SOA Case Study:
A Practical Guide to SOA

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JK Enterprises (JKE) Case Study

JKE Enterprise Architecture
- Service Integration Maturity Model
- Defining and Enforcing SOA Governance
- Project Prioritization and Planning

JKE Business Architecture
- Business Component Analysis
- Service-Oriented Modeling and Architecture
- Identifying Areas for Improvement

JKE Application Architecture
- Exposing Services using Indirect & Direct Patterns
- Developing Service Flows

JKE Information Architecture
- Developing Data Federation
- Exposing Information Services

JKE Infrastructure Architecture
- Security Architecture
- Composite Application Management
JK Enterprises

Corporate Overview
- JK Enterprises is a premier supplier to retail channel, small business channel, and corporate customers
- Founded in 1935, now a well liked brand image
- High-touch approach to our customers
- Customers of all types can interact with us in a way that suits their individual needs
- Best service at the lowest cost
- Now with customer centers around the world
- Acquired Jensen Incorporated in 2000, which strengthened our corporate customer base
- Corporate customers are true business partners

Corporate Attributes
- 900 Offices, 6 Countries
  - Corporate Headquarters (2)
  - 350 Customer Centers
  - 500 Remote Sales Offices
  - 6 Call Centers
  - 8 Data Centers
- 11,000 employees
  - 1500 Corporate
  - 1000 Sales and Sales Support
  - ~15 per Customer Center
  - 150 per Call Center
  - 2000 in IT

Line of Business Organization

CEO

Commercial
- Sales
- Service
- Credit

Retail
- Sales
- Service
- Credit

e-business
- Sales
- Service
- Credit
JK Enterprises

**Envisioned Future State**
- The most profitable high-touch company in the industry
- Aggressive growth with minimal risk
- Optimized responsive corporate organization
- A company that leverages its strategic investments
  - Best Web Site in the industry
  - Expert Sales force
  - Global CRM
  - Sales Focused Call Centers

**Key Initiatives**
- Grow organically and leverage our size
  - 100,000 new customers this year
  - Increase cross-sell ratio to over 2.0 in 24 months
- Multi channel integration
  - Access any service from any channel with consistent experience
  - Then move customers toward lower cost channels
- Business transformation and optimization
  - Optimize then grow - organization and processes
  - Remove redundancies - centralized shared services
  - Shift our focus to strategic functions - outsource high cost tactical business functions, invest in the rest
- Control access to information to ensure appropriate security

**Future Organization**

- **CEO**
  - LOBs
- **CIO**
  - VP Development
    - Development
    - Release Engineering
    - Process Improvement
  - VP IT Operations
    - Service Support
    - Service Delivery
    - Solution Deployment
    - Infrastructure
- **CTO**
  - Project Management
  - Risk, Security, Compliance
Agenda

- Enterprise Architecture
- SOA Business Architecture
- SOA IT Architecture
  - Application Architecture
  - Information Architecture
  - Infrastructure Architecture
- Getting Started
SOA and Enterprise Architecture: Best Practices

Goverance

Enterprise Architecture:
- Assess SOA Readiness and Maturity
- SOA Governance
- Business Component Design

SOA Design:
- Service Identification
- Service Specification
- Service Realization
- Service Implementation

SOA Development/Deployment:
- Developing/creating Services
- Developing Information Services
- Developing User Interaction and Collaboration Services
- Developing Business Process Services

SOA Management:
- Service Infrastructure Considerations
- (Performance, Security, Virtualization)

JK Enterprise Projects

JK Enterprises Project Prioritization & Planning

Enterprise Architecture Models

SIMM

SGMM

SOA on your terms and our expertise
Service Integration Maturity Model (SIMM) – Next Steps

- **Business**: Business Process Integration, Business Service Decomposition
- **Organization**: IT Transformation, IT Governance, SOA Governance, SOA and IT Governance Alignment
- **Methods**: Move to SOA-based Design Methodology, Service Oriented Modeling, Process Integration via Services
- **Applications**: Objects, Components, Choreography Assembly
- **Architecture**: Layered Architecture, Component Architecture, Focus on SOA Foundation
- **Information**: LOB or Enterprise Specific, Information As a Service, Deploy Common Information Services
- **Infrastructure**: Standards, SOA Infrastructure Standard, Common SOA Environment

Levels:
- Level 1: SOA on your terms and our expertise
- Level 2: Business Process Integration
- Level 3: Componentized Business offers Services
- Level 4: Processes Through Service Composition
- Level 5: Geographically Independent Service Centers
- Level 6: Mix and Match Business and Location Capabilities
- Level 7: Governance through Policy
SOA Governance
Defining SOA Governance at JK Enterprises

