Fill: Light green fill and a black border. The custom color settings are: Hue/Sat/Lum – 140/240/192 or Red/Green/Blue – 204/255/204 Text: Color: Black Font: N/A Size: N/A
External System Node	Elliptical	Border: Solid Black Fill: Light gray fill and a black border. The custom color settings are: Hue/Sat/Lum – 160/0/225 or Red/Green/Blue – 239/239/239 Text: Color: Black

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Element	Symbol	Format
		Font: N/A Size: N/A
External System Node (Internal to VA)	Elliptical	Border: Solid Black Fill: Light blue fill and a black border. The custom color settings are: Hue/Sat/Lum – 40/240/210 Red/Green/Blue – 255/255/191 Text: Color: Black Font: N/A Size: N/A
System Interface	Arrow	Border: Solid Black Fill: N/A Text: Color: Black Font: N/A Size: N/A
Service Interface	Arrow	Border: Dashed Black Width: 1.25 Text: Color: Black Font: N/A Size: N/A

Additional guidance that applies to a system interface is provided below.

- System Interface labels will be placed, where possible, above the horizontal line and closest to either the arrowhead or 90 degree angle.
- System Interface line intersections are permissible, but should be minimized to the extent possible.

Each SIM diagram shall have a Diagram Description contained within the Description block of the diagram properties that describes the purpose of the diagram, the Stakeholder and federally mandated systems Information.

- A Documentation Block representing header information for the diagram (including the diagram name and date last updated) is placed at the top center of every diagram. The Documentation Block is enlarged so there are no truncation indicators (dots) indicating text is not visible. The Documentation Block is a box with no fill color and has a black border.
- The SIM diagram shall not have a border.
- Each diagram is named after the Stakeholder.

Each SIM diagram uses standard object naming conventions as follows:

- System names are the official Stakeholder acronyms, a Family of Systems of the Stakeholder, or a federally mandated system acronym.
- System names are used to create System Interface names. The naming convention for System Interfaces is “sending System acronym” - “receiving System acronym”.
- Each System Interface name shall only use approved acronyms, non-plural and use no special characters except “-”.

10.3.2 Modeling SIM Objects

The following guidelines are used to create or modify the SIM.

- Modeling objects shall not have truncated entries on the diagram.
- All System Node labels shall be centered at the top of the System Node border and the label should not fall outside the boundary of the ellipse.
- Each System Node name shall be title-case, use only approved acronyms, non-plural and use no special characters except “-”.
- All System labels should be centered at the top of the System box and the label should not fall outside the box boundary.
- All Systems must be contained within their associated System Node elliptical boundary.
- Each System name shall be upper-case or title-case, use only approved acronyms, non-plural and use no special characters except “-”.
- Each System Node may contain a System of Systems to represent current and future Stakeholder systems that have not been identified for the current release of the OneVA EA architecture.
- The central node of each SIM diagram will contain the systems and any Stakeholder SoS that have been identified.
- System Interface lines are not permitted to traverse intermediate Systems. To the maximum extent possible, System Interface lines shall not cross intermediate System Nodes.
- System Interface arrows shall be black with black filled arrowheads.
- Each end of a System Interface line must be connected to a System.

The following rules are used to create or modify the SIM.

- Platforms, networks, and communication devices are out of scope for the One OneVA EA.
- Databases are not within scope of the SIM, if a database type system has added functionality to include processing data and generating new data (i.e., report) it may be added.
- Device utility, software, and encryption standards are not systems and thus are out of scope for the SIM (i.e., an interface or encryption standard should not be captured as an entity).
- Internet Portals are not systems within the scope of the SIM (e.g., eBenefits website is an internet portal, the underlining system that provides benefits maintenance functionality Veterans On-Line Application.)
- Systems and Services should be captured on the SIM.

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- Only relevant systems (i.e., those cited in official system documentation) should be captured as Systems under the SoS entities.
- External organizations and systems must be defined.
- The legend should only have all shapes and symbols used in the SIM diagrams
- A System or System of System (SoS) may have underlining Applications or Systems; please refer to the OneVA EA definition of System, Service, and Application in order to correctly bucket requirements.

10.3.3 SIM Best Practices

This section discusses best practices, including lessons learned from previous architecture development efforts and common modeling pitfalls to avoid.

The following lessons learned serve as the basis for the SIM Checklists in Appendix B.

- Ensure that the SIM analysis occurs concurrently with SPO development; ensure system mechanisms are properly assigned to Major Initiatives.
- Regular and early communication with other OneVA EA Development Teams is needed to assess impact of proposed changes in other models on the SIM. The SIM team will actively participate in the pre-analysis workshops to ensure that changes in the Major Initiative can be properly reflected in the SIM.
- Standard color coding of diagrams during the workshop is useful for participants to identify where content was added, changed or deleted. Standard color coding should be in line with that used in the OneVA EA Compare reports.
- All exception reports must be reviewed and resolved.

The following common mistakes could affect the SIM development and also serve as the basis for the SIM Checklist on Appendix B:

- Acronyms in system descriptions not included in DD.
- Provide enough time in the original schedule to incorporate late changes in the SPO model. Often adequate time to complete impact analysis or post development tasks to modify the SIM is not available.
- Interfaces are exposed in the web-based version of the architecture.

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11 Laws, Regulations and Policies Model (LRPs)

11.1 Summary Description

The Laws, Regulations, and Policies (LRPs) Model contains LRPs that are imposed on the Department of Veterans Affairs people, processes and systems by various governing bodies. The OneVA EA LRP Model includes constraints mandated by various offices within the VA that apply to the entire Enterprise and may be in the form of regulatory documents (e.g., Office of Management and Budget (OMB) Circulars, Federal Acquisition Regulations, Department of Treasury Financial Manuals, Public Laws, or policies issued in Memorandums or other issuances).

The OneVA EA LRP delivered with the OneVA EA in order to provide users with a current set of compliance constraints and their linkages to the OneVA EA. The OneVA EA does contain the actual LRP, but contains a link to the current authoritative source. Brief descriptions of the LRPs are stored in the OneVA EA that provide a guide to the specific citation.

11.1.1 Model Purpose

The OneVA EA derives its compliance constraint requirements from the LRPs that govern the business functional areas covered in the OneVA EA. The LRPs delivered with the OneVA EA provide users with a current set of compliance constraints and their linkages to the OneVA EA. These are also expressed in the architecture via three products:

- As mappings from Business Rules in the Requirements and Rule Model
- As mappings from Business Functions in the Business Reference Model
- As mappings from Technical Architecture objects in the Technical Architecture

11.1.2 Model Structure

The OneVA EA LRP Model is a complete list of all authoritative sources identified as constraints to the OneVA EA. This OneVA EA LRP Model is coordinated with all of the Stakeholders on an annual basis, during the development cycle of the OneVA EA, to ensure that the LRPs are complete and accurate for each Stakeholder. This is an indexed list of the authoritative source documents with a hyperlink to the official website for each source. Please note that some web sites are not always accessible and web site addresses change over time. The addresses provided represent what was available at the time of publication.

11.1.3 Relationship to Other OneVA EA Models

The LRP Model objects are mapped to by Business functions in the BRM, by Business Rules in the RRM and by objects in the ETA.

Table 14. Relationships between LRP and other OneVA EA Models

Model	**Relationship**
BRM	A Business Function can be linked to a LRP that has not been reduced to one or more Rules.
RRM	A Rule can be linked to a LRP that is the source of the Rule.
ETA	An ETA object can be linked to the LRP from which the object is derived.
FOM	An Organizational Unit can be linked to the LRP that caused the unit to be established.

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11.1.4 LRP Definitions

The following table contains the objects included in the LRP Model with descriptions.

Table 15. LRP Objects

Object Name	Description
Name	Unique indenter reference number assigned to the LRP used to be linked to other OneVA EA artifact.
Reference Document	Reference to the primary source document, includes document type and number. May also include chapter, subchapter, section, paragraph depending on the type of document to guide the reader to the specific citation
Description	A brief description of the LRP used in the OneVA EA reports.

11.2 Developing LRP Model

11.2.1 Pre-Development Tasks

The LRP Model is updated and maintained to capture applicable constraining requirements and corresponding mappings to the BRM for LRP. Updates to the LRP Model include re-evaluating source documents already captured in the Baseline and including additional mappings to the updated BRM as well as incorporating new source documents and mappings to the LRP Model. As changes to the OneVA EA Business Functions occur, work should be done to identify, capture and map authoritative constraints relevant to these changes. As changes to LRP occur that impact the content definitions of the OneVA EA Business Functions, these must also be identified, captured and mapped to the OneVA EA.

11.2.2 Post-Development Tasks

The post development tasks consist of running, and then verifying and validating the contents of the following reports.

- Business Function – Control Report

The Business Function – Control report is derived by relating the linkages of the authoritative OneVA EA LRPs, to the BRM Business Functions in the model in System Architect. This report displays the Business Functions in an outline that will expand through the hierarchy displaying the child Business Functions. All relevant OneVA EA LRPs are arranged by source in the Office of General Counsel (OGC) approved hierarchy.

- Business Rule Traceability Report

The Business Rule Traceability Report provides a view of the specific compliance OneVA EA LRPs that have currently been mapped to the RRM Business Rules. It is provided to give the widest possible audience user-friendly access to the compliance LRPs mapped to the OneVA EA and displays the RRM Business Rules in alphabetical order.

- Technical Architecture Traceability Report

The Technical Architecture Traceability Report provides a view of the specific compliance OneVA EA LRPs that have currently been mapped to the TA objects. The mapped TA objects include cyber security objects. It is provided to give the widest possible audience user-friendly access to the compliance LRPs mapped to the OneVA EA and displays the TA objects in alphabetical order.

- Source Document Reports

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The source document reports display the compliance LRPs information from the model by source document name. These reports are organized in a way that allows users to see all the OneVA EA compliance authoritative source documents in hierarchical order. The reports are available in both MS Excel and HTML. In keeping with the roll-up of the details of the LRP Model, these files are presented at the same outline level as all of the other report information.

11.3 Modeling LRP Using SA

There a two ways to load LRPs into the SA encyclopedia; Batch and Manual.

1. Batch: The batch load process is used when a significant number of LRPs have to be loaded.
2. Manual: The manual load process is used to load a few LRPs or to link or delink a LRP to another SA artifact.

11.3.1 LRP Batch Load

The batch load uses an MS Excel spreadsheet for the input. Each batch load spreadsheet must be coordinated with the OneVA EA Tools Team to ensure that the correct data fields are included on the load spreadsheet.

Mandatory data fields on the load spreadsheet are:

- Name: A text data field up to a maximum of 80 characters that uniquely identify a LRP.
- LRP Description: A text data field up to a maximum of 250 characters that briefly describes the LRP.

Optional data fields are lists of SA artifacts to which the LRPs are linked. Each list must contain the exact name of the LRP and the exact identifying field of the linked SA artifact.

Note: In the current release of the OneVA EA a LRP is only linked to Organizational Units.

11.3.2 LRP Manual Load

The following figure illustrates the LRP manual load screen Introduction Tab.

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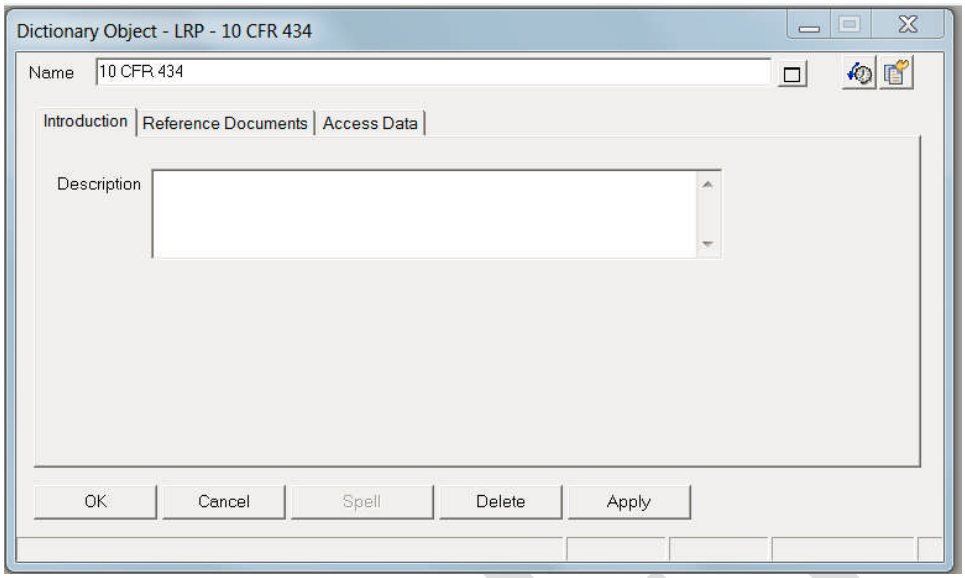
Figure 15. LRP Manual Load Screen – Introduction Tab



This tab contains the two following data fields:

1. Name: This is a read only data field that is the identifying name of a LRP which is selected from a drop-down list.
2. Description: This is a read only data field that displays the description of the LRP.

