Key Issues

• What are Federal Enterprise Architecture (FEA) and Service Oriented Architecture (SOA) and what is their strategic relationship?

• How are FEA and SOA used to meet agency business needs?

• Why are SOA entry points important in creating value?

• What is FEA / SOA value proposition?

Past

Today
Agencies expect IT to deliver **Business / Mission value**, to adopt methods that will drive **enterprise strategy and investment decisions** with well-defined **milestones and performance metrics**. They want to produce **concrete improvements** in the effectiveness of agency programs and lines of business.
Business / Mission IT Alignment: How can I ensure my enterprise IT assets are focused on meeting business / mission objectives?

What kinds of change are driving need for alignment?

Business Process Change is making a bigger Impact

Past

Today
Definitions

**Enterprise architecture (EA)** is the process of translating business vision and strategy into effective enterprise change.
Enterprise Architecture (EA) is an integrated approach to organization-wide strategic, business, and technology planning. EA is one of approximately twelve functional areas mandated in federal law and guidance, to be overseen by agency Chief Information Officers (CIOs). These areas encompass the key governance processes that must work together to optimize how information technology is used to support the accomplishment of the agency’s mission.
Capital Planning and Investment Control (CPIC) and FEA

**Planning**
- Select Phase
  - Does the investment meet the business decision criteria?
    - 13 Actions
  - Does the investment support the Agency business/mission?
    - 1 Step

**Architecture**
- Business Alignment
- Technical Alignment

**Control Phase**
- Does the investment being managed within the planned cost, schedule and design?
  - 5 Actions
- Does the investment interoperate within the technology infrastructure?
  - 1 Step

**Evaluate Phase**
- Did the investment meet the promised performance goals?
  - 3 Actions
- Is there a need to update the architecture?
  - 1 Step
Agencies expect IT to support Rapid Response to Change with Optimal Efficiency in Motion, Economy of Effort, Energy in Execution, and Efficacy of Impact
Business / Mission Agility: What architectural style can I use that will maximize my ability to respond to rapid and impactful change?

Past

Business Process Change is occurring faster

How does rate of change impact architectural style?

Today
Service-oriented architecture (SOA) is a style of application architecture comprised of reusable components and services.
## Service Oriented Architecture (SOA)

### Definition

An approach for organizing and utilizing the discrete functions contained in enterprise applications that may be under the control of different ownership domains into interoperable, standards-based services. It provides a uniform means to offer, discover, interact with and use services to produce business outcomes consistent with measurable preconditions and expectations.

### Key Components

- **Enterprise SOA** combines two major components
  - Enterprise or Business Services Bus (ESB or BSB)
  - Component-based Development (CBD)

- Useful to think about SOA in terms of 3 architectural perspectives;
  - Architecture
  - Applications
  - Infrastructure

### Evolution

**Distributed Computing Evolution...SOA Maturity**

- Business logic for services based on loose coupling among business partners
- Separation of business logic and business rules from application processing, creating a service layer for easy modifications
- SOA principles to guide governance, architecture definition, design and deployment
- Simple, Multi-level, and Process Driven SOA

![Diagram showing the evolution of SOA](image-url)
SOA Concept Architecture

Simple Model to invoke reusable services across a network
SOA Entry Points

Agencies are generally using three entry points to drive SOA adoption:

– Business Process (BPM enables SOA)

– Build / Connectivity (Build Web services / Enterprise Service Bus (ESB))

– SOA Governance (Administration of services in Design time and Run time)
BPM, Critical SOA Enabler

Self-Service Business Pattern

Application Integration pattern
Extended Enterprise business pattern

Service provider (1) publishes a service description to a registry managed by Service Broker (2). Service Consumer (3) searches the registry for a service description that best matches their needs and orders (SLA) the service from the provider.
Using Business Process Entry Point:

- Enhanced Services Definition
- Improved Granularity
- Service semantics are business oriented
- Improved discovery across business domains, enables dynamic orchestration
BPM ignites SOA Impact

SOA implementations that deliver the most business value, broaden the impact with BPM as BPM puts a business face on SOA as a key enabler of process flexibility and Business Agility.