Tailor SGMM
Create Project Proposal

Execute the “JKE SOA Governance Project”

Identify SOA Business and IT Principles
Determine Existing Governance Structure
Define CoE Structure

Create the SOA Governance Framework

Roles
Processes
Policies
Metrics
Quality Gates

Implement Tools and Infrastructure
Refine Operational Environment

SOA on your terms and our expertise
SOA Governance
Enforcing Governance at JK Enterprises

Define Governance Policy
- Rational Method Composer
- WebSphere Business Modeler

Review Service Lifecycle
- Business Requirements Traceability

Service Design and Development
- Implement Policies
  - Service Reuse
    - WebSphere Service Registry and Repository
  - Architectural Compliance
    - Governance Policy and Best Practices
  - Access Method
    - WebSphere Integration Developer

Enforce Policies
- Service Reuse
  - WebSphere Service Registry and Repository
- Architectural Compliance
  - SOA Design Review
- Service Management
  - Tivoli Composite Application Manager for SOA
  - Tivoli Change and Configuration Mgmt DB

SOA on your terms and our expertise
Agenda

- Enterprise Architecture
- **SOA Business Architecture**
  - SOA IT Architecture
    - Application Architecture
    - Information Architecture
    - Infrastructure Architecture
- Getting Started
## Business Analysis

### Identifying Business Components

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<thead>
<tr>
<th>Target Competency:</th>
<th>Base</th>
<th>Competitive</th>
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### Business Administration
- **Directing**
  - M Business Planning
  - L Sector Planning
  - M Account Planning
  - M Sales Planning
  - L Fulfillment Planning
  - M Portfolio Planning

### New Business Development
- L Business Unit Tracking
- M Sector Management
- M Relationship Management

### Relationship Management
- M Credit Assessment

### Servicing & Sales
- M Product Management
- L Credit Assessment
- M Sales Management
- M Fulfillment Monitoring
- M Reconciliation

### Product Fulfillment
- H Product Fulfillment
- H Customer Accounts

### Financial Control and Accounting
- M General Ledger

### Executing
- L Account Administration
- H Product Administration
- M Purchasing
- M Marketing Campaigns
- H Credit Administration
- M Customer Service
- M Collections
- M Document Management

### Controlling
- M Staff Appraisals
- M Product Management
- M General Ledger
- M Credit Administration

### Business Analysis
- Base
- H M L
- M L
- M L
- L H M
- M L

### Business Planning
- Directing
- Controlling
- Executing

### Financial Control and Accounting
- L H
- L M
- M L
- L L
- M L
Business Analysis
*Identifying Business Components*

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### Directing
- **Business Administration**
  - Business Planning (M)

### Controlling
- **Business Unit Tracking** (M)
  - Staff Appraisals (L)

### Executing
- **Account Administration** (L)
  - Product Administration (M)
  - Purchasing (H)
  - Branch/Store Operations (L)
  - Product Directory (L)
  - Marketing Campaigns (L)
  - Credit Administration (M)
  - Customer Service (H)
  - Collections (L)
  - Document Management (M)
  - Sales (H)
  - Sales Fulfillment (L)
  - Product Fulfillment (M)
  - Customer Accounts (L)

**Cost control opportunity**

**Revenue / Profit improvement opportunity**

**Cost control opportunity**

**'Hot' Component**
Business Analysis

Identifying Improvement Areas at JK Enterprises

Target Competency: Base, Competitive, Differentiated

Investment Review: Contribution, Cost (H, M, or L)

‘Hot’ Component

- Negotiate volume discounts based on combined volume of all departments
  - Decrease negotiated cost of automated credit report by 20%
  - Automate 75% of credit report retrievals
- Implement consistent business rules to improve risk management
  - Decrease number of credit report retrievals by 10%

- Develop optimized cross-channel account application process
  - Increase cross-sell ratio to 2.0
  - Add 500 new corporate customers
  - Improve STP of applications by 35%
  - Reduce call center calls from sales force and offices by 30%

- Automate manual tasks for creating and administering accounts
  - Decrease cost of account activation by 50%
  - Decrease time to open account by 50%

- Decrease paper processes by automation of manual tasks
  - Increase electronic applications by 25%
Defining Solution Scope

Business Context Diagram

Customer

CSR (Store)

Account Open Request

New Account Request

Account Manager (HQ)

Account Requests

eForms

Credit Scoring Partner

Account Owner (HQ)

Real-time Collaboration re: Account History

Portal

Account Open Request

Account On-Boarding

Forms

Account History
Service Design via SOMA

Service Identification

Domain Decomposition

- Techniques:
  - Process Modeling Tools
  - Design of KPIs/Metrics

- Services Identified
  - Open Account
  - Account Activation
  - Account Verification

