



# Federal Enterprise Architecture

## *Using EA to Design Future-Ready Agencies and Implement Shared Services*

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Executive Office of the President

Office of Management and Budget





# OMB Policy Directives on EA

## IT Shared Services Strategy (May 2012)

## Common Approach to Federal EA (May 2012)

### 25 POINT IMPLEMENTATION PLAN TO REFORM FEDERAL INFORMATION TECHNOLOGY MANAGEMENT

### Shared Services Is Action Item



EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF MANAGEMENT AND BUDGET  
WASHINGTON, D.C. 20503

THE DIRECTOR

August 8, 2011

M-11-29

MEMORANDUM FOR HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: Jacob J. Lew  
Director

SUBJECT: Chief Information Officer Authorities

In December 2010, the Administration released the 25 Point Implementation Plan to Reform Federal Information Technology (IT) Management.<sup>1</sup> The reforms are focused on eliminating barriers that get in the way of effectively managing IT programs throughout the Federal government. Too many Federal IT projects have run over budget, fallen behind schedule, or failed to deliver promised functionality, hampering agency missions and wasting taxpayer dollars.

As the Federal government implements the reform agenda, it is changing the role of Agency Chief Information Officers (CIOs) away from just policymaking and infrastructure maintenance, to encompass true portfolio management for all IT. This will enable CIOs to focus on delivering IT solutions that support the mission and business effectiveness of their agencies and overcome bureaucratic impediments to deliver enterprise-wide solutions. This memo is designed to clarify the primary area of responsibility for Agency CIOs throughout the government, as identified in the IT Reform Plan.

Agency CIOs must be positioned with these responsibilities and authorities to improve the operating efficiency of their agencies. In addition to their statutory responsibilities that are established under the Clinger-Cohen Act<sup>2</sup> and related laws, under the IT Reform Plan there are four main areas of responsibility that Agency CIOs should have a lead role:

1. **Governance.** CIOs must drive the investment review process for IT investments and have responsibility over the entire IT portfolio for an Agency. CIOs must work with Chief Financial Officers and Chief Acquisition Officers to ensure IT portfolio analysis is an integral part of the yearly budget process for an agency. The IT Reform Plan restructured the investment review boards (IRBs) by requiring Agency CIOs to lead "TechStar" sessions – actionable meetings designed to improve line-of-sight between project teams and senior executives. Outcomes from these sessions must be formalized and followed-up through completion, with the goal of terminating or turning around one-third of all underperforming IT investments by June 2012.

<sup>1</sup> <http://www.eo.gov/documents/25-Point-Implementation-Plan-to-Reform-Federal-IT-2011.pdf>  
<sup>2</sup> Public Law 104-106, Division I, Clinger-Cohen Act of 1996

M-11-29

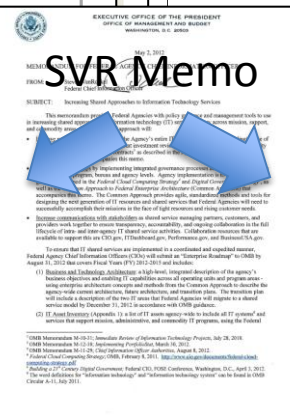
CIO Authorities Memo:  
Commodity IT (Aug 2011)

Draft for Discussion  
Subject to Revision

### FEDERAL INFORMATION TECHNOLOGY SHARE SERVICES STRATEGY "Shared First"

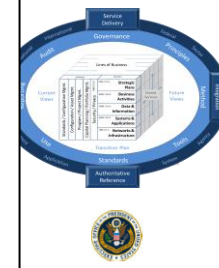
December 8, 2011

May 2, 2012



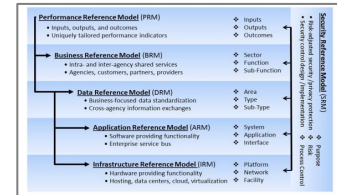
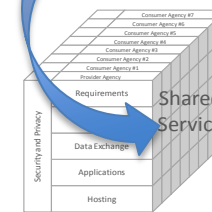
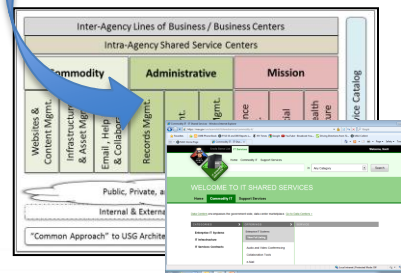
Review Draft v0.6

### Common Approach To Federal Enterprise Architecture



May 2, 2012

## IT Reform Agenda's 25-Point Plan (Dec 2010)







# The Role of Enterprise Architecture

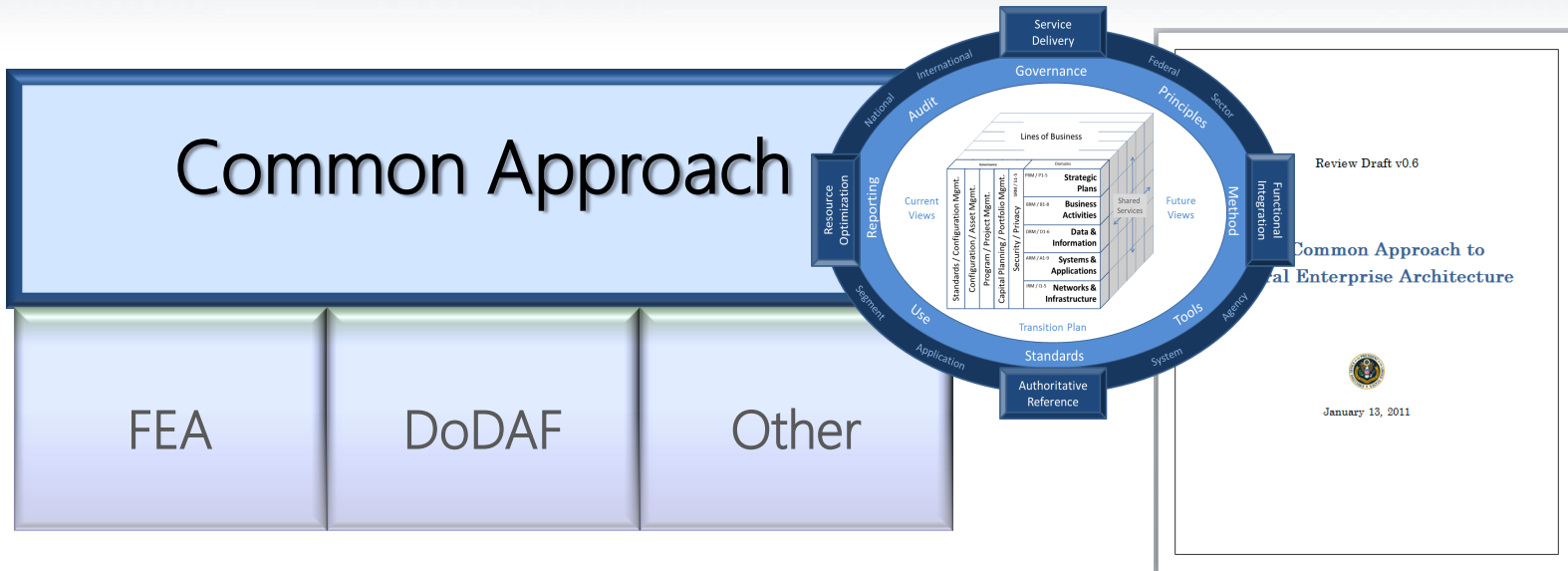
The *Common Approach to Federal Enterprise Architecture* is OMB policy on EA standards.

FEAv2 is the implementation of the Common Approach, it provides design and analysis methods to support shared service implementation, DGS, IRM Strategic Plans, and PortfolioStat investment reviews.