Together they will accelerate their respective and coordinated use.
## Connectivity using ESB

**Mission Innovation & Optimization Services**  
*Monitor and manage the runtime implementations at both the IT and business levels*

- **Interaction Services**  
  *Collaboration and I/T services*

- **Process Services**  
  *Manage the flow and control of service interactions*

- **Information Services**  
  *Capabilities to federate, replicate, and transform information sources*

**Enterprise Service Bus**  
*Transport services, event services, and mediation services to exploit implemented services*

- **Partner Services**  
  *Document, protocol, and mgmt capabilities to enable interaction of processes across domain boundaries*

- **Mission App Services**  
  *Mission capabilities that can be combined to form composite applications and processes*

- **Access Services**  
  *Bridging capabilities between legacy applications, pre-packaged applications, enterprise data stores*

**Infrastructure Services**  
*Optimize throughput, availability, and performance*

**Architecture, Standards, & Process**  
*Domain specific architectures, SoS architectures, technology standards, IS&S business processes*
SOA Governance

Applies policies, procedures, metrics and structured relationships in order to promote desired behavior and manage outcomes.

Design-time/Change-time

Service Consumer

Repository

Service Provider

Repository:
- WSDL
- Policy
- Service Def/Taxonomy
- Support Docs
- XML Schema

Registry:
- Service Def/Taxonomy
- WSDL URL(s)

SOA Ecosystem (Runtime)

Service Consumer (Discovers)
Service Provider (Publishes)
Registry (Promotes)

Data Storage
Security
Mediation
Governance
Messaging
Application Hosting
Management

AOPEA FEA SOA MGreer 08192010
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Getting the right services to the right consumer at the right time

• Publish services and enable discovery
• Optimize service selection with metadata
• Manage availability and performance
• Ensure consistent policy enforcement
• Govern the entire service lifecycle
FEA and SOA Strategic Relationship

Business Process Change is occurring faster (SOA)

Business Process Change is making a bigger Impact (FEA)
Why EA and SOA

Our ability to meet our current and future business goals is dependent on our Enterprise Architecture competency.
Relevance of Culture

What is culture?

- Culture is learned from experience and the interpretation of experience
- Culture operates at different levels of awareness; values, beliefs, attitudes, and behavior
- Changing culture cannot be separated from the associated organizational changes.
- As culture is grounded locally, it is highly resistant to change

Using Enterprise Architecture to enable SOA requires a mechanism to initiate positive change.

- There are cultural factors that can subvert any effort to gather data and build architectures

How does the FEA / SOA synergy impact the responsibilities of the Chief Engineer, the Chief Architect?

- Understand agency culture and how it can function as both a mechanism and a constraint
- Understand the politics of knowledge and knowledge management
- Identify and understand the impact and leverage formal and informal communities of practice.
FEA and SOA the on-ramp to Advanced Software

Lightweight Programming
- Javascript + XML

Rich User Experience
- Networking

Web as Platform
- Locations

Data as the Discriminator
- Auctions

Software Transcends the Device
- iPod

Harness Collective Intelligence
- Online Encyclopedia

Non-traditional Release Cycles
- Photos
Value Proposition

• An Enterprise Architecture focus will deliver a more meaningful use of SOA and tends to deliver real benefits.

• Specifically, Enterprise Architecture’s maturity makes SOA more adaptive and better able to meet business cycle time pressures, leading to better business decisions.

FEA and SOA will become co-dependent. FEA is essential in determining IT investment priority among SOA projects, and SOA will deliver the FEA performance improvement results faster, with greater agility for ongoing change.
Strategic Recommendations

• Understand the strategic relationship between FEA and SOA

• Learn more about SOA Governance issues.

• If acquiring a FEA tool, determine how it supports SOA. Look especially for tools that support the lifecycle management of services.

• Consider linking FEA and SOA via a Competency Center
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