This window is used to find a particular LRP among all of the LRPs that exist within the SA encyclopedia.

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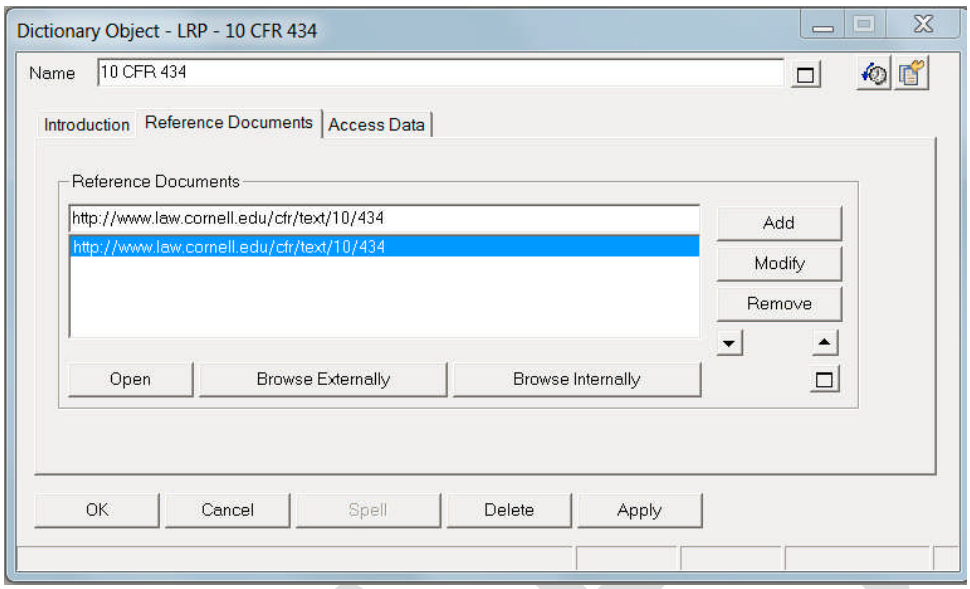
The following illustrates *the LRP manual load screen Reference Documents Tab.*

Figure 16. LRP Manual Load Screen – Reference Documents Tab



This tab contains the two following data fields:

1. Name: This is a read only data field that is the identifying name of a LRP which is selected from a drop-down list. The data field value is populated from the value in the Introduction Tab window.
2. Reference Documents: This is a scrollable list of text fields that denote the location of a reference document that contains the details of the LRP.

The tab contains three the following buttons to manipulate a Reference Document.

1. Add: This button invokes a window that allows a new Reference Document for the LRP to be changed.
2. Modify: This button invokes a window that allows an existing Reference Document for the LRP to be deleted.
3. Remove: This button invokes a window that allows a new Reference Document for the LRP to be entered

The tab contains three the following buttons to review of find a Reference Document.

1. Open: This button invokes a window that display a selected Reference Document from the scrollable list.
2. Browse Externally: This button invokes a window that allows the Internet to be searched for a Reference Document.
3. Browse Internally: This button invokes a window that allows Intranet to be searched for a Reference Document.

11.3.3 Modeling LRP Objects

The LRP Model is updated and maintained to capture applicable constraining requirements and corresponding mappings of the FOM, BRM, RRM and ETA to the LRP. Updates to the LRP Model include re-evaluating source documents already captured and including additional mappings to the updated BRM, RRM and TA objects as well as incorporating new source documents and mappings to the LRP Model. As changes to the FOM, BRM, RRM and ETA objects occur, work is done to identify, capture and map authoritative constraints relevant to

these changes. As changes to LRP occur that impact the content definitions of the BRM, RRM and TA objects, these must also be identified, captured and mapped to the OneVA EA.

Note: In the September 2013 OneVA EA release only the links to the FOM have been established.

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12 Requirements and Rules Model (RRM)

12.1 Summary Description

This section describes the RRM Operational Rules Model, its relationship to other OneVA EA Models, the development method, and the modeling guidelines to be followed. Model Purpose

The RRM specifies operational or business rules that are constraints on an enterprise, a mission, operation, business, or architecture. For example, while other OV models describe the structure of a business, what the business can do, for the most part, they do not describe what the business ***must*** do, or what it ***cannot*** do. [

The RRM Operational Rules Model is the set of operational rules that constrain an Enterprise, mission, operation, business, or architecture. For the OneVA EA, the operational rules are called "Business Rules." Business Rules are required in the OneVA EA to fulfill the VA business mission; describing what the business must do and cannot do. Business Rules define or constrain some aspect of the business.

The OneVA EA distinguishes between a Business Policy/Guidance and Business Rules. The distinctions are based on the following definitions of a Business Policy/Guidance and Business Rules as derived from *Object Management Group's Semantics of Business Vocabulary and Business Rules v1.0* (OMG SBVR)

Business Policy/Guidance is different from Business Rules in that, Business Policy/Guidance is:

- Less structured
- Less discrete
- Less carefully expressed in terms of a standard vocabulary
- Not directly enforceable

Business Rules are different from Business Policy/Guidance in that, a Business Rule:

- Uses structured language and notation
- Is unambiguous
- Can be compound or atomic
- Uses a standard vocabulary
- Is directly enforceable

The OneVA EA RRM, Operational Rules include the OMG SBVR concept of "Business Rule Category" to distinguish between two categories of Business Rules; Operative Business Rules and Structural Business Rules. Operative Business Rules are those that constrain the dynamic aspects of an enterprise. Structural Business Rules are those that constrain the static aspects of an enterprise. The Operative Category of a Business Rule has a Type of either Derivation or Action, both of which can potentially be violated or ignored. The Structural Category of a Business Rule has a Type of Relational or Definitional, both of which are constrains that must be imposed. Examples are presented in the following sections.

There is a difference between the definition of a Business Rule and notation in which the Business Rule is written. This is similar to the difference between the definition of a Process Model and BPMN. Business Rule notation is a technique used to write Business Rules in a consistent way such that the Business Rule is unambiguous, uses a standard vocabulary, and is directly enforceable. While the ASG specifies *RuleSpeak*™ as the Business Rule notation, there are earlier written Business Rules that do not conform to *RuleSpeak*™ notation.

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A business statement that does not follow *Object Management Group's Semantics of Business Vocabulary and Business Rules v1.0* conventions or *RuleSpeak*™ notation can be entered as not being "ASG Compliant". This allows the OneVA EA to capture a business requirement that may be rewritten as an ASG compliant business rule in subsequent OneVA EA releases.

The development of Business Rules is an art rather than a science. It requires close collaboration between the Stakeholder SMEs and the OneVA EA Development Team to create Business Rules that provide clear unambiguous guidance. There are few fixed guidelines that can be applied. of the sources used as a guideline is the methodology developed by Ronald G. Ross and Gladys S.W. Lam, internationally acclaimed experts of Business Rule techniques and methodology. This methodology is documented in Ross's book *Business Rule Concepts: Getting to the Point of Knowledge* (2nd ed. Business Rule Solutions, LLC, 2005).

12.1.1 Model Structure

The RRM is a textual model in the form of definitions. The RRM is manually created. The required fields for the Business Rules to make the definition complete are defined in a subsequent subsection. Each Stakeholder can have an unlimited number of Business Rules within the OneVA EA SA encyclopedia.

12.1.2 Relationship to Other OneVA EA Models

RRM is related to other OneVA EA models as shown in the following figure.

Table 16. Relationships between RRM and other OneVA EA Models

Model	Relationship
OSI	The scope of the development effort for each CBM for a development cycle, as disclosed in the OSI, will determine if the RRM models are affected in the release.
DD	All RRM terms with specific meaning must be included in the DD. These terms must include, as a minimum, all object types included in the deliverable. All acronyms used in RRM descriptions must be listed and spelled out in the DD Acronyms Definitions list.
BPM	An Operative Rule can be mapped to leaf level BPM Process Steps.
BRM	An Operative Rule can be mapped to the level Business Function.
CDM	Structural Rules are mapped to objects in the CDM.

12.1.3 RRM Model Definitions

The following figure is a decision tree that guides the mapping of RRM Requirements and Rules to the appropriate OneVA EA models.

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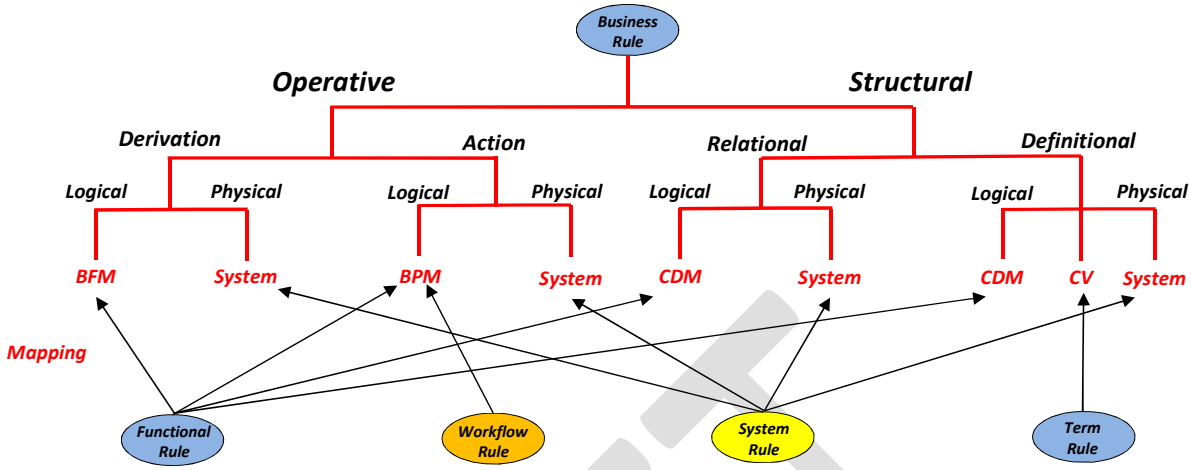
Figure 17. RRM OneVA EA Model Mapping Decision Tree



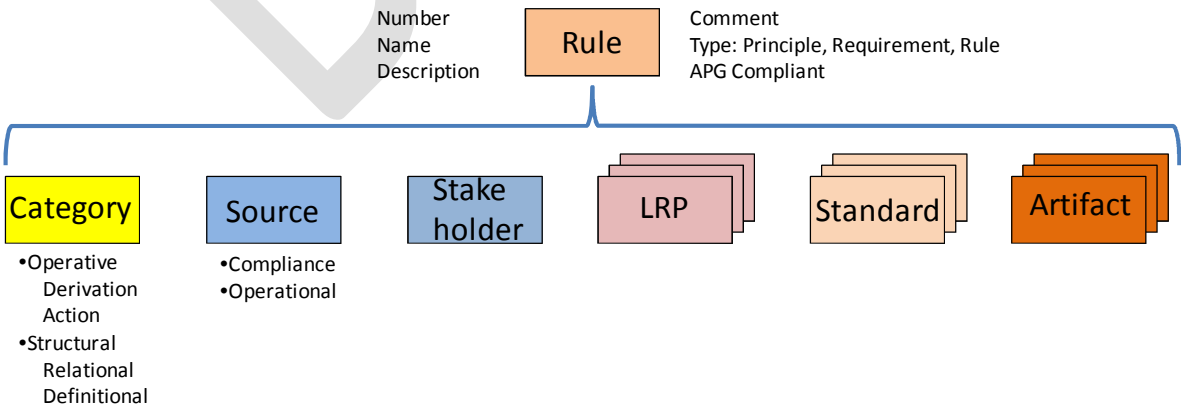
The *Operative* and *Structural* categories are specified by SBVR. The *Operative* category contains rules that declare some given behavior of business activity is either required or prohibited. *Operative* category is subdivided into two types; *Derivation* and *Action*. The *Structural* category uses universal quantification (e.g., "each" or "all") to propose a necessary characteristic of a concept. A *Structural* rule proposes that something is always true about all instances of the concept. The *Structural* category is subdivided into two types; *Relational* and *Definitional*.