# The Common Approach to Federal EA

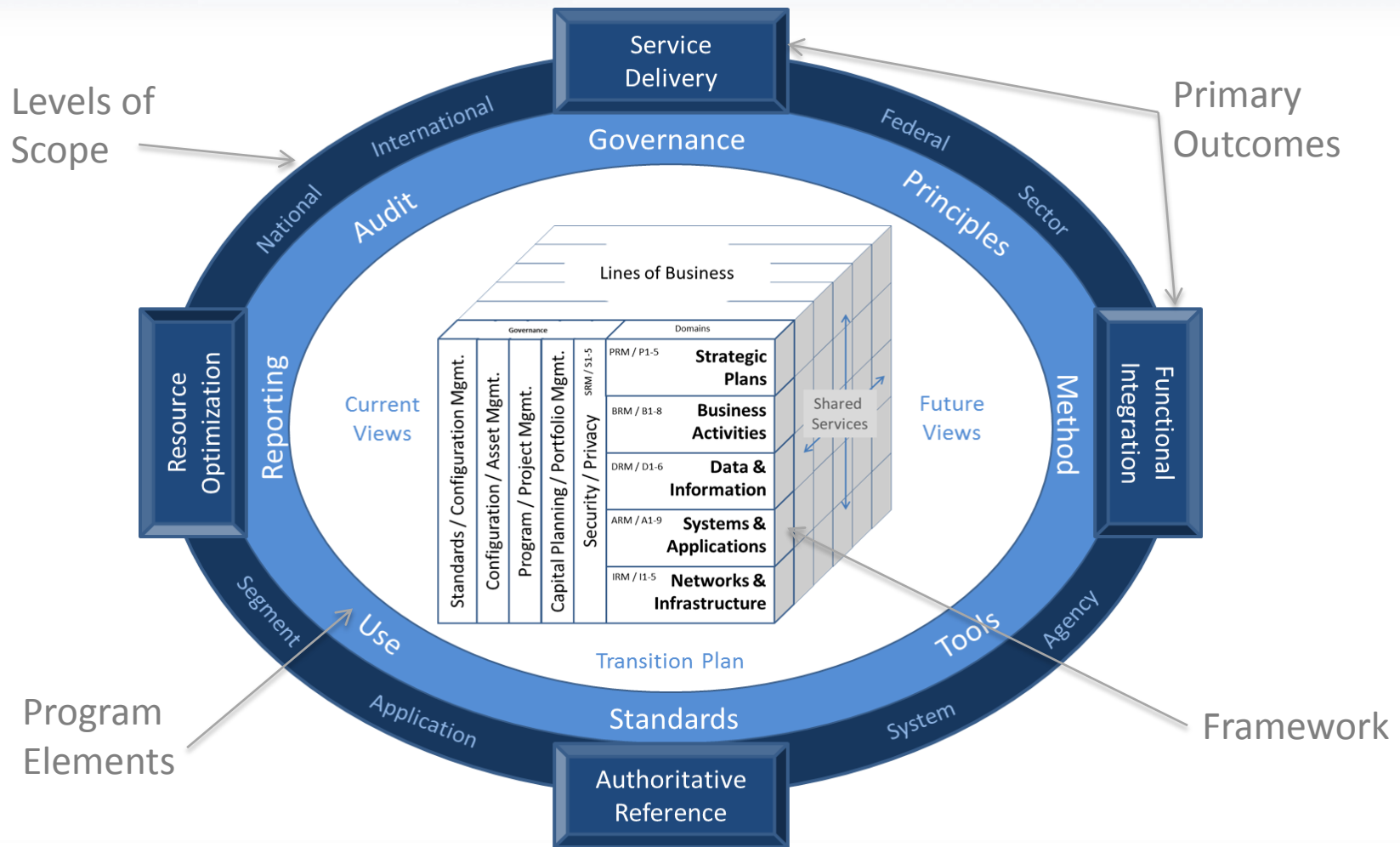


The *Common Approach to Federal Enterprise Architecture* helps to make agencies ***“Future-Ready”*** by accelerating agency business transformation and new technology enablement by providing standardization, design principles, scalability, an enterprise roadmap, and a repeatable architecture project method.





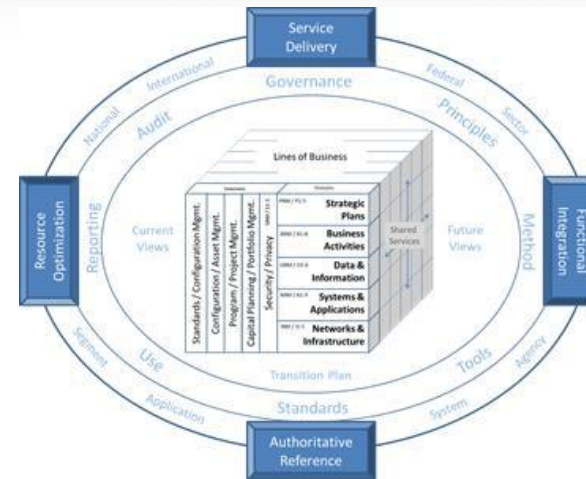
# Common Approach Meta-Model





# Primary Outcomes

- Service Delivery
- Functional Integration
- Resource Optimization
- Authoritative Reference



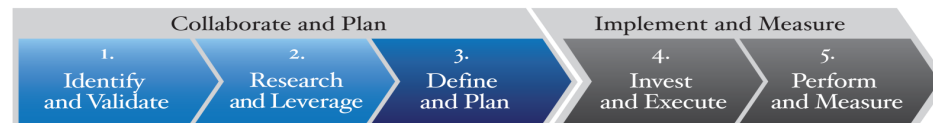
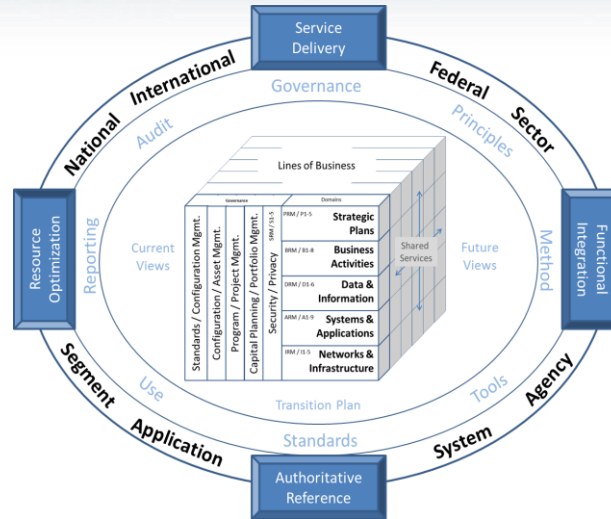
While there are many positive outcomes that EA contributes to, these four outcomes are “primary” in that they represent areas of direct, positive impact that architectures can make within and between agencies and with customers and partners external to government





# EA Project Levels of Scope

- International
- National
- Federal
- Sector
- Agency
- Segment
- System
- Application



These levels of scope promote consistency in architecture methods to promote comparability and support varying levels of complexity. Solution Architecture is done in a similar way at all levels of scope, using the Collaborative Planning Method (CPM)

