Service Oriented Architecture and zSeries:

Achieving business flexibility with strategic middleware and a world-class server technology

Jamie Thomas
Vice President, WebSphere Server Development
November 2005

SOA on your terms and our expertise

ON DEMAND BUSINESS™

Questions You Need to Consider

- **What is Service Orientation and SOA and why is it important for your business?**

- **Is it real? Are customers really using it today?**

- **What are the core elements brought together under SOA?**

- **How can IBM help you get started?**

SOA on your terms and our expertise

What is SOA?

… a service?

A **repeatable business task** – e.g., check customer credit; open new account

… service orientation?

A way of integrating your **business as linked services** and the outcomes that they bring

… service oriented architecture (SOA)?

An IT **architectural style** that supports service orientation
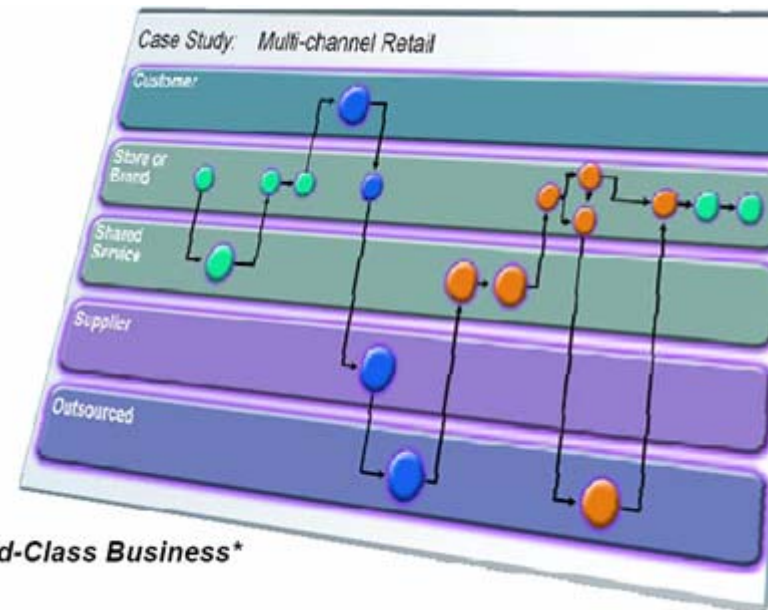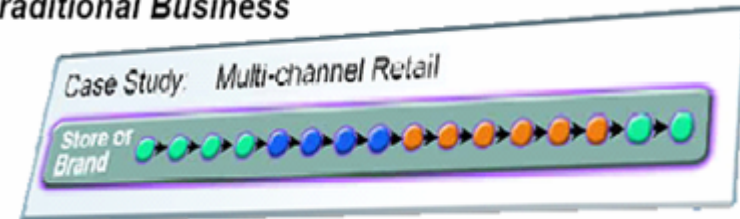
… a composite application?

A set of **related & integrated** services that support a business process built on an SOA

SOA on your terms and our expertise

Why SOA for Business Flexibility and Reuse?

- **Economics:** globalization demands flexibility
- **Business processes:** changing quickly and sometimes outsourced
- **Growth:** at top of CEO agenda
- **Reusable assets:** can cut costs
- **Information:** greater availability
- **Crucial for flexibility and becoming an On Demand business**

Traditional Business

Case Study: Multi-channel Retail

Store of Brand

Case Study: Multi-channel Retail

Customer
Store or Brand
Shared Service
Supplier
Outsourced

Today's World-Class Business*

What are the barriers to business flexibility?

