BEA 4.1 Summary

March 15, 2007

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Introduction

The Business Enterprise Architecture (BEA) is the enterprise architecture for the Department of Defense (DoD) Business Mission Area (BMA) and includes activities, processes, data standards, business rules, operating requirements, and information exchanges. The BEA is developed using a set of integrated DoD Architecture Framework (DoDAF) products, including All Views (AV), Operational Views (OV), System Views (SV), and Technical Standards Views (TV) products. The BEA defines DoD's business transformation priorities, the Business Capabilities required to support those priorities, and the combinations of systems and initiatives that enable these capabilities. The major milestones for the systems and initiatives that are critical to achieving the transformation priorities are outlined in the Enterprise Transition Plan (ETP). Although the ETP is a separate document, the BEA and the ETP are integrated and cross referenced at the appropriate common touchpoints (i.e. SV-5, AV-1, and AV-2), as listed in Table 2: Integrating BEA with the ETP.

The transformation effort guiding BEA development focuses on providing tangible outcomes for a limited set of priorities and on developing an architecture that is integrated, understandable, and actionable. The scope of the BEA, defined by six Business Enterprise Priorities (BEPs), permits the BEA to evolve in a controlled and consistent fashion.

Historically the BEA has been released on a semi-annual basis. However, now all future releases are planned to occur annually, beginning with the BEA 5.0 release in March 2008. The decision to move to an annual release, concurrent with the March 15 release of the Congressional Report, allows services and programs one year to address and align to the most current release of the architecture and Congressional Report, while also corresponding with the Investment Review Board's (IRB) Fiscal Year appropriation decision schedule.

Each release includes the addition of new content that is selected from architecture gaps identified in the previous release's AV-1 Findings and Recommendations, in addition to content improvements proposed by BEA stakeholders. The most recent gaps addressed are displayed below in Table 1: Gaps Addressed by BEP for BEA 4.1. In addition to new content, each release includes an effort to clarify existing content and improve the usability, production, and functionality of the architecture.

Table 1: Gaps Addressed by BEP for BEA 4.1

BEP	Gaps Addressed in BEA 4.1
Acquisition Visibility (AV)	• Eliminated Generate Requirements Response Operational Activity through realignment and redefinition of associated ICOMs[1] • Further documented Capital Asset Valuation • Performed Architecture Cleanup[2]
Common Supplier Engagement (CSE)	• Added the system Synchronized Pre-Deployment and Operations Tracker (SPOT) • Performed Architecture Cleanup[2]
Financial Visibility (FV)	• Added Phase III of the Standard Financial Information Structure (SFIS) • Performed Architecture Cleanup[2]
Materiel Visibility (MV)	• Added Logistics Federated Touchpoints • Performed Architecture Cleanup[2]
Personnel Visibility (PV)	• Decomposed Human Resources Management (HRM) Operational Activities
Real Property Accountability (RPA)	• Performed Architecture Cleanup[2]

[1] An ICOM is used on an OV-5. It represents the Input, Control, Output, or Mechanism that defines information relationships in an Activity Model.

[2] Throughout the suite of BEA products, Cleanup addresses: general technical cleanup that verifies, validates, and improves the content clarity of the BEA by ensuring that all architectural products adhere to applicable architectural standards and are mutually consistent, aligned, and integrated; and content refinement changes that address or correct gaps in content that were created within the scope of one of the previous releases, and includes updates for consistency, flow, alignment, and integration between the BEA products.

Purpose

The purpose of this document is to provide a high-level summary of the following:

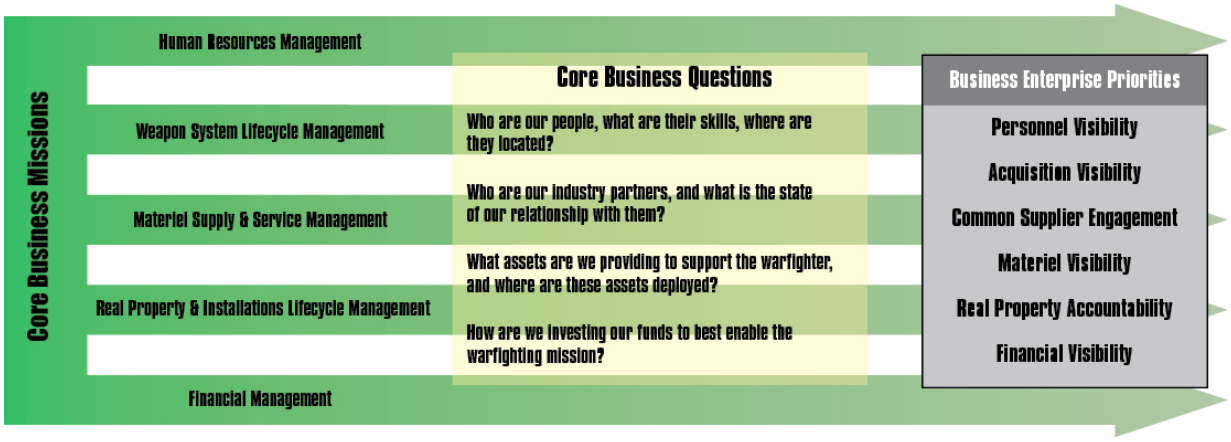
- BEA 4.1 Architecture Development
  - Methodology Overview
  - What is different in BEA 4.1
  - Integration between BEA and ETP
  - Architecture Development Improvements
- BEA References and Supplemental Products
- HTML Features
- BEA Laws, Regulations, and Policies (LRP) Repository
- Final Note to include the drivers of BEA 5.0 planning
- Appendix with high level list of BEP content changes by product

BEA 4.1 Architecture Development

Methodology Overview

The basic tenets of the BEA have been firm since BEA 3.0. BEA 4.1 addresses only DoD enterprise-level business and strategic plans, goals, objectives, and strategies. BEA 4.1 continues to be an outcome-based architecture focused on six BEPs within DoD's five Core Business Missions (CBMs) [3] as depicted in Figure 1: Business Enterprise Priorities (BEPs). There were no additional BEPs identified for the BEA 4.1 release.

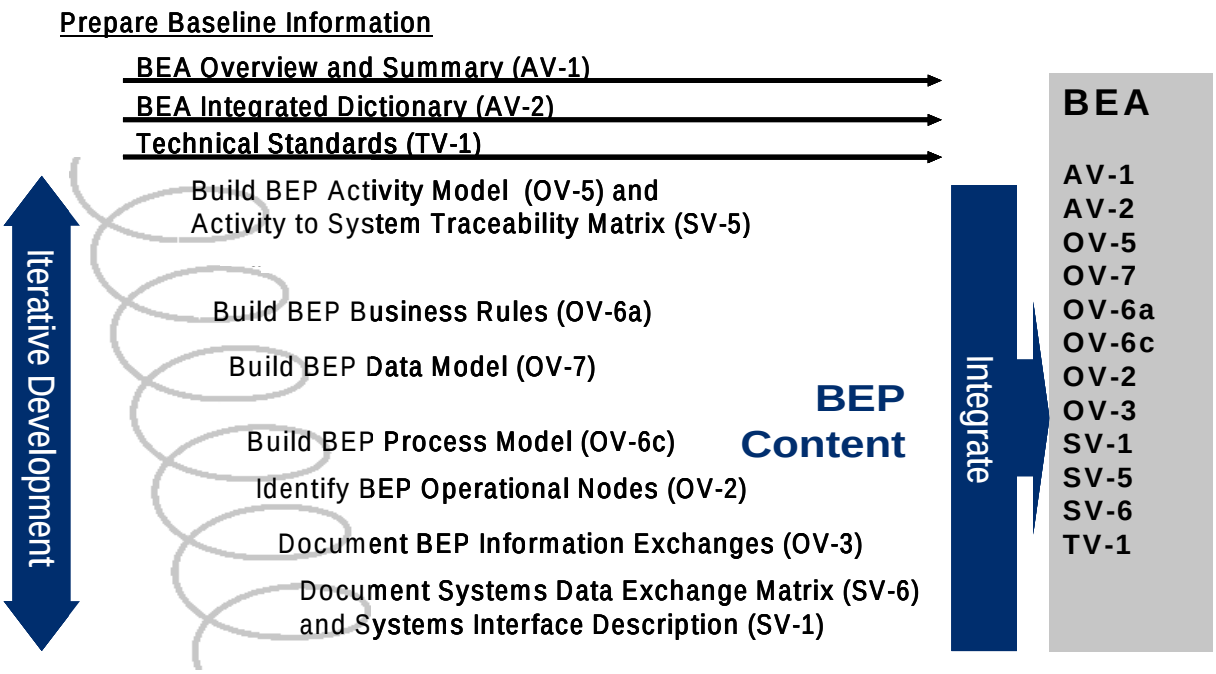
Figure 1: Business Enterprise Priorities (BEPs)



The same basic spiral development methodology was followed with BEA 4.1 as with previous releases. The necessary and sufficient set of DoDAF products to meet BEA objectives and the development sequence employed for BEA 4.1 remains stable, as presented in Figure 2: BEA Spiral Development. In addition, Independent Verification and Validation (IV&V) continued their role as an embedded member and active participant in all areas of the development process. IV&V delivers reports of their findings for each architecture release.

