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Let's Complete Each Other: EA and SOA

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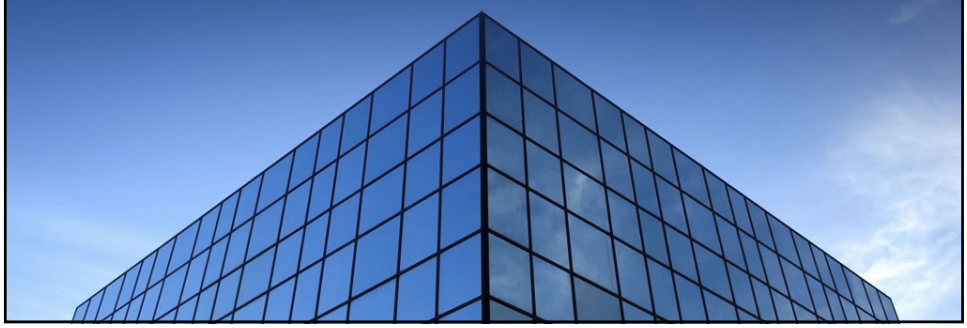

Content Summary

EA and SOA can complete each other via Enterprise Service Oriented Architecture (ESOA)

- Enterprise Architecture (EA) and its challenges
- How SOA can mitigates EA challenges
- Modeling EA in a service-oriented manner – ESOA
- Simplify ESOA modeling via horizontal and vertical partition –> domain segmentation and service federation

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Why We Need Enterprise Architecture

The Purpose of an Enterprise Architecture is to

- Have a blueprint and long-term guidance for an enterprise
- Facilitate decision making
- Support enterprise system modernization efforts
- Enhance collaboration and interoperation opportunities across enterprise
- Help to increase enterprise efficiency and effectiveness by streamline business processes and technology implementations across the enterprise
- Enable resource sharing and cost efficiency by identify common and sharable components and services
- EA for an enterprise .vs. city planning for a city

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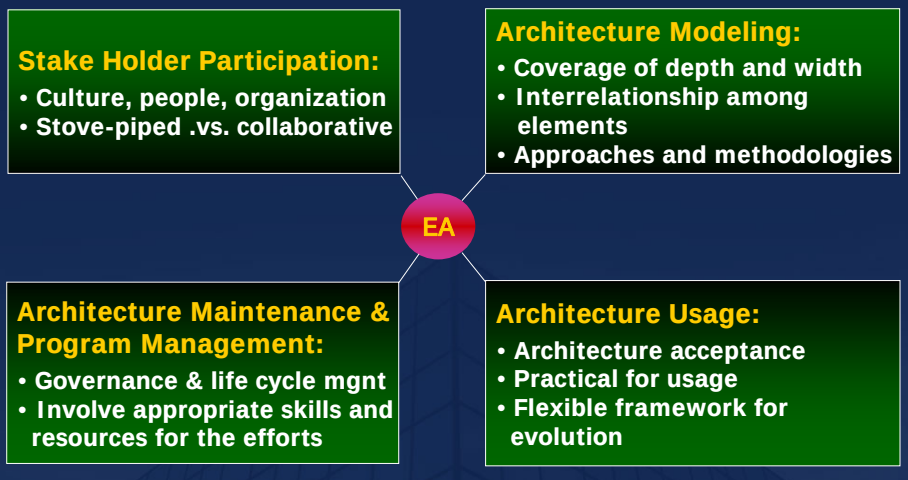
The Challenges in EA Practice