- **Lack of business process standards**

- **Architectural policy limited**

- **Point application buys to support redundant LOB needs**

- **Infrastructure built with no roadmap**

SOA on your terms and our expertise
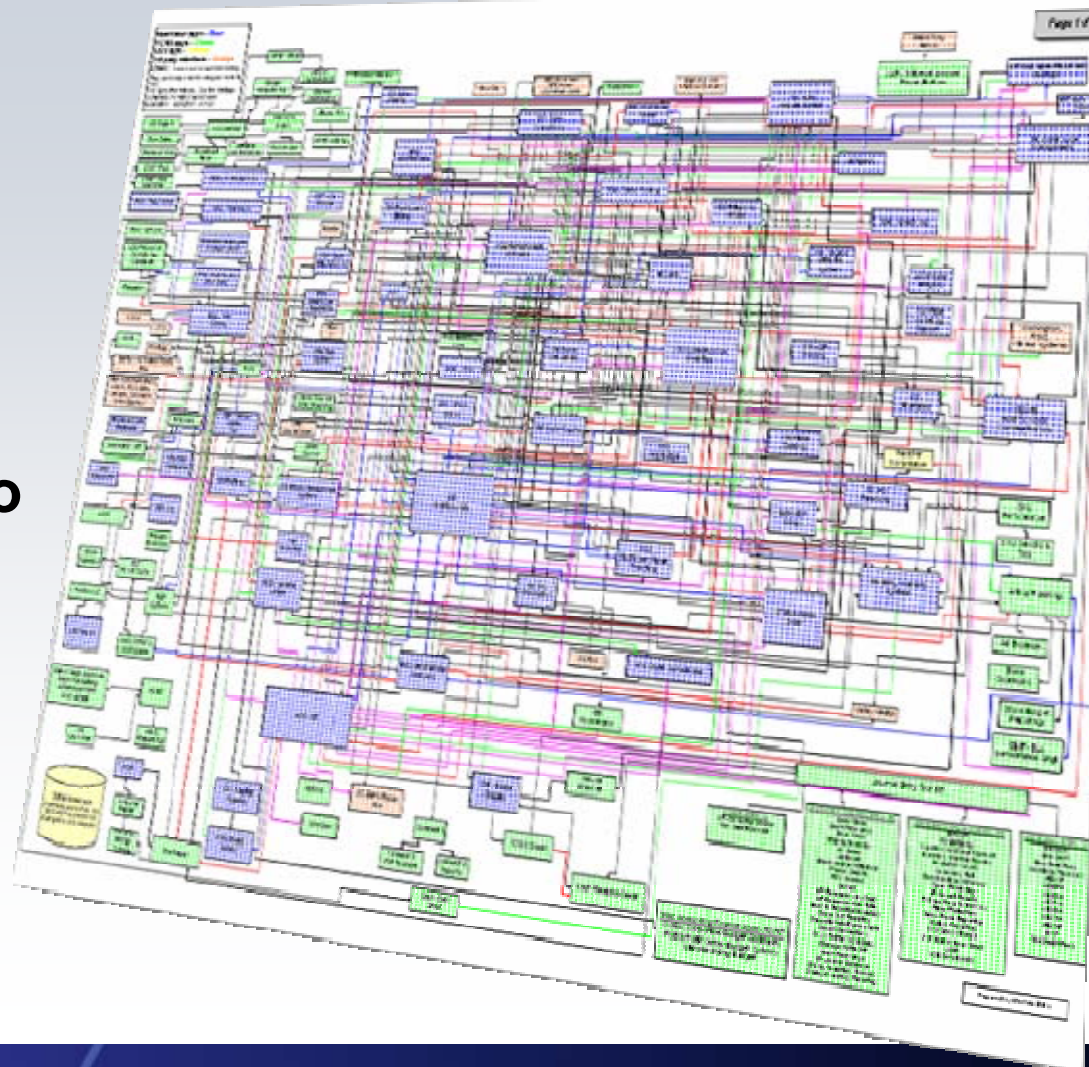
What differentiates SOA from claims like this in the past?