A *Functional Rule* is a constraint imposed by a Business Function, while a *Workflow Rule* is a constraint that sequences Businesss Process Steps. A *System Rule* is a constraint on a system, application or service. A *Term Rule* is a definition of a term used by a rule.

12.1.4 RRM Field Definitions

This subsection defines concepts and terms used when discussing Business Rules. The following figure illustratesFigure 18. Data Fields and Structure of a Business Rule the structure of a Business Rule and lists the tem (10) associated data fields. As described in further detail below, four of the data fields are text entry, two of are single list selections, and the remaining four are multiple value list selections.

Figure 18. Data Fields and Structure of a Business Rule



- **Number**: A mandatory text data field for the unique number manually assigned to a Business Rule for identification purposes. The following are examples of correct Business Rule Numbers:
  - 50048
  - 50049

The Business Rule Number should be sequentially assigned within the OneVA EA Release number as shown above. That is, the OneVA EA Release is "5.0" and the sequential numbers are "48" and "49". This assignment technique allows all of the new Business Rules for a OneVA EA Release to be easily identified.

- **Name**: A mandatory text entry field for the unique name assigned to a Business Rule for identification purposes. The Business Rule Name is limited to 80 characters and consists of concatenated terms separated by underscores (_). A term can be either alphabetic or numeric. The Business Rule Name must begin with an alphabetic term. Initial uppercase is used for each alphanumeric term, unless it is an acronym. The Business Rule Name is used to map to other architecture artifacts such as a BPM Process. An example of a Business Rule Name is:

  "Payment_Request_Approval_1"

- **Description**: A mandatory text entry field for the Business Rule set forth as a statement of constraint or permission with respect to a process and/or data. It may be stated at any level but should be stated at an appropriate level of detail consistent with the process level. Examples of Business Rule Descriptions are given in a following Business Rule Category Section.
- **Comment:** An optional text entry field for use of Stakeholders. For example, the stakeholder may decide to list related Business Functions here.
- **Type**: A mandatory data field selected from a drop down list that denotes whether the entry is a *Principle*, *Requirement* or *Rule*. A *Principle* is a high level statement that provides guidance to the Stakeholders in developing OneVA EA content. A *Requirement* is a statement of a business requirement that is further reduced to one or more *Rules*. A *Rule* is a business statement that constrains some aspect of a business. Only a *Rule* is linked to another OneVA EA artifact.
- **ASG Compliant**: A mandatory data field selected on a checkbox entry that denotes whether or not the statement contained in the Description field is compliant to the *Object Management Group's Semantics of Business Vocabulary and Business Rules v1.0* conventions and to the *RuleSpeak*™ notation. If the Rule is not "ASG Compliant" and the *Type* is *Rule*, then the statement and must be rewritten to be in compliance before the next OneVA EA Release.
- **Business Rule Category**: A mandatory data field from a single list selection field for defined Business Rule categories to assist in mapping the Business Rule to the BRM and the CDM Models. Listed categories include:
  - **Operative Derivation**: A Business Rule that reflects computational or derived aspects of the mission or business and specifies constraints of a Process Step or Sequence Flow in the BPM. It must have a mapping to a Process Step or Flow. The following is an example of a correct Operative Derivation Business Rule:

    The ***Fee Amount*** must be calculated by multiplying the ***Fee Rate*** by the number of ***Days Late***.

    The underscored terms in the above description must be added as Terms in the DD.

- **Operative Action:** A Business Rule that reflects dynamic aspects of the mission or business and specifies constraints of a Process Step or Sequence Flow in the BPM. It must have a mapping to a BPM Process or Flow. The following is an example of a correct Operative Action Business Rule:

  The ***Fee Amount*** must be calculated by multiplying the ***Fee Rate*** by the number of ***Days Late***.

  The underscored terms in the above description must be added as Terms in the DD.

- **Structural Relational:** A Business Rule that reflects static aspects of the mission or business terms and facts. Structural Assertion Business Rules may result from important structural assertions graphically represented in the CDM due to OneVA EA Compliance Assessment requirements. It must have a mapping to the BRM Process which enforces the rule. This rule could have a mapping to the CDM. The following is an example of a correct Structural Relation Business Rule:

  A ***Contract*** must have one or more ***Line Items***.

  The underscored item in the above description must be defined as Terms in the DD.

  A ***CONTRACT*** must have one or more ***LINE-ITEMS***.

  The underscored item in the above description must be defined as Entities with a Relationship in a LDM.

- **Structural Definitional:** A Business Rule that reflects static aspects of the mission or business terms and facts. Structural Definitional Business Rules may result from important structural definitions graphically represented in a CDM due to OneVA EA Compliance Assessment requirements. It must have a mapping to an Attribute. The following is an example of a correct Structural Definitional Business Rule:

  A ***Zip_Code*** must have exactly nine numeric characters.

  The underscored item in the above description must be defined as an Attribute.

  Structural Definitional Business Rule Description:(DD Term)

  A ***Contract*** is an agreement between two or more parties whereby each party promises to do, or not to do, something.

  The underscored item in the above description must be defined as a Term in the DD.

- **Source:** A mandatory single value list selection field that indicates the source of the Business Rule.
- **Stakeholder:** A mandatory data field from a drop down list that identifies the owner Stakeholder of the Business Rule.
- **LRP:** An optional data field that contains the identifier of the LRP that is the origin of this type of Business Rule. The LRP Source is selected from a list of available LRP Sources. Multiple LRPs can be selected because the LRPS are not mutually exclusive.

  Note: When the *Source* is "LRP", the Business Rule must be mapped using a valid LRP Source Identifier.

- **Standard:** An optional data field from a multiple value list selection field that designates the Enterprise Standards that the Rule enforces or identifies the enterprise system(s) that the Business Rule influences Rules mapped directly to specific CDM objects must have the enterprise system or Enterprise Standard they support identified here. Multiple Enterprise Standards can be selected because the Enterprise Standards are not mutually exclusive.

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- **Artifacts:** A mandatory data field selected from a multiple valued list of valid SA function, data or process artifacts to which the Rule applies.

12.1.5 RRM Input Field Capture

This section describes capturing the Business Rules field values for inserts or changes to the System Architect encyclopedia.

12.1.5.1 Input Document

The primary input document is a spreadsheet that has the following four tabs:

- Main Load
- LRP Sources
- Stakeholders
- Business Functions
- BPM Processes

The Main Load tab contains all of the above single entry fields as columns. That is, the fields for which there is only one value; such as the Business Rule Definition.

The other three tabs contain the fields for which multiple occurrences are possible; for example, a Business Rule can be mapped to more than one BPM Process Step. The map between the Business Rule and the other OneVA EA artifact is the Business Rule Name. The following is an example of entries in the BPM Process tab.

Table 17. Example of a BRM Function Tab

Business Function	Business Rule Name
Manage Financial Management Policy	Audit_Trails_9
Manage Financial Reporting	Deferred _Maintenance_And_Cleanup_Costs_1
Manage Financial Management Policy	Deferred _Maintenance_And_Cleanup_Costs_1

The LRP Sources and the Stakeholders tabs have the same construct as the above. This input document is also used as a “turn around” document for reviews between the OneVA EA Development Team and the stakeholder.

12.1.5.2 System Architect Update Process

There are two basic SA update processes, based on the volume of the update. A large update volume requires assistance from the Build Team using a spreadsheet provided by the OneVA EA Development Team as input to an automated procedure. A small update volume is manually entered into SA by the OneVA EA Development Team.

12.1.5.3 Mapped Field Validation

The mapped field names must be correct, otherwise errors will be generated and the Business Rule will not be complete.

The SA Build Team automated load procedure automatically inserts artifacts as new objects when a match is not found. For example, an incorrect Business Function name in the load sheet will cause a new Business Function name to be added with that name and may result in incorrect mappings. This is an error that must be manually corrected. Consequently, care must be taken to ensure that the mapped names are valid and already exist in System Architect.

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The same applies for LRP Sources; however, this is a benefit because no manual effort is required to update the OneVA EA LRP Source list. The LRP Sources should be verified before the load to ensure that they are valid.

12.2 Developing the RRM Model

This section describes the approach used by the OneVA EA Development Team to develop the RRM Operational Rules model. The OneVA EA Development Team works with stakeholders to produce Business Rules that support the business transformation. This process includes development, maintenance and retirement of Business Rules.

12.2.1 Pre-Development Tasks

In general, each stakeholder has their own process to identify Business Rule concepts for inclusion into the RRM Operational Rules model. The Stakeholder may request the assistance of the OneVA EA Development Team during pre-development work, such as: providing general guidance on how to develop content; answering questions regarding form and structure; or generating and analyzing System Architect reports from the previous OneVA EA release. This process for Business Rule creation does not require detailed analysis of the architecture. The Stakeholder provides the OneVA EA Development Team their identified Business Rule concepts mapped to an architectural object for pre-analysis.

12.2.2 Development Tasks

12.2.2.1 Refine Business Rules Concept

The following steps refine the Business Rule concept.

- Develop the concept into a form ready for functional review.
- Refine the Business Rule to meet the project's OneVA EA standards.
- Confirm that the proposed Business Rule concept does not duplicate an existing rule.
- Analyze the concept for accuracy and potential conflict with existing Business Rules.
- Determine the Business Rule Category.
- Refine the Business Rule concept by applying *the RuleSpeak™* guidelines to ensure the proposed language of the Business Rule meets the OneVA EA standards.
- Determine the Business Rule Category Type and Business Rule Source Type.
- Develop the Business Rule Name.
- Assign the RRM Operational Rules Model unique Business Rule Numbers.
- Forward the proposed Business Rules to the OneVA EA Development Team for technical review.

12.2.2.2 RRM Operational Rules Model Coordination with Stakeholders

Each Business Rule is passed back to the Stakeholders for a functional review after the technical review by the OneVA EA Development Team. The Stakeholders verify that the proposed Business Rule conveys the same idea as the original Business Rule concept. If the proposed Business Rule passes the functional review, the Stakeholders return it to the OneVA EA Development Team for pre-load verification. If the proposed Business Rule does not pass functional review, the Stakeholders return it to the OneVA EA Development Team for further refinement. In that case, the OneVA EA Development Team uses Stakeholder comments to refine the Business Rule concept. The Stakeholders and OneVA EA Development Teamwork closely work to achieve a consensus on a functionally and technically solid Business Rule.

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12.2.2.3 RRM Operational Rules Load Preparation

After the validity of the Business Rules has been agreed, the Business Rules are ready for the load into the OneVA EA. The OneVA EA Development Team creates the load sheet, which is an MS Excel spreadsheet that lists the Business Rules and all associated fields discussed in 6.1.4 Definitions. This load sheet is submitted to all of the Stakeholders for approval through the designated OneVA EA Workshops. After the load sheet has been approved, the OneVA EA Development Team submits the load sheet to the SA Build Team. The OneVA EA Development Team can manually input the approved Business Rules into System Architect. This is normally done when the Business Rule volume is less than twenty Business Rules.

If a Business Rule does not successfully pass the Stakeholders final approval stage, the OneVA EA Development Team works with the Stakeholders towards final approval.

After the Business Rule is loaded into SA, the OneVA EA Development Team verifies that the load sheet is correctly represented in the OneVA EA. This step must wait for the SA Build Team to perform an Encyclopedia update so that the OneVA EA Development Team can conduct the Post-Build Verification on the latest Encyclopedia build.

