Selecting DoDAF 2.0 Views and Models for Use in DoD Projects, Their Integration & Analysis

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Agenda

• A short introduction to the FEAC DoDAF Certification Program
• Overview of DoDAF 2.0
  – Changes from 1.5
• Six Step Process for Planning
• Examples
  – Example questions and corresponding views
  – Example planning example
The FEAC DoDAF Program

• FEAC was founded in 2001 and has certified over 1300 architects
• FEAC offers DoDAF education and training that leads to FEAC Certification, which is given by California State University East Bay
• The program consists of five courses, four of which can be taken for graduate academic credit from the Department of Engineering at CSUEB
• Students learn how to plan, develop, model, implement and do EA analysis for an actual DoDAF project throughout the program and delivered as a practicum
• FEAC also offers short workshops and DoDAF boot camps, as well as TOGAF 9 certification courses
The DoDAF Courses

• The five basic FEAC courses are designated by the following course numbers; depending on whether you are taking the program for CEU or graduate academic units:
  – EXSP 8680/ENGR 7806 Framework Basics
  – EXSP 8681/ENGR 7807 Planning for Architecture Development and Use
  – EXSP 8682/ENGR 7808 Framework Views and Models
  – EXSP 8683/ENGR 7809 Advanced DoD Architecture Modeling and Analysis
  – EXSP 8684 DoDAF Practicum/Thesis

• We also provide an Elective TOGAF Course for those wanting TOGAF 8.1.1 Certification, which qualifies those who want to TOGAF 9 to take the Bridging Examination
# Organizations that have sent students to FEAC for Certification

## Government
- Army Def Med Log SS
- Army AIMD TRADOC
- Air Force HQ OSSG
- Air Force AIMD TRADOC
- Air Force USJFCOM
- Air Force US PACOM
- Air Force US STRATCOM
- Bureau of Engraving & Printing
- City of Glendale, CA
- City of Virginia Beach
- Department of Commerce - NTIA
- Department of Commerce PTO
- Department of Education SFA
- Department of Education HQ
- Department of State
- DOJ CIO
- DOI OSM
- DISA
- HHS - ASBTF-OIRM
- FDA
- Federal Railroad Administration
- FERC
- Forest Service
- GAO
- GSA
- IRS
- Joint Forces Command
- Lawrence Livermore National Labs
- National Park Service
- Navy ONR
- Navy NAVSISA
- NASA HQ
- NASA Centers
- NOAA
- Office of the Comptroller of the Currency
- OMB
- OPM
- Security and Exchange Commission
- Smithsonian
- Treasury - US Mint
- USDA HQ
- USDA RMA
- US Postal Service
- US Coast Guard
- US Commerce Department
- US Patent and Trademark
- US PACOM/J2T2
- US Senate
- University Of Leuven (Belgium)
- Veterans Administration
- VA Veterans Benefits Administration
- White House-EOP

## Industry
- Aerospace Corporation
- AMIT
- AMS
- Analytics and Mechanics
- Assoc
- Anteon
- Apteon
- Arinc
- BAE Systems
- BEA
- Boeing
- Booz Allen Hamilton
- Burk Consortium
- CACI
- Conquest-Boeing
- CSC
- Dell
- DiamondCluster
- DigitalNet
- Eagan McAllister
- East Bank Technologies
- ERPI
- General Dynamics
- GrupoActivity (Spain)
- Headstrong
- Hewlett Packard
- IBM
- Independent Consultants
- Information Dynamics
- Johns Hopkins University- APL
- Knowledge Code
- L-3 Communications
- Lockheed Martin Co
- Mitre
- Northrup Grumman
- NTT Data Agilnet (Japan)
- Oracle
- PacTel
- Phase One Inc
- Raytheon
- R2
- RGS Assoc
- Rose International
- RSS
- SAIC
- Samsung (Korea)
- Schafer
- Sci Group
- ScotCro
- SKCC (Korea)
- SRA
- Stanley Associates Inc
- Summaria Sys Inc
- Titan
- VAAP Technologies
Goals of this Tutorial