[3] For additional information on CBMs, BEPs, and Business Capabilities, reference the BEA 4.1 AV-1 Overview and Summary Information and the March 2007 update to the ETP in the BTA Report to Congress of March 15, 2007. Definition of terms used in this document can be found in the BEA 4.1 AV-2 Integrated Dictionary.

Figure 2: BEA Spiral Development



What is different in BEA 4.1

BEA 4.1 development efforts focused on addressing gaps identified in the BEA 4.0 AV-1 Findings and Recommendations, in addition to content improvements proposed by BEA stakeholders.

To further enhance the stability of the architecture content, an entry and exit criteria procedure was implemented at the start of the BEA 4.1 development cycle that constrained the process of determining content to be developed. The entry and exit criteria procedure was identified to ensure each proposed content improvement had value for business transformation and to ensure the recommended improvements were aligned with the Objectives, Goals and Mission of the BTA. In addition, the procedure required each proposed content improvement to be described in terms of its value to the transformation efforts of the DoD, the level of effort required to articulate a solution to the gap, and the measures that would be used to validate the integration and completeness of the work effort.

The major areas of content improvement are organized by the stewarding BEP in the following sections. In order to introduce the reader to understand technical changes, this section describes the content changes in the context of the value added from a business perspective. It includes a description of the identified gap in the architecture and the BEA 4.1 solution to address the gap. The specific architecture changes can be referenced in Appendix A: High Level BEP Content Changes by Product.

In conjunction with new and improved content, several other minor architectural changes were made in BEA 4.1 to improve the overall integrity and alignment of the architecture. However, these minor architectural changes did not significantly affect the functional content of the architecture. Cleanup was performed for all BEPs, except PV in which all architecture changes were considered new content.

Acquisition Visibility (AV)

Gap Addressed: Generate Requirements Response

Gap identified in BEA 4.0
Since BEA 3.0, the representation of the 'Generate Requirements Response' Operational Activity has been identified as a gap; however the architecture was insufficient to properly address the handling of 'requirements' within the Department. The use of the spiral development approach in BEA 3.1 and BEA 4.0 improved the representation of the DoD Decision Support System (DSS) content. This matured the architecture to the point where the Generate Requirements Response gap could be properly addressed in BEA 4.1 for existing 'requirements' in the architecture, as well as handle additional requirements not previously reflected in the department's business processes.

Improvements made in BEA 4.1:
BEA 4.1 addressed this gap with the elimination of the 'Generate Requirements Response' Operational Activity and realignment of existing ICOMs to the 'Conduct Program Management', 'Manage Execution Fund Account', and 'Manage Request and Sourcing Strategy' Operational Activities. These changes resulted in a more accurate representation in the architecture of the discrete handling of requirements within the Department of Defense, vice a generic use of a single Operational Activity. In addition, these changes are critical to future content development and provide a better approach for BEA products to accurately capture and illustrate Business Processes at the level of detail required for identifying inter-dependencies.

Gap Addressed: Capital Asset Valuation

Gap identified in BEA 4.0
Military Equipment Valuation (MEV) and Capital Asset Valuation lifecycle, while represented at a high level in BEA 4.0, were not at a sufficient level of detail nor integrated as part of the Defense Acquisition business process. The ability to value and depreciate military equipment measures the effective use of resources and provides another aspect of traceable justification reasoning for acquisition of future assets. The need to value and depreciate military equipment applies to all future assets as well as future Defense Acquisition activities. Business processes within acquisition and logistics (acquisition logistics) must support the capability for the valuation and depreciation of military equipment throughout the lifecycle.

Improvements completed in BEA 4.1:
BEA 4.1 not only improves the representation of MEV in the architecture by decomposing and changing the existing high level Perform Asset Valuation activities, but also provides greater detail to the valuation process and identifies critical touch points between the MEV process and Defense Acquisition business activities. Proper and accurate decomposition of Operational Activities and Processes related to the valuation of military equipment improved the overall visibility of MEV specific information required to support the diverse decision processes within the Defense Acquisition community.

Common Supplier Engagement (CSE)

Gap Addressed: Synchronized Pre-Deployment and Operations Tracker (SPOT)

Gap identified in BEA 4.0
BEA 4.0 did not represent a means to track contingency contractors, contractors who deploy with the military, or to relate contract level information with individual contingency contractor employee information, in compliance with DoD Instruction (DoDI) 3020.41. The Synchronized Pre-deployment and Operational Tracker (SPOT) system was endorsed as an enterprise system and certified for modernization funding by the Defense Business Systems Management Committee (DBSMC) in November 2006. The SPOT system will enable the analysis of contract services available to support mission needs, the processing and tracking of individuals who deploy, and the visibility of contractors within an Area of Responsibility.

Improvements completed in BEA 4.1:
CSE representatives focused on adding SPOT as an enterprise system in BEA 4.1. SV Products were updated to define the system and system functionality. CSE representatives also identified the System Interfaces and System Data Exchanges necessary to support those Operational Activities that SPOT enables. As SPOT evolves, system requirements will be updated as needed in future deliverables.

Financial Visibility (FV)

Gap Addressed: Standard Financial Information Structure (SFIS) Phase III

Gap identified in BEA 4.0
BEA 4.0 required further analysis and refinement of the standard cost elements and cost structure necessary to support cost and managerial accounting within DoD.

Improvements completed in BEA 4.1:
BEA 4.1 incorporated Standard Financial Information Structure (SFIS) Phase III Data Elements and related Business Rules that were developed and approved by the newly formed SFIS Governance team. These Data Elements and Business Rules represent the standard cost elements and cost structures to support cost accounting and reporting. Furthermore, SFIS Phase III included changes and/or updates to the existing SFIS Data Elements and Business Rules from Phase I and Phase II. The high level architecture changes included adding eight new data elements to the OV-7 and forty-four new Business Rules to the OV-6a.

Cleanup of SFIS Phase I and II included updates to existing Business Rules as well as the addition of Business Rules to resolve gaps. In addition, the Data Element Allocation_Unique_Identifier (AUID) and its associated Business Rules were removed by the SFIS Governance team because it would result in customization issues for the implementing ERPs. To accommodate this deletion, additional Business Rules were included to properly associate the pedigree Data Elements that comprised the AUID.

FV Cleanup

Considerable progress was accomplished by FV representatives on the integration of the OV-5 to align with the OV-6c and Office of Federal Financial Management (OFFM) requirements. Operational Activities were created to clearly define the activities for 'Liabilities', 'Receivables', 'Debt Management', and 'Post to General Ledger' in support of system compliance. ICOMs on the OV-5 were also added to provide further detail and alignment to the OV-6c and to support further refinement of the OV-7.

Additional work accomplished included the incorporation of updated Laws, Regulations, and Policies (LRP) sources as a result of changes from the latest release of the OMB A-11. These changes clarified that shifting budgetary resources within a single Treasury account is considered a transfer, not a reprogramming, if the shift moves budgetary resources between separate statutory appropriations. In addition, the changes clarified the distinction between rescissions and cancellations of budgetary resources.

Material Visibility (MV)

Gap Addressed: Logistics Federated Touchpoints

Gap identified in BEA 4.0
BEA 4.0 did not lend the supply chain user community the ability to align themselves to the BEA due to an overall lack of supply chain and logistics content in the architecture. As a result, it was the intent of the Materiel Supply and Service Management (MSSM) community to work closely with the Defense Logistics Agency (DLA), and U.S. Transportation Command (USTRANSCOM) to expand the supply chain and logistics content and further define the architecture for BEA 4.1 to facilitate and enable alignment, federation, and tiered accountability.

Improvements completed in BEA 4.1:
BEA 4.1 development was focused on decomposing the architecture to create touchpoints between the Enterprise and Components. For this effort, MV representatives met with subject matter experts from DLA and USTRANSCOM to decompose the Operational Activities 'Deliver Property and Forces' and 'Return or Dispose Property and Materiel'. In order to properly align these Components with the BEA, Operational Activity models were created and new Operational Activities were added to create this layer of touchpoints. To support the newly refined Operational Activities, an OV-6c Process Model was created in addition to updates to existing OV-6c Process models, data requirements, and LRPs.

Personnel Visibility (PV)

Gap Addressed: Human Resources Management (HRM) Decomposition

Gap identified in BEA 4.0
BEA 4.0 contained only a high level depiction of the Human Resources Management (HRM) Operational Activities. As a result, it was determined that a further level of decomposition was required to assist Program Managers in clearly aligning their systems to the Operational Activities for system compliance. DoD leadership's envisioned target state ('To Be' effectively implementing the IRB legislation) is a BEA that is sufficiently developed enough to enable system groupings needed to sustain investment management.

