IBM SOA Architect Summit

SOA on your terms and our expertise
Business Architecture:
Architecting SOA With A Business Focus

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SOA Architect Summit Roadmap

What is the impact of SOA on current Enterprise Architectures?
- Alignment of Business and IT Architectures
- SOA Reference Models
- SOA Governance

How do you develop SOA with a business focus?
- Business Components
- SOA Design
- Business Process Management

How do you reuse applications in the context of SOA?
- Asset Discovery
- Application Reuse

How do you leverage information in an SOA?
- Information as a Service
- Master Data Management

How does my infrastructure support SOA?
- Service Management / QoS
- Security

SOA on your terms and our expertise
Agenda

- SOA Business Architecture Considerations
  - Business Strategy
  - SOA Design
  - Business Process Management
- SOA Business Architecture Best Practices
- IBM Capabilities to Support SOA Business Architecture
- Summary
Enterprise Architecture Links Business and IT  
Reconciling Business Requirements and IT Capabilities

Business Perspective

Business View

Business Analyst

Process/Operation Model

Business Process Model
Business Component
Business Information
Business Services

IT Perspective

IT View

IT Architect
Developer

Architecture/Execution Model

Process Choreography
UML Class Model
UML Data, XML, SQL Model
Service Model, WS-BPEL
Business Strategy Drives IT Decisions

IT’s Goal is to Flexibly Support Business Requirements
Service-Oriented Design Is An Evolutionary Approach

- **SOA builds on** well-established software architecture principles (such as information hiding, modularization and separation of concerns)

- **SOA adds** additional aspects (including SOA interaction patterns, service registries, reuse considerations)

- Service-oriented modeling **needs** techniques to support these aspects (service identification, specification, realization and implementation techniques)
Service Oriented Analysis, Modeling, and Design

- **Top Down Approach – Business Requirements** can be rendered as a Business Process Model
  - Articulate and model the business intent as a process
  - Process model becomes an input for service design

- **Meet-In-The-Middle Approach – Identification** of business goals and sub-goals
  - Goals and sub-goals correlate to candidate services

- **Bottom Up Approach – Existing IT assets** are discovered and evaluated as possible services
  - Identify existing components as candidate services
  - Assets can be transformed into service interfaces and implementations
Top Down SOA Approach

- Business Analyst
- Business Use Cases
- Business Requirements
- Story Board And/or Process Model
- Business Analyst
- WSDL
- Service Specification
- Non-Interruptible Recei...
Bottom Up SOA Approach

- Legacy application
- Business Requirements
- Business Analyst
- Business use Cases
- IT
- WSDL
- IT Service Specification
- IT New Application
- IT Business Analyst

- Interface Specification
- Story Board And/or Process Model
- Business Analyst
- Business Requirements
- Business Analyst

- Services (reusable functional components)
- Choreography (business rules and processes)
- IT

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Developing Business Process and Consumer Layers

- Consumers
  - Business Process
    - Composition; choreography; business state machines

- Channel
  - B2B

- Service Consumer
  - Service Provider

- Governance (managing the service portfolio)
  - Integration Infrastructure (Enterprise Service Bus)
  - QoS Layer (Security, Management & Monitoring Infrastructure Services)
  - Information Architecture (meta-data) & Business Intelligence
  - Governance (managing the service portfolio)

- Atomic Service
- Composite Service
- Registry

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Enabling Business Process Management Through SOA

- **Business process design**
  - Alignment of designed functionality with business requirements and performance objectives
  - Quality of the design (complete, correct, and consistent with best practice process design principles, standards and guidelines)
  - Integration across processes based on common business items or services

- **Business process implementation**
  - Alignment of operational organization with the process
  - Alignment of application services with process functionality
  - Integration with other applications and data via ESB
  - Use of application services components that support dynamic reuse and reconfiguration

- **Business process execution**
  - Monitoring of real-time process performance and trends against performance targets
  - Response to execution problems with effective interventions to restore performance
Developing the User Interaction Layer

*Portlet-based User Interface Components Provide Access to Services*

- Execute business functions through process and service layers
- Personalize interactions based on user identity and role
- Support workflow within portal execution space
Agenda