• Understanding how to identify required data and select DoDAF described models based on stakeholder questions
DoD Architecture Framework 2.0

• What it is:
  – Guidance on the types of data and relationships needed to document a DoD architecture in a standard way (new in 2.0)
  – Guidance on format and content for a standard set of DoDAF Described Models for describing architectures
  – High level meta-process for using the DoDAF

• What it isn’t:
  – A specific architecture
  – A tool
  – A detailed architecture development process
DoDAF V2.0 Vision

Views for the Architect

Structured Knowledge Base – Common Model

Views for Other Stakeholders
Levels of Architecture

- Solution Level Architectures
- Segment Level Architectures
- Enterprise Level Architectures
  - DoD Enterprise
  - Capability Based
- System Context
  - SoS Architectures
  - FoS Architectures
DoDAF V2.0 Viewpoints

New in V2.0

- Services views split out into separate viewpoint in V2.0
- Data models split out into separate Viewpoint in V2.0
Views Are Models
Not Pictures

• Models have a standard semantic interpretation
  – Rules for correctness and consistency
• Most DoDAF described models/views have a graphic template
• The graphic is backed up with *dictionary entries* (data entities and relationships from DM2):
  – Data elements provide definitions and descriptions of items in the graphic

*plus*

  – Additional supporting information and relationships to other architecture elements

• The data elements *integrate* the set of views
DoDADF As Guidance

• Views have options discussed in Volume II
  – Choices of things like:
    • Techniques/notations
    • Level of detail

• All views may be tailored
  – Graphic conventions
  – Techniques to manage complexity
  – Edits of dictionary entries: changes to data elements
Architecture Planning
Six Step Process (V2.0) - The Planning Perspective

1. Determine the intended use of the architecture

Scoping Architecture Work

2. Determine scope of the architecture
3. Determine data required to support architecture development

Planning the Architecture Project

4. Collect, organize, correlate, and store architecture data
5. Conduct analyses in support of architecture objectives

6. Document results IAW with Decision-Maker needs

What Needs to be Done

How the Work Will Be Done
Why Look at the Six Step Process?

*The Six Step Process is important to the identification of required data and selection of views together with their options and tailoring*

- Performance of Steps 1-4 yields information for your AV-1:
  - Purpose and stakeholders
  - Scope
  - Views with options and tailoring
- Planning for Steps 4-6 yields constraints on view options and tailoring based on development and analysis processes
Step 1: Determine Intended Use
The Problem Statement

• What questions need to be answered?
• Are there specific strategic objectives to be satisfied?
• Are there specific trade offs to be considered?
• What critical issues need to be addressed?
• How is the EA used to support key decision-making processes?
• What types of analysis need to be supported?
Why Is Purpose Important?

• Architecture is a tool to support decision making
  – If you don’t know what you are going to use it for, there is a good chance it won’t be useful
  – You need to identify and understand the different purposes of different stakeholders

• Architectures can be expensive to build
  – Doesn’t make sense to build one if you don’t plan to use it!
Why Is Purpose Important?

PURPOSE

DRIVES

VIEWS

DETAIL

COMPLETION
Step 2: Determine Scope

- Operational bounds
  - What’s the enterprise, what level of architecture
  - What mission(s), functions, and organizations
  - What geographical context
- Constraints on technology to be considered
- Timeframes
  - As-Is, To-Be, phasing and evolution
- Specific project schedule and resource constraints
Step 3: Determine Data Required to Support Architecture Development - Think About Architecture Primitives
(DoDAF Conceptual and Logical Data Model Entities)

- Performers
- Activities
- Information elements
- Events/triggers
- Capabilities
- Goals

- Systems
- Services
- Rules
- Standards
- Locations
- Measures
- Projects
DoDAF Conceptual Data Model
Step 4: Collect, Organize, Correlate, and Store Architecture Data