Standards

- Broadly adopted Web services ensure well-defined interfaces.
- Before, proprietary standards limited interoperability

Organizational Commitment

- Business and IT are united behind SOA (63% of projects today are driven by LOB)*
- Before, communication channels & 'vocabulary' not in place

Level of Focus

- SOA services focus on business-level activities & interactions
- Before, focus was on narrow, technical sub-tasks

Connections

- SOA services are linked dynamically and flexibly
- Before, service interactions were hard-coded and dependent on the application

Level of Reuse

- SOA services can be extensively re-used to leverage existing IT assets
- Before, any reuse was within silo'ed applications

*Source: Cutter Benchmark Survey

SOA on your terms and our expertise

Why IBM for SOA?

IBM understands service orientation and your business

Skills

Partners

Know-how & best practices

Infrastructure

Expertise in aligning business and IT processes
- SOA consultants, architects and IT specialists
- Dozens of SOA-enabled business solutions
- Unique intellectual property and methods

Thriving ecosystem of partners (ISVs, SIs, Resellers)
- 100+ partners in SOA community

Extensive Industry experience and best practices
- Over 1000 customers worldwide

Unmatched breadth and depth of products
- Over $1B/yr invested in SOA
- Leadership in open standards: active in 50+ committees
- Over 300 SOA-related patents

SOA on your terms and our expertise

ON DEMAND BUSINESS

The Value of the IBM SOA Foundation
Provides What You Need to Get Started with SOA

IBM SOA Foundation: Integrated, open set of software, best practice, and patterns
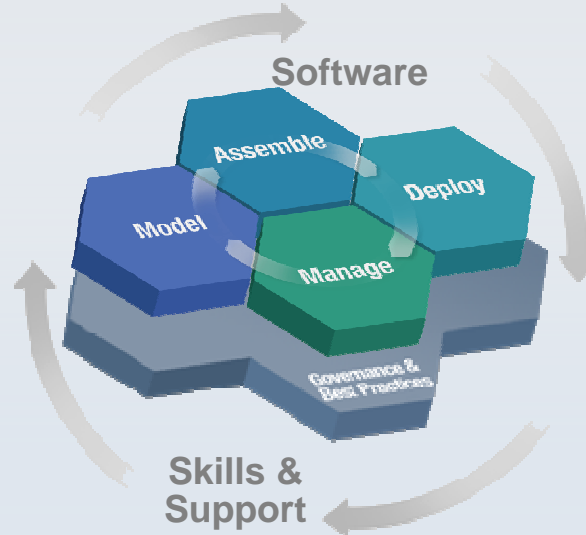
Supports complete lifecycle with a **modular** approach

Extends value of your existing investments, regardless of vendor

Scalable; start small and grow as fast as the business requires

Extensive business and IT standards support; facilitating greater **interoperability & portability**

IBM SOA Foundation

Software

Assemble

Deploy

Model

Manage

Governance & Best Practices

Skills & Support

Leveraging existing IT Infrastructure

ORACLE   SAP   bea   **CICS**   IBM WebSphere   **IMS**   Microsoft   ca **Custom Apps.**

SOA on your terms and our expertise

ON DEMAND BUSINESS

IBM & SOA at Wachovia

*SOA Drove
Business and IT
Success*

The SOA Lifecycle

- **Discover**
- **Construct & Test**
- **Compose**

- **Integrate people**
- **Integrate processes**
- **Manage and integrate information**

- **Gather requirements**
- **Model & Simulate**
- **Design**

Assemble

Deploy

Model

Manage

Governance & Processes

- **Manage applications & services**
- **Manage identity & compliance**
- **Monitor business metrics**

SOA on your terms and our expertise

ON DEMAND BUSINESS™

Announcing New and Enhanced Products
Strengthening the IBM SOA Foundation

WebSphere Integration Developer*
Rational Application Developer
WebSphere Developer for zSeries

Process:
  WebSphere Process Server for z/OS*
  WebSphere ESB for z/OS*
  WebSphere Message Broker for z/OS
  WebSphere Partner Gateway & Adapters
People:
  WebSphere Portal
Information:
  WebSphere Information Integrator
Application Infrastructure:
  WebSphere Application Server
  WebSphere Extended Deployment
  CICS Transaction Server