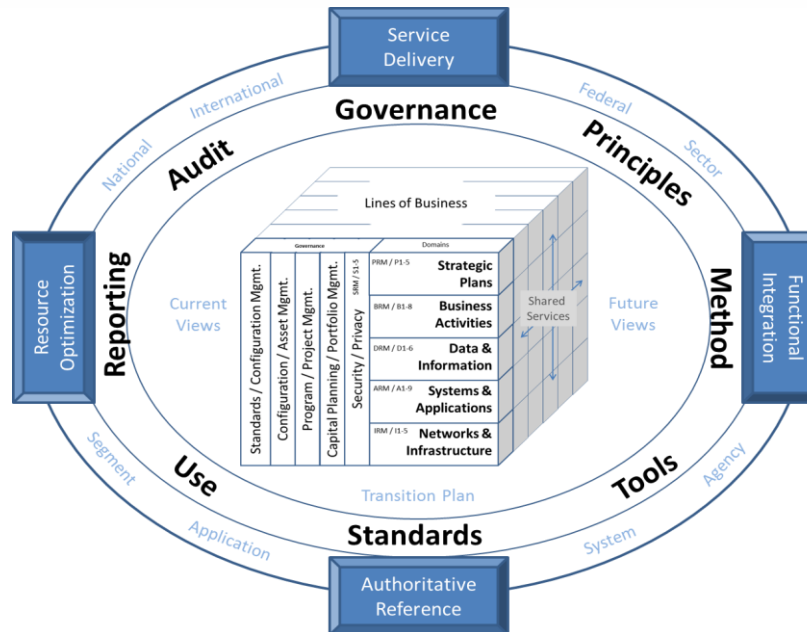






# EA Program Basic Elements

1. Governance
2. Principles
3. Method
4. Tools
5. Standards
6. Use
7. Reporting
8. Audit



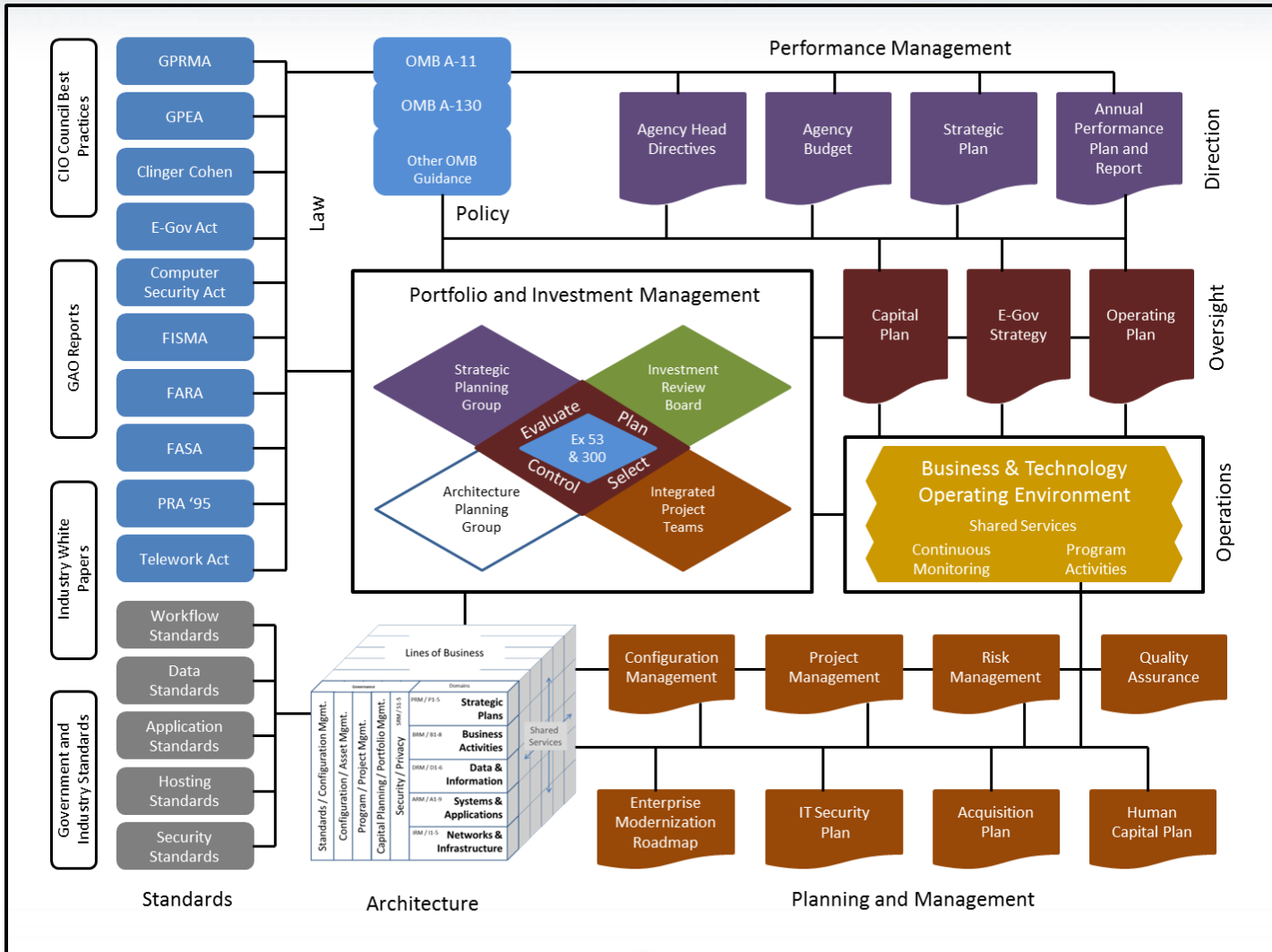
These basic elements ensure that agency EA programs are complete and can be effective in developing solutions that support planning and decision-making.







# Element 1: Governance





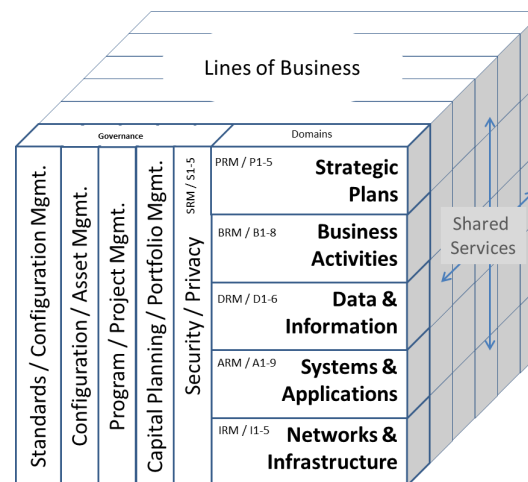
# Element 2: Principles

## General EA Principles

- Future-Ready
- Investment Support
- Shared Services
- Interoperability Standards
- Information Access
- Security and Privacy
- Technology Adoption

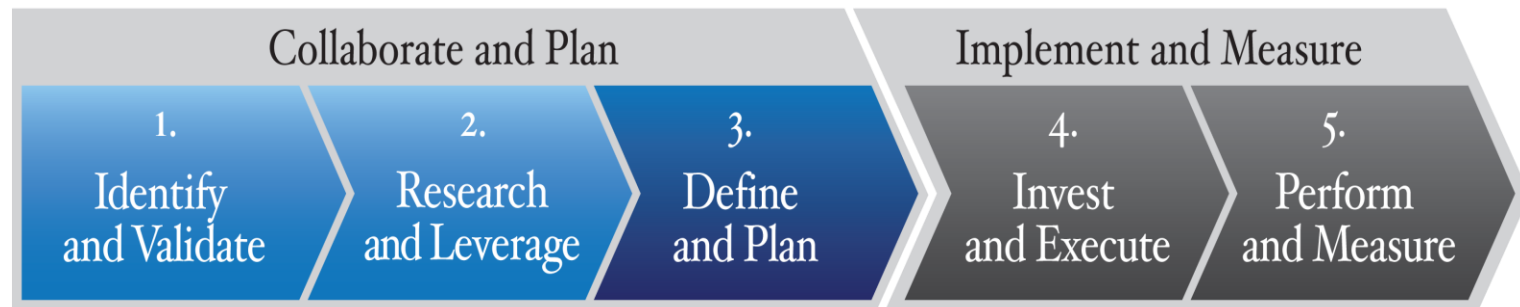
## Design/Analysis Principles

- Strategic Drivers
- Business Activities
- Technology Enablement





# Element 3: Method for EA Projects



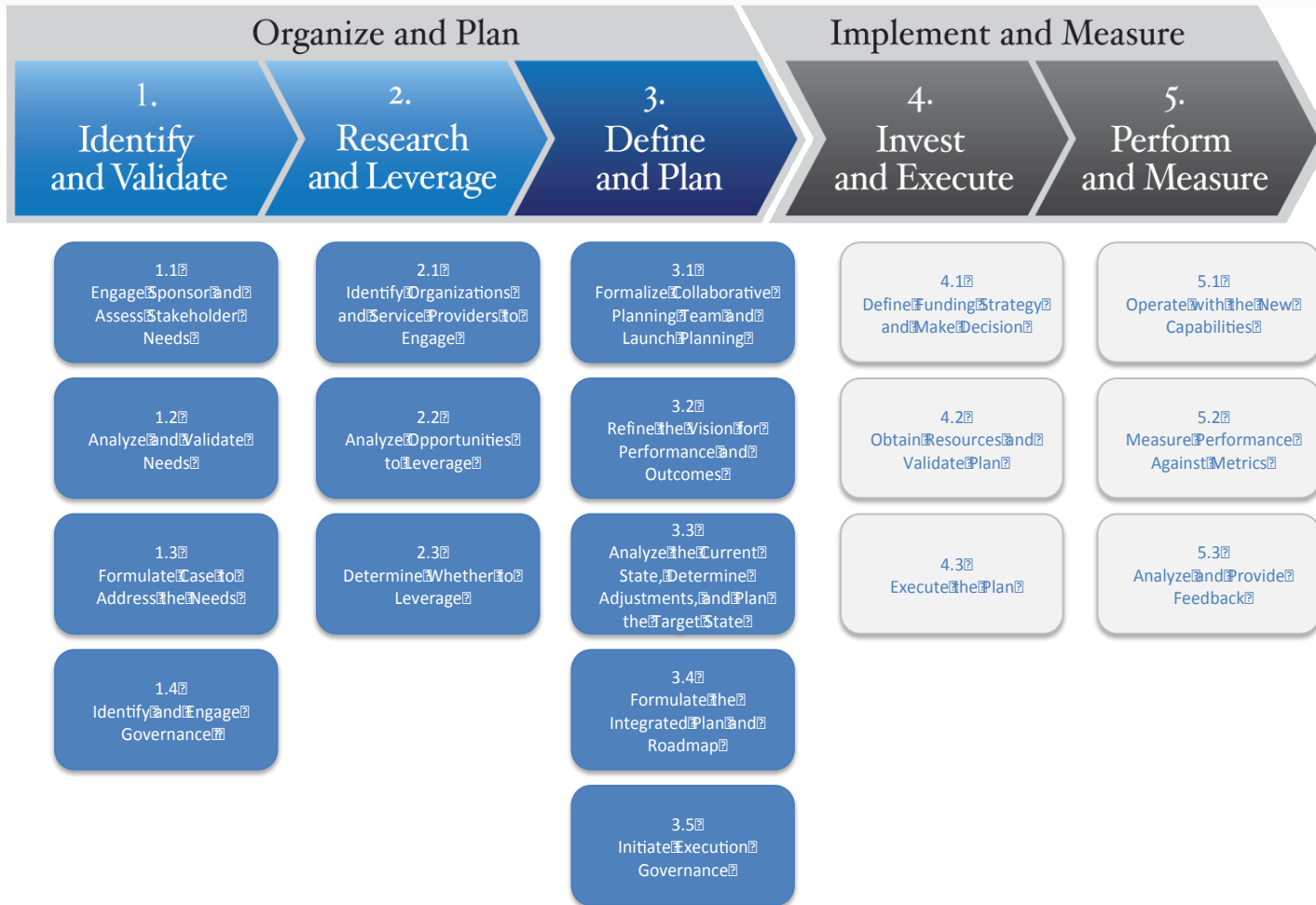
The Collaborative Planning Methodology (CPM) is a repeatable process that consists of steps that require integrated multi-disciplinary activities to affect change with the collaboration of leaders, stakeholders, planners, and implementers.