- Emphasis in planning is how data will be organized
- That is, what DoDAF views will eventually be used, including options and tailoring
- This tells us what the metadata should be and identifies repository requirements
- This tells us what needs to be collected and how it should be correlated
All Viewpoint Views Capture Information That Applies to the Architecture Overall

Overview and Summary Information (AV-1)

• Identification
  - Name
  - Architect
  - Organizations Involved
  - When Developed

• Purpose
  - Analysis Needs
  - Decision Support Needs

• Scope
  - Views and Products Used
  - Time Frames Addressed

• Context
  - Mission
  - Geographical
  - Rules, Criteria, and Conventions Followed

• Findings: Results, Recommendations
• Tools and File Formats

Integrated Dictionary (AV-2)

At a minimum, the integrated Dictionary is a glossary with definitions of terms used in the given architecture description. Each labeled graphical item in the graphical representations should have a corresponding entry in the Integrated Dictionary.
Examples: Enterprise-Level Architecture

Capability Management
Portfolio Management
# Example Capability Management Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Required Data Types</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do the capabilities relate to enterprise strategy and goals?</td>
<td>Vision, Goals, Desired Effects, Capabilities, Relationship between capabilities and goals</td>
<td>Vision (CV-1)</td>
</tr>
<tr>
<td>Are there dependencies among the capabilities?</td>
<td>Capabilities, Relationships among capabilities, including dependencies</td>
<td>Capability Dependencies (CV-4)</td>
</tr>
<tr>
<td>How will capability performance be measured?</td>
<td>Capabilities, Performance Measures, Relationships of capabilities to performance measures</td>
<td>Capability Taxonomy (CV-2)</td>
</tr>
</tbody>
</table>
Example Capability Management Questions (continued)

<table>
<thead>
<tr>
<th>Question</th>
<th>Required Data Types</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>When will the capabilities be available and what projects will provide them?</td>
<td>Capabilities, Projects, Timeframes, Relationships among the above</td>
<td>Capability Phasing (CV-3)</td>
</tr>
<tr>
<td>What organizations will use the capabilities?</td>
<td>Capabilities, Organizations, Relationships among capabilities and organizations</td>
<td>Capability to Organizational Development Mapping (CV-5), Organizational Relationships Chart (OV-4)</td>
</tr>
</tbody>
</table>
## Example Portfolio Management Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Required Data Types</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>What organizations are in change of which projects?</td>
<td>Organizations, Projects, Relationships between organizations and projects</td>
<td>Project Portfolio Relationships (PV-1), Organizational Relationships Chart (OV-4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What are the timelines for the projects and are there dependencies among them?</td>
<td>Projects, Timelines: start and end dates, Dependencies among projects</td>
<td>Project Timelines (PV-2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which projects are delivering capability configurations that realize which capabilities?</td>
<td>Projects, Capabilities, Relationships between projects and capabilities</td>
<td>Project To Capability Mapping (PV-3)</td>
</tr>
</tbody>
</table>
Recommendation: Basic Views for Enterprise-Level Architectures

- Vision (CV-1)
- Capability Phasing (CV-3)
- Capability Dependencies (CV-4)
- Capability to Organizational Development Mapping (CV-5)
- Project Portfolio Relationships (PV-1)
- Project Timelines (PV-2)
- Project to Capability Mapping (PV-3)
- Organizational Relationship Chart (OV-4)

Plus AV-1 and AV-2, as always
Integration of Enterprise Level Architecture Basic Views

VISION (CV-1)

PROJECT TO CAPABILITY MAPPING (PV-3)

PROJECT TIMELINES (PV-2)

PROJECT PORTFOLIO (PV-1)

ORGANIZATIONAL RELATIONSHIPS CHART (OV-4)

CAPABILITY DEPENDENCIES (CV-4)

