

Leaping from Legacy to SOA with JBOSS

Fiserv - GalaxyPlus

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Introduction & Agenda

- About Fiserv - GalaxyPlus
- Business/Technical Challenges
- JEMS Solution
- Project Use Cases
- Design and Implementation
- Overall Impact

- Fiserv
 - ✓ Financial services IT solutions
 - ✓ World's largest provider to financial institutions
 - ✓ Over 17,000 clients worldwide
- GalaxyPlus
 - ✓ Credit union division
 - ✓ Core systems, Internet banking, CRM
 - ✓ ASP and in-house systems

2005 Business/Tech Challenges

- Business Need for SOA
 - ✓ Customer/vendor partnerships
 - ✓ Provide a more open core system
 - ✓ Legacy system limitations
- Fiserv Integration Initiative
 - ✓ FiAPI – Fiserv API
 - ✓ Fiserv “best of breed”
 - ✓ GalaxyPlus yet to be a player

Two Birds, One Stone

- Meet both challenges in one project
 - ✓ Automated Account Creation (AAC)
- Constraints
 - ✓ 6-month timeframe
 - ✓ AIX/IBM
 - ✓ No charge to our customers

The Big Hurdle

- Legacy system
- Legacy database
- Legacy toolkit
- Proprietary OLTP

Legacy System

- Mainframe, dumb terminal architecture
- Monolithic application
- VB GUI Façade
- 6 million lines of code
- Ported from Basic to PL1 to C
 - ✓ Data General to Unix

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Legacy Database

- DataTek/SQL
 - ✓ Ported from Data General
- No JDBC driver available
- Precompiled SQL in C or PL1 only
- A replacement was assumed

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Legacy Tools and OLTP

- Legacy toolkit
 - ✓ VI editor
 - ✓ Shell scripting
- Proprietary OLTP and messaging system
 - ✓ New data too large and complex

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The Big Leap

- Java and Web Services
- JBoss and JEMS
- Custom JDBC driver

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Java and Web Services

- Practical reasons
 - ✓ Multi-platform
 - ✓ Open source tools
 - ✓ More cost-effective
- Web services
 - ✓ WSDL, SOAP, HTTP(S)

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Java and XML

- Rewrite business tier
 - ✓ "Harvest" the business logic
- XML instead of proprietary formats
 - ✓ Schema-based (XSD)
 - ✓ Java for parsing and binding

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JBoss and JEMS

- Positive Referral
- No initial investment
- Runs on AIX
- Supports latest WS standards
- Technically Sound
- Open source licensing
- Excellent support

Custom JDBC Driver

- Reduce legacy code dependence
- Type 3 JDBC Driver
 - ✓ Middle-Tier process in C++
 - ✓ Translate to native API (HLI)
- Basic SQL and JDBC support
- Works perfectly inside JBossJCA!

Project Overview

- Automated Account Creation (AAC)
- I-SK Example
- Architectural View
- Who is AAC for?

Automated Account Creation (AAC)

- Services for credit union accounts
- Account Information
 - ✓ Personal data, loans, and credit reports
- Operations for each area of information
- Aggregation services

AAC Examples

- Online enrollment
- New member application
- New shares and loans
- Loan applications
- Store credit reports

GalaxyPlus

Progress

- Enrollment Eligibility
- New member disclosure
- Personal information
- Employment Data
- Identify Yourself
- Joint information
- Employment Data
- Product Selection
- Fee Schedule Disclosure
- Additional Services
- Funding
- Transfer Funds
- Disclosures

Eligibility

Online Membership Enrollment

Membership Eligibility

We invite you to join our Credit Union. CU is a community and SEC chartered credit union, which means we service the community as well as area churches and Scaled Employee Groups. Once you become a member of the credit union, you can be a member and purchase for life, even if you move or switch jobs. Your family members are eligible too, and qualify for the same membership benefits. Eligible members include:

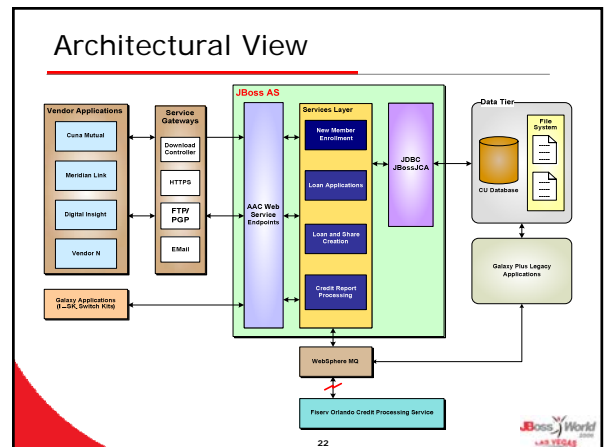
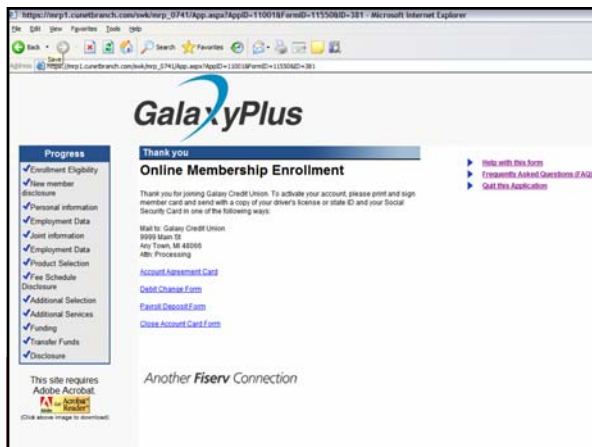
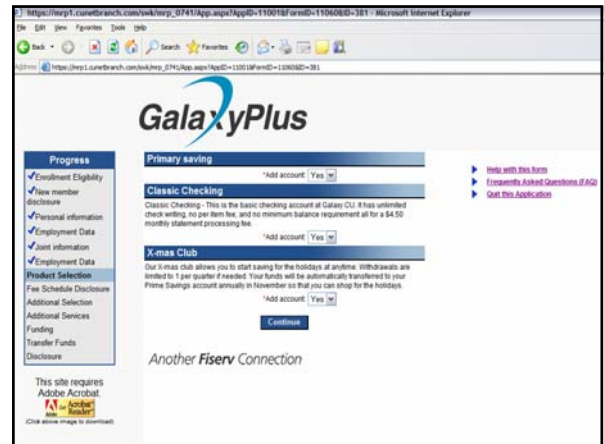
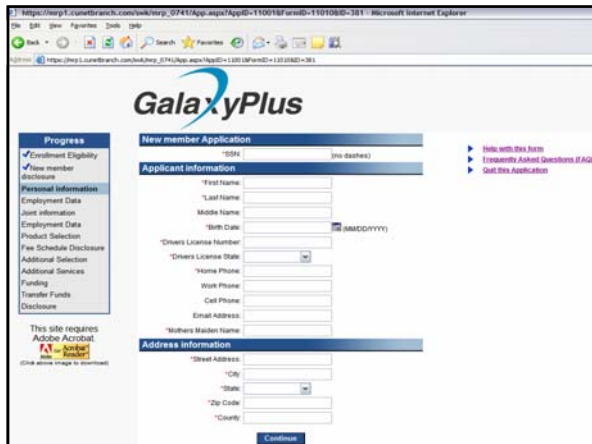
- Those who reside in Missouri, Oklahoma, South Carolina, and three Counties
- Employees or members of Scaled Employee Groups, Churches and Organizations within our Field of Membership
- Those who are 18 years of age or older, live within 25 miles of a CU location, and receive a monthly recurring benefit such as social security or pension.
- Family members of active CU members, spouses, parents, step-parents, children, step-children, brothers, sisters, grandparents, grandchildren, and domestic partners.

*Citizenship:

*Eligibility:

*How did you hear about us?

Another Fiserv Connection



Who is AAC for?