It is inclusive of the full planning and implementation lifecycle and is intended for use at all levels of scope.





# Element 3: Method (continued)







# Element 4: EA Tools

- Repository website and content to create a visual representation of architecture in its current and future states
- Decomposable views of the overall architecture and specific architectures
- Over-arching “management views” of the architecture
- Strategic planning products and performance measures
- Business process documentation to answer questions and solve problems
- Physical / logical design of data entities, objects, applications, and systems
- Physical and logical design of networks & cloud computing environments
- Configuration management and quality standards
- Security and risk solutions for physical, information, personnel and operational needs

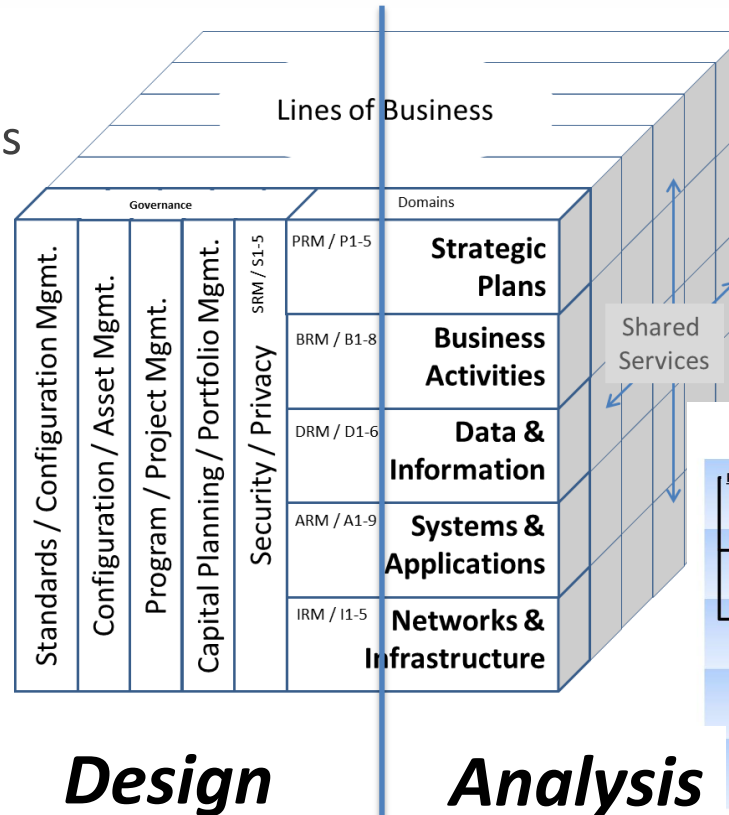




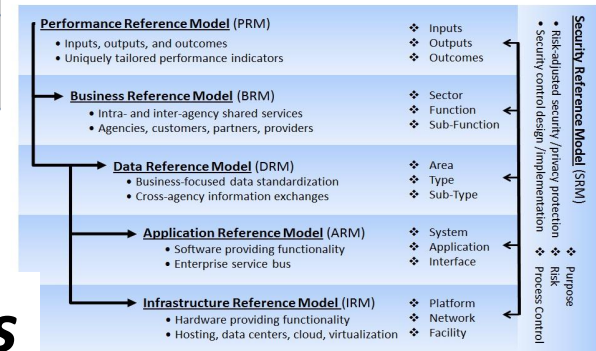
# Element 5: Standards

EA standards for  
doing design projects

EA standards for  
doing analysis projects

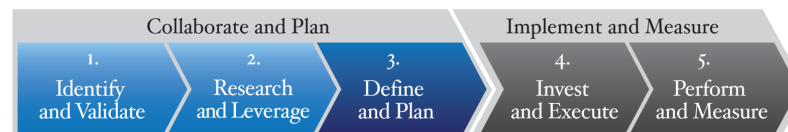


## Consolidated Reference Model (CRM)



*Design*

*Analysis*





# Element 6: Use

## **The Common Approach supports:**

- Shared-Services Implementation
- Cloud-First Implementation
- Digital Strategy – Mobile & Web
- TechStats / PortfolioStats
- Security and Privacy Control Design
- Business Process Improvement
- Big Data
- Data Center Consolidation
- Voice, Data, Video Convergence





# Element 7: Reporting

- ▶ Annual submission to OMB that “tells the story” of the agency’s use of IT to enable mission, support, and commodity functions.
- ▶ Due April 1<sup>st</sup> – these are public documents, nothing sensitive in it.
- ▶ Format Guidelines:
  - ▶ Main Body: a) Synopsis of IRM Strategic Plan and goals  
b) Enterprise-wide business and technology architecture  
c) Transition Plan milestones
  - ▶ Appendix 1: IT Asset Inventory
  - ▶ Appendix 2: IT Commodity Consolidation Plan (M-11-29)
  - ▶ Appendix 3: Agency Shared Services Plan (improve quality & uptake)
  - ▶ Appendix 4: EA Program Assessment / Project Value Measurement

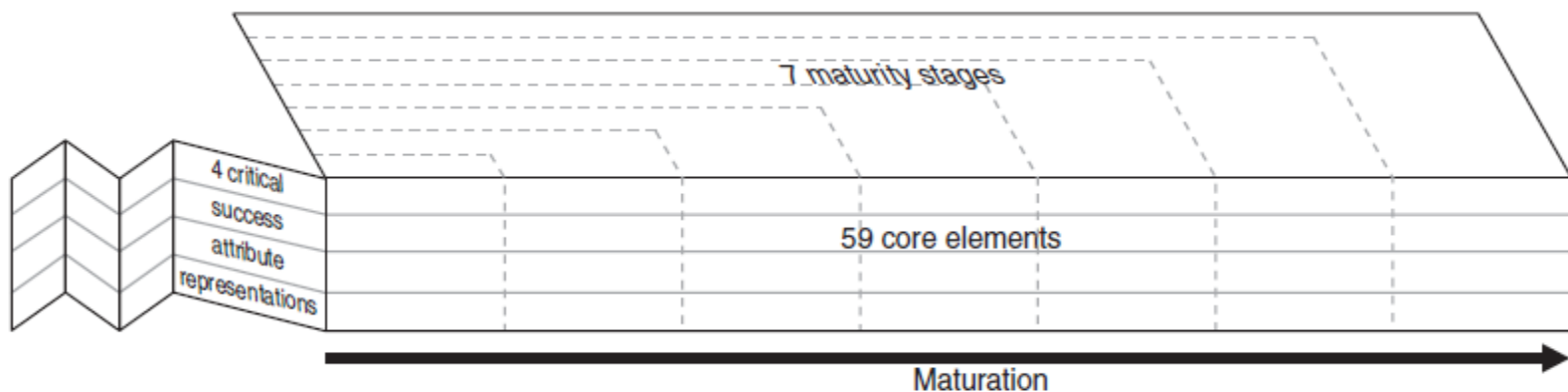
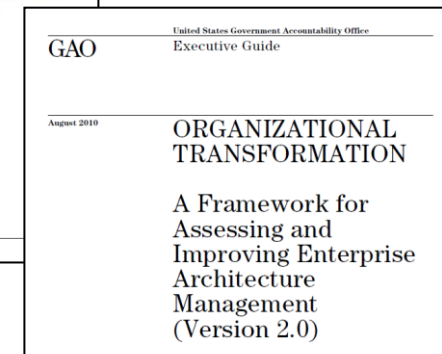
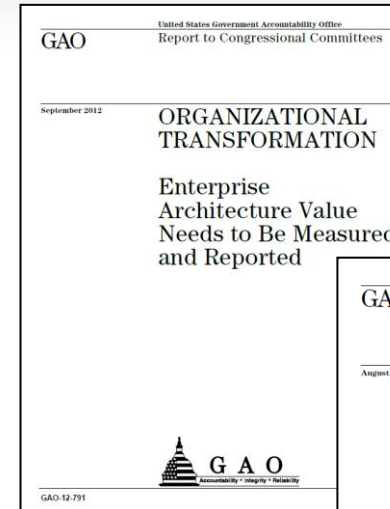






# Element 8: Audit

- Roadmap (Appendix 4) provides an evaluation of:
  - EA Program maturity
  - The value of EA projects
- Uses EA Management Maturity Framework v2 (EAMMF), Aug 2010