Improvements completed in BEA 4.1:
BEA 4.1 proved to be an extensive effort for HRM to decompose the architecture to the level necessary for compliance. In order to ensure that the content to be added in BEA 4.1 was totally integrated, the content had to be scaled accordingly. As a result, only 'Manage Organization' and 'Manage and Sustain Personnel' Operational Activities were decomposed and integrated across all BEA Products. This decomposition in the architecture will now give the Program Managers the detail needed for compliance. As other Operational Activities are decomposed in future deliverables, work that was accomplished in BEA 4.1 may need to be modified. PV representatives have also identified potential areas of decomposition for future deliverables by identifying decomposed Operational Activities in the BEA Look Ahead OV-5 Node Tree.

Real Property Accountability (RPA)

RPA Cleanup

RPA representatives focused on the refinement of Business Rules and Data Elements definitions to reflect the final Construction in Progress requirements document approved by the Real Property and Installations Lifecycle Management (RPILM) governance board. In addition, updates were made to artifact definitions to incorporate Explosive Safety Management terminology.

Integration between Business Enterprise Architecture (BEA) and Enterprise Transition Plan (ETP)

As the two seminal tools that document the business transformation within the DoD, it is imperative that the BEA and the ETP stay fully aligned. The entities that need to be integrated between the BEA and the ETP are characterized in Table 2: Integrating BEA with the ETP.

By identifying which BEA and ETP objects require formal alignment and establishing the guidelines for alignment in conjunction with formal integration sessions covering the objects shown in the figure below, BEA 4.1 and the ETP remain closely integrated.

Table 2: Integrating BEA with the ETP

BEA Object	ETP Object	Guidelines for Alignment
Golden Questions	BEP Goals and Objectives	Must be congruent
Derivative BEP Questions	BEP Goals and Objectives	
BEP Goals (AV-1)	BEP Goals and Objectives	
Business Capabilities	Functional Scope & Organizational Span	Must be identical in name and definition
BEP Entry and Exit Criteria Forms; AV-1s	Business Capability Improvement Metrics Table	Must be congruent
SV-1/5 Systems	Systems	Lists must be identical for transformational systems within the scope of the BEA
SV-5 Matrix	Functional Scope & Organizational Span	Identical relationships should exist between systems and initiatives and the Business Capabilities
OV-5 Operational Activities	Functional Scope & Organizational Span	Business Capabilities must relate and directly support the identified BEA objects
OV-6c Processes	Business Capabilities	
SV-1/5 System Functions	Business Capabilities	
OV 6a Business Rules	Business Capabilities	
OV-6c/7 Data Objects	Business Capabilities	
AV-2	ETP Acronym List; Business Transformation Guidance (BTG) Glossary	Must be identical for ETP acronyms listed; Must be identical for items listed in BTG Glossary

Architecture Development Improvements

During each release, efforts are undertaken to improve the process for physically constructing the architecture, by using new or modified processes and tools. These efforts may not be obvious from the end user perspective, but they ultimately improve the final architecture product and quality of the content. As discussed in the following sections, BEA 4.1 efforts included improved methods for producing the OV-2, OV-3, and SV-5 products, in addition to improving the OV-6c diagrams. Only the improvements are discussed, and not the complete process for the product development.

OV-2 and OV-3 Derivation Improvements

A new tool was developed making it easier to generate the OV-2 Operational Node Connectivity diagrams and OV-3 Operational Information Exchange Matrix. The user begins by developing the OV-5 Activity Model diagrams and then establishing the associations of the Operational Activities to Operational Nodes and the associations of Information Exchanges to ICOM Arrows. The new tool is then used to generate the OV-2 diagrams. The tool recognizes and interprets the ICOM Arrow parent-child relationships off the OV-5 diagrams, whereas the previous routine required manual identification. After the OV-2 diagrams are generated, some cleanup of the OV-2 Need Lines is required where multiple Operational Nodes are associated with an Operational Activity and the Operational Nodes do not use all the Information Exchanges associated with the Operational Activity inputs and outputs. In these instances, the extra Information Exchanges are removed from the respective OV-2 Need Line. Once the OV-2s are finished, the OV-3 is then generated using the OV-2 information along with user

entered associations of the Data Entities to Information Exchanges. This helps maintain synchronization between the OV-2, OV-3, and OV-5 products.

The SV-5 System Function Traceability Matrix Generator

The new SV-5 tool generates a matrix that displays the links between Business Capabilities, Operational Activities, and System Functions based on relationships as defined within System Architect. This is a major improvement from the hand-generated product in BEA 4.0. The SV-5 matrix is delivered in HTML and MS-Excel format showing System Entities (Systems and Initiatives) from the SV-1 that appear at the intersection between corresponding System Functions and Operational Activities.

OV-6c Improvements

Enhancements were made to the BEA Process models (OV-6c diagrams) that increased the accuracy and improved the visualization and usability. The key improvements are listed below:

- Cleaned up the previously existing middle-layer diagrams to better align to Architecture Product Guide (APG) conventions
- Improved consistency of initiating Event
- Standardized Event names, thus a triggering action is always referred to with the same Event name
- Ensured consistent Data Object interface between BEPs
- Enhanced depiction of cross-BEP collaboration within a diagram by ensuring shared artifacts were accurately represented throughout all of the OV-6c diagrams
- Enhanced inter-product integration that was possible only as a result of a certain level of architecture maturity
    - Integrated OV-6c with the OV-7 via SFIS Data Element Synonyms
    - Integrated OV-6c with the OV-5 via Process-Operational Activity mapping

BEA Supporting Products

Each architecture release offers supporting products not specified by DoDAF, which assist the end user with accessing information and understanding the architecture. The references and supplemental products delivered for BEA 4.1 are described in more detail below.

BEA Look Ahead OV-5 Node Tree

The BEA Look Ahead OV-5 Node Tree is a stand alone representation of the Operational Activities, at a high level, to be performed by the DoD Business Mission Area. This Look Ahead Node Tree was developed to support planning and spiral development activities for future iterations of the BEA and is not integrated with BEA 4.1. In addition, the Look Ahead Node Tree is a means for BEP representatives to document future desired architecture content and to capture relevant 'To-Be' business activities; however, as it is not an official product of the BEA 4.1 release, it will not be used for current or future IRB system certification purposes. New content was added to the BEA Look Ahead OV-05 Node Tree for the AV, PV and MV BEPs, as listed below. No new Operational Activities were added to the Look Ahead Node Tree for the CSE, FV, and RPA BEPs.

Acquisition Visibility

- The following Operational Activities are projected to be further decomposed
    - Manage Acquisition Business Functional Area
        - Conduct Science & Technology
        - Conduct Systems Engineering
        - Conduct Acquisition Logistics.
    - Apply the Defense Acquisition Management Framework

Personnel Visibility

- The following Operational Activities are projected to be decomposed
    - Manage Organization in the area of
        - Account for Workforce
    - Manage Personnel & Pay in the area of
        - Develop Personnel
    - Manage and Sustain Personnel in the areas of
        - Manage Time and Attendance
        - Manage Adverse Actions
        - Administer Grievance Process
    - Manage Benefits in the areas of
        - Manage Quality of Life
        - Manage Military Health Services
        - Manage Retirement Benefits
    - Manage Travel in the areas of
        - Manage Travel Authorization
        - Manage Travel Resource Scheduling
        - Reconcile Centrally Billed Accounts Invoice
        - Support Travel Management Audit
    - Manage Human Resources Organizational Infrastructure Support in the areas of
        - Administer Legal Personnel Programs
        - Manage Law Enforcement
        - Manage Personnel Security
        - Manage Human Resources Contact and Relations

Materiel Visibility

- The following Operational Activity is projected to be decomposed
    - Perform Build and Make and Maintenance Sustainment

BEA Development Documents

BEA development is described in three documents that provide varying degrees of guidance for the BEA development process; the Business Transformation Guidance (BTG), the BEA Development Methodology (BDM), and the Architecture Product Guide (APG).

The BTG document provides high level guidance regarding development and usage of the BEA in the overall context of DoD business transformation. The structured approach is directly aligned with the DoD mission and leverages existing business transformation efforts. The BTG is located on the home page of the Defense Business Transformation website.

The BDM document describes the overall process and approach that the BTA architecture team follows during architecture development. This document represents a compilation of practices that have been tried and tested across the architecture development lifecycle and describes the current methodology to develop the BEA. The BDM is located on the BEA 4.1 HTML homepage.

The APG document provides specific modeling conventions that guide the development and integration of each BEA product. The APG describes the methods and modeling conventions for the development of AV, OV, SV, and TV products. The document supplies the guidance, rules, examples, checklists and product descriptions necessary for developing products that comprise the BEA. The APG is intended for an audience that understands DoDAF and has Telelogic System Architect (SA) training and/or experience. For BEA 4.1 the APG was updated to incorporate new standards and development checklists to enhance product quality. The APG is located on the BEA 4.1 HTML homepage.