12.2.3 Creating/Modifying the RRM Models

To ensure that the Business Rules remain valid, the OneVA EA Development Team follows a maintenance and retirement process. The Stakeholders notify the OneVA EA Development Team that there is a change in the OneVA EA affecting existing Business Rules. The OneVA EA Development Team identifies the Business Rules and makes any necessary adjustments in System Architect. Next, the OneVA EA Development Team analyzes the architecture for potential changes to the existing processes and other linkages in System Architect. Finally, the OneVA EA Development Team validates the above Process for continued support of the business transformation. The following discusses the maintenance process in detail:

12.2.3.1 Identify Business Rules

Either the Stakeholders or the OneVA EA Development Team may initiate an analysis to determine if changes are needed. A number of circumstances may trigger a change to some aspect of the Business Rule and/or its artifacts. Below are typical (but not an inclusive list of) triggers:

- Business Function change
- BPWM Process Step change
- Data Object change
- Requirement change
- LRP Source change

Note: If a LRP Source Identifier or description already mapped to a Business Rule changes in the LRP Repository, the LRP team will notify the OneVA EA Development Team and/or the Stakeholders. The OneVA EA Development Team will manage the change in System Architect.

12.2.3.2 Analyze Potential Changes

Once the change is identified, the OneVA EA Development Team conducts analysis to determine any potential impacts on the OneVA EA. The analysis includes impact to other architectural models, existing Business Rules and/or requirements.

12.2.3.3 Validate Business Rule Changes

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The OneVA EA Development Team performs a technical review. After completing technical review, the Development Team works with the appropriate Stakeholders for functional approval.

12.2.3.4 Update System Architect

Upon approval, the OneVA EA Development Team makes the changes in SA or creates a load sheet to present to the Build Team for automated loading.

12.2.4 Post-Development Tasks

As with the Business Rule maintenance process, a number of Events may trigger the retirement process, such as:

- A Business Objective change or elimination
- BPM Process modification or elimination
- LRP Source change or elimination

The Stakeholders notify the OneVA EA Development Team that a Business Rule needs to be retired. The OneVA EA Development Team, working closely with the Stakeholders, documents the reason for retirement, and then the Business Rule is retired from the SA encyclopedia. Finally, the appropriate validation steps are executed to ensure that the Business Rule was actually retired.

Note: The Stakeholders review each Business Rule identified for retirement, verifying whether it is appropriate to retire the Business Rule for all Processes. If a Business Rule, identified for retirement, still has a valid mapping to another Process Step, the OneVA EA Development Team retains the Business Rule, removing only the link to the retired Process Step.

12.2.4.1 Identify Obsolete Business Rule

The Stakeholders are responsible for identifying a Business Rule that needs to be retired. In addition, if an architecture object deletion or change is the trigger, the Stakeholders identify whether each instance of the Business Rule must be deleted or just the mapping between the Business Rule and the architecture object being changed.

12.2.4.2 Retire Business Rule

The OneVA EA Development Team removes the identified Business Rule from SA. The OneVA EA Development Team also identifies to the LRP team a retired Business Rule that has a LRP Identifier associated with it. If the Business Rule is still valid, and possesses valid mappings to other architecture objects, the OneVA EA Development Team removes only the prescribed mapping.

12.2.4.3 Validate Business Rule Retirement

The OneVA EA Development Team SME conducts the appropriate quality assurance checks. These checks validate the appropriate retirement of a Business Rule and prevent the creation of orphan Processes and Data Elements.

12.3 Modeling the RRM Model Using SA

12.3.1 RRM Modeling Conventions

Guidelines that assist in the identification and definition of Business Rules are:

- Each Business Rule must have a unique Business Rule Name.
- Each Business Rule must be assigned a unique Business Rule Number by which it can be identified.
- Each Business Rule must have a unique Description. The Description is the actual Business Rule.

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- Each Business Rule must have a Stakeholder.
- Each Business Rule must be classified into only one of two Business Rule Categories: Operative or Structural.
- Each Business Rule of the Operative Category must be typed as either Derivation or Action.
- Each Business Rule of the Structural Category must be typed as either Relational or Definitional.
- Each Business Rule must be associated with only one of two Business Rule Sources: "LRP" or "Reference Material".
- Each Business Rule with a Source of "LRP" must be associated with one or more LRP authoritative sources. The LRP Source Identifier is the unique identifier from the LRP Repository.
- Each Business Rule includes an optional Comment field for use of the CBM Stakeholder(s).
- Each Business Rule includes an optional Reference Material field. This field is used to store information the Stakeholder considers relevant for the Business Rule. For instance, the Stakeholder may include the title of a Requirement Document Regulation and/or policy with a Hypertext Markup Language (HTML) link to the original document. The Stakeholder may also include a list of related Business Functions.
- Each Business Rule may be optionally associated with an integration Stakeholder. The Stakeholder designation must be from the approved Stakeholder acronym list.
- Each Structural Business Rule can have a mapping to an Attribute the underlying Business Function, Subject Area/Attribute, a Relation in the LDM or a BPM Process Step.
- Every Operative Business Rule must have a mapping to at least one Business Function, BPM Process Step and/or Flow.
- Each Structural Business Rule mapped to any CDM object must be associated with the Enterprise System or Enterprise Standard it supports in Enterprise Standards field.
- Each LRP Source Identifier must be associated with a unique Identifier from the LRP Repository.

12.3.2 Modeling RRM Objects

- A clear understanding of the BRM and CDM models must come before RRM development.
- Stakeholder RRM content that affects other Stakeholders should be socialized before the workshop.
- Prior to the workshop, the fields associated with a Business Rule, like Source Type and BPM Process Step mappings, should be socialized with other Stakeholders to ensure these mappings are captured, in addition to the content of the Business Rule.
- Ensure acronyms are spelled out in DD.
- A Business Rule that has a source of a "LRP" must have a LRP Source Identifier associated with the Business Rule.
- A Business Rule must be mapped to a BRM, BPM Process Step or a CDM artifact.
- Ensure all exception reports have been reviewed and resolved.

12.3.3 RRM Best Practices

This section discusses best practices, including lessons learned from previous architecture development efforts and common modeling pitfalls to avoid.

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12.3.3.1 RRM Lessons Learned

- A clear understanding of the BRM, CDM and BPM must come before RRM development.
- Stakeholder RRM content that affects other Stakeholders should be socialized before the workshop.
- Prior to the workshop, the fields associated with a Business Rule, like Source Type and Business Function mapping, should be socialized with the Stakeholders to ensure these mappings are captured, in addition to the content of the Business Rule.
- Ensure acronyms are spelled out in DD.
- A Business Rule that has a source of a “LRP” must have a LRP Source Identifier associated with the Business Rule.
- Ensure all exception reports have been reviewed and resolved.
- Validate the existence of SA mapped names using spread sheet macros such as VLOOKUP. This helps reduce errors in the load process.

12.3.3.2 RRM Common Pitfalls

- Ambiguity.
- Embedding term definitions in Business Rules (Use DD to define terms).
- Over-explaining or adding unrelated information.
- Subject is neither quantified nor singular (e.g., by using the word “each”).
- Conditional Business Rules not in the “If…,then…” format.
- The result of a computation is not subject of a Business Rule with the Business Rule Category of Derivation.
- The logical structure of the Business Rule makes does not make sense.
- Contradictory or redundant Business Rule description.

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13 Function Organization Model (FOM)

13.1 Summary Description

This section describes the Function Organization Model (FOM) and its relationship to other OneVA EA models, the development method, and the modeling guidelines to be followed.

The FOM depicts the Organizational Units and the decomposition of the VA using a hierarchical structure. Where applicable, the Organizational Units are mapped to related Laws, Regulations, and Policies (LRP) which are responsible for creation of and/or regulation of those units.

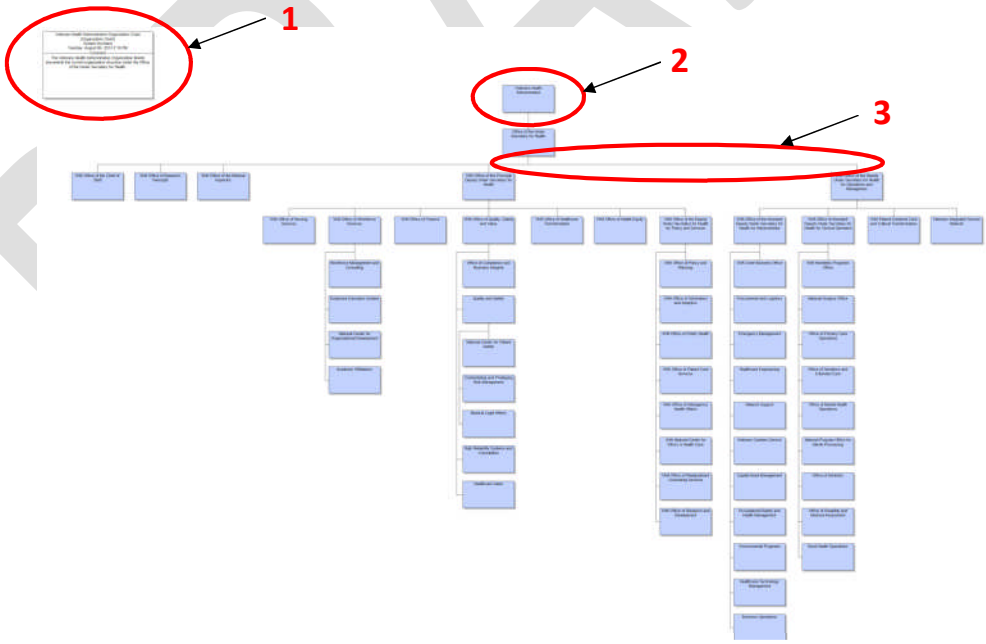
13.1.1 Model Purpose

This hierarchical structure of the FOM is used to depict the command or reporting structure between a parent organization and its sub-organizations. This model and its organizations will serve as touch points for other components of the architecture, such as owners/maintainers of systems and applications or performers of business processes.

13.1.2 Model Structure

The FOM is depicted as a hierarchical decomposition of Organizational Units. The hierarchical decomposition is representative of the command structure, whereby each sub-organization reports up to or takes direction from its parent organizations. Represented in the OneVA EA encyclopedia are the FOMs for VA Corporate and its supporting enterprise offices, and the VHA segment. The FOMs for VBA and NCA segments are in their own respective encyclopedias.

Figure 19. Functional Organization Model Example



The FOMs are developed for Corporate, VBA, VHA, and NCA Segments. The objects used to represent the FOM are numbered as shown in the above figure. The main features of this model are:

- **Documentation Block (1)** is located in the upper left corner of the diagram. The title block contains the model name based on the focus Segment ("National Cemetery Administration"), model type ("Organization Model"), model description and last modification date and time.
- **Organizational Units (2)** are the boxes in the model that are named after each of the organizations comprising the VA. The Organization Model name represents the focus Segment. The administration models will federate to the OneVA EA.
- **Structural Relationships (3)** are the connecting lines between each of the Organizational Units. They represent decomposition or command structure within the organization. Each of the lower level, or child organizations, reports to the organizations that appear above them.

13.1.3 *Relationship to other OneVA EA Models*

Shown in the following table are the relationships between the FOM and other OneVA EA models.

Table 18. Relationships between FOM and other OneVA EA Models

Model	Relationship
Laws, Regulations and Policies (LRPs)	The Organizational Units are related to the LRPs responsible for creation and/or governance of those organizations.

Note: Planned releases will start to map organizational information with other components of the architecture. Organizational Unit names will sync up with stakeholders, participants, and system nodes. Additionally, Organizational Units will serve as touch points for other architectural components such as owners/maintainers of systems and applications, or performers of business processes.

13.1.4 *FOM Definitions*

The following are definitions of the key elements contained in the FOM:

- **Organizational Unit:** An Organizational Unit is an entity within an organization that is responsible for a discrete set of processes aimed at achieving a collective goal.
- **Structural Relationship:** A structural relationship is a connecting line between two organizations that defines the command structure or hierarchy.