# The Federal Enterprise Architecture

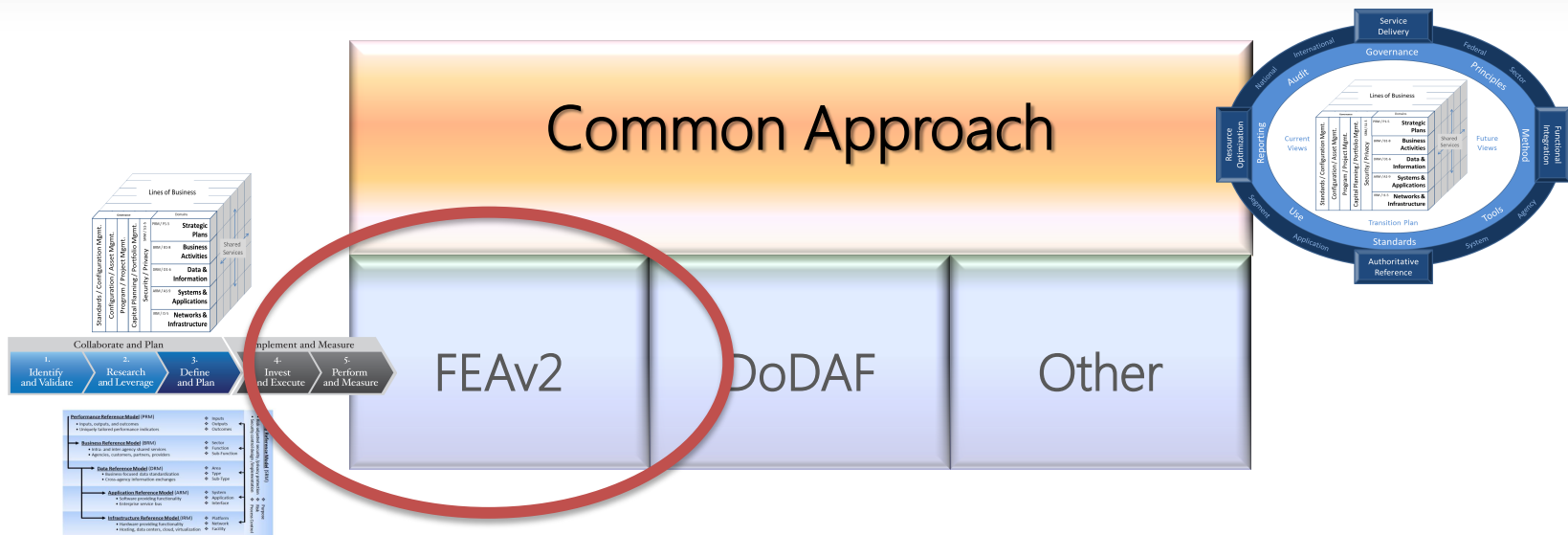
Version 2.0 (FEAv2)

*Implementing the Common Approach*





# Common Approach & FEAv2



The Common Approach to Federal Enterprise Architecture (Common Approach) accelerates supports the identification of opportunities for shared services and design alternatives. The Federal EA version 2 (FEAv2) will be released in January 2013 and aligns with the standards of the Common Approach.





# FEAv2: Major Components

FEAv2 aligns with the Common Approach and has three major components:

## ■ Standards:

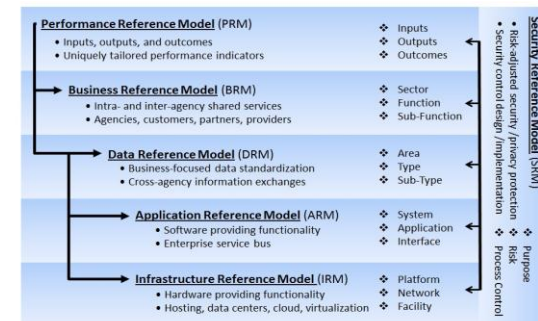
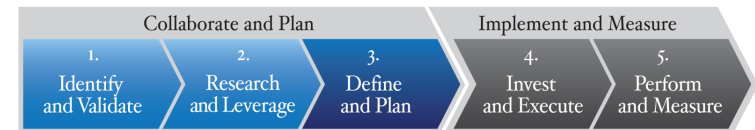
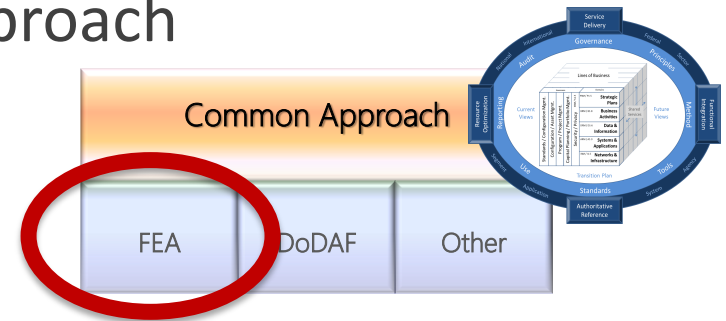
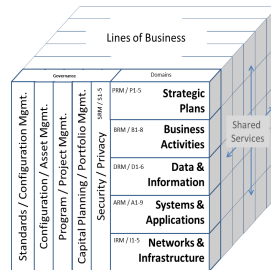
- Framework
- Artifacts

## ■ Methods:

- Common Approach
- Collaborative Planning Method (former FSAM)

## ■ Analytics / Reporting:

- Consolidated Reference Model
- Ex 53 & 300
- Enterprise Roadmap

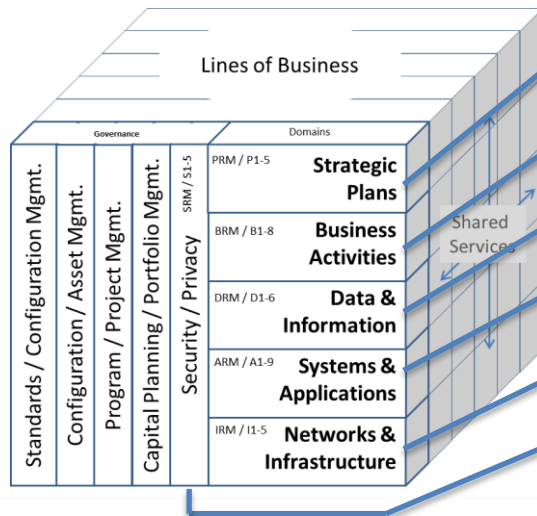






# FEAv2 Standards: Framework & Artifacts

- The standard artifact list consists of the “core” artifacts that need to be considered and/or tailored to support a robust set of EA artifacts for the organization

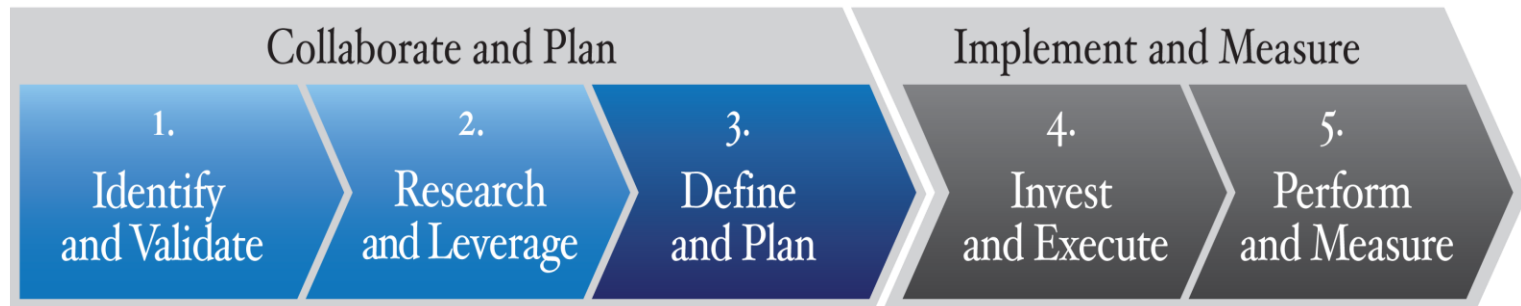


EA <sup>3</sup> Cube Level/Thread	Artifact ID #	Artifact Name (* Composite Artifact)	Zachman Mapping	DODAF Mapping
Strategic Goals & Initiatives (I)	S-1	Strategic Plan*	C6/R1	AV-1
	S-2	SWOT Analysis	C5/R1	
	S-3	Concept of Operations Scenario		AV-1
	S-4	Concept of Operations Diagram	C2/R1	OV-1
	S-5	Balanced Scorecard™ *	C6/R4, C6/R5	
Business Products & Services (I)	B-1	Business Plan*	C3/R2, C5/R1	
	B-2	Business Process Model		OV-2
	B-3	Business Process Diagram		OV-5
	B-4	Business Process Flowchart		OV-5
	B-5	Business Process Map		SV-10a
Data Information & Knowledge (I)	D-1	Strategic Plan/Priority Goals		OV-3
	D-2	Workflow Diagram		SV-10b
	D-3	Dataflow Diagram		SV-10c
	D-4	System Interfaces		SV-11
	D-5	Network Diagram		SV-9
System Applications (S)	S-1	Security Controls		AV-2
	S-2	System Interfaces		SV-1
	S-3	Network Diagram		SV-2
	S-4	Security Controls		SV-3
	S-5	System Interfaces		SV-4
Network Infrastructure (N)	N-1	Network Diagram		SV-5
	N-2	Security Controls		SV-6
	N-3	System Interfaces		SV-7
	N-4	Network Diagram		SV-8
	N-5	Security Controls		
Standards (ST)	ST-1	Technical Standards Profile	C3/R4	TV-1
	ST-2	Technology Forecast	C3/R4	TV-2, SV-9
	ST-3	Standards Profile		
Workforce (W)	W-1	Workforce Plan*	C4/R1	OV-4
	W-2	Organization Chart	C4/R2	OV-4
	W-3	Knowledge and Skills Profile	C4/R3	OV-4