BEA 4.0 – BEA 4.1 Compare Report

In response to an overwhelming need from the BEA user community, the BEA continues to deliver 'compare' reports that provide a detailed comparison of relevant architecture artifacts and their significant characteristic changes between BEA 4.0 and BEA 4.1.

The reports contain differences only; artifacts and characteristics that have not changed between BEA versions are not included. For example, if the description of an artifact has not changed since BEA 4.0 but a new BEP has been associated with the artifact, then only the new BEP will be indicated and the description will not be displayed. The reports do not indicate if an artifact was replaced by a different artifact. For example, if an artifact was renamed but the description and other characteristics remained the same, then the report will reflect one artifact as obsolete and one artifact as new.

The delta between artifacts is indicated by the following color codes:
• *Italicized Blue* indicates artifacts or artifact characteristics that are obsolete (they were in BEA 4.0 and are not in BEA 4.1).
• **Bold Green** indicates artifacts or artifact characteristics that are new (they are in BEA 4.1 but were not in BEA 4.0)
• Underlined Red indicates artifact characteristics that have changed (they were in BEA 4.0 and have been updated in BEA 4.1)

The artifacts are organized by DoDAF architecture view type (All, Operational, System, and Technical Standards) in addition to a section with the following BEA-unique artifacts[4]:
• Business Capability
• BEP
• Federal Enterprise Architecture (FEA) Business Reference Model (BRM)

The reports are available in HTML and MS-Excel format.

BEA Thread Tool

The BTA developed a new tool that further extends the utility of the BEA Compare Tool by providing a detailed mapping of selected related architecture artifacts. The new tool, named BEA Thread Tool, allows the user to create ad hoc reports derived from BEA artifacts and their interrelationships. With proper understanding of DoDAF and the BEA, this tool has proven to be vital for quickly and accurately identifying a variety of problematic and informational aspects of the architecture during the development of BEA 4.1.

The user begins to build a 'thread' by selecting a single artifact type as a starting point for thread construction, which can then be constrained by selecting a single instance of that artifact type. Additionally, the user has the ability to filter the following artifact types by BEP: Business Capability, BPM Event, BPM Process, Business Rule, Data Object, Entity, Gateway, ICOM Arrow, Operational Activity, Operational Node, System Data Exchange, System Entity, and System Function.

After selecting the starting artifact type and any filtering options, the user may select a series of other artifact types to display architecture content according to the established interrelationships between artifacts in the BEA. When the thread definition is completed, the user may choose to generate the report in HTML or as an MS-Excel spreadsheet.

As of the delivery of BEA 4.1, the use of the BEA Thread Tool is limited to BTA staff using internal web services. However, the BTA is evaluating the feasibility of providing access to the tool to external users.

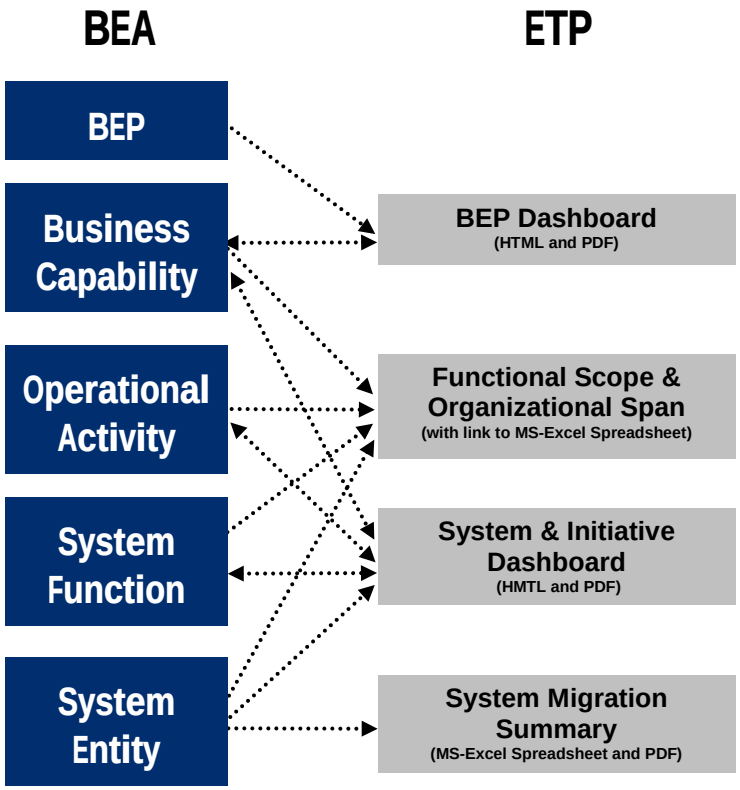
[4] BEA-Unique artifacts are those that are not specified in DoDAF and have been incorporated into the architecture in order to organize and manage the development and implementation of the BEA to support BTA and BEA-stakeholder objectives.

BEA -- ETP Cross Reference Report

As the guiding vision for business transformation, the BEA in concert with the ETP codifies DoD's transformation direction. These two transformation tools, delivered at the same time, are physically linked in the HTML view of BEA 4.1. This linkage is an essential means of associating specific objects within the BEA with the transformation efforts of the Department as outlined in the ETP.

The BEA-ETP Cross Reference Report identifies the specific HTML object links between these two products. The types of objects that are linked are shown in Figure 3: Linking BEA to the ETP. The architecture objects linked to the ETP are: BEPs, Business Capabilities, Operational Activities, System Functions, and System Entities.

Figure 3: Linking BEA to the ETP



BEA Supporting Products not delivered for BEA 4.1

For each BEA release, the BTA determines the set of supporting products to deliver. Sometimes, products delivered in the previous release are not delivered in the following release due to a change in methodology. The following supporting products were not delivered for the BEA 4.1 release:

Round Trip Matrix

The Round Trip Matrix provided an overview of the relationships between the DoD CBMs, BEPs, the capabilities required to support those priorities, and the combinations of systems and initiatives that enable these capabilities. The DOTMLPF (Doctrine/Policy, Organization, Training, Materiel, Leadership, Personnel, and Facilities) resources section, not completed in BEA 4.0, would complete the round trip by identifying the resources impacted by specific systems and initiatives. It was one of the integration tools that facilitated alignment between various

elements of the BEA and ETP. The Round Trip Matrix was available through a link on the BEA 4.0 HTML home page.

The Round Trip Matrix was not delivered for the BEA 4.1 release because BEA 4.1 and the ETP update did not substantively change in content of the previous matrix. When there is a significant change in the future, the BTA will revisit this product.

Business Capability Gaps - BEA/ETP Solution Mappings

A rapid information gathering effort to document how BEA architecture elements (including Business Capabilities) address a selection of significant DoD Issues (missions needs, problems, material weaknesses, and unanswered questions) was conducted in FY06. The Solution Mappings data was available through a link on the BEA 4.0 HTML home page.

The BEA/ETP Solution Mappings set was not delivered for the BEA 4.1 release because the BTA is developing a more mature methodology for documenting gaps and improvements. This product will be rolled out in a subsequent version of the architecture.

BEA HTML

BEA 4.1 was constructed using Telelogic System Architect (SA) Version 10.3; however the BEA continues to be offered in two versions: SA and HTML. The following are the technical specifications that were tested for viewing the BEA 4.1 HTML site, which are also listed in the Help file accessible through the HTML home page.

Web Browser Supported

- Internet Explorer Version 6 for Windows

System Requirements

- Add-ins are used to enhance the user experience. Not all services will function properly if these are not current, installed, and/or enabled.
- Java Run Time Environment Version 5.0+
- JavaScript must be enabled in the browser
- Scaleable Vector Graphics (SVG) Viewer (Adobe SVG Viewer 3.03)

Since the HTML version of the BEA is accessible to a greater number of users than the SA version, there is a concerted effort each release to improve the usability and functionality of the HTML version for the end user. The following sections highlight the improved HTML features delivered for BEA 4.1, in addition to existing useful features.

OV-6c HTML Improvements

The existing OV-6c HTML reports were enhanced to make the architecture more visible and intuitive for the end user. Descriptions of the improved functionality are listed below:

- Provided direct linkage from one object to its previous and subsequent objects
- Expanded the source information provided for all Processes to include data passed through messages and inter-process communication
- Added the ability to automatically show either data usage by Process Step or Process Step usage of data without having to manually create cross-references, resulting in improved ability to verify data flow and usage
- Added the ability to follow event-based links and determine the flow 'source ' and 'destination' without manually creating cross-references, resulting in improved ability to navigate directly with hypertext links
- Added the diagram name to the object reference report so that the user can visually see where each object reference appears
- Added collapsible/expandable report capability so the user can easily find and view particular information

Revised OV-5 Operational Activity Hierarchy Report

The existing BEA Operational Activity Hierarchy Report was revised to more clearly denote the Operational Activity hierarchy. The descriptions were removed from the report to reduce the spacing between each listing; however, the descriptions are located in the AV-2 and accessible through the OV-5 Activity Model Diagrams. As a result, the report displays the hierarchy between Operational Activities in a condensed format for easier view. This report is provided in MS-Word and PDF formats.

