The Role of Enterprise Architecture Updates in Guiding Decentralized Organizations

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SPEC Innovations
Overview

- Enterprise Architecture and Systems Study Interrelation
- Systems Study Methodology
- Systems Study Data Manipulation
- Summary
- Backup Slides
ENTERPRISE ARCHITECTURE AND SYSTEMS STUDY INTERRELATION
Enterprise Architecture (EA)

- Previous EA
  - DODAF 1.0

- Updated EA
  - DODAF 2.0
    - Starting Point for Updated EA
    - Develop with Operational and Functional Focus
    - Conduct Reviews with Representative Subset of COI
    - Incorporate COI Comments

- Updated EA 'As-Is' Models in CORE
  - Functional Model

- Updated EA 'To-Be' Models in CORE
  - Functional Model
  - Notional Physical Model

- Updated EA Transition Plan
  - Transition from 'As-Is' to 'To-Be' Architectures
  - Organizational and Technical Transition Initiatives
Why Update the EA?

**Previous EA 'As-Is'**
- Documents current state of functionality as of previous EA completion

**Previous EA 'To-Be'**
- Documents desired future state of functionality as of previous EA completion

**Updated EA 'As-Is'**
- Documents current state of functionality as of previous EA completion

**Updated EA 'To-Be'**
- Documents desired future state of functionality as of previous EA completion

**Architecture Update**
- Provides planning and policy direction

**Answers**

**Previous EA 'To-Be'**
- Delta describes the difference between the previous planned and updated actual processes
- Assesses the effectiveness of past decisions and directives

**Updated EA 'As-Is'**
- Delta describes the required transitions to achieve the 'To-Be' functionality.
- Influences policy and procurement decisions

**Updated EA 'To-Be'**
- Delta describes the change in the way the community operates from the previous to the updated EA.

**Previous EA 'As-Is'**
- Delta describes the change in operational vision from the previous to the updated EA.

**Updated EA 'As-Is'**
- Delta describes the change in operational vision from the previous to the updated EA.

**Updated EA 'To-Be'**
- Delta describes the change in operational vision from the previous to the updated EA.

**Delta**
- How effective were past policy actions?
- What needs to change?
- What is being done differently?
- How has the vision changed?
EA Transition Plan

What needs to change?

Updated EA ‘As-Is’

△ Delta describes the required transitions to achieve the ‘To-Be’ functionality.
△ Influences policy and procurement decisions

Updated EA ‘To-Be’

How to implement changes?

Updated EA Transition Plan

- Transition from ‘As-Is’ to ‘To-Be’ Architectures
- Organizational and Technical Transition Initiatives

Organizational Transition Initiatives

Technical Transition Initiatives

Transition Initiative Timeline
The Systems Study Findings will show how existing systems might be leveraged to implement the desired processes and changes as defined in the Updated EA.
SYSTEMS STUDY METHODOLOGY
Systems Study Path Forward

1. **Updated EA ‘As-Is’ Functional Models in CORE**
   - Review Updated EA ‘As-Is’ Functional Requirements

2. **Updated EA ‘To-Be’ Functional Models in CORE**
   - Review Updated EA ‘To-Be’ Functional Requirements
   - Review Updated EA ‘To-Be’ Systems and Services Functional Allocations

3. **Develop System Evaluation Criteria**
   - Develop System Evaluation Criteria
   - Map Evaluation Criteria to Updated EA
   - Map Evaluation Criteria to Transition Initiatives

4. **Conduct System Evaluations**
   - Establish Data Collection Methods
   - Identify Current Systems
   - Conduct System Evaluations

5. **Develop EA ‘As-Is’ Physical Architecture**
   - Review Current Systems’ Functionality
   - Develop Systems ‘As-Is’ Physical Architecture

6. **Develop Systems Study Findings**
   - Review System Evaluations Results
   - Develop Systems Study Findings

Requirements Analysis

System Evaluations

Documentation and Findings
Systems Study Path Forward

1. Updated EA ‘As-Is’ Functional Models in CORE
   - Review Updated EA ‘As-Is’ Functional Requirements

2. Develop EA ‘As-Is’ Physical Architecture
   - Review Current Systems’ Functionality
   - Develop Systems ‘As-Is’ Physical Architecture

3. Conduct System Evaluations
   - Establish Data Collection Methods
   - Identify Current Systems
   - Conduct System Evaluations

4. Current Systems Interconnectivity
   - Current Systems
   - Criteria Evaluation Results

5. Documentation and Findings
   - Current Systems Physical Architecture
**Systems Study Path Forward**

1. **Requirements Analysis**
   - Review Updated EA 'To-Be' Functional Requirements
   - Review Updated EA 'To-Be' Systems and Services Functional Allocations

2. **Updated EA 'To-Be' Functional Models in CORE**
   - Service Functional Allocation
   - System Functional Allocation
   - Operational Resource Flow
   - System Functions