# FEAv2: Collaborative Planning Method



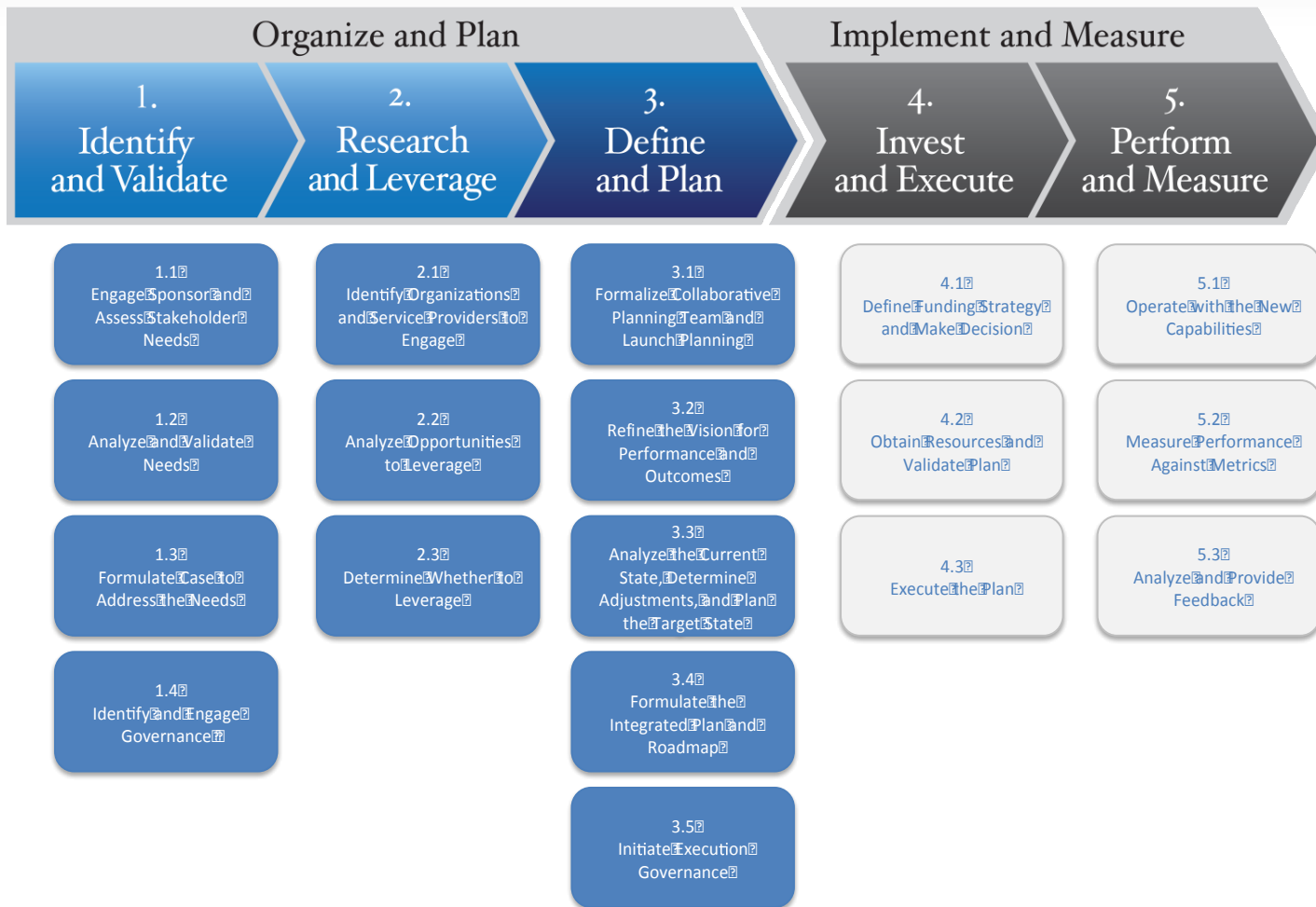
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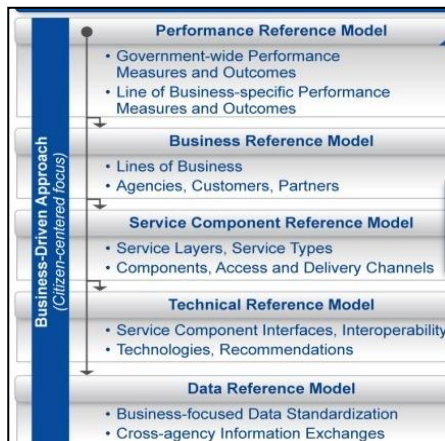
# Method (continued)



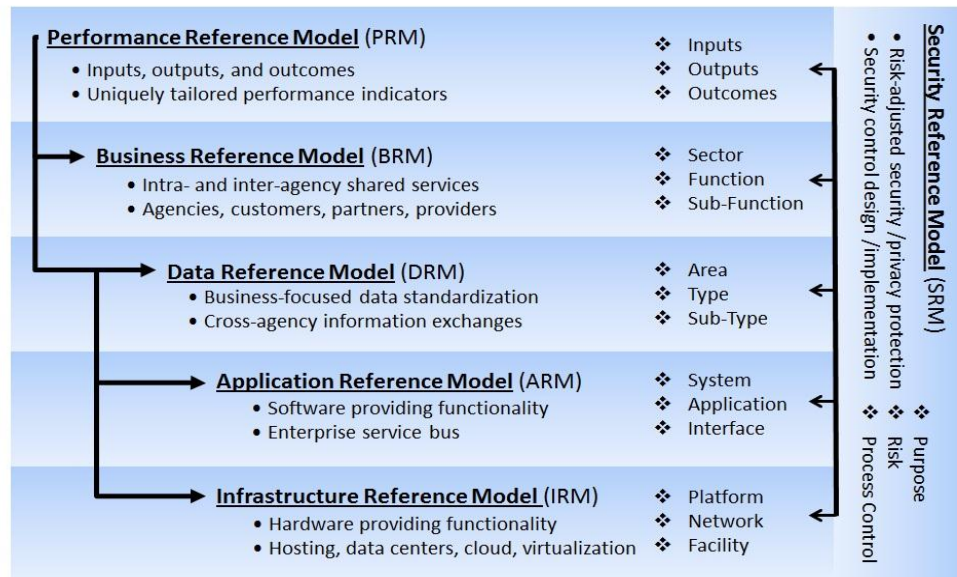


# FEAv2: Consolidated Reference Model

## 2003-05 FEA RMs



## Consolidated Reference Model (CRM)



The CRM consists of a set of interrelated “reference models” designed to facilitate cross-agency analysis and the identification of duplicative investments, gaps and opportunities for collaboration within and across agencies. Through the use of the CRM and vocabulary, IT portfolios can be better managed and leveraged across the federal government.







# FEAv2: The CRM's Reference Models

## PRM – BRM – DRM – ARM – IRM – SRM

The Reference Models from have evolved from five in FEAv1 to six in FEAv2. Each Reference Model consists of the following areas:

- ▶ Taxonomy – Provides for categorization and inventories.
- ▶ Methods – Incorporates associated best practices.
- ▶ Use Cases – Describes how the reference model will be applied and used in the federal government. This area will apply the reference models to the Collaborative Planning Method (CPM). Each reference model will have at least three use cases.
- ▶ Touch Points – The relationship between all of the reference models.