13.2 Developing the FOM

This section describes the approach to develop and maintain the FOM. The FOM is developed as a hierarchical diagram.

The FOM is developed and maintained using the latest version of the VA Functional Organization Manual published by Office of Policy & Planning (OPP).

13.2.1 *Pre-Development Tasks*

The tasks that must be completed prior to FOM development and/or maintenance are:

- The architects should receive the latest copy of the VA Functional Organization Manual and review it against the current FOMs to determine any changes/updates.
- The Stakeholder representative is provided a copy of an existing FOM and descriptions. The Stakeholder representative is responsible for identifying any new organizations or organizations that have been removed, and providing updates to organization descriptions. Additionally, the stakeholder should provide any LRPs responsible for creation or governance of an organization.

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13.2.2 Development Tasks

The development and maintenance of the FOM is completed by the architect after analyzing the latest VA Functional Organization Manual and receiving applicable feedback from stakeholders.

Prior to any changes, an impact analysis is conducted to assess the impact of new or revised Organizational Units. The following impact analysis tasks are performed:

- Review new or removed Organizational Units against the list of System Nodes in the encyclopedia to ensure names are synchronized.
- Review new or removed Organizational Units against the list of Stakeholders in the encyclopedia to ensure names are synchronized.
- Review new or removed Organizational Units against the list of Participants in the encyclopedia to ensure names are synchronized.
- Review Organizational Units to be removed for references to other components of the architecture. These references should likely become mappings to a new or existing Organizational Unit.

After a new FOM has been created or an existing FOM has been opened, the following tasks are performed to create Organization Units in a hierarchical structure:

- Select the Organizational Unit type and click on the diagram to create a new instance.
- Define the Organizational Unit with a name and description.
- Add any applicable LRP mappings to the appropriate LRP field within the Organizational Unit object.
- Drag sub-organizations on top of parent organizations to create a hierarchical structure.

Note: If Organization Units and their properties have already been imported into the encyclopedia via a load sheet, the architect can drag the objects from the data dictionary on to the diagram rather than creating a new Organizational Unit instance.

13.2.3 Post-Development Tasks

These tasks are performed after changes are made to the Organization Model by the Stakeholders to ensure integration of the architecture.

- When a FOM is updated, make updated diagrams and definition/LRP mapping reports available to the Stakeholders to review, identify corrections, and finalize acceptance of the model.
- Verify all acronyms are in the DD.

Moreover, quality assurance checks are conducted to prepare for the formal quality assurance tasks conducted by IV&V group and Stakeholder review. The Function Organization Model Checklist is used to verify that the content is in accordance with the FOM guidelines. The major checks to ensure compliance include:

- Spelling of all objects within the diagram is correct.
- Organizational Units appear at the appropriate level within the hierarchy.
- Each Organizational Unit has a definition in the dictionary.
- Complete the Organization Model Checklist.

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13.3 Modeling FOMs

13.3.1 Modeling Conventions

The following modeling conventions must be used to create FOMs. The models use a standard color scheme, font and line size as follows:

Table 19. Modeling Guidelines for the Organization Model

Element	Symbol	Format
Documentation Block	Text Box	Position: Upper Left Corner Border: Solid Black Fill: None Text: Color: Black Font: Arial Size: Default
VA Corporate Organization	Rectangle	Border: Solid Black Fill: Yellow boxes with a black border. The custom color settings are: Red/Green/Blue – 255/255/166 Text: Color: Black Font: Arial 10, black Size: Default
VBA Organization	Rectangle	Border: Solid Black Fill: Green boxes with a black border. The custom color settings are: Red/Green/Blue – 182/227/166 Text: Color: Black Font: Arial 10, black Size: Default
VHA Organization	Rectangle	Border: Solid Black Fill: Blue boxes with a black border. The custom color settings are: Red/Green/Blue – 194/210/254 Text: Color: Black Font: Arial 10, black Size: Default

Element	Symbol	Format
NCA Organization	Rectangle	Border: Solid Black Fill: Pink boxes with a black border. The custom color settings are: Red/Green/Blue – 255/213/213 Text: Color: Black Font: Arial 10, black Size: Default
Structural Relationship	Connector	Border: Solid Black Fill: N/A Text: Color: Black Font: N/A Size: N/A

13.3.2 Modeling Organization Objects

The following guidelines are used to create or modify the Organization Model.

- Modeling objects shall not have truncated entries on the diagram.
- All Organizational Unit labels shall be centered at the top of the Organizational Unit border and the label should not fall outside the boundary of the rectangle.
- Each Organizational Unit name shall be title-case, use only approved acronyms, non-plural and use no special characters except "-".

13.3.3 FOM Best Practices

This section discusses best practices, including lessons learned from previous architecture development efforts and common modeling pitfalls to avoid.

- To simplify the data collection process, LRP mappings should be captured concurrently with organization model development or updates. Where possible, an link should be provided for each LRP unless the document is classified or has not been formally published.
- Acronyms in organization descriptions should not be used if they are not included in the DD.
- All exception reports must be reviewed and resolved.

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14 Enterprise Technical Architecture (ETA)

14.1 Summary Description

The Enterprise Technical Architecture is a series of technical documents describing the System and infrastructure requirements for the VA. Currently, the Technical requirements are not included in the OneVA EA as elements of the encyclopedia, but are included in the following list of the Enterprise Technical Architecture (ETA) documents:

- VA Enterprise Target Application Architecture v1.0, June 2012, Office of Product Development
- VA SOA Technical Framework v0.3.1, April 2012, Office of Product Development
- VA SOA Layer Implementation Guide v0.1, January 2012, Office of Product Development
- OIT Release Architecture v0.1, October 31, 2011, Service Delivery and Engineering
- The Department of Veterans Affairs Enterprise Architecture Vision and Strategy Document, Office of Architecture, Strategy and Design
- VA Policy 6500, Handbook 6500, and other 6500 appendices
- VA Technical Reference Model, Office of Architecture, Strategy, and Design
- VA IT Roadmap, July 2012, Office of Architecture, Strategy, and Design
- VA Cloud First Policy, DIRECTIVE 6517
- VA Virtualize First Policy – VA 2105, September 27, 2011
- VA Information Security Reference Guide v1.0
- OMB Shared First Policy, December 8, 2011
- VLER XML Schema Directive, January 24, 2011

The ETA related documents will be the authoritative source documents for any system implementation and compliance requirements, until further development and update occurs. Changes in the ETA will be addressed in the future iterations of the ASG.

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15 Data Dictionary (DD)

15.1 Summary Description

This section describes the Data Dictionary (DD), its relationship to other OneVA EA models, the development method and the model guidelines to be followed.

15.1.1 Model Purpose

The DD for the OneVA EA and contains all descriptions and terms that are used in the other OneVA EA models. The DD provides a central repository for a given architecture's data and metadata which enables the set of architecture models to stand alone, allowing them to be understood with minimal reference to outside resources. The DD is an accompanying reference to other models. The key to long-term interoperability resides in the accuracy and clarity of these definitions.

15.1.2 Model Structure

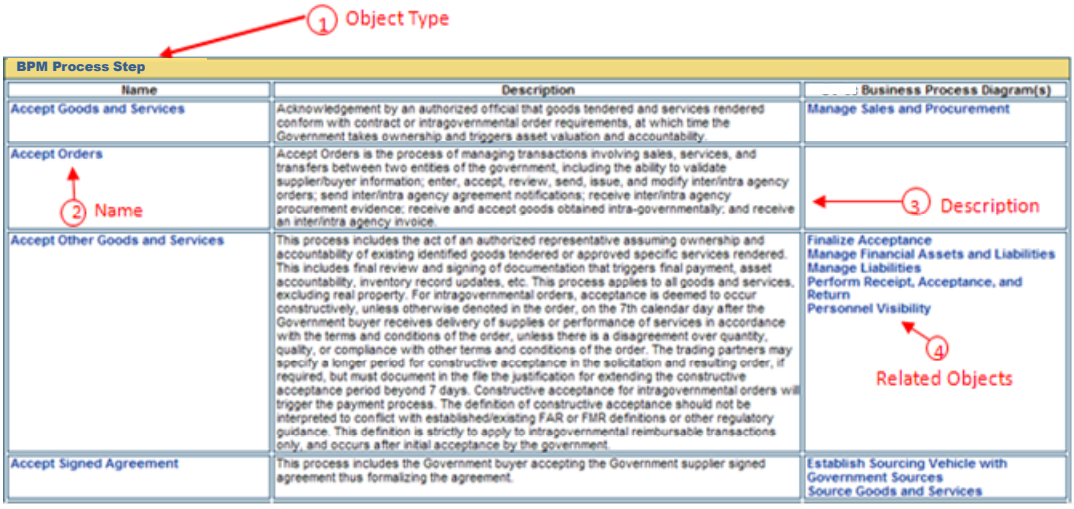
The DD is a textual model in table format and consists of a glossary, a repository of architecture data, taxonomies, and metadata (i.e., data about architecture data), including metadata for tailored models, associated with the architecture models developed.

Each description name is classified and located in the DD by:

- **Object Type:** The major classification scheme in the DD.
- **Name:** The specific name of an instance of the Object Type.
- **Description:** The full description (definition) of the listed Name.
- **Related Object:** Terms pertaining to certain Object Types in the DD are also defined as related to other objects to assist the user in interpreting the Term based on the context of the relevant relationships in the OneVA EA.

An example from the DD for Business Process Steps is provided in the following figure which illustrates a Business Process Step related to multiple Business Process Diagrams.

Figure 20. Data Dictionary Example



BPM Process Step		
Name	Description	Business Process Diagram(s)
Accept Goods and Services	Acknowledgement by an authorized official that goods tendered and services rendered conform with contract or intragovernmental order requirements, at which time the Government takes ownership and triggers asset valuation and accountability.	Manage Sales and Procurement
Accept Orders	Accept Orders is the process of managing transactions involving sales, services, and transfers between two entities of the government, including the ability to validate supplier/buyer information; enter, accept, review, send, issue, and modify inter/intra agency orders; send inter/intra agency agreement notifications; receive inter/intra agency procurement evidence; receive and accept goods obtained intra-governmentally; and receive an inter/intra agency invoice.	
Accept Other Goods and Services	This process includes the act of an authorized representative assuming ownership and accountability of existing identified goods tendered or approved specific services rendered. This includes final review and signing of documentation that triggers final payment, asset accountability, inventory record updates, etc. This process applies to all goods and services, excluding real property. For intragovernmental orders, acceptance is deemed to occur constructively, unless otherwise denoted in the order, on the 7th calendar day after the Government buyer receives delivery of supplies or performance of services in accordance with the terms and conditions of the order, unless there is a disagreement over quantity, quality, or compliance with other terms and conditions of the order. The trading partners may specify a longer period for constructive acceptance in the solicitation and resulting order, if required, but must document in the file the justification for extending the constructive acceptance period beyond 7 days. Constructive acceptance for intragovernmental orders will trigger the payment process. The definition of constructive acceptance should not be interpreted to conflict with established/existing FAR or FMR definitions or other regulatory guidance. This definition is strictly to apply to intragovernmental reimbursable transactions only, and occurs after initial acceptance by the government.	Finalize Acceptance Manage Financial Assets and Liabilities Manage Liabilities Perform Receipt, Acceptance, and Return Personnel Visibility
Accept Signed Agreement	This process includes the Government buyer accepting the Government supplier signed agreement thus formalizing the agreement.	Establish Sourcing Vehicle with Government Sources Source Goods and Services

As a consequence of the OneVA EA internal integration, there are cases where the same description name may be listed separately in the DD under multiple object types, but with different descriptions due to its usage and

context in the OneVA EA. There are also limited cases where the same description is used for different names in different object types due to the development process for that description name.

15.1.3 Relationship to other OneVA EA Models

The DD relates to all the other OneVA EA models. In particular:

- All objects from selected deliverable object types (e.g. Business Function, Subject Area or Business Rule) from other OneVA EA models must be listed and defined in the DD.
- Any Terms with specialized meaning must be listed in the DD; these specifically include, but are not limited to the descriptions of all deliverable architectural object types.
- Any Acronyms used within the architecture must be included in the DD Acronym Definitions report, subject to the scope defined in the next section.
- **Exception:** Terms from LRPs and other external documents are specifically excluded from the requirement to be captured in the DD.