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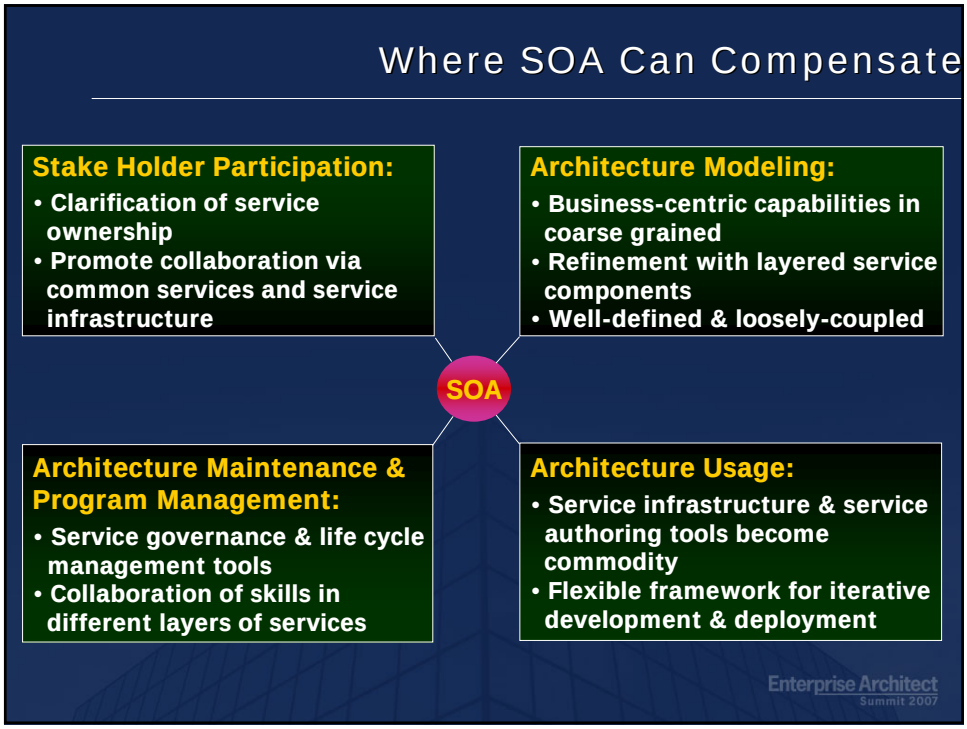
Where SOA Can Compensate



Stakeholder participation

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- **Lack of Stakeholder Participation, due to**
  - Traditional culture
  - Background of people
  - Organization structure
  - Competing priorities
  - Value proposition
- **Lack of clear guidance for collaboration in**
  - Target picture
  - Work direction
  - Roles and responsibilities
  - Effective approach and methods

SOA

- **Increase Stakeholder participation by**
  - Easier communication through service-oriented concept
  - Break organization boundaries via common services
  - Create common service roadmap across organizations
  - Reduce cost via shareable and reusable services
- **Paint a Clear Picture for Collaboration by**
  - Common service infrastructure
  - Identification of common services
  - Clarification of roles and responsibilities regarding to service providers and consumers
  - Self-sufficient service components with manageable scope in organizational level

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Architecture Modeling

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- **How to Model big picture**
  - Depth and breadth of architecture scope
  - Model matches audience
  - Right level of details
  - Not to jump into details too quickly and lost big picture
- **Produce meaningful models and conceptual abstraction in addition to data artifacts collection**
  - EA .vs. engineering process
  - EA approaches and methodologies .vs. EA framework
  - EA uniqueness for each enterprise
  - Insight and vision
  - Skilled architect for conceptual models

SOA

- **SOA can simplify big picture description**
  - Atomic service components
  - Loosely coupled, not hard-wired
  - Depth and breadth are covered by flexible layered components
- **SOA makes EA envisioning, planning, and modeling easier via**
  - Componentized and layered services
  - Loosely coupling
  - Iterative development
  - Matching different skills to different layers

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Architecture Usage

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- **Lack of EA product acceptance due to**
  - Stakeholder participation
  - Value proposition
  - The relevance of EA to specific projects
  - Gap analysis
- **Need flexible EA framework that can**
  - Connect the EA products and components together
  - Incorporate changes along the way
  - Be loosely coupled