Assemble

Deploy

Model

Manage

Governance & Processes

WebSphere Business Modeler
Service Flow Modeler in WebSphere
   Developer for zSeries
Rational Software Architect
WebSphere Studio Asset Analyzer

WebSphere Business Monitor
Tivoli Composite Application Manager
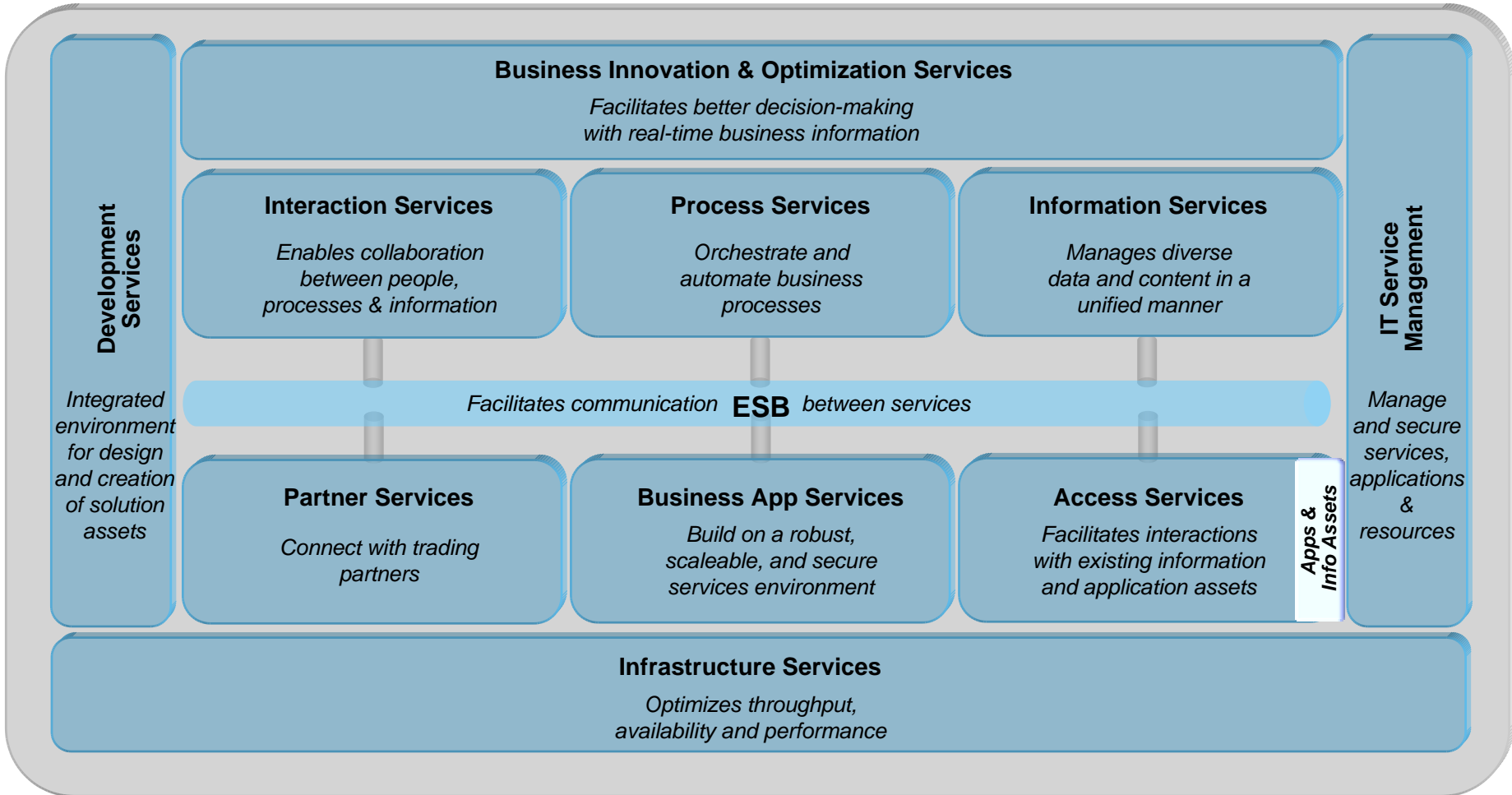**Tivoli Federated Identity Manager**

* Indicates new products

Indicates products currently running – or with stated plans to run – natively on System z9 and zSeries.