Goal Service Modeling

- Techniques
  - Requirements Planning Tools
  - Design of KPIs/Metrics

- Services Identified
  - Determine Applicant Eligibility
  - Address Verification

Existing Asset Analysis

- Techniques
  - Asset Analysis Tools
  - Interviews/Documentation

- Services Identified
  - Account Inquiry (CICS 2.2)
  - AR Setup (CICS 2.2)
  - Account Setup (CICS 3.1)
  - Create Account (SAP)
Service Specification

Applying The Service Litmus Test

- **Candidate Service Name:** AR Setup

- **Business Alignment:**
  - Is the service business relevant? **YES**
  - Is funding available for service development and management? **YES** (Governance Board)
  - Is the service sharable? **YES**

- **Composability**
  - Is the service consistent with NFRs at the composite level? **YES** - As per current requirements
  - Is service stateless? **YES**
  - Is the service self-contained? (Are there dependencies?) **YES** – No Dependencies
  - Is the service technology neutral? **Implementation is CICS 2.x - technology neutral**

- **Externalized Service Description**
  - Is there an externalized service description e.g. WSDL? **NO** - done as part of service creation
  - Can the service be discovered and bound via the service description? Following service creation
  - Does the description contain meta-data about itself? Following service creation

- **Redundancy Elimination**
  - Can the service be applied to all processes where its function is required? **YES**
SOMA Service Specification
Defining the “Account Receivable (AR) Setup” Service

Building the Service Message Model
Designing the Service Components

Rational Software Architect

SOA on your terms and our expertise
Service Specification
Service Model for “Account Activation”

Consumers
Sales Application
Central Office
Sales Application
Regional Office

Business Process
Composition; choreography; business state machines

Services
Atomic and composite

Services Components
J2C
Message Flow

Operational Systems
(Customer (CICS 2.x)
Billing (CICS 3.1)
GL (SAP)

Indirect exposure
Indirect exposure
Direct exposure
Indirect exposure
Create from scratch
Third-party reuse
SOMA Service Realization

Designing the implementation for the “AR Setup” Service

- **Architectural Considerations**
  - Implementation is CICS 2.2
  - WebSphere MQ on mainframe
  - Security requirements (RACF)
  - Alternatives
    - ESB Integration
    - Custom EJB Development
    - J2C Adapter
    - Application-level messaging

- **Architectural Decisions**
  - ESB Integration
    - Security requirements
    - Availability requirements
    - Message augmentation/transformation
  - Support for both synchronous and asynchronous interactions
  - Compensatory service need to be designed and deployed
Agenda

- Enterprise Architecture
- SOA Business Architecture
- **SOA IT Architecture**
  - Application Architecture
  - Information Architecture
  - Infrastructure Architecture
- Getting Started
The End-to-end Account Opening Solution

People

Internet/Intranet Portal

Information

Account History Service
- Customer
- Account History
- Customer Orders

Account Opening Service
- Customer Application
- Account Status
- Customer Application

Account Info Service
- Customer
- Account Info
- Customer Account

Process

Account Open Process
- Check Application
- Credit Policy
- Create Account
- Confirm Account
- Receive Request
- Account History Service
- Account Info Service
Developing the Process Model
Completing the “Account Open” Process Model

Design and Simulation of the “Account Open” Business Process Model

Collaborative Development of the “Account Open” Business Process Model

WebSphere Business Modeler
WebSphere Business Modeler Publishing Server

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Application Architecture

“Account Setup” Service (Billing System)

Direct Exposure
CICS 3.1

Service Creation
With CICS TX 3.1
Rational Developer for System z
Application Architecture
“Account Inquiry” Service (Customer Management)

Indirect Exposure
J2C Adapter to CICS

Adapter Development
WebSphere Integration Developer

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Application Architecture
“Create Account” Service (SAP)

Indirect Exposure to SAP

Developing The SAP Adapter Instance

Setting SAP Adapter Properties
Selecting BAPIs For Adapter Operations

WebSphere Adapter for SAP Software

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Service Reuse

Integration with the Service Registry

Browsing for Services and Publishing Services with the Web Interface

Browsing for Services with the Eclipse Interface

WebSphere Service Registry and Repository

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Application Architecture
Developing Basic and Composite Service Flows

Develop Service Flows for “Determine Eligibility” and “Account Activation” Services

WebSphere Integration Developer
Information Architecture
Data Federation, XML Retrieval and Data Cleansing Services