SOA

- **SOA increase EA products acceptance by**
  - Better facilitate stakeholders' participation
  - Enable better ROI estimate across full spectrum of SOA benefits in a composite way
  - Can help to fill the gaps between EA products and individual project by layered services
- **SOA enables a flexible framework by**
  - Componentized services
  - Components loosely coupling
  - Dynamic service plug-in and update

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Architecture Maintenance & Program Management

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- **Challenge in EA lifecycle management and governance**
  - Uniqueness for each organization
  - Time and resource constraints
  - Effective tools
- **Challenge in Resources**
  - EA needs very special skill set
  - The bias from either technical or business perspectives
  - Need artistic ability with vision and insight to present reality via representational models
  - Lack of EA curricula in Universities

SOA

- **SOA based lifecycle management and service governance are easier by**
  - Building architecture maintenance into service lifecycle
  - Tools are developed rapidly for service lifecycle management and governance
- **SOA can ease the EA resource pain by**
  - Matching skills to manageable service scopes and layers
  - Ease the increasing demands for breadth in architecture competencies

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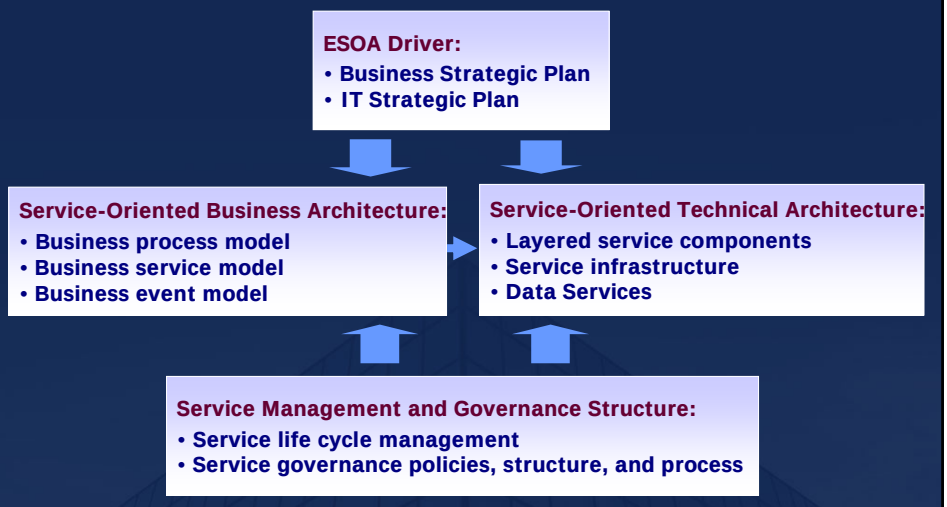
An Enterprise SOA (ESOA) Model



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What ESOA is About

SOA is an architectural style and modeling approach independent of its implementation technologies

- Emphasizes well-defined, loosely coupled, coarse-grained, business-centric, reusable and shared services, as well as associated infrastructure.
- Can be considered as a practical modeling approach for enterprise architecture (EA) development.
- Bridge EA with solution architecture and implementation by layered service components across business models, application models, and technology implementation
- Bridge the business process model with service model providing a better mapping of the business requirements to IT capabilities

