Presentation to: Architecture Practitioners’ Conference

Title: Integrating EA into the Full Information Systems Life Cycle
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Agenda

- Introduction
- The Role of Enterprise Architecture
  - Some of the Problems
  - Making The Change
- A Suggested Life Cycle Approach
Introduction
LESSONS LEARNED FROM

- Multiple Client Engagements
- Exhibit 300 (Federal Government Business Case) Support
- International Best Practices
- Development of the TAFIM
WHAT’S THE PROBLEM?

- Too Many Definitions for Enterprise Architecture
- Too Much Focus on The Framework
- Inconsistent Goals for What an Enterprise Architecture is Supposed to Do
- Not Focusing on a Measurable End Outcome
Definitions
» An IT architecture* provides a strategic context for the evolution of Information Technology within the enterprise, in response to the constantly changing needs of the business environment.

» An effective IT architecture also enables managed innovation within the enterprise, by enabling the right balance to be achieved between IT efficiency and business innovation. Individual business units can innovate safely in their pursuit of competitive advantage. At the same time, the needs of the organization for an integrated IT strategy are assured, permitting the closest possible synergy across the extended enterprise.

*According to the TOGAF
The term “Information Technology Architecture” means an integrated framework for evolving or maintaining existing information technology and acquiring new information technology to achieve the agency’s strategic goals and information resources management goals.

The disciplined definition of the IT infrastructure required by an agency to attain its objectives and achieve its vision. It is the structure given to information, applications, organizational and technological means -- the groupings of components, their interrelationships, the principles and guidelines governing their design, and their evolution over time.

The FEA is a tool that enables the Federal Government to identify opportunities to leverage technology and alleviate redundancy, or to highlight where agency overlap limits the value of IT investments. The FEA will facilitate horizontal (cross-Federal) and vertical (Federal, State, and Local Governments) integration of IT resources, and establish the “line of sight” contribution of IT to mission and program performance. The outcome will be a more citizen-centered, customer focused government that maximizes technology investments to better achieve mission outcomes.

“As with any architecture effort, the development of an FEA is an iterative and continuous process..... will be modified periodically as conditions evolve and additional agency architecture information is provided. Changes to the FEA will continue to be verified through Federal Agencies and will be published to the FEAPMO Website.”
An enterprise architecture is to an organization’s operations and systems as a set of blueprints is to a building. That is, building blueprints provide those who own, construct, and maintain the building with a clear and understandable picture of the building’s uses, features, functions, and supporting systems, including relevant building standards. Further, the building blueprints capture the relationships among building components and govern the construction process. Enterprise architectures do nothing less, providing to people at all organizational levels an explicit, common, and meaningful structural frame of reference that allows an understanding of

- (1) what the enterprise does;
- (2) when, where, how, and why it does it; and
- (3) what it uses to do it.

GAO-03-584G  A Framework for Assessing and Improving Enterprise Architecture Management (Version 1.1), April 2003
• A Focus On The Delivery Of IT-Enabled Business Change As Opposed To Development of The Architecture

• A Strong Linkage Between What The Enterprise Architecture Promises To Provide And The Ability of The IT Organization and The IT Infrastructure to Support The Change When It Is Deployed.
Frameworks
Reference Models

- **Performance Reference Model (PRM)**
  Government-Wide, LOB-Specific Performance Measures & Outcomes

- **Business Reference Model (BRM)**
  Lines of Business, Agencies, Customers, Partners

- **Service Component Reference Model (SRM)**
  Service Domains, Service Types, Components, Access, Delivery Channels

- **Data and Information Reference Model (DRM)**
  Business-Focused Data Standardization, Cross-Agency Exchange

- **Technical Reference Model (TRM)**
  Technologies, Standards, Specifications, Component Framework
Strategic Drivers
(External Pressure to Change)

Architecture Principles
(Our Proposed Response to the Pressures)

Work Architecture
(The Way We Do Our Jobs)

Application Architecture
(The Applications We Need to Move Information)

Information Architecture
(The Information We Need to Do Our Jobs)

Technology Architecture
(The Technology We Need to Make It All Work)

HERE’S YET ANOTHER WAY TO LOOK AT IT.