15.2 Developing the DD Model

15.2.1 Pre-Development Tasks

There are no pre-development tasks related to the DD Model.

15.2.2 Development Tasks

The DD is generated automatically during development of the architecture models in the SA encyclopedia. The two exceptions are Acronyms and Term definitions pertaining to architecture models, which are entered manually in the Terms and Acronyms definitions in SA in order to appear in the DD.

Whenever an Acronym or a Term is changed, the existing Acronym List or Term List should be examined to see whether the Acronym or Term has been previously defined. If the Acronym or Term exists, then the description of the Acronym or Term should be reviewed to determine whether it is the correct description within the context use of the Acronym or Term.

The scope of the DD Acronym Definitions report and Terms Definitions report cover all the OneVA EA models that are in the SA encyclopedia and the OSI Overview and Summary Information document. DD Acronyms and Terms that also appear on the OneVA EA Summary, the VADM, overall summary documents and Web pages must be contain the same description set forth in the DD.

Acronyms introduced in Laws, Regulations and Policies descriptions, Configuration Management (CM) documents an*d the OneVA EA Development Process documents are not required to be listed in the DD. The DD Acronym Definitions report contains four types of character groupings:*

- **Abbreviation:** A shortening of a word or phrase.
- **Short name:** Term that is a shortened version of a longer name. This grouping is reserved for the names of systems.
- **Acronym:** An abbreviation that forms a word.
- **Initialism:** An abbreviation that uses the first letter of each word in a phrase. Also known as mnemonic.

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For the purpose of generating the DD Acronym Definition report, the first three character groupings (Abbreviations, Acronyms and Initialisms) are all considered “Acronyms”. Although additional information about an Acronym may be found within the OneVA EA, the Acronym is only defined in the DD and not within the description of a particular OneVA EA model. New or changed OneVA EA model descriptions that include Acronyms must follow this rule.

Exception: Acronyms may be defined in standalone reports and overall summary documents and Web pages. In particular:

- The OneVA EA Summary and overall summary documents may also include an Acronym list that covers the scope of the document. For these documents, an Acronym is described at first use in the document and entered into the Acronym list within the document. Subsequent uses of the Acronym do not re-describe the Acronym.
- Web pages may include a description with each use of the Acronym to provide a quicker understanding by a more casual user or reader.

Conversely, a Short Name that is included in the DD Acronym Definitions report can also be described within the description of an OneVA EA model because a Short Name typically pertains to a system or application name that is used only within System/Application/Service model descriptions. Additional information about a component system may be found outside of the OneVA EA in the VA System Repository.

In certain cases, the same Acronyms or Short Name may have multiple descriptions. To avoid confusion, the Term is listed only once in the DD Acronym Definition report, with multiple entries in the description field. The OneVA EA user must determine the correct description within the context of the use of the acronym. For example, the acronym “FMS” could correspond to both Financial Management System and Foreign Military Sales.

The DD Term Definitions report contains words and phrases that are recognized by OneVA EA users as having a specialized meaning within the OneVA EA business community, which differs in scope of use from the typical dictionary definition.

To be included in the DD, a Term must have a precisely limited meaning in a particular context and it should qualify as being:

- **Basic**: Not derived or computed from other Terms.
- **Atomic**: Not divisible, collective or composite.
- **Knowable**: Not events or actions.
- **Unambiguous**: Not subjective.

Generally, each word in a Term is capitalized. There may be exceptions where common, generally accepted use of a Term does not follow this convention. Spelling and capitalization of a Term should be identical in the SA object description and the DD Term Definition list.

A Term must be described in the DD Term Definitions report within the context of its use. To avoid confusion when a Term has different uses with distinct definitions, the Term is listed only once in the DD Term Definitions report with multiple entries in the description field. The OneVA EA user must determine the correct description within the context of the use of the Term. In the example shown below, the Term “Transition” may be applied to both the non-system context and the system context, but the Term “Transition Type” has a distinct definition for each.

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Figure 21. Term Definition Example

Transition	The act of carrying out business transformation - moving from one state to another.

Transition Type	Non-system - Policy Change - Process/Organizational Improvement - Outsourcing System - Modification or re-use of an existing system - Modification or use of an existing procurement - New Initiative

As a rule, a Term is described only in the DD Terms Definitions list and not in the description of an OneVA EA model. New or changed OneVA EA model descriptions that include Terms must follow this rule. It is anticipated that over time, Term use in all OneVA EA model descriptions will be changed to conform to this rule.

The Stakeholder that develops an OneVA EA model also drafts the initial description of an Acronym or Term used in conjunction with the OneVA EA model. The OneVA EA Development Team reviews the description and may propose refinements, subject to approval by the team that developed it, before entering it into the DD. The Stakeholder may also provide key source information and other descriptive information, where deemed helpful.

With the exception of Acronyms and Terms manually entered into the DD, all DD definitions are automatically generated from the OneVA EA models in the SA encyclopedia. Any changes to these definitions must be made to the OneVA EA models that introduce that specific Term, as well as the definitions regenerated for the DD.

15.2.3 Post–Development Tasks

As part of the integration review for each model, all DD descriptions are confirmed, both auto-generated and manually input names and descriptions. The object names and descriptions published in the DD must be reviewed for spelling and grammar errors. Use MS Word to spellcheck the names of Acronyms and Terms sections of the DD.

- Add all of the valid Terms and Acronyms to the Word dictionary.
- Spell and grammar check the entire DD names and definitions.
- Validate and confirm errors and proposed solutions with Stakeholders.

15.3 Modeling the DD Model Using SA

15.3.1 *DD Modeling Conventions*

Refer to each model section for modeling conventions of the DD objects.

15.3.2 *Modeling DD Objects*

Refer to each model section for modeling of the specific DD objects.

15.3.3 DD Best Practices

This section discusses best practices, including lessons learned from previous architecture development efforts and common modeling pitfalls should be avoided.

The following are the lessons learned:

- Ensure that the DD is generated after all of the OneVA EA models are stabilized.

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- Perform regular and early communication with other architects to assess impact of proposed changes in other models on the DD.
- Review OneVA EA descriptions to ensure all shared Definitions, Acronyms and Terms have the same descriptions in related documents.
- Ensure that all exception reports are reviewed and resolved.

The following are the common pitfalls:

- Failure to ensure that all relevant OneVA EA Acronyms and Terms are included in the DD.
- Failure to coordinate DD Acronym and Term Lists with the Web pages**.**

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16 Federal Enterprise Architecture Mappings

16.1 Summary Description

The OneVA EA follows federal CIO policy guidance and management for increasing shared approaches to IT service delivery. As stated in the introduction section of this document, the OneVA EA is in conformance with *The Common Approach to Federal Enterprise Architecture May 2, 2012*. The OneVA EA is also in alignment with the Federal Enterprise Architecture reference models through mappings of OneVA EA artifacts to the appropriate Federal Enterprise Architecture reference model artifact.

The OneVA EA mappings of artifacts are to the Federal Enterprise Architecture (FEA) reference models as described in the Federal Enterprise Architecture Framework Consolidated Reference Model (FEAF CRM) Version 2 January 29, 2013 The purpose of the CRM as stated in this document is "The Consolidated Reference Model of the Federal Enterprise Architecture Framework (FEAF) equips OMB and Federal agencies with a common language and framework to describe and analyze investments. It consists of a set of interrelated "reference models" designed to facilitate cross-agency analysis and the identification of duplicative investments, gaps and opportunities for collaboration within and across agencies. Collectively, the reference models comprise a framework for describing important elements of federal agency operations in a common and consistent way. Through the use of the FEAF and its vocabulary, IT portfolios can be better managed and leveraged across the federal government, enhancing collaboration and ultimately transforming the Federal government."

The following are the FEA reference models.

- The **Performance Reference Model (PRM)** links agency strategy, internal business components, and investments, providing a means to measure the impact of those investments on strategic outcomes.
- The **Business Reference Model (BRM)** describes an organization through a taxonomy of common mission and support service areas instead of through a stove-piped organizational view, thereby promoting intra- and inter-agency collaboration.
- The **Data Reference Model (DRM)** facilitates discovery of existing data holdings residing in "silos" and enables understanding the meaning of the data, how to access it, and how to leverage it to support performance results.
- The **Application Reference Model (ARM)** categorizes the system- and application-related standards and technologies that support the delivery of service capabilities, allowing agencies to share and reuse common solutions and benefit from economies of scale.
- The **Infrastructure Reference Model (IRM)** categorizes the network/cloud related standards and technologies to support and enable the delivery of voice, data, video, and mobile service components and capabilities.
- The **Security Reference Model (SRM)** provides a common language and methodology for discussing security and privacy in the context of federal agencies' business and performance goals.

The current version of the OneVA EA does not include mappings to all of the above FEA reference models. While the full scope of the OneVA EA is planned, the OneVA EA is undergoing a phased development and not all of the models are included in the current release. However, subsequent releases of the OneVA EA will include mappings to each FEA reference model.

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16.2 Developing the Mappings

The OneVA EA to FEA BRM and DRM mappings are developed as each OneVA EA model is maintained. For example, during a work session that refines the OneVA EA BRM an OneVA EA Business Reference Model leaf function is mapped to the appropriate FEA BRM Service. This action is performed during the work session by a collaborative effort between the Stakeholders and the OneVA EA Development Team.

The other OneVA EA to FEA mappings are developed by the OneVA EA Development Team in collaboration with the VA developers of the Systems Inventory and Technical Architecture.

The FEA reference model mappings included in the current version of the OneVA EA are:

- Business Reference Model
- Data Reference Model

The following mappings will be included in subsequent versions of the OneVA EA

- Application Reference Model
- Security Reference Model

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Appendix A Acronyms

Acronym	Definition
ARM	Applications Reference Model
ASG	Architecture Style Guide
BCG	Business Concept Graphic
BCM	Business Capability Model
BPM	Business Process Model
BPMN	Business Process Modeling Notation
BRM	Business Reference Model
CDM	Conceptual Data Model
CM	Configuration Management
CMD	Configuration Management Document
DD	Data Dictionary
DM2	DoDAF Meta-model
DoD	Department of Defense
DoDAF 2.0	Department of Defense Architecture Framework Version 2.0
DRM	Data Reference Model
ETA	Enterprise Technical Architecture
F&R	Findings and Recommendations
FEA	Federal Enterprise Architecture
FEAF	Federal Enterprise Architecture Foundation
FOM	Functional Organization Model
IEEE	Institute of Electrical and Electronics Engineers
IT	Information Technology
LDM	Logical Data Model
LRP	Laws, Regulations and Policies
MI	Major Initiative
NCA	National Cemeteries Administration
OGC	Office of General Council
OMB	Office of Management and Budget
OMG	Object Management Group

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Acronym	Definition
OneVA EA	Veterans Affairs Enterprise Architecture
OSI	Overview and Summary Information
PDM	Physical Data Model
PRM	Performance Reference Model
RRM	Requirements and Rules Model
SBVR	Semantics of Business Vocabulary and Business Rules
SoS	System of Systems
SOA	Service Oriented Architecture
SPO	Strategy Planning Objects
SIM	Systems Interface Model
SRM	Security Reference Model
TRM	Technical Reference Model
URL	Universal Resource Locator
VA	Veterans Affairs
VBA	Veterans Benefits Administration
VADM	VA EA Development Methodology
VHA	Veterans Health Administration

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Appendix B Model Checklists

DD OSI Diagram Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
1		Manual Check	OneVA EA Names and Descriptions should be the same in Enterprise Transition Plan (ETP). OneVA EA OSI is the authoritative source for OneVA EA Names, Description Goals and Objective.		
2		Manual Check	Lead and support Stakeholders should be correctly identified and in accordance with the ETP.		
3		Manual Check	Listing of "Models Developed" should be accurate and complete.		
4		Manual Check	All spelling is correct and there are no grammatical errors.		