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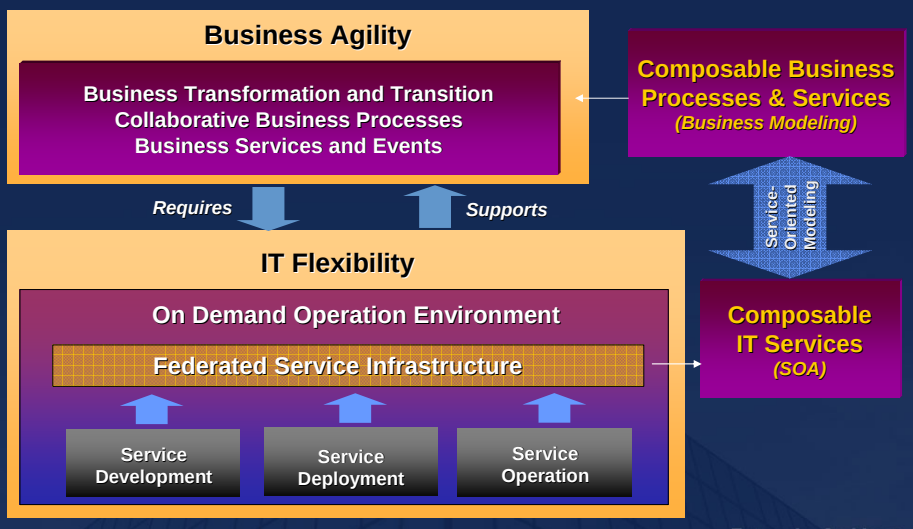
What ESOA means to an Enterprise



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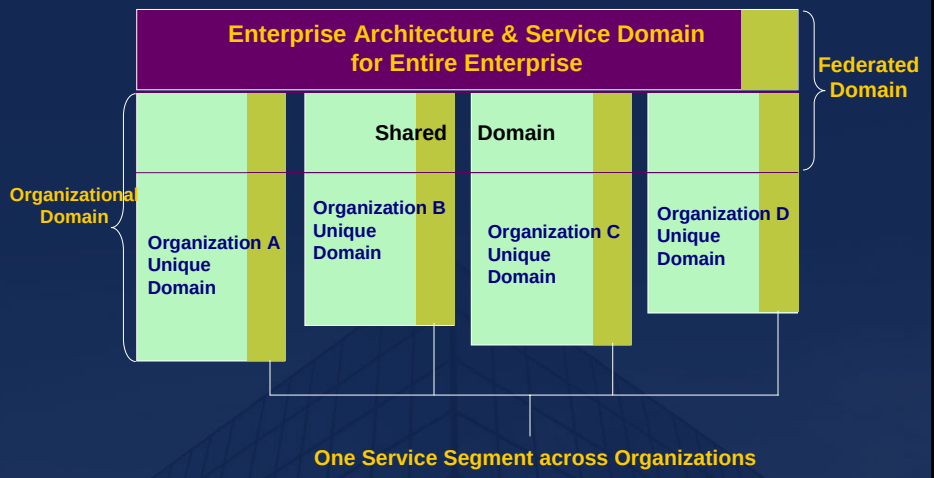
ESOA Major Benefits

- **Business Agility**
  - Easier for business process improvement
  - Convenient for business operation monitoring
  - Convenient in manipulation and change of process flow via BPM tools
- **Reuse and leverage existing assets**
  - Business services can be constructed from existing components
  - Legacy systems can be accessed via web service interfaces
- **Common infrastructure as commodity**
  - SOA infrastructure is becoming commodity by the use of COTS products
  - By enforcing standards, service components can be consolidated within a well-defined SOA infrastructure
- **Reduce development and maintenance cost**
  - Reuse of existing components will reduce development time and cost
  - Easier in incorporating new business requirements will reduce maintenance cost
- **Risk mitigation**
  - Reusing existing components reduces the risk in creating new ones
  - The commodity nature of infrastructure reduces risk in its support