- GalaxyPlus applications
 - Online Enrollment (I-SK)
 - Call Center (Member Relationship Plus)
- Fiserv business units
- Lending Vendors
 - Loan Origination
 - Loan Application
 - Indirect Auto Lending

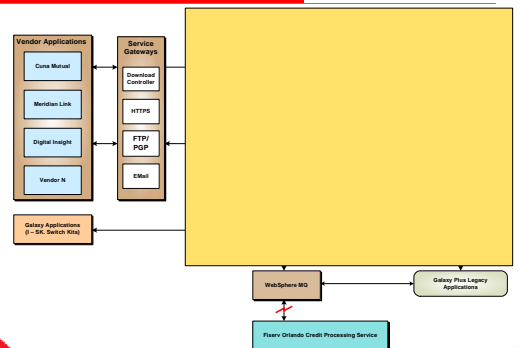
Implementation

- Tools and API's
- FiAPI message model
- XML Bindings
- Integration with WebSphere MQ

Tools & API's

- JBoss AS 4.0.1 (Application Server)
- JDBC with JBossJCA
- EJB 2.0
- JAXB (Semi-automatic binding)
- JAXP (XML DOM)
- JAX-RPC (JSR-109) on JBossWS

Layered Diagram



FiAPI Message Model

- Fixed header
 - ✓ Building blocks of the message
- Request/Response section
 - ✓ Purpose of the message
- FiAPI & SOAP
 - ✓ Has most of the goodies which SOAP has
 - ✓ Schema based solution
 - ✓ FiAPI messages through SOAP

FiAPI - Example

```

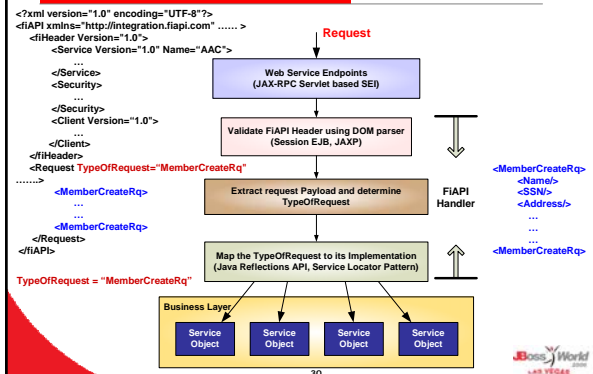
<fiAPI>
  <fiHeader Version="2.0">
    <Service Version="1.1" Name="AccountCreate">
      <DateTime>2003-05-12T16:59:05:00</DateTime>
    </Service>
    <Security>
      <AuthenticationMaterial />
    </Security>
    <Client Version="1.3">
      <VendorID>ITI</VendorID>
      <AppID>EIM1151</AppID>
      <OrgID>001</OrgID>
      <SessionID>88888888-4444-4444-4444-123456789012</SessionID>
    </Client>
    <fiHeader />
  </fiHeader>
  <Response TypeOfResponse="MemberCreateRs">
    <MemberCreateRs>
      <Status>.....
      <MemberNumber>1234567890</MemberNumber>
      </Status></MemberCreateRs>
    </Response>
  </fiAPI>
    
```