- Business Processes
  - Manual Procedures
    - Performed by
    - Using
  - Automated Procedures
    - Performs Roles in
    - Using
  - User Classes
    - Provide Facilities for
    - Work Locations
      - Performed at
      - Built from
      - Information
        - Access from
        - Requiring
  - Technology Platforms
    - Placed in
    - Requiring
  - Technology Environments
    - Placed on
    - Built from
    - Comprised of
    - Who Access
WHAT’S THE PROBLEM?
SELECTED FRAMEWORK PROBLEMS

• The Impression That A Top-Down Focus Will Work In The Real World
  – Most Fail To Some Degree
• Denying IT Infrastructure Investments Until The Enterprise Architecture is “Complete”
• Attempting To Control Or Dictate Real-World Operations Through EA Modeling Tools
  – A Model is a Representation of Reality
  – “All Models Have Flaws, Some Are Just Worse Than Others”
WHAT PEOPLE EXPECT (1)

Enterprise Architecture Framework

And Then -- A Miracle Occurs!!!

Information Systems That Support Corporate BUSINESS Goals
WHAT PEOPLE EXPECT (2)

Enterprise Architecture Modeling Tool

And Then -- A Miracle Occurs!!!

Information Systems That Support Corporate BUSINESS Goals
WHAT PEOPLE EXPECT (3)

Enterprise Architecture → And Then -- A Miracle Occurs!!! → Successful Business Case (Exhibit 300)
Fixing the Problem (1)
• Architecture is a Process, NOT a Solution
• Successful Implementation of a Disciplined, Repetitive Approach is the Key
• For delivery of solutions, an Enterprise Architecture is Necessary but NOT Sufficient
ARCHITECTURE PROCESS

Initiation and Architecture Framework
(Obtain Management Approval of the Architecture Vision)

Baseline Characterization
(A High Level Inventory of Where We Are Today)

Quick Hits

Target Architecture Definition
(An Unconstrained Statement of Where We Want to Be)

Gap Analysis
(Identify and Categorize Opportunities for Getting to the Target)

Transition Options
(Identify and Select the path or Alternate Paths to the target)

Architecture Administration
(Your Process for Maintaining and Improving the Architecture)

Implementation Planning
(Developing the Detailed Implementation Plans)
What Do We Need To Make It Work?

- A Team of Architects and Engineers
- A Mechanism for Providing User Input
- Clear Division of Responsibilities

Here’s the Grand Design

I Know What It Takes to Build It

Architect

Systems Engineer

CIO

Architecture Steering Committee

Chief Architect

Chief Engineer

SUGGESTED ROLES AND RESPONSIBILITIES FOR INTERNAL CIO ORGANIZATION

- **Responsibilities of the Architect**
  - Defining USER Requirements
  - Bounding the Requirements Set
  - Setting the General Direction for the Systems Engineer
  - Validating the General “Correctness” of the Systems Engineer’s Recommendations

- **Responsibilities of the Systems Engineer**
  - Translating User Requirements into Design
  - Conducting Trade-Off Analyses Between Competing Technologies
  - Delivering a Workable Solution to the Eventual System Operator
Through our research of best IT management practices and our evaluations of agency IT management performance, we have identified a set of essential and complementary management disciplines. These include:

- IT investment management,
- software/system development and acquisition management,
- IT services acquisition management,
- IT human capital management,
- information security management, and
- enterprise architecture management.
• The governance processes required as attendant documents to this section (IRM Plan, documented CPIC process, and the EA) are used in connection with the business cases (Exhibit 300) and this "Agency IT Investment Portfolio" (Exhibit 53) to demonstrate the agency management of IT investments and how these governance processes are used to make decisions about IT investments within the agency.
EXHIBIT 300 ELEMENTS

1. Strategic Fit
2. Options/Alternatives Appraisal and Affordability
3. Enterprise Architecture, Privacy, Records Management and Security
4. Acquisition Strategy
5. Project Management
   - Project Organization, Plan and Milestones
   - Assumptions
   - Performance Measures
   - Risk Analysis and Mitigation
6. Project Progress
   - Earned Value
   - Operational Analysis
PERFORMANCE-BASED ACQUISITION

PBA Methodology

Work Breakdown Structure (WBS)

Performance Work Statement (PWS)

Quality Assurance Plan (QAP)

Performance Incentives

Performance Requirements Summary

<table>
<thead>
<tr>
<th>Task</th>
<th>Standard</th>
<th>Acceptable Quality Level</th>
<th>Surveillance Methods/Measures</th>
<th>Incentives</th>
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PERFORMANCE-BASED ACQUISITION
LIFE CYCLE APPROACHES
IDENTIFY THE COMPLETE PACKAGE

Trained IT Staff

Planning

Directs

Architecture

Directs

IT OPERATIONS

Guides

Systems Engineering

Guides

Data Management

Delivers

Information Services That Support Corporate BUSINESS Goals

Makes Available

Enterprise Security

Supports

Program/Quality Management

Value/Benefits/Results Evaluated
THE PORTFOLIO MANAGEMENT APPROACH*

Are We Getting The Desired Benefits?  
(Portfolio Management)

Are We Doing The Right Things?  
(Strategy)

Are We Doing Things The Right Way?  
(Architecture)

Are We Getting Them Done?  
(Project Management)

* The Information Paradox
“Project Management is ABSOLUTELY ESSENTIAL for Portfolio Management to Succeed.”