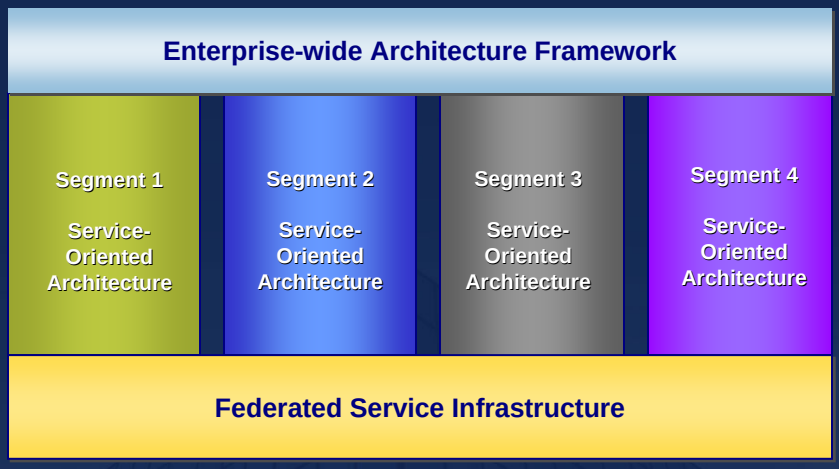
Approaches and Methodologies for ESOA Practice

- **SOA Planning with Enterprise View**
  - Take advantage from Enterprise Architecture exercise
  - Create enterprise level ESOA framework include: service categorization, service infrastructure, and service owners and stake holders identification
- **Segmentation: service domain vertical partition based on (LoB)**
  - Associate with the segment enterprise architecture (proposed by Federal CIO Office for Federal EA development)
  - Separate entire enterprise service domain into segments based on the line of business services, and identify services for each LoB
- **Federation: service domain horizontal partition for service provision**
  - Associate with the federated enterprise architecture (i.e. for Federal EA development)
  - Implement and host the services based on organization autonomy
  - Implement federated service infrastructure to enable federated enterprise architecture implementation
- **Service Componentization**
  - Service component: self-contained with well-defined service interfaces
  - Service components are layered, and associated between business, application, & data
  - Components are reusable and services are sharable
- **Iterative and Incremental: top-down, bottom-up, and middle-out**
  - Adopt SOA for newly modernized environment and applications
  - Integrate with remaining legacy applications
  - Evolve legacy applications towards SOA

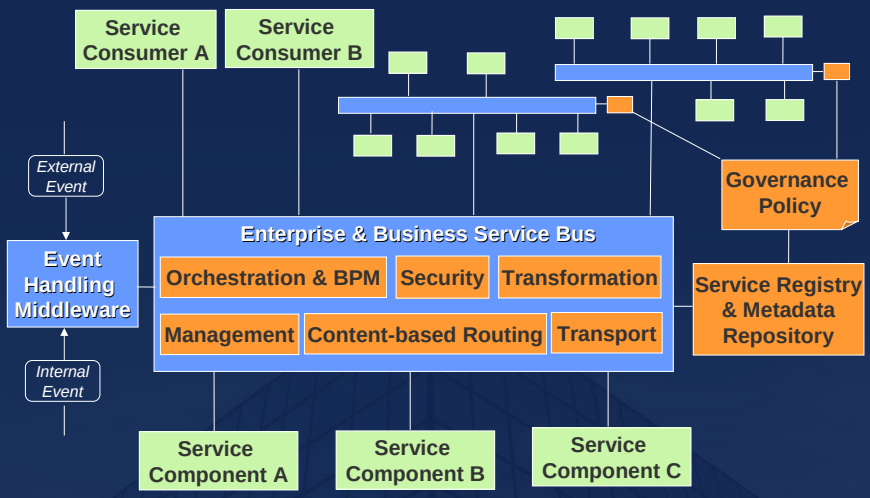
Enterprise Architecture Domains for Service Segmentation and Federation