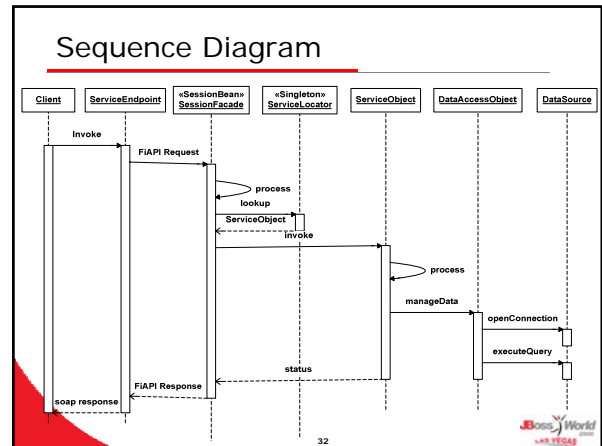
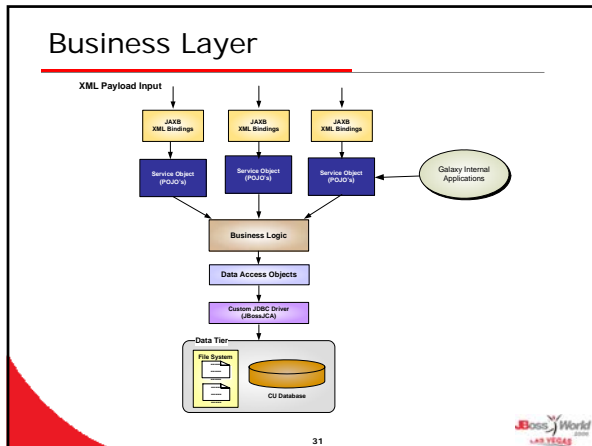
FiAPI messages and WSDL

```

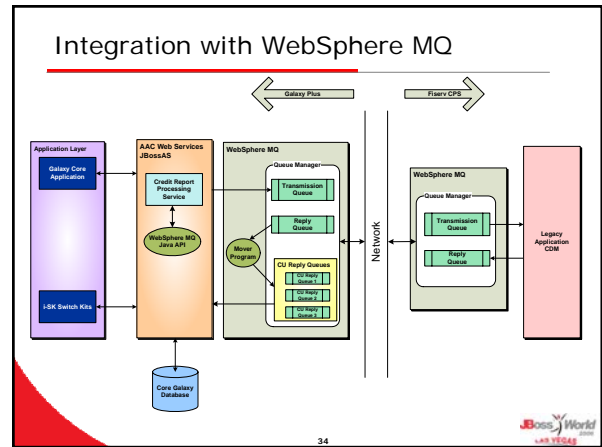
<definitions .... targetNamespace="urn: memberCreate">
  <types> <!-- Define schemas here --> </types>
  <message name="MemberCreateRq">
    <part name="request" type="tns:MemberCreateRq"/>
  </message>
  <message name="MemberCreateRs">
    <part name="response" type="tns:MemberCreateRs"/>
  </message>
  <portType name="IMemberCreate">
    <operation name="createMember" parameterOrder="MemberCreateRq">
      <input message="tns: MemberCreateRq"/>
      <output message="tns: MemberCreateRs"/>
    </operation>
  </portType>
  <binding name="IMemberCreateBinding" type="tns:IMemberCreate">
    <soap:binding style="doc" transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="createMember">
      <soap:operation/>
      <input><soap:body use="literal" namespace="urn:memberCreate"/></input>
      <output><soap:body use="literal" namespace="urn:memberCreate"/></output>
    </operation>
  </binding>
  <service name="MemberCreation">.....</service>
</definitions>
    
```

Web Services Layer





- ### XML Bindings
- JAXB 1.0 XML Bindings
 - ✓ Semi-automatic bindings: JAXB bindings were done on the payload only
 - ✓ Avoid duplication of the runtime libraries
 - JAXB 2.0
 - ✓ Reduction in the schema derived classes
 - ✓ Smaller runtime libraries
 - ✓ JAXB internal validation
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- ### Implementation - Summary
- Web Services layer
 - ✓ Provided a level of abstraction
 - ✓ Loosely coupled interface
 - ✓ Interoperability
 - Business Layer
 - ✓ Business process management - Service Orchestration
 - Data Access Object Layer
 - ✓ Decouples data access mechanisms from the rest of the application
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- ### SOA and JBoss: Overall Impact
- Catalyst for change
 - ✓ Open source was a "coup d'état"
 - Reallocated cost savings
 - ✓ J2EE training
 - ✓ Additional J2EE programmer
 - ✓ New development tools
 - New opportunities
 - ✓ Business growth and product development
 - ✓ New product ideas
 - ✓ Enhance business potential
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AAC Today

- Lending Channels
 - ✓ CUNA Mutual
 - ✓ Meridian Link
 - ✓ Digital Insight
- Online Enrollment – i-SK
- Galaxy Plus Core Application
- 25 credit unions and growing

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Questions?

- THANK YOU!!
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