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DD Acronym Definitions Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
1		Manual Check	The acronym is described in Acronym List		
2		Manual Check	The acronym is not described in the OneVA EA model description with the exception of Business Guidance items.		
3		Manual Check	Short name is described in Acronym List.		
4		Manual Check	Plurals of acronyms are not described in Acronym List.		
5		Manual Check	If the acronym is used in the OSI Overview, then the acronym must be described at first use.		
6		Manual Check	If the acronym is used in the OSI Overview, then the acronym must be in the Acronym List.		
7		Manual Check	The acronym must be used within the ETP, OneVA EA, or architecture guidance document.		

DD Term Definitions Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____
-

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
1		Manual Check	The object names and descriptions published in the DD do not contain any spelling or grammar errors.		
2		Manual Check	All DD exception reports have been reviewed and resolved.		

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BRM Diagram Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
			BRM Business Function Decomposition		
1		Manual Check	The Business Functions boxes are numbered sequentially, relative to position and match the corresponding activity numbering on the BRM.		
2		Manual Check	The top-level box of the BRM is centered on the diagram as permitted by the tool.		
3		Manual Check	Parent Business Functions are decomposed to at least two, but not more than nine, child Business Functions.		
4		Manual Check	The BRM follows the modeling conventions: Names are Normal and Black font. The Business Function box border shall be a solid black line. The integrated Business Functions shall be white. The standalone Business Functions that appear on the BRM only shall be blue.		
5		Manual Check	Business Functions on the BRM should be decomposed to a level low enough to support a Business Capability.		
6		Manual Check	Each Business Function is named as a Verb-Noun, using an active verb phrase (for example, Allocate Resource).		
7		Manual Check	Each leaf level Business Function should be aligned to the FEA BRM where possible.		
			Business Functions		
8		Manual Check	Business Function names follow modeling conventions: The font must be normal and Black. The Business Function name begins with a RETURN character. Business Function name falls within the Business Function box border with no truncation indicators The Business Function y Box has a solid black line border. All business functions should be colored Yellow.		
9		Manual Check	Business Function y boxes are numbered sequentially in the lower right corner. The number inside the Business Function y box shall match the last digit of the Business Function number sitting outside the box beginning with an "A." Business Function y boxes are stair-stepped vertically and numbered in descending order appropriately.		

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#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
10		Manual Check	Diagram name (Business Function box label) shall use title case (first letter of each word capitalized, other letters lowercase), should be non-plural (exception approved by VA) and can use only the special character "-". Any acronyms used in the Business Function name must be from the approved acronym list that is part of the OneVA EA DD.		
11		Manual Check	Each BRM term must be defined in the DD.		
12		Manual Check	Each acronym used in BRM descriptions must be defined in the DD.		
13		Manual Check	Leaf level Business Functions must be assigned to the Capabilities they support		
14		Manual Check	Process Steps in the BPM are only linked to leaf level Business Functions in the BRM.		
			General		
1		Manual Check	The BRM diagram does not have a border.		
2		Manual Check	The BRM diagram has a Documentation Block for header information that includes the title of the diagram on one line, its creation/modification date, but no graphic comments. The Documentation Block is in the extreme upper left corner of the diagram with a black border, no fill color and no truncation indicators.		
3		Manual Check	The BRM diagram has a narrative description of the diagram, using the diagram properties comment box to explain the Business Functions and their relationships.		
4		Manual Check	All exception reports have been reviewed and resolved.		

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BRM Definitions Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
1		Manual Check	Object names are unique and in the proper tense.		
2		Manual Check	Object names are in title case, do not end in "s", and contain no special characters or invalid acronyms.		
3		Manual Check Spell Check	Each Business Function has a unique grammatically correct definition that has been spell checked.		
4		Manual Check	The Business Function definition identifies what the Business Function does, suitable to the level of decomposition and how information is transformed, created or consumed in the Business Function.		
5		Manual Check	All exception reports have been reviewed and resolved.		

BRM Integration Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
1		Manual Check	Each leaf-level Business Function is mapped to one or more leaf-Level Processes.		
2		Manual Check	Each leaf-level Business Function is mapped to the FEA BRM Sub-functions.		
3		Manual Check	Object names use only approved abbreviations and acronyms contained in the DD and are free of symbol characters, (for example, /, $, @, &).		
4		Manual Check	All exception reports have been reviewed and resolved.		

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SIM Diagram Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
1		Manual Check	Verified intended content changes with Subject Matter Expert		
2		Manual Check	There is a SIM for each Stakeholder that has identified Enterprise Systems for the OneVA EA and an External SIM to reflect VA use with federally mandated systems.		
3		Manual Check	Each SIM diagram has a Diagram Description.		
4		Manual Check	Each SIM diagram has a Documentation Block representing header information for the diagram (including the diagram name and date last updated) that is placed at the top left of every diagram.		
5		Manual Check	Documentation Block has been enlarged so there are no truncation indicators (dots) indicating text is not visible.		
6		Manual Check	The Documentation Block has a box with no fill and a black border.		
7		Manual Check	The SIM diagram name is the name of the focus Stakeholder or External system node, light green, on the diagram.		
8		Manual Check	All System Node labels are Arial 14, Bold and Black font.		
9		Manual Check	All System Node labels are top center of the System Node border and the label does not fall outside the boundary of the ellipse.		
10		Manual Check	Internal System Nodes are elliptical with a light blue fill and black border.		
11		Manual Check	The central System Node on each diagram is elliptical with a light green fill and a black border.		
12		Manual Check	The external System Nodes is elliptical with a light gray fill and a black border.		
13		Manual Check	All System labels are Arial 10, Bold and Black font.		
14		Manual Check	All System labels are at top center of the System box and the label should not fall outside the box boundary.		
15		Manual Check	Enterprise-level Systems are yellow boxes with a black border.		

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
16		Manual Check	System of Systems is light orange boxes with a black border.		
17		Manual Check	System Interface labels are clear and not within the parenthesis.		
18		Manual Check	Each System Node may contain a System of System.		
19		Manual Check	Non-VA Systems are white boxes with a black border.		
20		Manual Check	All Systems are contained within their associated System Node elliptical boundary.		
21		Manual Check	The naming convention for System Interfaces is “sending System abbreviation”- “receiving System abbreviation” (data in parentheses).		
22		Manual Check	System Interface labels are placed, where possible, above the horizontal line where most visible and close to the arrowhead.		
23		Manual Check	System Interface lines should not traverse intermediate Systems.		
24		Manual Check	To the maximum extent possible, System Interface lines should not cross intermediate System Nodes.		
25		Manual Check	System Interface arrows are black with black filled arrowheads.		
26		Manual Check	System Interfaces connect to a System at both ends.		
27		Manual Check	System Interfaces are solid, straight, lines with 90-degree curves, when necessary.		
28		Manual Check	All exception reports have been reviewed and resolved.		

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SIM Definitions Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
1		Manual Check	Each SIM has a diagram description that explains what it represents and a brief description of the Enterprise Systems.		
2		Manual Check	Each System has a description of what the Enterprise System does.		

SIM Integration Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
1		Manual Check	Each OneVA EA Enterprise System must have at least one System Function assigned.		
2		Manual Check	Systems have Stakeholders assigned.		

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TA Definitions Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
1		Manual Check	The Standards are mandated in the VA Technical Reference Model.		
2		Manual Check	Brief descriptions for the Technology Standards are provided.		
3		Manual Check	References to the Standard administration/publishing organization are provided.		
4		Manual Check	All exception reports have been reviewed and resolved		

TA Integration Checklist

CR Number: _____ Date: _____
Approval Signatures:
Contractor Lead _____ Government Lead _____

#	Source ASG	Manual / Report	Checklist Item Description	Modeler	Reviewer
1		Manual Check	Each Technical Service shall map to a Technology Service Area, which represents an OneVA EA TRM.		
2		Manual Check	Each Standard shall link to the Technical Service it supports.		
3		Manual Check	All exception reports have been reviewed and resolved.		

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Appendix C Glossary

Term	Description
Acronym	The initials of a standard phrase used in the OneVA EA or ETP.
Activity Box	Represented by an enclosed rectangular box within which an operational function is performed in conducting the business of the enterprise.
Action Assertion Business Rule	These rules concern some dynamic aspects of the business and specify constraints on the results that actions produce. There are three types of action assertions: − Condition: This is a guard or the "if" portion of an "if-then" statement. If the condition is true, it may signal the need to enforce or test additional action assertions. − Integrity Constraint: These must always be true (for example, a declarative statement). − Authorization: This restricts certain actions to certain human roles or users.
AND-Split	See "Fork (AND-Split)". [BPM]
AND-Join	See "Join (AND-Join)". [BPM]
Attribute	An Attribute is a property or characteristic that is common to some or all of the instances of an Entity. Attributes that identify Entities are key Attributes. Attributes that describe an Entity are non-key Attributes. Attributes are associated to one and only one Entity or Subject Area.
Artifact	A graphical object that shows additional information about a process that is not directly related to the Sequence Flow or Message Flow. There are three artifacts: Data Objects, Groups and Annotations. [BPM]
Association	An Association is used to link information with Flow Objects. An Association may or may not have direction. [BPM]
Availability	Timely, reliable access to data and information services for authorized users.
Box Name	The verb or verb phrase placed inside a BRM box to describe the modeled function.
Box Number	The number (0 to 9) placed inside the lower right corner of a BRM box to uniquely identify the box on a diagram.
BPM Event	See "Event".
BPM Process	See "Process".
Branch	A junction (fork or join) of two or more arrow segments.
Branching Point	Branching points are Gateways within a Business Process where the flow of control can take one or more alternative paths. Synonymous with *Decision*. [BPM]

Term	Description
Business Capability	This is the ability to execute a specific course of action. It can be a single business enabler or a combination of business enablers (e.g., business processes, policies, people, tools and systems information) that assist an organization in delivering value to its customer.
Business Process	A Business Process is a set of tasks that are performed within an organization or across organizations.
Business Rule	Listed in the RRM, a Business Rule is “a rule that is under business jurisdiction”, SBVR OMG. It is a constraint on an enterprise, a mission, operation, business, or architecture. A Business Rule describes what the business must or cannot do. A Business Rule is an atomic piece of business logic, specified declaratively, whose intent is to control, guide, or enhance behavior.
Child Box	A box on a Child diagram.
Child Diagram	The diagram that details a Parent box.
Class Word	A Class Word is a word selected from a specified list that is used in an Attribute name to establish the general structure and domain of that Attribute.
Collaborative Process	A collaboration process depicts the interactions between two or more business Entities. This is shown as two or more processes communicating with each other. In BPM, collaborative processes also include processes from the same Business Entity, but commonly assigned to a different higher-level process. [BPM]
Collapsed Sub-Process	A collapsed Sub-Process is a graphical representation of a Process Step in which the details of the Sub-Process are not visible in the diagram. This is indicated by a “+” stereotype. [BPM]
Conditional Flow	A Sequence Flow that has a condition expression evaluated at run time to determine whether the flow will be used. [BPM]
Confidentiality	Assurance that information is not disclosed to unauthorized individuals, processes or devices.
Connecting Objects	Connecting objects connect Flow Objects together. There are three connecting objects: Sequence Flow, Message Flow and Association. [BPM]
Context	The immediate environment in which a function (or set of functions on a diagram) operates.
Context Diagram	A diagram that presents the context of a model, whose node number is A-n (n greater than or equal to zero). The one-box A-0 is a required A-0; that with node numbers A-1, A-2, are optional A-0s.
Criticality	The criticality assessment of the information being exchanged in relationship to the mission being performed.
Data-Based Decision	A Gateway in which the Decision represents a branching point where Alternatives are based on conditional expressions based on data contained within the outgoing Sequence Flow. [BPM]
Data Element	A Data Element allows a common format or small set of values to be assigned to more than one Attribute or describe derived data such as a total that is not an Attribute.