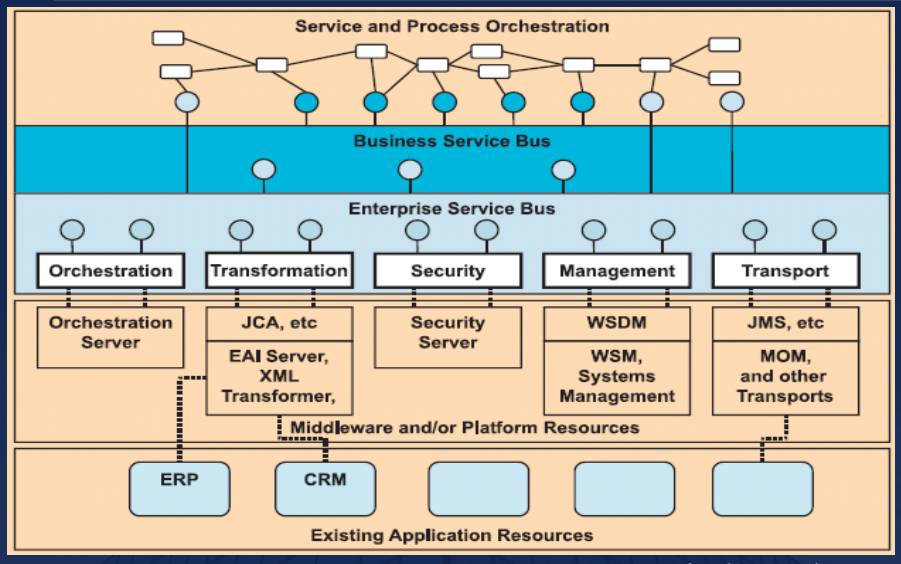
Federated and Segmented ESOA



Federated ESOA Service Infrastructure

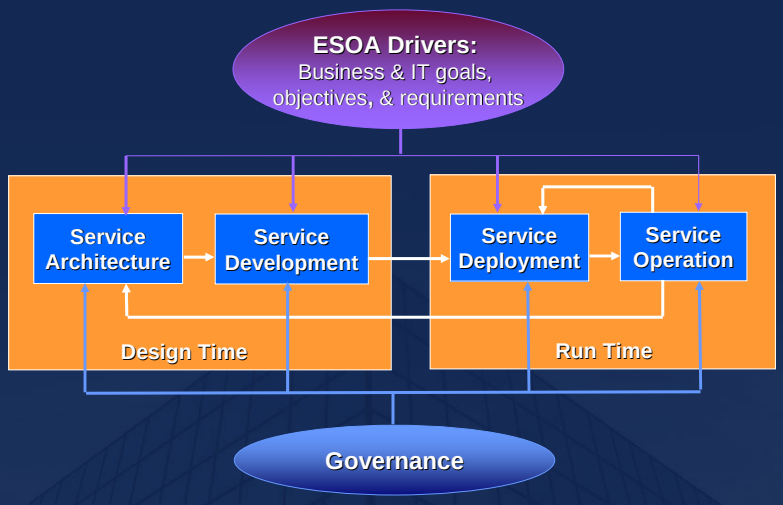


ESOA in Layers



** from CBDI Journal*

ESOA Service Life Cycle



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ESOA Service Life Cycle Components

Service Architecture	Service Development	Service Deployment	Service Operation
• Business process modeling • Business service modeling • Business event modeling • Layered technical service components modeling • Service infrastructure modeling • Data service modeling	• Infrastructure implementation • Policy and control-points implementation • Services and workflow implementation • User interface implementation	• Service packaging • Service change management • Services configuration • Service provision and orchestration • Identity and security management • Data integration	• Event correlation • Service monitoring • Operation analysis and improvement • Business process management • Workload and policy management