3. **Develop System Evaluation Criteria**
   - Criteria Descriptions
   - Criteria Measures
   - Criteria System Function Allocation
   - Criteria Transition Initiative Allocation

- Develop System Evaluation Criteria
- Map Evaluation Criteria to Updated EA
- Map Evaluation Criteria to Transition Initiatives
Systems Study Path Forward

1. Develop System Evaluation Criteria
   - Criteria Descriptions
   - Criteria Measures
   - Criteria System Function Allocation
   - Criteria Transition Initiative Allocation
   - Develop System Evaluation Criteria
   - Map Evaluation Criteria to Updated EA
   - Map Evaluation Criteria to Transition Initiatives

2. Conduct System Evaluations
   - Current Systems Interconnectivity
   - Current Systems
   - Criteria Evaluation Results
   - Establish Data Collection Methods
   - Identify Current Systems
   - Conduct System Evaluations

3. Develop Systems Study Findings
   - Collated Evaluation Results
   - Documented Findings
   - Recommendations
   - Review System Evaluations Results
   - Develop Systems Study Findings

4. System Evaluations

5. Documentation and Findings
Systems Study Path Forward

1. Conduct System Evaluations
   - Review System Evaluations Results
   - Develop Systems Study Findings

2. Establish Data Collection Methods
   - Identify Current Systems
   - Conduct System Evaluations

3. Current Systems Interconnectivity

4. Current Systems

5. Collated Evaluation Results
   - Review Current Systems’ Functionality
   - Develop Systems ‘As-Is’ Physical Architecture

6. Documented Findings
   - Review System Evaluations Results
   - Develop Systems Study Findings

7. Recommendations

8. Current Systems Physical Architecture

9. Documentation and Findings

10. System Evaluations
SYSTEMS STUDY DATA MANIPULATION
Criteria Evaluation Results Data

Conduct System Evaluations

- System A Criteria Evaluation Results
  - Enter
  - XLS
  - Convert
  - CSV
  - System A Evaluation Criteria Occurrence Excel Spreadsheet
  - Import CSV File

- System B Criteria Evaluation Results
  - Enter
  - XLS
  - Convert
  - CSV
  - System B Evaluation Criteria Occurrence Excel Spreadsheet
  - Import CSV File

- System n Criteria Evaluation Results
  - Enter
  - XLS
  - Convert
  - CSV
  - System n Evaluation Criteria Occurrence Excel Spreadsheet
  - Import CSV File

Import Criteria Occurrence CORE Script

EA CORE Model
Determining Systems Potentially Impacting Changes

1a. Determine criteria mapped to TI

Statement
Type=Vision
Transition Initiative

Artifact
Type=DRAWINGS: Architecture Product

documented by / documents

decomposes / decomposed by

declares / declared by

Text
Measure

documented by / documents

decomposes / decomposed by

declares / declared by

Action
Type=System Function
Function

documented by / documents

decomposes / decomposed by

declares / declared by

Characteristic
Type=Criteria

Characteristic
Type=Criteria

Characteristics
Type=Criteria

based on / basis of

Determine criteria occurrences mapped to criteria

Determine highest value occurrence

Evaluate

Determine non-zero value occurrences

Characteristics
Type=Criteria Occurrence

Characteristics
Type=Criteria Occurrence

Characteristics
Type=Criteria Occurrence

Determine criteria mapped to TI

Significant Impacting Systems

Most Significant Impacting System

Evaluate

Determine non-zero value occurrences

Determine highest value occurrence

Significant Criteria Occurrences

Most Significant Criteria Occurrence

Determine systems mapped to criteria occurrences

Asset
Type=System

Asset
Type=System

Asset
Type=System

System A

System B

System C
Findings Document Creation

* The following cross matrices are created:

Criteria Items to Systems Cross Matrix
Criteria Items to Systems Cross Matrix with Criteria Values
Functions to Systems Cross Matrix
Functions to Systems Cross Matrix with Values
Summary Level Criteria Items to Systems Cross Matrix
Summary Level Criteria Items to Systems Cross Matrix with Criteria Values
Transition Initiatives to Systems Cross Matrix
Transition Initiatives to Systems Cross Matrix with Values
System Interconnectivity Data

Diagram:
- Conduct System Evaluations
- System A Interconnectivity Analysis
- System B Interconnectivity Analysis
- System n Interconnectivity Analysis
- System Connected Systems
- System-System Links
- System Function Inputs
- System Function Outputs
- System Security Requirements
- IO to Link Allocation
- EA CORE Model

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Physical Architecture Model Rendering

1. Determine system function mapped to system
2. Determine functional correlation
3a. Determine applicability of system function IDEF0
3b. Determine system functions with IDEF Diagrams

- **Asset**
  - Type: System
  - System
  - Performs / allocated to

- **Action**
  - Type: System Function
  - System Function
  - System User Function
  - System Functional Context
  - Augmented by / augments