Revised OV-5 ICOM Arrow Hierarchy Report

The existing BEA ICOM Arrow Hierarchy Report was revised in two ways to more clearly denote the hierarchy of Inputs, Controls, Outputs, and Mechanisms (ICOMs). The descriptions were removed from the report to reduce the spacing between each listing; however, the descriptions are located in the AV-2 and accessible through the OV-5 Activity Model Diagrams. In addition, the BEPs associated with the focused ICOM were added to make it easier for the BEP teams to view their hierarchy data. As a result, the report displays the hierarchy between ICOM Arrows in a condensed format for easier viewing. This report is provided in MS-Excel and PDF formats.

New OV-5 ICOM Arrow Traceability Report

The new BEA ICOM Arrow Connectivity Report displays the ICOM Arrow hierarchy between leaf level Operational Activities. This report is useful to understand how the exchange of information between Operational Activities is limited by the lowest child ICOM Arrow in the intervening ICOM Arrow hierarchy. Specifically, the report displays the appropriate input/output ICOM Arrow associated with the source and destination Operational Activities, which directs the user to the appropriate Information Exchanges referenced in the OV-3. This report is provided in MS-Excel and PDF formats.

BEA 4.0 to BEA 4.1 Operational Activity Comparison

BEA 4.1 continues to provide a report that offers a side by side comparison of Operational Activities from BEA 4.0 to BEA 4.1; it is unique compared to the BEA 4.0 – BEA 4.1 Compare Tool in that it provides a more comprehensive set of information specific to Operational Activities. This report identifies Operational Activities that existed in BEA 4.0 that are not included in BEA 4.1 and Operational Activities in BEA 4.1 that did not exist in BEA 4.0. In addition, the report identifies modifications to Operational Activities that exist in both releases, including Operational Activity name changes, Operational Activity Node Tree level changes, and definition changes. The report is located on the OV-5 Activity Model HTML page; it is delivered both in HTML format and in an MS-Excel spreadsheet. The MS-Excel spreadsheet allows the user to easily identify and sort the color coded Operational Activities by additions (*italicized green*), deletions (**bolded blue**), and modifications (underlined red) from BEA 4.0 to BEA 4.1.

BEA Laws, Regulations, and Policies (LRP) Repository

The BEA LRP Repository contains those laws, regulations, and policies that constrain Operational Activities and Processes in the BEA. The Repository is maintained in the Dynamic Object Oriented Requirements System (DOORS). This tool allows the specific laws, regulations, and policies to be linked directly to the BEA OV-5 Activity Model, OV-6a Business Rules, and OV-6c Process Models as appropriate. The products and reports relevant to BEA 4.1 including updates or changes to any laws, regulations or policies are outlined in the BEA LRP Repository narrative on the BEA 4.1 home page of the Defense Business Transformation website.

In previous versions of the LRP, the requirements were at a very detailed level. During the 4.0 development period, and embracing the concept of tiered accountability, the BEPs also undertook an effort to re-establish the requirements within the LRP Repository by mapping to the BEA at the high-level chapter and/or section level of each requirement, versus the detailed (text) mappings previously captured and maintained. This resulted in reducing the number of detailed requirements in the repository from over 122,000 to fewer than 10,000 without

forfeiting the quality of the information available in the LRP Repository. The LRP continues to provide more user-friendly data for assistance in determining BEA compliance.

Final Note

As a result of stakeholder review sessions at the conclusion of BEA 4.0, users suggested three areas of improvement that the BTA should focus on during development of BEA 4.1. These included stabilizing the BEA, improving BEA usability, and enhancing BEA visualization capabilities. As a result, the following summarizes action taken during BEA 4.1; though the BTA recognizes there is still future work to be accomplished in all areas of action.

Stabilizing the BEA

Stabilizing the BEA minimizes changes in those areas where the architecture is considered adequate and focuses enhancement on areas where it is not. This effort is aimed at completing the description of transformational Business Capabilities in the architecture to the point where few additional changes are required to fully implement the transformational objectives, particularly as the architecture is used in support of program development evolution and investment management through the governance of the IRBs. The following are areas that were addressed in 4.1:

- Included SFIS Phase III in the architecture. This matures the description of SFIS to the point that the architecture is now able to be the source of measured compliance to this important transformational initiative.
- Started assessment of business capability sufficiency in the BEA.
- Determined entrance and exit criteria for BEA content.
- Examined and re-stabilized the release cycle and dates of the BEA.

Improving BEA Usability

Improving the usability of the BEA is a continuous process at the BTA. Several actions have been taken to improve the way the BEA is used by the services and programs as well as the IRB process. The following are areas that were addressed in 4.1:

- Developed and socialized a new tool, called Architecture Compliance and Requirements Traceability (ACART), which supports both usability and visualization of the architecture. ACART allows services and programs to assess and align their developmental efforts for systems and initiatives with the content of the architecture. This tool is useful early in the development stages of a program to find and use compliant Operational Activities, Business Rules, and data structures. As programs must be certified and reviewed in the IRB processes, ACART serves to demonstrate that continued compliance and alignment. An updated version of the ACART tool, using the BEA 4.1, is planned for release in April 2007.
- Improved efforts to communicate to stakeholders regarding what is occurring during BEA release cycles and how the BEA can serve the DoD beyond the requirements of the BMA. The first effort included more active participation between the BTA with the DoD EA Communities of Practice and the Federated Joint Architecture Working Group (FJAWG). Secondly, the BTA invited the CIO community to participate with the BEA Development Team in the review and integration of the final BEA 4.1 product, and the testing of the representative HTML. The improved communication aids the feedback loop mechanism for stakeholders to address issues with usability.
- More clearly identified changes within the architecture between two releases by offering the BEA 4.0 – BEA 4.1 Compare Reports and an improved ACART tool.
- Streamlined data collection efforts between the BEA and ETP.

Enhancing BEA Visualization Capabilities

Enhancing the visualization capabilities of the BEA is essential as it is a tool used by program managers and planners to set priorities and manage portfolios. The BTA delivers a fully integrated HTML version of the architecture, which is relied upon by users who do not have access or a license for Telelogic System Architect, the architectures native format. Therefore, the BTA continued to focus on enhancing the HTML views as well as development of tools to support more detailed reporting.

- Refreshed and optimized the Hyper Text Markup Language (HTML) delivery of the BEA with new technology, new menus, and new features. Features include search and query options, zoom, and print features that are responsive to the graphical modeling nature of the BEA.
- Simplified architecture diagrams and improved color coding to provide clearer representations of touch points, interfaces, and ownership.
- In the process of updating the ACART tool to allow for tailored architecture views to display information for a specific system or program.

The BTA will continue to look for opportunities and capabilities that will further improve the ability to visualize the architecture.

BEA 5.0 Planning

As the BEA enters an annual release cycle, several factors have emerged as the clear drivers for upcoming releases. In addition to continuing to address prioritized Business Capability gaps, the following items will serve as development factors for BEA 5.0 and beyond, each of which can be characterized within the categories of stabilization, usability and visualization of the BEA:

- Federation
- Implementable Architecture
- Information Assurance
- Interoperability
- Investment Management
- Service Oriented Architecture (SOA)

For example, in the Investment Management area, planning is underway to combine the Look-Ahead Node Tree and the BEA Node Tree within a single product for BEA 5.0. The BTA has determined that it is helpful to represent each type of activity performed within the DoD in a single Node Tree product. The types of activities are:

- BEA Activities – Operational Activities deemed within the scope of the BEPs thus linked to other BEA products (i.e., activities linked to Processes, Business Rules, data and other BEA content)
- Look-Ahead Activities – Described in the beginning of this section
- Additional BMA Activities – Operational Activities that are part of the BMA as a whole but have not been deemed within the scope of the BEPs

For Operational Activities, IRBs will continue to require system compliance only to the first type of activity - BEA Activities. However, a single Node Tree that contains the aforementioned activity types provides a better planning mechanism to support Portfolio Management and Federation by increasing the breadth and depth of activities to which investments and other architectural information may be linked. The Look-Ahead and additional BMA activities will not be 'linked' to the other products of the BEA (e.g., Processes and Business Rules) but prove useful for planning and to provide a more complete picture of the BMA thus enabling Components and Programs to better "identify themselves" within the BMA and overall architecture.

In addition, there are two remaining open GAO recommendations (one previously outstanding recommendation as well as the new recommendation from GAO's most recent report – GAO #06-658) that address essentially the same topic – planning for future releases of the BEA. The DoD partially agrees with these recommendations.

To address this, the BTA developed a Business Enterprise Architecture Concept of Operations (BEA CONOPS) that describes how the BEA will be enhanced to address each architecture use (e.g., Investment Management, Strategic Decision-Making, Oversight, System Implementation, Software Development, and Business Case Development). The planning process follows the overall transformation approach described in the BTG, and proposed improvements to the Department's overall acquisition process described in the Business Capability Lifecycle (BCL). The BEA CONOPS identifies the high-level planned milestones required to achieve these enhancements. The detailed allocation of requirements for each BEA release will be finalized at the beginning of each development cycle by combining this high-level plan with emergent priorities and available architecture resources. This planning approach will ensure that each future version of the BEA addresses both the strategic transformational objectives and the needs of the user community.