- Initiate the Project
- Plan the Project
- Execute the Project
- Control the Project
- Close the Project
WHAT’S MISSING?

Portfolio Management/Strategy/
Enterprise Architecture/Project Management
Only Gets You to Delivering the Solution,
Not Keeping It Up and Running and Delivering Services.
FUNDAMENTAL PHASES IN THE IT INVESTMENT MANAGEMENT PROCESS

- **Select**
  How do you know you have selected the best projects?

- **Evaluate**
  Based on your evaluation, did the systems deliver what you expected?

- **Control**
  What are you doing to ensure that the projects will deliver the benefits projected?

Process Information
A MORE SOPHISTICATED, FIVE-PHASED APPROACH

Select
How do you know you have selected the best investments?

Pre-Select
What are the business needs for the investments?

Control
What are you doing to ensure that the investments will deliver the benefits projected?

Steady-State
Do the investments still cost effectively support requirements?

Evaluate
Based on your evaluation, did the investments deliver what you expected?
A More Complete Approach
ITIL stands for the **IT Infrastructure Library**

- Begun by the Office of Government Commerce (OGC), a UK Govt. agency, in 1989 ..... 
- **ITIL is:**
  - Comprehensive, consistent & coherent set of best practices – NOT a methodology
  - Aligns IT services with business requirements
  - Promotes a quality management approach
  - Certification at Foundation, Practice and Master Level
  - Vendor (tool) independent, platform independent
  - World-wide de facto standard for ITSM

- **Now a formal British standard: BS15000**
The aim of ITSM is to Implement ITIL by:

- Aligning IT services with the ever changing needs of the business
- Improving the quality of IT services
- Reducing the cost of providing service

It’s about increasing the efficiency and effectiveness of IT Operations
The Office of Government OGCC Suggests that Vendors be asked to demonstrate compliance with standards-based:

- Project Management Methodology
- Software Development Methodology
- IT Service Management

Internal IT should be certified in same disciplines as well

- Promotes common language between both sides
- Identifies Measurable Standards
THE APPLICATION MANAGEMENT LIFE CYCLE*

*Best Practice for Application Management, The Office of Government Commerce, ITIL
THE APPLICATION MANAGEMENT LIFE CYCLE*

Requirements

- Enterprise Architecture
  + Characteristics
  + Service Levels
  + Usability Requirements
  + Testing Requirements
  + Preliminary Service Management Requirements

Application Development

Optimize

Design

Operate

Build

Deploy

Optimize Development

*Best Practice for Application Management, The Office of Government Commerce, ITIL
THE APPLICATION MANAGEMENT LIFE CYCLE*

*Best Practice for Application Management, The Office of Government Commerce, ITIL
• “Methodware” Vendors Offering Integrated Tool Set with Supporting Methodologies that Map EA Requirements Through the Design and Development Steps

• SW-CMM Tools Being Converted to Project Management Methodology Tools
THE APPLICATION MANAGEMENT LIFE CYCLE

- **Application Development**
- **Design**
- **Build**
- **Deploy**
- **Operate**
- **Optimize**

Service Management (ITSM)

Validated Service Levels

*Best Practice for Application Management, The Office of Government Commerce, ITIL*
THE APPLICATION MANAGEMENT LIFE CYCLE*

Requirements → Application Development

Optimize

Enhanced Service Levels

Operate

Service Management (ITSM)

Build → Deploy

*Best Practice for Application Management, The Office of Government Commerce, ITIL
The Suggested Life Cycle is Actually Embedded in Exhibit 300.....
But most submitters do not realize it.
An Enterprise Architecture is the BEGINNING of a Journey, Not a Destination. (No Matter How Far You Have Traveled, It’s Never Too Late to Ask Directions Or Turn Back If You Find You Took the Wrong Road.)
The Goal of An Enterprise Architecture is the DELIVERY of Information Services That Satisfy Corporate BUSINESS Goals.

(Information Systems Are Mechanisms That Focus on The Delivery of Services to Customers.)
• To Transition From Architecture to Delivery and Operation You Need to Adapt a Software Development Methodology with an Embedded Project Management Methodology.

• Buy, Read and Implement ITIL.
I’m Ready For Any Questions