Term	Description
Data Model	A graphical and textual representation of analysis that identifies the data needed by an organization to achieve its mission, functions, goals, objectives, and strategies and to manage and rate the organization. A data model identifies the Entities, Attributes and Relationships (or associations) with other data.
Data Object	Additional information on an BPM, which does not have any direct effect on the Sequence Flow or Message Flow but does show the data that may be passed, created, or consumed by the BPM Process. Data Objects are a mechanism to show how data is required or produced by Process Steps. A Data Object is considered an artifact because it does not have a direct effect on the Sequence or Message Flow of the process. [BPM]
Decision	Synonymous with “Branching Point.” [BPM]
Decomposition	The partitioning of a modeled function into its component functions.
Default Flow	Sequence Flow, for Data-Based Exclusive Decisions or Inclusive Decisions, which shall be used only if all the other outgoing Conditional Flows are not true at run time. [BPM]
Derivation Business Rule	These rules concern algorithms used to compute a derivable fact from other terms, facts, derivations, or action assertions.
Description	Text description of mission or role being performed by the Node.
Diagram	A single unit of a Model that presents the details of a box.
Diagram Node Number	That part of a diagram’s node references that corresponds to its Parent box node number.
End Event	An Event that indicates where the process concludes. [BPM]
Enterprise Sub-Services	Used in the SIM-TA Bridge, it describes the intersection between enterprise systems and Technical Services, and defines Standard attributes to bring order to that point.
Entity	An Entity is the representation of a set of real or abstract things (people, objects, places, events, ideas, combination of things, etc.) that are recognized as the same type because they share the same characteristics and can participate in the same Relationships.
Event	An Event is something that happens during the course of a Business Process. These Events affect the flow of the process and usually have a cause (trigger) or an impact (result). Events are represented as circles with open centers to allow internal markers to differentiate different triggers or results. There are three types of Events, based on when they affect the flow: Start, Intermediate and End. [BPM]
Event-Based Decision	The Decision represents a branching point where Alternatives are based on an Event that occurs at a particular point in the process. [BPM]
Event Name	Name of the Event that triggers the IE.
Exception Flow	Sequence Flow occurring outside the Normal Flow of the process and is based upon an Intermediate Event that occurs during the performance of the process. [BPM]
Exclusive Gateway (XOR)	An Exclusive Gateway restricts the flow such that only one of a set of alternatives may be chosen during runtime. There are two types of Exclusive Gateways: Data-based and Event-based. Also see “Inclusive Decision”. [BPM]

Term	Description
Expanded Sub-Process	An expanded Sub-Process is a graphical representation of a Sub-Process in which the boundary of the Sub-Process icon is expanded and the details (a process) are visible within its boundary. [BPM]
Flow Object	Flow Objects are the main graphical elements to define the behavior of a Business Process. The three Flow Objects are Events, Process Steps and Gateways. [BPM]
Fork (AND-Split) [BPM]	Dividing a path into two or more parallel paths, where Process Steps can be performed concurrently, rather than sequentially. [BPM]
Function	An activity, process, or transformation (modeled by a BRM box) identified by a verb or verb phrase that describes what must be accomplished.
Gateway	Used on a BPM, this Flow Object controls the divergence and convergence of multiple Sequence Flows. [BPM]
Inclusive Decision	A branching point (Gateway) where Alternatives are based on conditional expressions contained within the Sequence Flow. Since each path is independent, all combinations of the paths may be taken. Also see "Exclusive Gateway". [BPM]
Integrity	Quality of an IS reflecting the logical correctness and reliability of the operating system; the logical completeness of the hardware and software implementing the protection mechanisms; and the consistency of the data structures and occurrence of the stored data. Note that, in a formal security mode, integrity is interpreted more narrowly to mean protection against unauthorized modification or destruction of information.
Intermediate Event	An Event that occurs between a Start Event and an End Event. It affects the flow of the process, but will not start or (directly) terminate the process. [BPM]
Interface	A shared boundary across which data or objects are passed; the connection between two or more model components for the purpose of passing data or objects from one to the other.
Join (AND-Join) [BPM]	A Gateway that combines two or more parallel paths into one path. Synonymous with "AND-Join" and "synchronization". [BPM].
Lane	A Lane is a sub-partition within a Pool and extends the entire length of the Pool. Lanes are used to organize and categorize Process Steps within a Pool. [BPM]
Leaf-level	Refers to the lowest level of detail described for a given Business Function, system, or process model. It represents the lowest level of decomposition of higher-level models needed to represent objects and relationships of interest to the topic under study.
Level Identifier	If using hierarchical decomposition of Nodes: identifier that corresponds to the Node's place in the Node hierarchy.
Logical Data Model	The LDM provides the structure for organizing the data as well as the metadata need for an understanding of the data. The LDM can serve as a guide for the acquisition and evaluation of systems by assisting portfolio managers in quantitatively assessing the contents of their portfolios in the evaluation of how well the alternative solutions meet the data needs of the VA.

Term	Description
Merging (OR-Join)	Merging exclusively combines two or more paths into one path. A Merge Gateway represents merging. [BPM]
Message Flow	A Message Flow shows the flow of messages between two Steps that are prepared to send and receive them. Two separate Pools in the Diagram will represent the two business units. [BPM]
Model Note	A textual comment that is part of a BRM diagram used to record a fact not otherwise depicted.
Name	Name or label of Node box on diagram.
Node	A box from which Child boxes originate; a Parent box.
Node Index	A listing, often indented, showing nodes in a BRM Model in outline order. Same meaning and content as Node Tree.
Node Reference	A code assigned to a diagram to identify it and to specify its position in the model hierarchy; composed of the model name (abbreviated) and the diagram node number, with optional extensions.
Node Tree	The graphical representation of the Parent-Child relationships between the Nodes of a BRM Model, in the form of a graphical tree.
Normal Flow	Normal Sequence Flow refers to the flow that originates from a Start Event and continues through Process Steps via alternative and parallel paths until it ends at an End Event. [BPM]
Normal Form	Normal form is the condition of an Entity relative to satisfaction of a set of normalization theory constraints on its attribution. A specific normal form is achieved by successive reduction of an Entity from its existing condition to some more desirable form.
Normalization	The process of refining and regrouping Attributes in Entities according to the normal forms.
Business Function	An activity is an action performed in conducting the business of an enterprise. It is a general term that does not imply a placement in a hierarchy (e.g., it could be a process or a task as defined in other documents and it could be at any level of the hierarchy of the Business Reference Model). It is used to portray operational actions not hardware/software System Functions. [BRM]
Business Function Name	Name of the Business Function (at the originating Node of the Need Line) that produces the IE.
Optional Non-Identified Relationship	A non-identified Relationship in which an instance of the Child Entity can exist without being related to an instance of the Parent Entity.
OR-Split	Synonymous with “Branching Point.” [BPM]
Parent Box	A box that is detailed by a Child diagram.
Parent Diagram	A diagram that contains a Parent box.
Participant	A Participant is a single business Entity or a business role, which controls or is responsible for a Business Process. A Pool represents a Participant in the process. [BPM]
Periodicity	How often the IE occurs; may be an average or a worst-case estimate and may include conditions (for example, wartime or peacetime).
Persistent Data	Data that has been saved and remains available even when it is not being used.

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Term	Description
Pool	A Pool represents a Participant – a single Business Unit – in a process. It also acts as a Swimlane and a graphical container for partitioning a set of Process Steps from other Pools. [BPM]
Primary Key Attribute	Represented by one or more textual names in the upper portion of the Entity box. Primary Key Attributes contain characteristics that uniquely define a single instance of an Entity.
Private Business Process	Private Business Processes are those internal to a specific organization and are the types of processes that have been generally called workflow or BPM Processes. [BPM]
Process	Used on a BPM, this denotes a set of tasks performed within a business organization, where an activity (not to be confused with the BRM usage for 'Business Function) is a generic term for work that a business organization performs. A BPM Process is depicted as a graph of Flow Objects, which are a set of other Process Steps and the controls that sequence them. [BPM]
Process Break	A location in a process that shows where an expected delay will occur within a process. An Intermediate Event is used to show the actual behavior. [BPM]
Process Step	Work that can be performed within a Business Process. A Process Step can be atomic or non-atomic (compound). The types of Process Steps that are a part of a BPM Event Trace Diagram are: Process Step, Sub-Process and Task. The term "Process Step" is a synonym for the Business Process Modeling Notation term "Activity." BPM uses the term "Process Step" to avoid confusion with the BRM term "Activity," representing a "Business Function." [BPM]
Protection Type Name	The name for the type of protection.
Public Processes	Public processes represent the interaction between a private Business Process and another process or participant. Only those tasks that are used to communicate outside the private Business Process, plus the appropriate flow control mechanisms, are included in the public process. All other internal tasks of the private Business Process are not shown in the public process. Synonymous with "Abstract Process". [BPM]
Purpose	A brief statement of the reason for a model's existence.
Receiving Business Function	The identity of the Business Function consuming the information.
Relationship	A Relationship is an association between two Entities or between instances of the same Entity.
Relationship Cardinality	Relationship Cardinality is the number of Entity instances that can be associated with each other in a Relationship.
Relationship Cardinality Constraint	A Relationship Cardinality Constraint is a limit on the number of Entity. Instances that can be associated with each other in a Relationship.
Relationship Name	A Relationship Name or label is "a verb or verb phrase, which reflects the meaning of the Relationship expressed between the two Entities shown in the diagram on which, the name appears."
Semantics	The meaning of the syntactic components of a language.

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Term	Description
Sending Business Function Name	The identity of the Business Function producing the information.
Sequence Flow	Arrows that show the order that Process Steps will be performed in a process.
Service	A service is an implemented business capability that is well-defined, self-contained, and does not depend on the context or state of other services.
Standard	An agreed upon means that establishes uniform engineering and technical requirements to implement all or part of a Technical Service.
Start Event	An Event that indicates where a particular process will start. A process must have one or more Start Events. [BPM]
Stereotype	A graphical icon that indicates the type of Flow Object. [BPM]
Structural Assertion Business Rule	These rules concern mission or business Stakeholder terms and facts that are usually captured by the Entities and Relationships of Entity-Relationship models. They reflect static aspects of Business Rules that may also be captured in the CDM or LDM. – Terms: Entities. – Facts: Association between two or more terms (for example, relationship).
Sub-Process	A compound Process Step that is included within a process. It is compound in that it can be broken down into a finer level of detail (a process) through a set of Sub-Processes. A Sub-Process may be shown graphically as a collapsed or expanded Sub-Process. [BPM]
Swimlanes	Swimlanes group the primary modeling elements by organization or other criteria. There are two Swim lane objects, Pools and Lanes. [BPM]
Synchronization	See “Join (AND-Join)”. [BPM]
Syntax	Structural components or features of a language and the rules that define relationships among them.
System	Shown on a SIM, it represents computer systems, family of systems or systems of systems. A System resides within a System Node and may contain one or more System Functions.
System Interface	Shown on an SIM, it represents the data exchange between Systems.
System Node	Shown on an SIM, it represents the system capabilities that are required to support the business functions.
Task	An atomic Process Step that is included within a process. A Task is used when the work in the Process Step is not broken down to a finer level of process model detail. [BPM]
Technical Service	Listed in the TA with its constituent Standards, represents a technical capability designed to support an Enterprise Sub-Service.

Term	Description
Technology Service Area	Shown in the TA, it groups similar Technical Services together for increased organization and comprehension. There may be one or more Technical Services in a Technology Service Area. The current TA takes its highest-level structure from the VA Enterprise Architecture Technical Reference Model (EA TRM). It contains four Technology Service Areas, drawn from the Core Service Areas of the OneVA EA TRM.
Term	Used in the OneVA EA or ETP, this is a word or group of words designating a selected concept.
Text	An overall textual (non-graphical) comment about a graphic diagram.
Text Annotation	Text Annotations are mechanisms (Artifacts), attached with an Association, for a process architect to provide additional information for the reader of the Process Diagram. [BPM]
Timeliness	Required maximum allowable time of exchange from Node to Node (in seconds).
Title	A verb or verb phrase that describes the overall function presented on a diagram; the title of a Child diagram corresponds to its Parent box name
Triggering Event	Brief textual description of the Event(s) that trigger the Process Step.
Uncontrolled Flow	Sequence Flow that is not affected by any conditions or does not pass through a Gateway. [BPM]
Viewpoint	A brief statement of the perspective of the model.
XOR	See “Exclusive Gateway”. [BPM]

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Appendix D References

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