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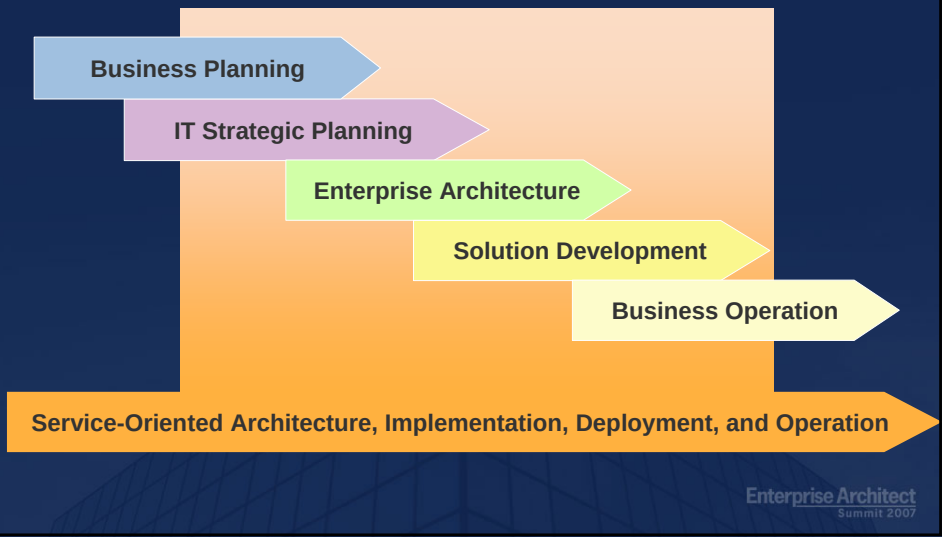
Where ESOA Applies to an Enterprise



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Estimate ROI for ESOA

Understand the full spectrum of SOA Benefits

- ROI for business agility
- ROI for asset reuse
- ROI for Common Infrastructure
- ROI from reduced development and integration cost
- ROI from maintenance cost
- ROI from risk mitigation

Assess ROI iteratively and compositely, as for SOA implementation

- Objectives for each service
- Cost for each service implementation
- Direct and indirect returns from the service
- Additional ROI obtained from reuse

inputs *guidance*

Reference Matrix for ROI

inputs *guidance*

IT Strategic Planning

Performance Measurement

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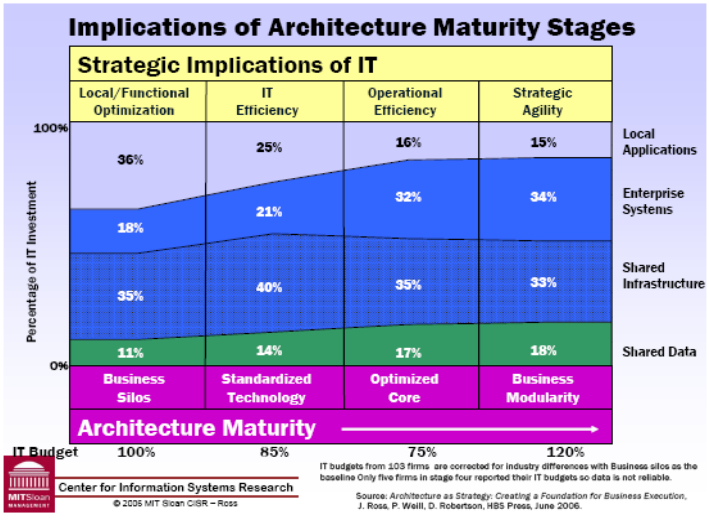
Successful and Usable ESOA

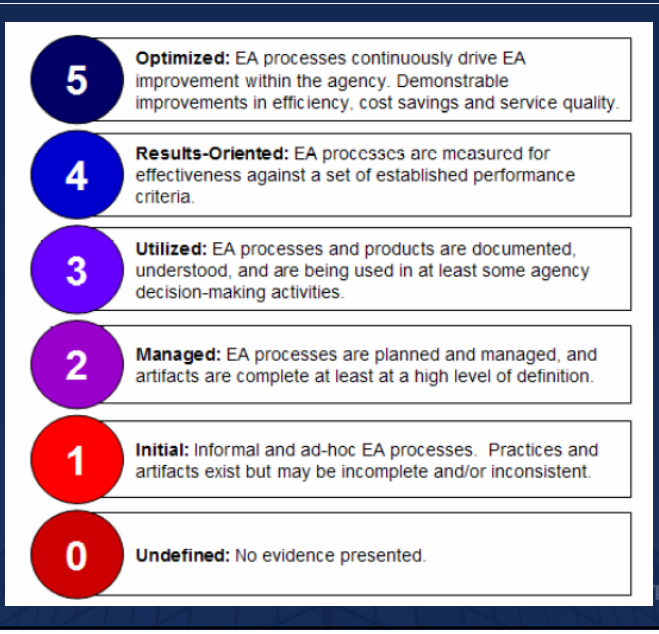
ESOA Assessment and Maturity Models
– Integration, Evolution, and Standardization

