CORBA Investment Reuse

Strategies for Deployment of Web Services and Reuse of CORBA Business Applications
Agenda

• Business Concerns
  – Business Focus
  – Limiting Enterprise Complexity
  – Agile Systems
  – CORBAConnect

• Components for Success
  – Hierarchy of Patterns
  – Application Patterns for Web Services
  – IONA Methodology

• Practical Examples
  – IONA Reference Architecture
  – Web Services at work
Business Concerns

- Solution Focused
- Become and Remain adaptable
- Implementations of business processes and Access to them must be flexible and extensible.
- Optimization and Economy
Enterprise Complexity

• A Competitive Enterprise is composed of:
  – Resource Management
    • Resources of people, services, & product
  – Knowledge Management
    • Markets, Strategic Relations, Technologies, etc.
    • Data Management, Trend Analysis, EIS
  – Business Solutions
    • Based on conclusive market analysis
    • Supported and encouraged by Knowledge Mgt
Flexible Systems

- Facilitating the Business Concerns
  - Use existing business systems
  - Build on existing architecture
  - Use existing skills
  - Prepare for business extensions
  - Expose business process to wider audience

- Address Enterprise Complexity
  - Use existing business systems
  - Prepare for business extensions
  - Prepare for technology evolution
  - Manage business latency
Components for Success

• Hierarchy of Patterns
• Patterns for Web Services
  – Access & Application Integration
  – Solution depends on required complexity
• Practical Examples
  – IONA Reference Architecture
  – Web Services in Finance
  – Web Services in Telecommunications
Hierarchy of Patterns

E-Business Patterns

Integration Patterns  Business Patterns

Architectural Patterns

Application Patterns  Runtime Patterns

Design Patterns

Creational Patterns  Structural Patterns  Behavioral Patterns
IONA Reference Architecture
Patterns for Web Services

• Two Integration Patterns
  – Access Integration
  – Application Integration
• Solution depends on requirements
• Four scenarios – Four solutions – Four application patterns
  – Direct Connection
  – Router
  – Broker
  – Managed Process
Direct Connection

- Used when:
  - There is a single application to integrate
  - Typically synchronous mechanism
  - Data types are simple
  - Interface contract is simple

- Benefits:
  - Supports a structured exchange
  - Leverages existing skills
  - Minimizes application complexity
  - Leverage legacy investment
Router

- Use when:
  - CORBA version or vendor impedance
  - Complex or nested data types require transformation
  - Impedance of interface granularity
  - Single application integration

- Benefits:
  - Leverage existing skills
  - Leverage legacy investment
  - Minimize application complexity
  - Minimize enterprise complexity
Broker

- **Used when:**
  - Multiple interfaces or systems
  - Request decomposition
  - Complex data type transformation
  - Simple business rules

- **Benefits:**
  - Leverage existing skills
  - Leverage legacy investment
  - Minimize enterprise complexity
  - Hide complexity of back-end systems
  - Decompose complex requests
Managed Process

- **Used when:**
  - Support for long running transactions
  - Complex data type transformation
  - Multiple step business transactions
  - Request decomposition
  - Multiple system & multiple interfaces
  - Complex business rules

- **Benefits:**
  - Automate long running transactions
  - Decompose complex requests
  - Leverage existing skills
  - Leverage legacy investment
  - Hide complexity of business transactions
Practical Examples

- Web Service example in Finance
- Web Service example in Telecom
Web Services in Finance

- Scenario
  - Established Brokerage
  - Large mainframe/CORBA investment
  - Wants to expose business systems
    - Advisors and Managers
  - Doesn’t want to do the “Branding”
Web Services in Finance

• Requirements
  – Reuse existing mainframe and CORBA investment
  – Leverage existing skills
  – Expose existing systems with minimal effort
  – Expose existing systems using uniform technology
  – Allow for growth (extensible and scalable)
Web Services in Finance