- **Hierarchy Diagram**
  - IDEF0-A0
  - IDEF0

- **Text**
  - Functional Correlation
Physical Architecture Document Creation

Develop EA ‘As-Is’ Physical Architecture

- Extract

- ‘As-Is’ Physical Architecture CORE Scripts

- System Function IDEF0-A0

- Decomposable System Function IDEF0

- Related Physical System Functional Contexts’ IDEF0s

- Related Physical System User and External System Functions’ IDEF0-A0s

- System Hierarchy Diagram

Enter

System IO Slides

Enter

‘As-Is’ Physical Architecture RTF File

Convert

‘As-Is’ Physical Architecture Word File

PPT

Systems Interconnectivity Diagrams Briefing

PPT
Systems Study Product Creation

* The following cross matrices are created:

- Criteria Items to Systems Cross Matrix
- Criteria Items to Systems Cross Matrix with Criteria Values
- Functions to Systems Cross Matrix
- Functions to Systems Cross Matrix with Values
- Summary Level Criteria Items to Systems Cross Matrix
- Summary Level Criteria Items to Systems Cross Matrix with Criteria Values
- Transition Initiatives to Systems Cross Matrix
- Transition Initiatives to Systems Cross Matrix with Values

**Systems Study Products**

- Systems Interconnectivity Diagrams Briefing
- 'As-Is' Physical Architecture Word File
- Systems Study Data Summary and Correlation Word File
- Systems Study Data Summary Cross Matrix* Excel Files
- Systems Study Findings Briefing

**Physical Architecture Products**

- Physical Architecture Products

**Findings and Recommendations Products**

- Findings and Recommendations Products
SUMMARY
Summary

- Enterprise Architecture (EA) updates answer questions regarding the state and direction of the enterprise.
- Systems Study findings show how existing systems might be leveraged to implement the desired processes and changes as defined in the Updated EA.
- Systems Study data should be stored in the architecture database and mapped to the EA and Transition Initiatives.
BACKUP SLIDES
# Enterprise State and Direction Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Architectural Product / Product Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Q1</strong> What is the current process?</td>
<td>Updated EA ‘As-Is’ Functional Architecture</td>
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<tr>
<td><strong>Q2</strong> What is the desired process?</td>
<td>Updated EA ‘To-Be’ Functional Architecture</td>
</tr>
<tr>
<td><strong>Q3</strong> How has the vision changed?</td>
<td>Previous EA ‘To-Be’ Functional Architecture / Updated EA ‘As-Is’ Functional Architecture Delta</td>
</tr>
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<td><strong>Q4</strong> What needs to change?</td>
<td>Updated EA ‘As-Is’ Functional Architecture / Updated EA ‘To-Be’ Functional Architecture Delta</td>
</tr>
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<td><strong>Q5</strong> What is being done differently?</td>
<td>Previous EA ‘As-Is’ Functional Architecture / Updated EA ‘As-Is’ Functional Architecture Delta</td>
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<td><strong>Q6</strong> How effective were past policy actions?</td>
<td>Updated EA ‘As-Is’ Functional Architecture / Updated EA ‘To-Be’ Functional Architecture Delta</td>
</tr>
<tr>
<td><strong>Q7</strong> How to implement changes?</td>
<td>Updated EA Transition Plan</td>
</tr>
<tr>
<td><strong>Q8</strong> What is used to implement current process?</td>
<td>Updated Systems ‘As-Is’ Physical Architecture</td>
</tr>
<tr>
<td><strong>Q9</strong> What can be used to implement changes?</td>
<td>Updated Systems Study Findings</td>
</tr>
</tbody>
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*Updated EA ‘To-Be’ Functional Architecture / Updated EA ‘As-Is’ Functional Architecture Delta*
Physical Architecture Diagram Summary

- **System Function IDEF0-A0**: Shows the inputs and outputs for the system functions. The system is shown as the IDEF mechanism and the data processing requirements are shown as the IDEF controls.

- **System User Function IDEF0-A0**: Shows the inputs and outputs from the view of the system user. The system user is shown as the IDEF mechanism.

- **System Functional Context – User IDEF0**: Shows the relationship between the system functions and the system user functions.

- **System Functional Context – Systems IDEF0**: Shows the relationship between the system functions and other systems' functions.

- **System Functional Context – External Systems IDEF0**: Shows the relationship between the system functions and external systems' functions.

- **System Functional Context – Detailed User IDEF0**: Shows the relationship between the decomposed system functions and the system user functions.

- **System Hierarchy Diagram**: Shows a hierarchical view of the system and subsystems.

- **EA CORE Model**: Produced

- **'As-Is' Physical Architecture Word File**: Visually represents the system relationship with other systems, system decomposition, inputs, outputs, and network requirements.

- **System IO Slide PPT**: