Breakout Session

Exploring the Differences between Enterprise and System Architectures — A Look at the Different Methods, Tools, and Techniques

“New Age” Enterprise Architecting—Best Practices and Distinctions (to Solutions Architecting)

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Focus Points

• The intent, scope, and methods of enterprise architecting have expanded dramatically from the initial CCA guidance

• DoDAF is sufficient for what it was intended to do (standardize descriptions of solutions architectures), but other frameworks bring in additional facets that are necessary to fully realize the objectives of modern EA

• There is no “one size fits all” framework, tool, or process for doing EA
  – The architect’s challenge is finding and optimizing the right mix
  – The urban planning metaphor provides a useful companion to help us understand the relationship/synergy between SA and EA

• We should leverage EA best practices, lessons learned, and successful case studies as we lay out the vision, roadmap, principles, governance, etc. for our holistic EAs
Framework Lineage: IT/ Systems to NSS/ Enterprises


- OSD Memo
  OSD Strategic Direction for a DoD Architecture Framework
- CJCSI 6212.01B
  Drives NSS and IT interoperability reqts, Including IER Matrix

1993
- GPRA
  Government Performance and Reform Act
  Part of the NPR, sets the stage for later Information Resource Mgt. (IRM) Reform
  Legacy: NIST, 1989 GAO, 1992

1995
- PRA
  Paperwork Reduction Act--original act to prescribe specific IRM practices

1996
- GPEA
  Government Paperwork Elimination Act;
  requires agencies to adopt electronic business processes for all G2G, G2B, and G2C by 2003

1997
- OMB A-130
  “Managing Federal IRM,” Operationalizes previous IT policies, incorporates other OMB guidance, recognizes several frameworks

1998
- CCA/ ITMRA
  Clinger-Cohen Act, aka IT Management Reform Act
  Defined EA and mandated its development in agencies, facilitated by the CIO
  Rooted in IT but gradually applied to NSS

2000
- AFI 33-124
  Enterprise ITAs; establishes AF Ent. ITA responsibilities in support of CCA

2001
- E-Gov
  E-Gov aka Public Law 107-347; establishes a Federal CIO within OMB, includes framework of success measures

2002
- DoDAF one Of 3 approved EA Frameworks
- CJCSI 6212.01B
  Drives NSS and IT interoperability reqts, Including IER Matrix

The Aerospace Corporation
Evolution of EA Definition

“EA is the System!” John Zachman, father of frameworks

An architecture is “the structure of components, their relationships, and the Principles and guidelines governing their design and evolution over time.”

**Enterprise Architecting:** Strategic information asset base, which defines the mission, the information and technologies necessary to perform the mission, and the transitional processes for … meeting changing mission needs”
Practical Guide to Federal EA, CIO Council, Nov 01

The Air Force Enterprise is comprised of all MAJCOMs, headquarters AF, agencies, installations, forces, and all operational mission and support activities those organizations perform. *AF Policy on Enterprise Architecting, CSAF/SECAF, 6 Aug 02*

… glue that holds the organization together … forcing function for quality strategic planning … enabler for transformation
(generalities from EA Conference, fall 03)

An Enterprise Architecture is the description of how an organization performs its work using people, business processes, data and technology
(OMB, 2003)
Mapping DoDAF to EA Building Blocks

Reference: “Federal Enterprise Architecture Certification (FEAC) Institute,” June 03

Key: FEA/F DoDAF All
Augmenting DoDAF for Enterprise Portfolio Management

- Performance/ Military Utility (Capability Views)
- Cost
- Risk
- Business case/ alignment
- Process synthesis
- Decision support/ visualization
- OMB Exhibit Requirements
- Project Management/ Reports
- Measures of success
- Others?
Scoping Dimensions—Enterprise and Solutions Architecting

**EA**

- Abstract
- Broad
- Abstract
- Broad
- Abstract
- To Be

**SA**

- Detailed
- Narrow
- Detailed
- Narrow
- Detailed
- As Is

- System-Level Specificity
- System Breadth
- Business Process Specificity
- Business Process Breadth
- Organizational Specificity
- Organizational Breadth
- Technology Specificity
- Technology Breadth
- Level of Currency

New Age EA: as Defined by OMB

... high-level blueprint for *transforming* an organization

Federal organizations confront common challenges –
- Redundant processes, data and systems
- Out-dated, non-supported technologies
- Agency-specific, non-interoperable systems
- Rework and reentry of data
- No standardization across systems, technologies and processes

The result is –
- Wasteful, duplicative spending
- Inability to take advantage of economies of scale
- Inability to define expected results (citizen, costs)

An Enterprise Architecture is the description of how an organization performs its work using people, business processes, data and technology

Attempting to modernize operations and systems without an enterprise architecture leads to –
- Operational and systems duplication
- Incompatible business operations, systems and data
- The inability to share data, or dependence on expensive, custom-made interfaces to permit data sharing

Reference: FEAC FEAF Fall ’03, Bill McVay, DigitalNet, formerly w/ OMB
New Age EA Elements

- Vision, Principles, Strategy, Roadmap
- Process synthesis/ optimization
- Framework and methods (rigor/ discipline)
- Collaborative Architecture Team
- Communication/ marketing
- Modeling and Repository Tools
- Information Assurance/Security
- Products and Services
- Measurement/ metrics (EAMM)
- Program Management Office (PMO)
- Decision support/ visualizations
- Portfolio/ change management
- Measurement/ metrics
- Threat analysis/ capability threads
- Gap, shortfall, and overlap assessments
- Cultural change enabler
- Cross-agency integration
- Component-based architecting

Decision Support
“Dashboards”—Visualization

Capability threads, gap
Analysis, integration

Information Architecture: Entities and Relationships
Urban Planning Metaphor to Conceptualize “New Age” EA Scope

High-Level Enterprise View

Corporate Level
CIO

MAJCOM/
Functional
Planner

Mission/Functional
Area
Operators

Existing & Re-Engineered
Business Processes

Existing & Planned
Business Processes

Existing & Planned
System Information

Detailed
Existing & Planned
System Design

Solution Architect

IT
Operators/Maintainers

Engineers
Programmers
SPOs

Urban Planner

Urban Planning

Planning

MAJCOM

Node A
Activity 1
Activity 2

Node A
Activity 3

Activity 2
Activity 3

Node A

“Needline”

Acquisition

Detailed
Existing & Planned
System Design

Detailed
Existing & Planned
System Design

Building Architect

OV-2 Template

Node A

Node A

P L A N N I N G

O & M

A C Q

OV-2 Template

Node A

Node A

Node A

Node A

Node A

EA Best Practices

- Collaborative culture/ community of practice/ High Performance Team tenets
  - Relationships; e.g., architects and LOBs
- Service-based organization/ function
- Create/ demonstrate value—elevator demo (e.g., visualization metamodel)
- Communicate, communicate, market, communicate …
- Repository/ web front end
- Governance
- Establish an EA PMO
- Process integration/ synthesis (especially CPIC/PPBE and planning)
  - EA as forcing function for world class strategic planning
- Principles and values
- Success criteria and measurement
  - Consider OMB/ GAO EA Maturity Model Framework (EAMMF)
EA Best Practices, continued

- Driven by business questions
- **Component-based architecting**
  - Common services/applications usually best value opportunity
- **Tool integration**
  - EA tool/model idea KM “engine”
- **Unbiased, objective, independent**
- **Know the technologies**
- **Proof of concepts and prototypes to mitigate risks**
- **Connect research with the EA**
- **Wring out ambiguity and non-value added steps**
- **Logic and Data model (do the tough work)**
- **Architecture review process**
  - Allow for waivers, with sunset clause
Top 10 Reasons EAs Fail

• Lack of success ownership
• Failure to demonstrate business value
• Failure to accurately identify stakeholders
• Seeing EA as a technical solution
• Poor communications
• Wrong people involved in the process
• Failure to see EA as a process
• Failure to integrate with other processes
• Too many people involved too soon
• Lack of funding

Source: “Ten Steps for a Winning Architecture Program, DCI/Meta Group EAC, Jeff Scott, Logical Leap
8 Steps to a Winning EA Program

- Developing perspective
- (Avoid) Common mistakes
- Governance
- Marketing/ selling – ID customers, build partnerships
- Create business value
  - 4 Attributes: relevant, reliable, rewarding, relative
- Process integration
- Expanding influence
- Envisioning the future

Source: “Ten Steps for a Winning Architecture Program, DCI/Meta Group EAC, Jeff Scott, Logical Leap
Deadly Sins of EA and the Results

- Authority and control—focus on rules
  - Active resistance
- “It’s all about the right technology”
  - Religious wars
- Advocate the corporate good—lofty goals, future goals
  - Passive agreement
- Architecture is taxonomy—models, frameworks, methods
  - Passive resistance
- Whining about resources
  - Insincere sympathy
- “Build it and they will come”—documentation, evangelism
  - Polite apathy
- Waiting for management support
  - Superficial activity

Source: “Ten Steps for a Winning Architecture Program, DCI/Meta Group EAC, Jeff Scott, Logical Leap
EA Lessons Learned

• Organizational constraints kill architectural motivation and buy-in
• Roles quickly become politicized and personality-driven which impedes cooperation
• Keep users involved by aligning projects to the business
• Actionable progress and projects is a must with defined results
• Methodology must be pragmatic, flexibility is key (conversely, rigidity stifles)
  – the trade-off is the key to successful architecture implementations
• Keep motivating and re-educating staff and management
  – especially since they change so frequently
• Governance is everything
  – strong executive management involvement is essential

Source: FEAC FEAF, Fall '03, Pat Bolton, Headstrong
EA Lessons Learned, continued

• **Streamline Data Collection Process**
  − Build data collection templates
  − Import templates directly into tool
  − Predefine Framework work products

• **Integrate Security into EA Model Views**
  − Protect security vulnerability data in the EA model/ sub-models

• **Time-box Effort**
  − Keep it a short, iterative (phased) approach
  − Build in dynamic model updates to keep baseline changes updated in the model

• **Break Through Organizational Lines**
  − Treat data collection as an Outreach Program to the LOBs
  − Build in buy-in to the data collection process (educate first)
  − Task force operations with weekly progress

Source: FEAC FEAF, Fall ’03, Pat Bolton, Headstrong
Back-ups
EA Visualization/ Decision Support

Predictive Battlespace Awareness

- ISR Strategy & Planning
- ISR Employment
- Target Development
- SAA (Battle Damage Assessment, BDA)

PLAN
FIND
FIX
TRACK
TARGET
ENGAGE
ASSESS

Combat ID

Time Critical Targeting

DAC Enterprise Directive 003, 16 Apr 02,
AF CIO Chief Architect Discussion Paper, draft, 10 Apr 03

Source: FEAC FEAF, Fall '03, Ira Sachs, EOB Slide 19

http://www.btmg.biz/EA_SC/zach.html
Reference: “Modernizing HUD’s IT Lifecycle,” E-Gov Conference, Oct 03, Graham Barrowman
EA for Alignment and Performance Models

From: “FEA Implementation and Integration, M. Tiemann, FEAC, FEAF, Fall 03
EA as Multi-Dimensional Integration Enabler

Portfolio of Capabilities For the Warfighter

Processes

Tools

Organizations

Policy/Directives

Concept by Ron Roehrich, Aerospace, AFSPC/DR SEIO, Jan 04
Work Culture Transformation via EA

• “Our desired or ideal culture would reward, encourage and support the following behaviors and activities:”

<table>
<thead>
<tr>
<th>Organization Attributes</th>
<th>People Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Experimenting with new ways of operating</td>
<td>♦ Being flexible and adaptive in thinking and approach</td>
</tr>
<tr>
<td>♦ Continuously improving operations</td>
<td>♦ Attracting top talent</td>
</tr>
<tr>
<td>♦ Pioneering new ways of doing things</td>
<td>♦ Encouraging teamwork*</td>
</tr>
<tr>
<td>♦ Capitalizing on creativity and innovation</td>
<td>♦ Providing employees with resources to do the job</td>
</tr>
<tr>
<td>♦ Anticipating change in operating environment</td>
<td>♦ Rewarding superior performance</td>
</tr>
<tr>
<td>♦ Establishing new procedures, systems and methods of operation</td>
<td>♦ Taking initiative*</td>
</tr>
</tbody>
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• Linear thinking to innovation
• Authority and control to influence
• Technology to business
• Models and methodology to products and services
• Activity management to delivering value
• Budgets to investments
• Risk avoidance to risk management

Reference: “Work Culture Survey Results,” Workshop on Introducing Innovation and Risk: Implications of Transforming the Culture of the Department of Defense, Shiraki, Schrover, and Riviello, 21 Oct 03