HIGH LEVEL CAPABILITIES ARE THE SAME

CAPABILITIES MATCH

VALUE ADDED: CAPABILITY DEPENDENCIES AND SPECIALIZATIONS

CAPABILITIES MATCH

VALUE ADDED: LINKS CAPABILITIES TO PROJECTS THAT DELIVER CONFIGURATIONS TO IMPLEMENT THE CAPABILITIES

VALUE ADDED: PROJECT DELIVERY TIMELINES & CROSS PROJECT DEPENDENCIES

PROJECTS MATCH

VALUE ADDED: LINKS PROJECTS TO ORGANIZATIONS THAT MANAGE THEM

PROJECTS MATCH

VALUE ADDED: ORGANIZATIONAL RELATIONSHIPS

CAPABILITY TO ORGANIZATIONAL DEVELOPMENT MAPPING (CV-5)

VALUE ADDED: MAPS ORGANIZATIONS TO CAPABILITIES AND CONFIGURATIONS THEY USE WITH DELIVERY DATES

ORGANIZATIONS MAP

VALUE ADDED: ORGANIZATIONAL RELATIONSHIPS

DELIVERY DATES MATCH

CAPABILITIES AND CONFIGURATIONS ARE THE SAME

VALUE ADDED: HOW CAPABILITIES SUPPORT STRATEGIC GOALS & OBJECTIVES

CAPABILITIES MATCH

VALUE ADDED: CAPABILITY PHASING CONFIGURATION CHANGES OVER TIME
Examples – Solution-Level Architecture

Setting Context for a System, SOS, or FOS
# Example Solution-Architecture Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Required Data Types</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the key elements of the Operational Concept for this architecture?</td>
<td>Abstractions of: Key mission process/activities Key performers Key resource exchanges</td>
<td>High-level Operational Concept Description (OV-1)</td>
</tr>
<tr>
<td>How are mission operations performed (now or in the future)?</td>
<td>Mission process/activities Resources exchanged/inputs &amp; outputs Performers</td>
<td>Activity Model (OV-5) Operational Resource Flow Description (OV-2) Operational Resource Flow Matrix (OV-3)</td>
</tr>
</tbody>
</table>
Basic Operational Views Capture the Critical Mission Relationships and Resource Exchanges

High-Level Operational Concept Description

Operational activities performed and their input/output relationships

Operational Resource Flow Description

Performers, Activities for each performers and resource needlines

Operational Resource Flows Matrix

Resources exchanged between performers and the relevant attributes of the exchanges
# Example Basic Solution

## Architecture Questions (continued)

<table>
<thead>
<tr>
<th>Question</th>
<th>Required Data Types</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>What systems/services and what are their interfaces (internal and external)?</td>
<td>Systems/services System/service interfaces Standards</td>
<td>System Interface Description (SV-1) or Services Context Description (SvcV-1) Standards Profile (StdV-1)</td>
</tr>
<tr>
<td>How do the systems/services support operations?</td>
<td>Relationship of systems/services to performers Relationship of systems/services interfaces to needlines Relationship of systems/services to activities</td>
<td>OV-2 SV-1/SvcV-1 Operational Activity to Systems Function Traceability Matrix (SV-5) or Operational Activity to Services Traceability Matrix (SvcV-5)</td>
</tr>
</tbody>
</table>
Relationships Between OV-2 and SV-1(SvcV-1)
Put IT in Context with Mission Operations
Standards Profile Identifies Implementation Criteria That Govern the Given Architecture
Recommendation: Basic Views for Solution-Level Architecture

- High Level Operational Concept Description (OV-1)
- Operational Resource Flow Description (OV-2)
- Operational Resource Flow Matrix (OV-3)
- Operational Activity Model (OV-5a, b)
- Systems Interface Description (SV-1) or Services Context Description (SvcV-1)
- Standards Profile (StdV-1)
- Capability to Operational Activity Mapping (CV-6)*

Plus AV-1 and AV-2, as always

*New with DoDAF V2.0; assumes a Segment-Level or Enterprise-Level architecture related to the Solution-Level architecture.
These Basic Views Link to Each Other

HIGH-LEVEL OPERATIONAL CONCEPT DESCRIPTION (OV-1)
VALUE ADDED: SUMMARY LEVEL REPRESENTATION OF ORGANIZATIONS/ROLES, MISSION, AND CONTEXT FOR THE ARCHITECTURE