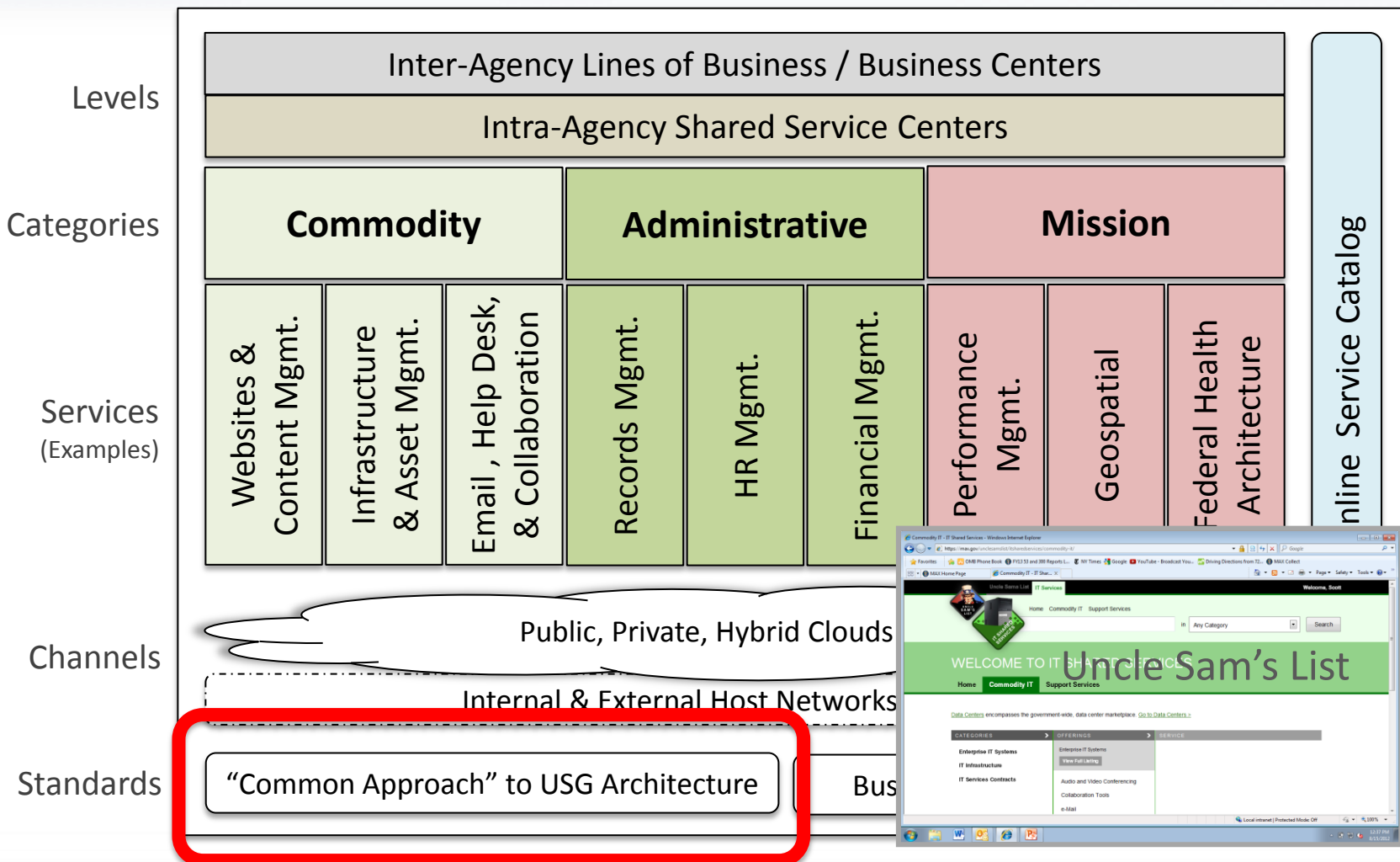


# Using EA to Support Shared Services Implementation



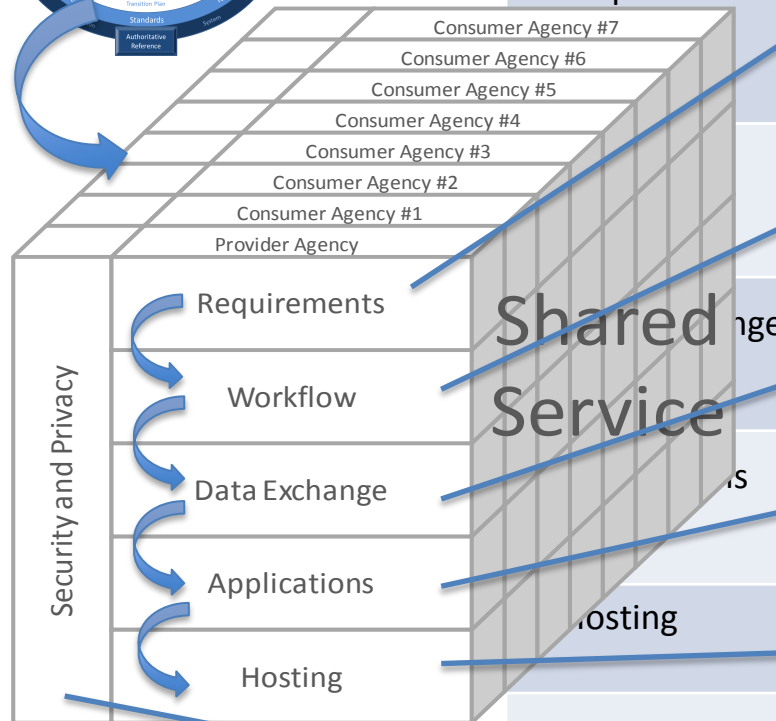
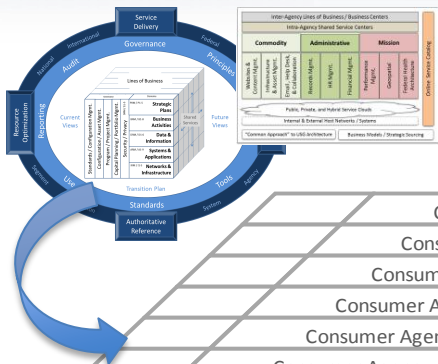


# IT Shared Service Concept Overview





# Architectural Components of a Service



## Component

## Description

### 1. Requirements

This includes the strategic and tactical requirements for the type(s) of functionality that the service has to provide to consumers. The type of requirements depends on the type of service area, number and diversity of participating agencies, sensitivity of information/data being exchanged.

Business processes that function through the shared service. The design of a process must support the functional requirements from #1.

The part of the business process in #2 that involves the creation, exchange, manipulation, storage, or deletion of data and information.

This includes the software and hardware that provide the functionality and data exchange capabilities that are identified in #2 and #3.

This is the infrastructure that the application(s) are hosted in. This includes cloud-based, client-server hosting solutions.

### 6. Security and Privacy

The logical, physical, process, and personnel controls that achieve required levels of protection and risk mitigation for the service.







# Implementation: Two Work Streams

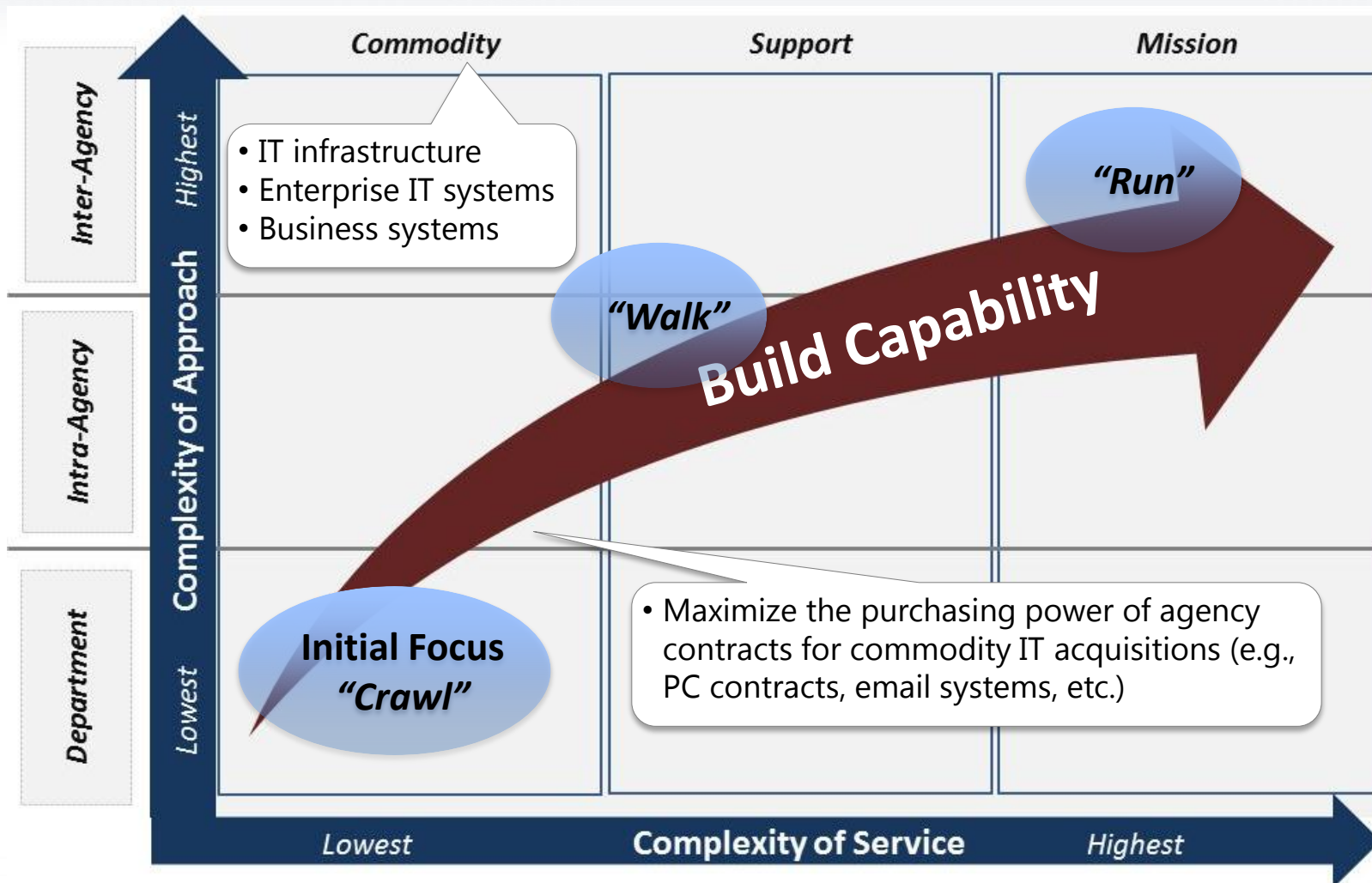
Intra-Agency Shared Services		Inter-Agency Shared Services
Agency CIOs	Owner	Managing Partners
Commodity IT	Scope	LOBs / Business Centers
Implementation of Agency Enterprise Architecture/Shared Service Plans	2012 Focus	Service Improvement
Migrations, EA Plans	Key Deliverable	Assessment, Benchmarks, Roadmap