• Strategy
  – Single point of access
    • Uniform access
    • Authentication, etc.
  – SOAP Listener
  – Expose existing CORBA interfaces
  – New components limited
    • Data Transformation
    • Exception management
    • Handling complex data types
    • Increase granularity of existing interfaces
Web Services in Finance

• Elaboration
  – Analyze existing CORBA IDL
    • Data Types
    • Exception handling strategy
    • Granularity and Sequence
  – Determine integration strategy
    • Insulating interface (WSDL design)
    • Exception handling strategy
    • Sequence design
  – Implement integration strategy
Web Services in Finance

• Implementation
  – J2SE SOAP-CORBA adapter
    • Implements WSDL
  – Use Router pattern to insulate complexities
  – No changes to existing CORBA investment
Web Services in Finance

Presentation Tier

Workspace Tier

Enterprise Tier

Resource Tier

Partner

J2SE Client

SOAP Listener

«protocol port»

«realize»

«reside»

«realize»

WSDL

«protocol port»

«CORBA Interface»

Router IDL

«realize»

Main Frame

«protocol port»

Router

«CORBA Interface»

IIOP

IIOP

SOAP

WSDL

IIOP

Making Software Work Together™
Web Services in Finance

• Benefits
  – Router makes solution extensible
  – Re-uses existing investment
    • No changes to mainframe components
    • No changes to existing CORBA components
  – Leverages existing skills base
  – Simple implementation introduces new skills
    • Short learning curve
Web Services in Telecom

• Scenario
  – Customer call center
    • .NET client
  – Web based customer support
  – Existing CORBA provisioning systems
  – Wants to use existing systems for .NET and Web
Web Services in Telecom

• Requirements
  – Reuse existing business systems
  – Provide a single access point to existing systems
  – Provide .NET integration
  – Reuse existing JSP investment
Web Services in Telecom

• Strategy
  – SOAP access port can support both Web and .NET access
  – Web framework will require very few changes
  – Reuse existing CORBA investment
    • No changes
  – New Components limited
    • Access integration via SOAP broker
    • Broker distributes calls to existing components
Web Services in Telecom

• Elaboration
  – Analyze existing CORBA interfaces
  – Analyze transaction sequences
    • .NET sequences
    • Web sequences
  – Define WSDL
  – Define Broker responsibilities
    • Exception handling
    • Sequence and System Collaborations
Web Services in Telecom

• Implementation
  – SOAP Listener
  – Broker simulator
  – Implement WSDL
  – J2SE CORBA client integrated with SOAP Listener
  – .NET integration
  – JSP integration
  – Broker implementation
Web Services in Telecom

Presentation Tier

Workspace Tier

Enterprise Tier

Resource Tier

Web User (from Actors)

Customer Agent (from Actors)

WebServer

Servlet

SOAP Listener

J2SE Client

WebServer

Servlet

SOAP Listener

J2SE Client

VM Provisioner

Web Provisioner

Wireless Provisioner

VoiceMail IDL

Web IDL

Wireless IDL

CORBA Interface

Extended IDL

Web User

Customer Agent

Web Server

SOAP Listener

J2SE Client

WebServer

Servlet

SOAP Listener

J2SE Client

VM Provisioner

Web Provisioner

Wireless Provisioner

VoiceMail IDL

Web IDL

Wireless IDL

CORBA Interface

Extended IDL

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Web Services in Telecom

• Benefits
  – Extensible and Scalable
  – Uniform access to business services
  – Reduces enterprise complexity
  – Reduces IT redundancy
  – Leverages existing skills
  – Leverages existing CORBA investment
Conclusion

• Web Services for Access Integration  
• Web Services for Application Integration  
• Patterns for increasing complexities  
• Uniform access to existing business systems  
• Uncouples presentation components from business systems  
• Enables extensible services and flexible integration points  
• Reduces enterprise complexity  
• Opportunity for increased return on investment
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