STANDARDS PROFILE (StdV-1)
VALUE ADDED: COMPLETE LIST OF RELEVANT STANDARDS WITH OPTIONS & PARAMETERS

OPERATIONAL ACTIVITY MODEL (OV-5)
VALUE ADDED: BUSINESS/MISSION PROCESS & RELATIONSHIPS AMONG ACTIVITIES AND RESOURCE EXCHANGES

OPERATIONAL CONCEPT ROLES & MISSIONS SET SCOPE FOR ACTIVITY MODEL

OPERATIONAL RESOURCE FLOW MATRIX (OV-3)
VALUE ADDED: INDIVIDUAL RESOURCE EXCHANGES ASSOCIATED WITH EACH NEEDLINE & PERFORMANCE REQUIREMENTS

OPERATIONAL RESOURCE FLOW DESCRIPTION (OV-2)
VALUE ADDED: STATEMENT OF OPERATIONAL PERFORMERS, ACTIVITIES, AND CRITICAL RESOURCE EXCHANGE NEEDS

SYSTEMS INTERFACE DESCRIPTION (SV-1)
VALUE ADDED: STATEMENT OF LOCATIONS, SYSTEMS & INTERFACES

STANDARDS APPLY AT SYSTEM TO SYSTEM INTERFACES

OPERATIONAL CONNECTIVITY & RESOURCE EXCHANGES, IF SHOWN ON OV-1, MAP TO OV-2 NEEDLINES & RESOURCE EXCHANGES

INPUT/OUTPUT LABELS MAP TO OPERATIONAL RESOURCE EXCHANGES (NOT ALWAYS ONE-TO-ONE)