- SOA Business Architecture Considerations
- SOA Business Architecture Best Practices
  - Business Component Analysis
  - Service-Oriented Modeling and Architecture (SOMA)
  - Business Process Management
- IBM Capabilities to Support SOA Business Architecture
- Summary
Business Component Analysis

- The enterprise is mapped out as a set of categorized business components
- Heat map highlights components for analysis based on criteria such as gaps and efficiency
- Enables approaches to understanding how the business can be improved

<table>
<thead>
<tr>
<th>Business Administration</th>
<th>New Business Development</th>
<th>Relationship Management</th>
<th>Servicing &amp; Sales</th>
<th>Product Fulfillment</th>
<th>Financial Control and Accounting</th>
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<tbody>
<tr>
<td>Directing</td>
<td>Business Planning</td>
<td>Sector Planning</td>
<td>Sales Planning</td>
<td>Fulfillment Planning</td>
<td>Portfolio Planning</td>
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<td>Controlling</td>
<td>Business Unit Tracking</td>
<td>Sector Management</td>
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<td>Staff Appraisals</td>
<td>Product Management</td>
<td>Credit Management</td>
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<td>Account Administration</td>
<td>Product Directory</td>
<td>Sales</td>
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<td>Customer Accounts</td>
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<td>Product Administration</td>
<td>Marketing Campaigns</td>
<td>Customer Service</td>
<td>Document Management</td>
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<td>Purchasing</td>
<td>Credit Administration</td>
<td>Collections</td>
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<td>Branch/Store Operations</td>
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A **business component** is "a grouping of the people, technology, & resources delivering specific business value"

Components have well-defined interfaces, allowing them to interact smoothly with each other and to be 'snapped' in and out at will, like building blocks

The Interfaces of the Business Components Enable Identification of Candidate Business Services
SOMA (Service Oriented Modeling and Architecture)

Identification, Specification, Realization and Implementation of Services, Components and Flows

- SOMA is IBM's end to end SOA Solution development method
- SOMA is an integral part of the Rational Unified Process
  - UML Profile for Software Services
  - RUP SOMA
- SOMA has the following phases:
  - Service Identification
  - Service Specification
  - Service Realization
SOMA (Service Oriented Modeling and Architecture)

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Service Exposure Decisions Within Service Specification

- **Business Alignment:**
  - Is the service business relevant?
  - Is funding available for service development and management?
  - Is the service sharable?

- **Composability**
  - Is the service consistent with NFRs at the composite level?
  - Is service stateless?
  - Is the service self-contained? (Are there dependencies?)
  - Is the service technology neutral?

- **Externalized Service Description**
  - Is there an externalized service description e.g. WSDL?
  - Can the service be discovered and bound via the service description?
  - Does the description contain meta-data about itself?

- **Redundancy Elimination**
  - Can the service be applied to all processes where its function is required?
Designing the SOA Service Model

<< Input from: Business Componentization/Analysis >>
Pre-modeling activities

Identification
of Candidate Services and Flows

Specification
of Services, Components, and Flows

Realization
Decisions

<< Output to:
SOA Implementation >>

Consumers
Channel
B2B

Business Process
Composition; choreography;
business state machines

Services
atomic and composite

Service Components

Operational Systems

Packaged Application
Custom Application
OO Application

Governance (managing the service portfolio)

QoS Layer (Security, Management &
Monitoring Infrastructure Services)

Integration Infrastructure (Enterprise Service Bus)

Information Architecture (meta-data) &
Business Intelligence

Pre-modeling activities

<< Input from: Business Componentization/Analysis >>
Pre-modeling activities

<< Output to:
SOA Implementation >>

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Business Process Management Within The SOA Lifecycle

Process Orchestration
- Standards-based development environment

Process Execution
- Integrated deployment of business processes

Modeling and Simulation
- Capture and optimize business models

Business Monitoring
- Real-time visibility for coordinated action
Developing Business Process Models

- Enable business users to graphically model processes
- Support documentation and training for the organization and external parties
- Support simulation and analysis to substantiate process design decisions
- Generate code artifacts to support IT implementation of processes

**Architectural Benefit:**
- Support top-down approach to service and process design
- Coordination of process development across business stakeholders as well as interaction with IT organization to articulate process design
- Creation of artifacts to support process development and implementation
Building Process Solutions