The Department also agrees that providing a more comprehensive forward view of Business Capability Improvements that will be built into the architecture over time provides important visibility to the future course of the DoD's business transformation efforts. To that end, the March 2007 version of the ETP provides highlights of the Business Capability Improvements that are required to achieve the objectives of each BEP. Planning for BEA 5.0 and beyond will assess which of these improvements is already satisfied by the BEA, and which should be addressed in the next version.

Appendix A: High Level BEP Content Changes by Product

Acquisition Visibility (AV)

Gap Addressed: Generate Requirements Response

- OV-5 Operational Activity Model
    - Eliminated the Operational Activity 'Generate Requirements Response'
        - Properly re-aligned ICOMs to associated BEA Operational Activities
        - Reviewed and revised ICOMs titles and definitions previously associated with 'Generate Requirements Response' as required for all BEPs
        - Realigned ICOMs to 'Conduct Program Management' (A328) (AV specific)
            - 'Construction Requirements'
            - 'Work Order Information'
            - 'Notification of Insufficient Funds'
            - 'Real Property Disposal Requirement'
            - 'Performance Perimeter Information'
        - Re-defined the ICOM 'Acquisition Requirement' to accommodate new methodology of handling of requirements (acquisition requirements) within the BEA

- OV-6c Business Process Model
    - Revised data objects and adjusted flows as required to align with the OV-5 Operational Activities revisions
    - Reviewed, re-aligned, and revised data object titles and definitions previously associated with 'Generate Requirements Response' as required

- OV-7 Logical Data Model
    - Verified and/or re-aligned views around functional concepts revised in the Operational Activity Node Tree and Activity Models

Gap Addressed: Capital Asset Valuation

- OV-5 Operational Activity Model
    - Relocated the MEV initiative and CAMS-ME System from MSSM to the WSLM CBM
    - Partial decomposition under 'Perform Asset Accountability'
        - Renamed 'Perform Asset Valuation' (A451 in BEA 4.0) to 'Perform Initial Capital Asset Valuation' and decomposed to include the following child Operational Activities:
            - Initiate Asset Valuation
            - Update Asset Valuation
            - Relieve Asset Valuation
        - Created new ICOMs to support the Initiate Asset Valuation, Update Asset Valuation, and Relieve Asset Valuation Operational Activities
        - Redefined existing ICOMs and Operational Activities to support WSLM, MSSM, and RPILM
        - Developed new ICOMs and added existing ICOMs to the following Operational Activities to expand and encompass WSLM BEA Operational Activities not reflected and to illustrate inter-related Operational Activities
            - 'Conduct Program Management'
                - 'Acquisition Requirement'
                - 'Updated Asset Valuation Information'
                - 'Updated Asset Information'
                - 'Military Equipment Recovery Information'

- 'Manage Capability-Based Acquisition'
    - 'Updated Asset Valuation Information'
    - 'Updated Asset Information'
- WSLM and CAMS-ME as 'Mechanism' ICOMs
- Reviewed and revised 'Control' ICOMs as appropriate

- OV-6c Business Process Model
    - Revised data objects and adjusted flows as required to align with the OV-5 Operational Activities revisions
    - Reviewed, re-aligned, and revised data object titles and definitions previously associated with 'Perform Initial Capital Asset Valuation' as required to support WSLM, MSSM, and RPILM
    - Created shared Process area and documented MEV related data objects and flows

- OV-7 Logical Data Model
    - Verified and/or re-aligned views around functional concepts revised in the Operational Activity Node Tree and Activity Models
    - Renamed and redefined all MATERIAL-ASSET entities to support PERSONAL-PROPERTY
    - Conducted partial decomposition integration of Property (interim solution)
        - PERSONAL-PROPERTY entity was subtyped as follows:
            - INTERNAL-USE-SOFTWARE
            - REPAIRABLE
            - CONSUMABLE
            - EQUIPMENT
        - EQUIPMENT was subtyped into
            - MILITARY-EQUIPMENT
            - GENERAL-EQUIPMENT
    - Established the following OV-7 enterprise view vice an individual BEP specific view
        - ENT – Valuation
            - Replaced RPA specific entities with enterprise wide entities to the OV-7 supporting the new enterprise view:
                - PROPERTY-ASSOCIATION
                - PROPERTY-STATUS

- SV-1 Systems Interface Description
    - Moved CAMS-ME from MSSM System Node to WSLM Node on each CBM diagram
    - Revised CAMS-ME System Function and System Interfaces
    - Created CAMS-ME decomposition diagram

- SV-6 System Data Exchange Matrix
    - Updated to incorporate System Data Exchanges associated with System Interfaces

AV Cleanup

- A majority of AV cleanup was associated with correction of non-content related grammatical issues.

Common Supplier Engagement (CSE)

Gap Addressed: Synchronized Pre-Deployment and Operations Tracker (SPOT)

- OV-5 Operational Activity Model
    - Added SPOT as a mechanism to the following existing leaf-level Operational Activities:
        - Account for Workforce
        - Conduct Program Management
        - Develop Personnel
        - Establish Sourcing Vehicle

        - Execute Individual Assignment
        - Manage Candidate Accession
        - Manage Foreign Government Support
        - Manage Military Health Services
        - Manage Personnel Security
        - Manage Private Organization Support
        - Manage Quality of Life
        - Manage Travel Authorization
        - Manage Traveler Visibility
        - Manage Vacancy Recruiting
        - Monitor Sourcing Execution
        - Perform Manpower Planning
        - Perform Reporting
        - Perform Workforce Analysis
        - Separate or Terminate Personnel

- SV-1 System Interface Description
    - Created a System Entity for SPOT which resides in the Multi-CBM System Node.
    - Added the following new System Functions:
        - Manage Contractor Qualifications
        - Manage Mission Support Requirements
    - Added the following existing System Functions:
        - Manage Agreement and Contract and Order
        - Manage Business Enterprise Reporting
        - Manage Performance Information
        - Perform Benefits Management
        - Perform Interagency Support
        - Perform Organizational Management
        - Perform Personnel Management
        - Perform Travel Management
        - Process Military Health Benefit
    - Created System Interfaces and System Data Exchanges from the following System Entities:
        - CCR
        - EDA
        - FPDS-NG

- SV-5 Operational Activity to System Function Traceability Matrix
    - Updated to relate SPOT System Functions with Operational Activities and Business Capabilities

- SV-6 System Data Exchange Matrix
    - Updated to incorporate System Data Exchanges associated with System Interfaces

CSE Cleanup

- OV-5 Operational Activity Model
    - Changed the source Operational Activity of the ICOM 'Procurement Report'
    - Updated destination Operational Activities of the ICOM 'Contract or Order Closure Information'

- OV-6c Business Process Model
    - Changed the source Process of the event and data object 'Procurement Report'
    - Updated destination Process of the events and data objects 'Contract or Order Closure Information' and 'Contract Modification'

- OV-7 Logical Data Model
    - Deleted ten attributes
    - Added three new attributes
    - Changed the names of six attributes
    - Changed the definitions of ten attributes
    - Deleted one relationship
    - Added one relationship
    - Changed the definitions of three relationships

Financial Visibility (FV)

Gap Addressed: Standard Financial Information Structure (SFIS) Phase III

- OV-5 Operational Activity Model
    - Added SFIS Control to the following forty-six Operational Activities:
        - Account for Workforce
        - Administer Personnel Grade Change
        - Administer Legal Personnel Programs
        - Administer Voluntary Enlistment Extension
        - Administer Involuntary Enlistment Extension
        - Closeout Performance Evaluation Process
        - Determine Assignment Action
        - Determine Personnel Requiring Performance Evaluation
        - Determine Performance Evaluation Rating Chain
        - Determine Reenlistment Candidate
        - Establish Unit
        - Execute Award Offer
        - Execute Demotion
        - Execute Enlistment Extension Agreement
        - Execute Individual Assignment
        - Execute Performance Evaluation
        - Execute Promotion
        - Execute Reenlistment
        - Manage Candidate Accession
        - Manage Human Resources Contact and Relations
        - Manage Personnel Security
        - Manage Private Organization Support
        - Manage Promotion Eligibility
        - Manage Promotion Selection
        - Manage State and Local Support
        - Manage Travel Resource Scheduling
        - Manage Traveler Visibility
        - Manage Vacancy Recruiting
        - Manage Workforce Occupational Safety Analysis
        - Perform Assignment Screening
        - Perform Manpower Budgeting
        - Perform Manpower Planning
        - Perform Manpower Programming
        - Perform Personnel Budgeting
        - Perform Workforce Analysis
        - Produce Award Recommendation
        - Provide Award Request Decision
        - Provide Assignment Action Outcome
        - Provide Reenlistment Request Decision
        - Publish Demotion Order

        - Receive Demotion Decision
        - Reorganize Unit
        - Separate or Terminate Personnel
        - Submit Assignment Action Request
        - Update Unit

- OV-6a Operational Rules Model (Business Rules)
    - SFIS Phase III
        - Added forty-four new Business Rules as a result of adding the following cost accounting data elements:
            - Funding_Center_Identifier
            - Cost_Center_Identifier
            - Project_Identifier
            - Activity_Identifier
            - Cost_Element_Code
            - Work_Order_Number
            - Unit_of_Measure_Code
            - MEPR_Code
    - SFIS Phase I and Phase II Cleanup
        - Deleted eighteen Business Rules as a result of decomposing the Allocation_Unique_Identifier (AUID) data element into six pedigree data elements
        - Updated forty-one Business Rules to conform to architectural standards and RuleSpeak guidelines
        - Added ten Business Rules as a result of including the following six pedigree data elements:
            - Department_Regular_Code
            - Main_Account_Code
            - Period_Of_Availability_Begin_Fiscal_Year_Date / Period_Of_Availability_End_Fiscal_Year_Date
            - Budget_Activity_Identifier
            - Budget_Sub_Activity_Identifier
            - Budget_Line_Item_Identifier
        - Added twenty Business Rules as a result of adding the following new data elements
            - Business_Event_Type_Code
            - Foreign_Military_Sales_Case_Identifier
            - Foreign_Military_Sales_Customer_Code
            - Foreign_Military_Sales_Case_Line_Item_Identifier
            - Line_Of_Business_Identifier
        - Added eight Business Rules as a result of updating the Business Rules associated with the following existing data elements
            - Advance_Flag_Code
            - Demand_Unique_Identifier
            - Organization_Unique_Identifier
            - Transaction_Type_Code
            - Transfer_To_From_Indicator
        - Updated 217 Business Rules as a result of adding the following class words to the SFIS data elements
            - Code
            - Identifier
            - Indicator
            - Number

- OV-6c Business Process Model
    - Added 492 new mappings of data element synonym to data objects for the following data elements:
        - Funding_Center_Identifier
        - Cost_Center_Identifier
        - Project_Identifier
        - Activity_Identifier
        - Cost_Element_Code
        - Work_Order_Number
        - Unit_of_Measure_Code
        - MEPR_Code

- OV-7 Logical Data Model
    - Deleted one entity and related attribute/data element
        - ALLOCATION-UNIQUE and Allocation_Unique_Identifier
    - Renamed three entities and related attributes/data elements
        - ACTIVITY was ACTIVITY-BASED-COSTING-ACTIVITY
            - Activity_Identifier was Activity_Based_Costing_Activity_Identifier
        - WORK-ORDER was JOB-ORDER
            - Work_Order_Identifier was Job_Order_Identifier
        - COST-CENTER was WORK-CENTER
            - Cost_Center_Identifier was Work_Center_Identifier
    - Created seven entities and related attributes/data elements
        - MEDICAL-EXPENSE-PERFORMANCE-REPORT and MEPR_Code
        - COST-ELEMENT and Cost_Element_Code
        - FUNDING-CENTER-COST-CENTER
        - FUNDING-CENTER-ACTIVITY
        - FUNDING-CENTER-PROJECT
        - FUNDING-CENTER-WORK-ORDER
        - FOREIGN-MILITARY-SALES-CUSTOMER and Foreign_Military_Sales_Customer_Code
        - Foreign_Military_Sales_Case_Identifier
        - Foreign_Military_Sales_Case_Line_Item_Identifier
        - Created, Realigned, or Deleted associated Entity Relationship lines

- SV-5 Operational Activity to System Function Traceability Matrix
    - Created System Function to support new Operational Activities
    - Updated to relate new System Functions with leaf Operational Activities and Business Capabilities

- SV-1 Systems Interface Description
    - Assigned new System Functions to enterprise Systems and updated System Interfaces

- SV-6 System Data Exchange Matrix
    - Updated to incorporate System Data Exchanges associated with System Interfaces

FV Cleanup

- OV-5 and OV-6c Alignment
    - Incorporated LRP sources as a result of the following changes from the latest release of the OMB A-11:
        - Clarified that shifting budgetary resources within a single Treasury account is considered a transfer, not a reprogramming, if the action moves budgetary resources between separate statutory appropriations

        - Clarified the distinction between rescissions and cancellations of budgetary resources
        - Modified two Operational Activities:
            - Perform Reprogramming and Transfers
            - Execute Rescission Deferrals and Cancellations

- OV-5 Operational Activity Model
    - Realigned OV-5 Operational Activities with both the OV-6c and OFFM requirements
        - Added five Operational Activities:
            - Administer Financial Assets and Liabilities
            - Manage Liabilities
            - Manage Receivables
                - Establish Accounts Receivable
                - Manage Accounts Receivable Balance
        - Realigned existing Operational Activities:
            - Moved Perform Financial Management Governance and its children Operational Activities, under Manage General Ledger Transactions
            - Moved Operational Activity Manage Financial Reporting Requirement from A81 in BEA 4.0 to number A84 Manage Financial Reporting Requirement in BEA 4.1
        - Modified two Operational Activities:
            - Manage Execution with Treasury
            - Manage Entitlement - was Calculate Entitlement in BEA 4.0

- OV-6c Business Process Model
    - Modified OV-6c decomposed diagrams to be consistent with Business Process Modeling Notation (BPMN) guidance
    - Modified mid-level FV diagrams to accurately depict cost accounting Processes
        - BEA 4.0 FV mid-level diagrams were modeled as sequential Process models, which was misleading as most core accounting Process models are independent of each other.
        - BEA 4.1 FV mid-level diagrams were re-modeled as Capability Views.

- OV-7 Logical Data Model
    - Added class words to forty-six SFIS Phase I attributes & data elements
    - Created three entities and related attributes/data elements
    - Renamed one entity and related attributes/data elements
    - Created, realigned, or deleted associated entity relationship lines

Material Visibility (MV)

Gap Addressed: Logistics Federated Touchpoints

- OV-2 Operational Nodes
    - Updated Need Lines and Operational Nodes in accordance with other relevant products to ensure integration.

- OV-3 Information Exchanges
    - Updated Information Exchange Matrix based on updated OV-5 and OV-2 architecture products.

- OV-5 Operational Activity Model
    - Added two new Operational Activity diagrams to define Operational Activities involved in Deliver and Return or Dispose with a full set of associated ICOMs:
        - Deliver Property and Forces, with the following child Operational Activities:
            - Identify Supply Chain Resources
            - Consolidate Orders into Conveyance-Based Loads
            - Determine Route and Carriers

                - Assemble and Marshal Forces
                - Manage Inbound and Outbound Shipments
                - Transport Materiel and Forces
            - Return or Dispose Property and Materiel, with the following child Operational Activities:
                - Identify Property and Materiel Return or Disposal
                - Authorize Return or Disposal
                - Schedule Return or Disposal
                - Dispose Property or Materiel
    - Added a new Operational Activity to Manage Property and Materiel, describing logistics planning with a full set of associated ICOMs:
        - Conduct Logistics Business Planning

- OV-6c Business Process Model
    - Added two new Process Models describing the sequencing of Deliver and Return or Dispose Processes as well as associated sequence and message flows, events, and data objects:
        - Deliver Property and Forces, with the following sub-processes:
            - Identify Supply Chain Resources
            - Consolidate Orders into Conveyance-Based Loads
            - Determine Route and Carriers
            - Assemble and Marshal Forces
            - Manage Inbound and Outbound Shipments
            - Transport Materiel and Forces
        - Return or Dispose Property and Materiel, with the following sub-processes:
            - Identify Property and Materiel Return or Disposal
            - Authorize Return or Disposal
            - Schedule Return or Disposal
            - Dispose Property or Materiel

- OV-7 Logical Data Model
    - Updated the Materiel Visibility logical data model view with new content for Deliver and Return or Dispose Information Exchanges

- SV-1 Systems Interface Description:
    - Updated in accordance with other relevant products

- SV-5 Operational Activity to Systems Traceability Matrix:
    - Updated and added new System Functions to the following child Operational Activities:
        - Deliver Property and Forces
        - Return or Dispose Property and Materiel

- SV-6 Systems Data Exchange Matrix:
    - Updated to incorporate new System Data Exchanges from the decomposition of Deliver Property and Forces and Return or Dispose Property and Materiel child Operational Activities

MV Cleanup

For BEA 4.1, cleanup was focused on the Materiel Visibility logical data model view, according to the following:

- OV-7 Logical Data Model
    - Updated nine entity definitions
    - Updated twenty attribute definitions
    - Deleted one derived attribute

Personnel Visibility (PV)

Gap Addressed: HRM Decomposition

- OV-5 Operational Activity Model
    - Decomposed the following Operational Activities
        - Manage Organization
            - Administer Position Management
        - Execute Assignment Placement Transfer
            - Administer Assignment Action
        - Manage and Sustain Personnel
            - Administer Recognition Program
            - Administer Reenlistment Process
            - Manage Enlistment Extension
            - Administer Performance Evaluation
            - Administer Personnel Grade Change

- OV-6c Business Process Model
    - Data objects were added and flows were adjusted to align with the OV-5 Operational Activities

- OV-7 Logical Data Model
    - Aligned views around functional concepts that are emphasized in the Operational Activity Node Tree and Activity Models
        - Enhanced the OV-7 to include the following functional subject areas that include the addition of approximately 200 new entities:
            - Organization Management
            - Assignments Action
            - Personnel Agreement
            - Performance Management

- SV-5 Operational Activity to System Function Traceability Matrix
    - Refined the decomposition and granularity of System Functions to better relate to the integrated OV-5 decompositions
    - Updated to relate new System Functions with leaf-level Operational Activities and Business Capabilities

- SV-1 Systems Interface Description
    - Assigned new System Functions to enterprise Systems and updated System Interfaces

- SV-6 System Data Exchange Matrix
    - Updated to incorporate System Data Exchanges associated with System Interfaces

PV Cleanup

PV did not address cleanup as a separate effort for this release.