OPERATIONAL CONCEPT ROLES & MISSIONS SET SCOPE FOR ACTIVITY MODEL

RESOURCE EXCHANGES ASSOCIATED WITH EACH NEEDLINE ARE DETAILED IN OV-3

PERFORMERS ARE ASSOCIATED WITH SYSTEMS AND LOCATIONS

EACH OPERATIONAL NEEDLINE MAPS TO ONE OR MORE SYSTEM INTERFACES

These Basic Views Link to Each Other
Segment-Level Architecture

Capability Focus
Recommendation: Basic Views for Segment-Level Architecture

• Combination of Enterprise and Solution Level core views
• If the Segment is used to manage the investments and portfolio for the capabilities included in the segment, then the Enterprise Level core views apply
• If the Segment is used to coordinate a set of Solution Level architectures, then the Solution Level core views apply to set the business context and document:
  – Relationship of major systems to high-level business process
  – Interfaces among business processes and among systems necessary to ensure interoperability
Example Questions for Additional Views
# Example Dynamic Behavior (Timing & Sequencing) Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Required Data Types</th>
<th>Views</th>
</tr>
</thead>
</table>
| What scenarios explain the concept of operation or key performance or security issues? | Events  
Messages  
Performers/systems/services  
Relationship among the above | Event/Trace  
Descriptions:  
Operational (OV-6c)  
Systems (SV-10c)  
Services (SvcV-10c) |
| What are the states/statuses that key elements of the architecture have and how do they change? | States for a given element of the architecture  
Transitions  
Events  
Relationships among the above | State Transition  
Descriptions:  
Operational (OV-6b)  
Systems (SV-10b)  
Services (SvcV-10b) |
| What are the rules that constrain operations, systems and/or services? | Rules  
Relationships of rules to other elements of the architecture | Rules Models:  
Operational (OV-6a)  
Systems (SV-10a)  
Services (SvcV-10a) |
# Example Domain Data Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Required Data Types</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the shared mission/business concepts and their relationships?</td>
<td>Entities, Attributes, and Relationship among the above or File Structures or Message Structures or ?</td>
<td>Physical Data Model (DIV-3)</td>
</tr>
<tr>
<td></td>
<td>Entities, Attributes, and Relationship among the above</td>
<td>Logical Data Model (DIV-2)</td>
</tr>
<tr>
<td></td>
<td>Entities, Attributes, and Relationship among the above or File Structures or Message Structures or ?</td>
<td>Conceptual Data Model (DIV-1)</td>
</tr>
</tbody>
</table>
# Example Transition Planning Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Required Data Types</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>When will new systems/services be available?</td>
<td>Systems/Services Timeframes Relationship among the above</td>
<td>Systems Evolution Description (SV-8)/Services Evolution Description (SvcV-8)</td>
</tr>
<tr>
<td>What IT performance improvements should be expected at key transition milestones?</td>
<td>Systems/Services Performance measures Relationships among the above</td>
<td>Systems Measures Matrix (SV-7)/Services Measures Matrix SvcV-7)</td>
</tr>
<tr>
<td>What are the trends in systems/services and standards and associated personnel skills that may impact IT during the transition period?</td>
<td>Systems/Services Areas, Categories, and Standards Timeframes Forecasts</td>
<td>Systems Technology and Skills Forecast (SV-9)/Services Technology and Skills Forecast (SvcV-9) Standards Forecast (StdV-2)</td>
</tr>
</tbody>
</table>
## Example Matrix/Mapping Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Required Data Types</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which systems/services interface with which other systems/services?</td>
<td>Systems/services Systems/services interfaces</td>
<td>Systems² Matrix (SV-3) Systems-Services Matrix (SvcV-3a) Services² Matrix (SvcV-3b)</td>
</tr>
<tr>
<td>How do services relate to capabilities?</td>
<td>Services Capabilities Relationships among the above</td>
<td>Capability to Services Mapping (CV-7)</td>
</tr>
<tr>
<td>What are the key attributes (such as throughput) of the system/services resources flows?</td>
<td>System/Service Interfaces System/Services Resource Flows Attributes of Resource Flows</td>
<td>Systems Resource Flow Matrix (SV-6)/ Services Resource Flow Matrix (SvcV-6)</td>
</tr>
</tbody>
</table>
Mapping Summary

Mappings help check for architecture consistency.
<table>
<thead>
<tr>
<th>Question</th>
<th>Required Data Types</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>What organizations are included in the architecture and how do they relate to the performers or other elements of the architecture?</td>
<td>Organizations Reporting/management relationships Relationships of organizations to other elements of the architecture</td>
<td>Organizational Relationships Chart (OV-4)</td>
</tr>
<tr>
<td>What are the key communications IT that support the systems/services interfaces?</td>
<td>Systems/services Communications systems, technologies &amp; protocols Relationships among the above</td>
<td>Systems Resource Flow Description (SV-2)/ Services Resource Flow Description (SvcV-2)</td>
</tr>
<tr>
<td>What are the systems functions/services and the data flow among them?</td>
<td>Systems functions/services Data flows among the systems functions/producer-consumer flows among the services</td>
<td>System Functionality Description (SV-4)/ Services Functionality Description (SvcV-4)</td>
</tr>
</tbody>
</table>
Planning Example
Purpose

• Document As-Is process for project financial management for Company X
  – Basis for business process standardization
    • Reference for Project Managers (PMs)
    • Training for new PMs
  – Basis for process improvement and upgraded automation
Stakeholders and Issues (1)

• Project Managers
  – What actions are required to initiate a contract?
  – What actions are required to complete the mid-month and end-of-month direct charge amount checks?
  – What actions are required to complete invoice approval?
  – What information needs to be provided to Accounting?
  – How is that information provided (i.e., what mechanism is used)?
Stakeholders and Issues (2)

• Accounting
  – What information is required from the PM prior to initiating a contract?
  – What information do PMs require to ensure accurate invoices?
  – How does Accounting receive and provide this information?
  – What are the information and reporting requirements for an integrated financial system?
Stakeholders and Issues (3)