<b>Intra-Agency Service Center</b> (Dept. CIOs)	<b>Commodity IT</b> <ul style="list-style-type: none"><li>• Websites/CMS</li><li>• Email/Collaboration</li><li>• Mobile/Wireless</li></ul>		
<b>Inter-Agency LOBs / BCs</b> (Managing Partners)	<ul style="list-style-type: none"><li>• Budget</li><li>• Financial</li></ul>	<ul style="list-style-type: none"><li>• GIS</li><li>• HR</li></ul>	<ul style="list-style-type: none"><li>• Performance</li><li>• Security</li></ul>



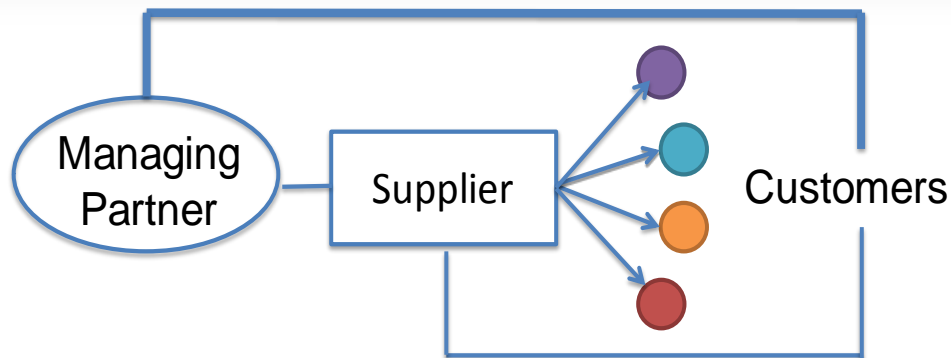


# Implementation and Initial Focus





# IT Shared Service Roles



- **Managing Partner.** The Federal agency that establishes and maintains the shared service with approval by agency leadership for intra-agency services, or by OMB for inter-agency services.
- **Customer.** The Federal agency or bureau that contracts with and pays the managing partner to receive a shared service.
- **Supplier.** A government or commercial organization that actually provides the shared service to consumers. Managing partners contract with suppliers using Federal-wide contract vehicles whenever practicable.





# Architectural Components of a Service

Component	Description
1. Requirements	This includes the strategic and tactical requirements for the type(s) of functionality that the service has to provide to consumers. The type of requirements depends on the type of service area, number and diversity of participating agencies, sensitivity of information/data being exchanged.
2. Workflow	Business processes that function through the shared service. The design of a process must support the functional requirements from #1.
3. Data Exchange	The part of the business process in #2 that involves the creation, exchange, manipulation, storage, or deletion of data and information.
4. Applications	This includes the software and hardware that provide the functionality and data exchange capabilities that are identified in #2 and #3.
5. Hosting	This is the infrastructure that the application(s) are hosted in. This includes cloud-based, client-server hosting solutions.
6. Security and Privacy	The logical, physical, process, and personnel controls that achieve required levels of protection and risk mitigation for the service.





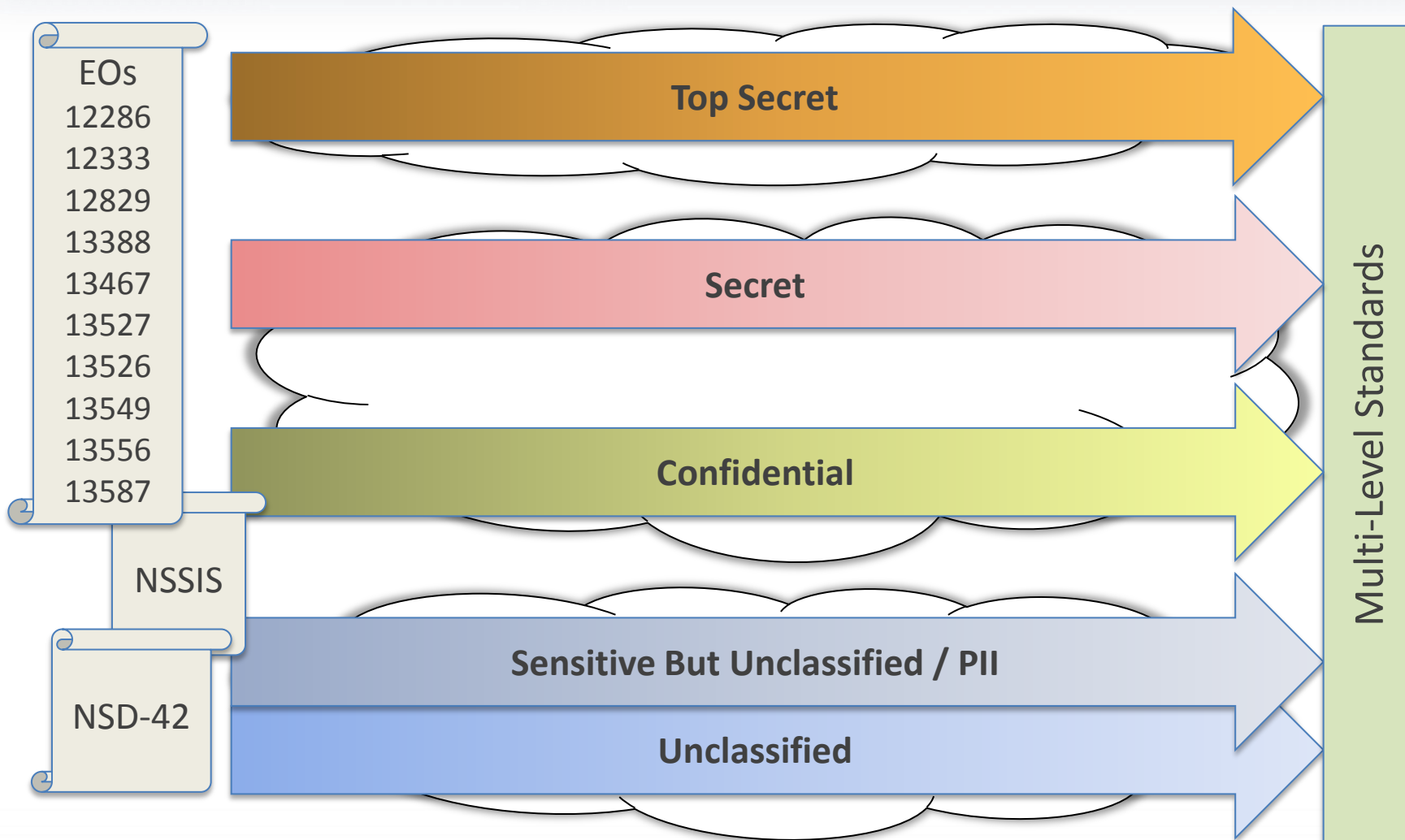
# Using Enterprise Architecture to Standardize and Improve Information Sharing Environments







# Information Sharing Environments





# Questions

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**Office of Management and Budget**

**Office of E-Government and IT**