Indicates Eclipse-based products running on distributed platforms/workstations, and can deploy composite applications on System z9 and zSeries.

SOA on your terms and our expertise

SOA Reference Architecture
Supporting your SOA Lifecycle

Development Services

Integrated environment for design and creation of solution assets

Business Innovation & Optimization Services

Facilitates better decision-making with real-time business information

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

Facilitates communication **ESB** *between services*

Partner Services

Connect with trading partners

Business App Services

Build on a robust, scaleable, and secure services environment

Access Services

Facilitates interactions with existing information and application assets

Apps & Info Assets

Infrastructure Services

Optimizes throughput, availability and performance

IT Service Management

Manage and secure services, applications & resources

Business process management is key to your SOA

Flexible business demands automating and optimizing business processes

- ***Identify and eliminate*** redundancies and bottlenecks

- ***Reduce risk*** by gaining an understanding of process impacts prior to operationalizing

- ***Automate*** process implementation, eliminating manual deployment tasks

- ***Immediately execute*** new business rules and processes

- ***Visualize*** actual process performance against key performance indicators

- ***Pinpoint*** future process improvements
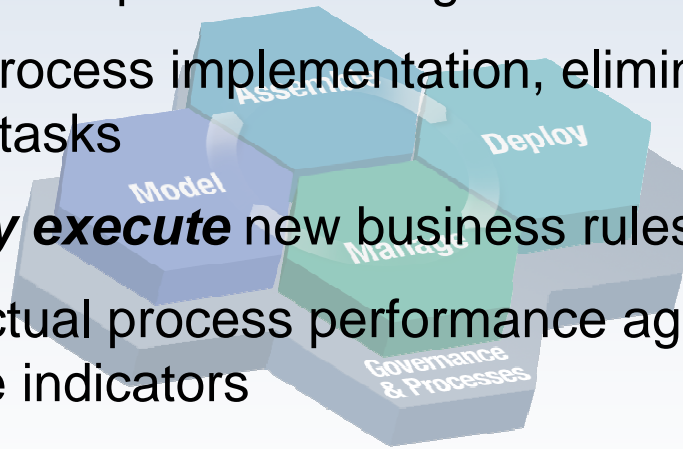
Without business process management, this would be achieved manually or through a dis-integrated set of tools from multiple vendors

Model – For the Business Analyst

Design business processes for SOA roll-out

Enhanced! WebSphere Business Modeler

- **Expanded user experience and analytical capabilities**
  - More granular and precise modeling of activities

- **Collaborative modeling to enable team work**
  - Ability to publish, share and comment on models through the web

- **Business performance modeling**
  - Ability to identify, generate and receive feedback on Key Performance Indicators

- **Microsoft Visio importing**
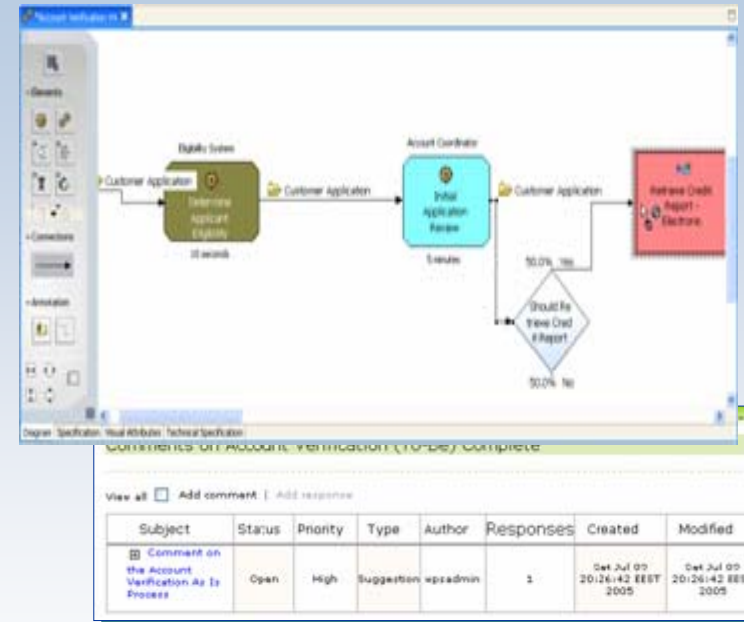
Assemble