- Business Process Choreography orchestrates services as *deployable* processes
- Integrate information and user interaction into process development and deployment
- Mediations to transform/route service requests and responses
- Enable inter and intra-enterprise (B2B) service integration

**Architectural Benefit:**
- Simplified, standards-based business process development
- Support for industry process and data models
- Invoke mediations for routing/transfoming requests between services
Monitoring Business Process Solutions

- Assemble dashboards on process behavior for different views/user perspectives
- Generate business event triggers and notifications via email, pager, SMS messages based on process events
- Generate preprogrammed responses based on process behavior
- Analyze process metrics over time to identify process trends

**Architectural Benefit:**
- Monitoring links to KPIs and Metrics defined by business analysts
- Integrates processes as part of an event-driven infrastructure
- Analyze trends in the business to enable ongoing optimization of solutions
Composite Business Services

*Business Services Provide the “Building Blocks”*

**Composite Business Services definition:**
A collection of integrated and related business services that provide a specific business solution and support business processes built on SOA.

**Business Services definition:**
A business function whose execution can be adapted at runtime based on business policy and user context.

- Designed at business level to represent a discrete business function (e.g. check credit, open account)
- Can provide flexible, adaptable behavior based on business policy and user context
- Provisioned through multiple communication channels
Composite Business Services
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IBM Products to Support SOA Business Architecture

Rational Unified Process for S?OMA
  Rational Method Composer
  Rational Software Architect
  WebSphere Business Modeler
  WebSphere Integration Developer

Development Services
  Integrated environment for design and creation of solution assets

WebSphere Portal Server

WebSphere Business Services Fabric
  WebSphere Business Monitor

WebSphere Process Server

Interaction Services
  Enables collaboration between people, processes & information

Process Services
  Orchestrate and automate business processes

Information Services
  Manages diverse data and content in a unified manner

Infrastructure Services
  Optimizes throughput, availability and utilization

Management Services
  Manage and secure services, applications & resources

Business Services
  Supports enterprise business processes and goals through business functional service

Partner Services
  Connect with trading partners

Business App Services
  Build on a robust, scalable, and secure services environment

Access Services
  Facilitate interactions with existing information and application assets
IBM SOA Service Offerings

Focused on SOA Business Architecture

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<tr>
<th>Service Offerings</th>
<th>Description</th>
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<tbody>
<tr>
<td>SOA Strategy</td>
<td>How do I get started in SOA?</td>
</tr>
<tr>
<td>SOA Diagnostic</td>
<td>I’ve started with SOA, how am I doing? What can I do better?</td>
</tr>
<tr>
<td>SOA Implementation Planning</td>
<td>There is a specific Business Area I want to improve using SOA – how should I approach it?</td>
</tr>
<tr>
<td>Business Process Management (BPM) Enabled by SOA</td>
<td>How can I leverage SOA to implement and improve business processes that meet my performance objectives, make better use of IT resources and give me a competitive edge?</td>
</tr>
<tr>
<td>SOA Design, Development and Integration Services</td>
<td>I’ve done the preliminary planning work, now I’m ready to develop and sustain SOA solutions</td>
</tr>
<tr>
<td>SOA Management</td>
<td>I’ve implemented SOA-based solutions, how can I manage them effectively to ensure ongoing benefit realization?</td>
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The Service Offering Lifecycle
Spanning the Full SOA Continuum

End-to-End Lifecycle

Strategy and Planning

Process and System Change

Ongoing Maintenance and Optimization

SOA Management Services

SOA Implementation Planning

SOA Design, Development and Integration Services

SOA Strategy

SOA Diagnostic

BPM Enabled by SOA Services

Typical client entry points
Summary

- **Designing SOA with a Business Focus requires:**
  - Linking Business and IT – normally through an Enterprise Architecture
  - Applying discipline and rigor to SOA Design
  - Business Process Management to design and implement business relevant services

- **Best practices for designing SOA based on a business focus implies:**
  - Decomposing the Enterprise into Business Components to design business-relevant service architectures
  - Use of SOMA to ensure an optimized service design for the enterprise
  - Application of tools and techniques to support business process modeling, assembly and deployment, and business process monitoring
  - Development and refinement of SOA Governance to enable a service lifecycle development approach and ensure business/IT linkage for SOA
Thank You
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