- Enterprise architecture maturity model
  - MIT, Center for Information Systems Research
  - OMB, Federal Government
  - Dept. of Commerce, Federal Government
- Service architecture maturity model
  - IBM Service Integration Maturity Model (SIMM) ?
- Service maturity model
  - Sonic (Progress Software), AmberPoint, BearingPoint, Systinet
  - HP, Oracle, EDS,

Implication of Architecture Maturity



OMB EA Assessment Framework



Architecture Capability Maturity Model - Dept. of Commerce

The five maturity levels:

- **Level 0: No architecture**
- **Level 1: Initial architecture**
- **Level 2: Under development architecture**
- **Level 3: Defined architecture**
- **Level 4: Managed architecture**
- **Level 5: Optimizing architecture**

Architecture Capability Maturity Model - Dept. of Commerce (continue)

The ten maturity aspects:

- Business linkage
- Senior management involvement
- Operating unit participation
- Architecture process definition
- Architecture development
- Architecture communication
- Governance
- Program management
- Holistic enterprise architecture
- IT investment and procurement strategy

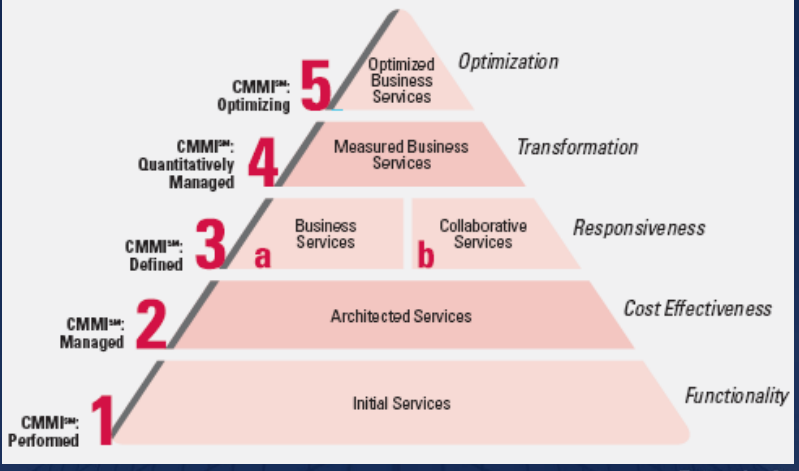
IBM SOA Maturity Model

Seven levels of service integration maturity Model for de-coupling and amount of flexibility achieved

1. Silo (data integration)
2. Integrated (application integration)
3. Componentized (functional integration)
4. Simple services (process integration)
5. Composite services (supply-chain integration)
6. Virtualized services (virtual infrastructure)
7. Dynamically reconfigurable services (eco-system integration)

SOA Service Maturity Model - Sonic, etc.

Figure 1: Service-Oriented Architecture Maturity Model Levels with Key Business Impact



ESOA Maturity Model Standardization

ESOA Maturity Models
– Evolution, and Standardization

- **Maturity Domains**
- **Maturity Assessment Aspects and Success Measures**
- **Maturity Levels/Stages**

Conclusion

Following topics are discussed, which provides a reference for EA and SOA integration via ESOA:

- EA Benefits and Challenges
- Where SOA can compensate – ESOA model
- What ESOA is about
- What ESOA means to an enterprise
- ESOA major benefits
- Approach and Methodologies for ESOA practice
- Reference for best practices
- Assessment for a successful and usable ESOA - maturity models

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