• Group Managers
  – Are all the PMs following the same procedures to initiate contracts and approve invoices?
  – Are the system(s) used by PMs to manage financial information adequate?
  – [Are the system(s) used by the PMs to manage financial information support easy and accurate assessment of project status?]
Stakeholders and Issues (4)

- Executive Management
  - Are there opportunities to simplify the contract initiation process?
  - What activities would a new, integrated financial system have to support?
  - What is the set of projects and internal organizations involved?
Scope

• Solution Level architecture
• Mission/function/organizational bounds: Normal interactions between PMs and Accounting in the execution of a single, prime contract
  – Normal bi-monthly interaction
• Geographic bounds: Activities are all performed at Company X HQ for projects in the U.S.
• Timeframe: As-Is
• Constraints: Application level analysis; no infrastructure to be examined; systems to be treated as “black boxes”
• Expected Analysis: Opportunities for improvement
Related Issues

- What actions are required to initiate a contract?
- What actions are required to complete the mid-month and end-of-month direct charge amount checks?
- What actions are required to complete invoice approval?
- Are all the PMs following the same procedures to initiate contracts and approve invoices?
- Are there opportunities to simplify the contract initiation process?
Data & Views – Processes (2)

Needed Data & Views

• As-Is Business Process descriptions, including systems used, organizations involved, and where policies are implemented – Activity Model (OV-5) with IDEF0, activities decomposed to show interactions between PMs and Accounting; OV-1

• Policies – Operational Rules Model (OV-6a) with structured English; rules mapped to controls on OV-5

• Scenarios showing differences between individual PM’s processes and showing opportunities for improvement – Operational Event/Trace Descriptions (OV-6c), specific scenarios TBD
Data & Views – Information (1)

Related Issues

• What information needs to be provided to Accounting?
• What information is required from the PM prior to initiating a contract?
• What information do PMs require to ensure accurate invoices?
Data & Views – Information (2)

Needed Data & Views

- Inputs and outputs from business process activities that go between PMs and Accounting
  - Activity Model (OV-5)
  - Operational Resource Flow Description (OV-2) with organizations as nodes
  - Operational Resource Flow Matrix (OV-3) with following columns: Needline ID, Information Exchange ID, Description, Media, Triggering Event, Producing Node and Activity, Receiving Node and Activity; may potentially need format standards for information exchanges
Data & Views –
Information Mechanisms (1)

Related Issues

• How is that information provided (i.e., what mechanism is used)?
• How does Accounting receive and provide this information?
Data & Views – Information Mechanisms (2)

Needed Data & Views

• Form and format of the information – Operational Resource Flow Matrix with media and format columns

• Systems and system interfaces used to automate information exchanges – Systems Interface Description (SV-1), system-to-system perspective, showing applications and databases on graphic
Data & Views -
Process Improvement (1)

Related Issues

• What is the set of projects and internal organizations involved?

• Are the system(s) used by PMs to manage financial information adequate?

• What are the information and reporting requirements for an integrated financial system?

• What activities would a new, integrated financial system have to support?
Data & Views –
Process Improvement (2)

Needed Data & Views

• Company X organizations and reporting relationships – Organizational Relationships Chart (OV-4) showing existing project organizations; color code to show relationships to performers

• Mapping of systems to business processes and information exchanges – Systems Interface Description (SV-1); Operational Activity to Systems Function Traceability Matrix (SV-5) with applications instead of systems functions

• Current standards in support of interoperability - Standards Profile (StdV-1) with FEA TRM and service areas of interest TBD
Summary of Selected Views

• OV-1
• OV-2: performers are roles
• OV-3: with Needline ID, Information Exchange ID, Description, Media, Format, Triggering Event, Producing Node and Activity, Receiving Node and Activity columns
• OV-4: with map to performers
• OV-5: IDEF0 with controls and system mechanisms
• OV-6a: Structured English, mapped to activity controls
• OV-6c: scenarios TBD
• SV-1: System to System perspective with applications and database
• SV-5: with applications instead of systems
• StdV-1: using FEA TRM

Plus AV-1 and AV-2, as always