Real Property Accountability (RPA)

RPA Cleanup

- OV-5 Operational Activity Model
    - Updated one Operational Activity and two ICOM definitions to incorporate Explosive Safety Management terminology

- OV-6a Operational Rules Model (Business Rules)
    - Refined Construction in Progress related business rules to reflect the final Construction in Progress requirements document approved by RPILM governance board

- OV-6c Business Process Model
    - Updated one Process and two data object definitions to incorporate Explosive Safety Management terminology

- OV-7 Logical Data Model
    - Refined Construction in Progress related data element definitions and corresponding mappings to reflect the final Construction in Progress requirements document approved by RPILM governance board

- SV-1 Systems Interface Description
    - Updated System Interfaces

- SV-6 System Data Exchange Matrix
    - Updated to incorporate System Data Exchanges associated with System Interfaces

Appendix B: Architecture Statistics by Product and Release

Descriptive statistics are gathered for major object changes to the architecture for each release. Comparing object counts by release helps portray a sense of magnitude for each architecture effort. These statistics are listed in Table 3: Object Counts by Product and BEA Release and Table 4: Diagram Count per Release. In addition, the specific object counts as compared to the previous release are rolled up by product in Figure 4: Percent Change in Objects per Product by BEA Release. Not only does this graph convey a sense of level of effort by release, but the graph also provides a sense of which products were most affected by each release.

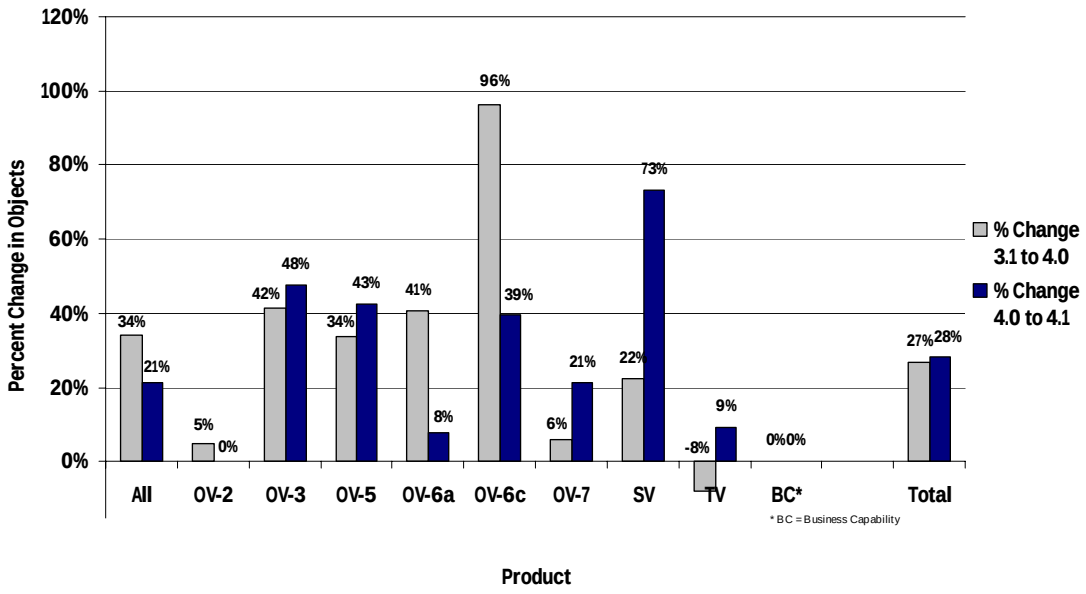
Table 3: Object Counts by Product and BEA Release

	3.1 Count	4.0 Count	4.1 Count	Net Change 3.1 to 4.0	Net Change 4.0 to 4.1	% Change 3.1 to 4.0	% Change 4.0 to 4.1
All							
Acronym	614	859	1060	245	201	40%	23%
Term	127	134	146	7	12	6%	9%
OV-2							
Need Line	107	113	113	6	0	6%	0%
Operational Node	14	14	14	0	0	0%	0%
OV-3							
Information Exchange	265	375	554	110	179	42%	48%
OV-5							
ICOM Arrow	394	544	794	150	250	38%	46%
Operational Activity	161	199	266	38	67	24%	34%
OV-6a							
Business Rule	689	969	1046	280	77	41%	8%
OV-6c							
BPM Event	204	344	454	140	110	69%	32%
BPM Process	439	573	576	134	3	31%	1%
Data Element Synonym	1036	2790	4327	1754	1537	169%	55%
Data Object	415	529	582	114	53	27%	10%
Gateway	107	95	107	-12	12	-11%	13%
Participant	15	15	15	0	0	0%	0%
OV-7							
Attribute	3706	3984	4869	278	885	8%	22%
Data Domain	260	142	139	-118	-3	-45%	-2%
Data Element	2252	2419	2809	167	390	7%	16%
Entity	649	709	928	60	219	9%	31%
Relationship	812	892	1138	80	246	10%	28%
SV							
System Data Exchange	214	261	390	47	129	22%	49%
System Entity	46	64	66	18	2	39%	3%
System Function	67	68	319	1	251	1%	369%
System Interface	136	175	214	39	39	29%	22%
System Node	8	8	8	0	0	0%	0%
TV							
Enterprise Sub-Services	9	10	10	1	0	11%	0%
Standard	335	301	332	-34	31	-10%	10%
Technical Service	23	27	28	4	1	17%	4%
Technology Service Area	4	4	4	0	0	0%	0%
Other							
Business Capability	30	30	30	0	0	0%	0%
Total	**13138**	**16647**	**21338**	**3509**	**4691**	**27%**	**28%**

Table 4: Diagram Count per Release

Diagram Count	3.1 Count	4.0 Count	4.1 Count		Net Change 3.1 to 4.0	Net Change 4.0 to 4.1		% Change 3.1 to 4.0	% Change 4.0 to 4.1
OV-2 Op. Node Connectivity	9	9	9		0	0		0%	0%
OV-5 Activity Model	25	31	52		6	21		24%	68%
OV-5 Node Tree	1	1	1		0	0		0%	0%
OV-6c Business Process	52	67	69		15	2		29%	3%
OV-7 Logical Data Model	32	30	34		-2	4		-6%	13%
SV-1 Systems Interface	8	12	13		4	1		50%	8%
Total	**127**	**150**	**178**		**23**	**28**		**18%**	**19%**

Figure 4: Percent Change in Objects per Product by BEA Release



Appendix C: Architecture Configuration Management Statistics

BEA development follows a rigorous configuration management discipline to ensure that all changes to the architecture are documented and integrated. During the BEA 3.1 development period, this process was enhanced to better correlate architecture changes to the capabilities required for business transformation. The architecture configuration management process is based on the use of the following configuration mechanisms that are recorded and managed in a configuration management tool:

- Parent Change Requests (CRs) identify a planned capability improvement such as adding new capabilities, addressing identified architecture gaps, addressing enterprise changes across BEPs, or addressing updates to the compliance requirements. Parent CRs may also address technical cleanup issues, as well as suggested content refinement.
- Child Change Requests are created for each architecture product that is impacted by the work effort scoped by the Parent CR.
- Test Tickets are can be either Child Tickets or HTML Tickets.
    - Child Tickets track content and technical defects found during Integration Review and BEP Acceptance Review.
    - HTML Tickets are used to track defects found in the HTML code during HTML Review and BEP Acceptance Review.
- Suggestion tickets were created during BEA 4.0. This modification to the change management tool allows the BEA team to have an authoritative source to house all recommended changes to the architecture. Specifically, suggestion tickets are used to document architecture improvement suggestions outside the scope of the current release or those that are generated during a formal review period that cannot be immediately addressed.

Table 5: Total Number of Changes Made by Request Type and BEA Release

Change Type	BEA 4.0 Count	BEA 4.1 Count
Parent Change Requests	19	17
Child Change Requests	102	58
Completed Test Tickets	117	120
Deferred Test Tickets	14	9