Building Federation Services

Table: INFORMIX ACCOUNT
- id: Informix
- DW: ibmpassword

Table: JKE CUACCOUNT
- Instance: DB2
- id: administrator
- pw: ibmpassword
- INFORMIX Server Name: ol_plstew

DB2 Federation Server

Building Native XML Retrieval Services

WebSphere Federation Server

DB2 v9 Viper

Building Account Application Data Cleansing Service

WebSphere Quality Stage
Information Architecture

Exposing Information Services

Registering Information Services

IBM Information Server
Process Design and Deployment
Assembly and Deploy

WS-BPEL Process Implementation

“Account Open”
WS-BPEL Implementation

Wiring the Components for the “Account Open” Process

WebSphere Integration Developer
Process Monitoring and Management

**Building BPM Monitoring Components and Dashboards**

- Monitoring Credit Risk
- Building Components to Monitor Account Opening Duration

**IBM SOA Architect Summit**

**WebSphere Business Monitor**

**WebSphere Dashboard Framework**

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Building User Interaction Services

- **Developing and Deploying the “New Account” Application**

- **Building Role-Specific Portlets and Dashboards**

**Tools and Frameworks**

- Lotus Forms
- WebSphere Dashboard Framework
- WebSphere Portal
Deploying the Solution Architecture

Implementation Topology for JK Enterprises

- Account Open Process
- WebSphere Process Server
- WebSphere Enterprise Service Bus
- Determine Eligibility
- WebSphere Application Server
- DataPower Security Gateway
- Address Verification Service (external)
- Account Activation
- WebSphere Message Broker
- WebSphere Service Registry and Repository
- Create Account
- SAP
- AR Setup
- CICS 2.x
- Account Inquiry
- IBM Information Server
- Account Setup
- CICS 3.1
- SOAP/HTTPS
- SOAP/HTTP
- SOAP/JMS
- Direct Call
- SAP Adapter
- CICS Adapter
- SOAP/HTTP
- SOAP/HTTPS
- IBM SOA Architect Summit
JK Enterprises Security Architecture
Infrastructure Architecture

Composite Application Management

Configuring Service Management Agents

Monitoring Account Opening Performance and Availability

Tivoli Composite Application Manager for SOA

Tivoli Enterprise Portal

SOA on your terms and our expertise
Agenda

- Enterprise Architecture
- SOA Business Architecture
- SOA IT Architecture
  - Application Architecture
  - Information Architecture
  - Infrastructure Architecture
- Getting Started
SOA Adoption: Tactical and Strategic Action Combined

SOA Goal
- Market return through transformation: quicker time to production, lower costs, competitive differentiation

Two Primary Roadmap Perspectives
- **Strategic Vision**
  Business and IT statement of direction which can be used as a guideline for decision making, organizational buy-in, standards adoption

- **Project Plans**
  Implementation projects to meet immediate needs of the current business drivers

Market Return through Transformation
Strategic Vision
Incremental Adoption
Why IBM?

Trusted, experienced guidance based on 5700 customers*

- Simplicity & robustness for consumability and confidence
- Investment protection through open standards
- Pioneering metrics for SOA and agility
- End-to-end processes based on industry best practices
- Basic to advanced to grow as your needs evolve
- Only vendor across people, process, and information

*# of Customers using our SOA offerings
Why IBM for SOA?

IBM understands service orientation and your business

**Expertise in aligning business and IT processes**
- 7500+ certified SOA consultants, architects, IT specialists
- Dozens of SOA-enabled business solutions

**Thriving ecosystem of partners (ISVs, SIs, Resellers)**
- 2500+ partners in SOA community
- 3500+ assets in SOA Business Catalog

**Extensive Industry experience and best practices**
- Over 4000 customers worldwide
- SOA Entry Points, SOA Reference Architecture, SIMM

**Unmatched breadth and depth of products**
- Over $1B/yr invested in SOA
- Leadership in open standards & 300+ SOA-related patents

**Leadership in Governance & Service Lifecycle Management**
- IBM SOA Governance & Management Method that spans the services lifecycle
Let's Go!
*Build on SOA Successes for Greater Business Value*

1. Continue to discover the value of SOA
   - Not just doing the same thing a different way
   - SOA is not just about technology, but technology’s integration with business insight

2. Get Assessed! SOA Self Assessment

3. Evaluate and select a SOA project

4. Arrange for a SOA Workshop to begin your SOA journey

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"...IBM is the leader in the development of SOA intellectual property.... with firm-wide SOA investment of $1 billion, IBM will leverage cutting-edge R&D, leading to quicker SOA value and reusable SOA assets for clients."

*The Forrester Wave™
North American SOA Integration, Q3 2006, September 2006*
IBM SOA Architect Summit

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