Create composite applications with ease

Assemble

New Product! **WebSphere Integration Developer**

Streamlining process design hand-off between business and IT

- Import and work with business process models directly from the business analyst (WebSphere Business Modeler)

Simplifying and speeding development
- Easy to use tools where everything can be done through the GUI

Maximizing re-use
- Ability to leverage existing services & save components for future service reuse
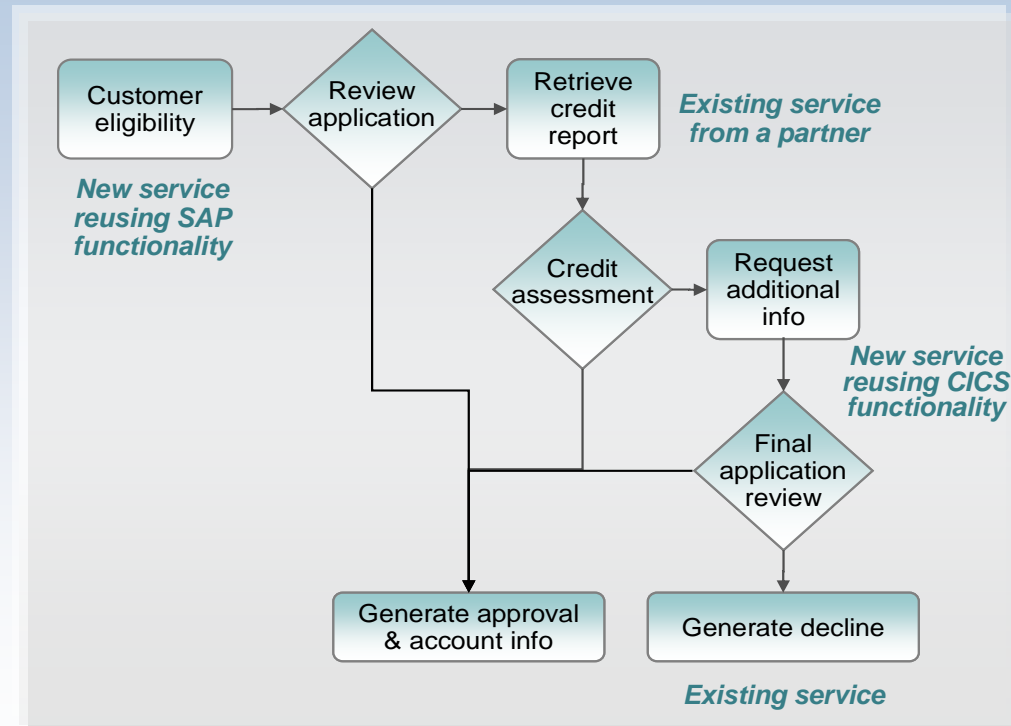
Availability is October 2005, and WebSphere Integration Developer runs in Windows, Linux and Unix environments.

Customer eligibility → Review application → Retrieve credit report

New service reusing SAP functionality

Existing service from a partner

Credit assessment → Request additional info

New service reusing CICS functionality

Final application review

Generate approval & account info

Generate decline

Existing service

ON DEMAND BUSINESS™

Deploying processes on a flexible, robust SOA integration platform

Deploy composite applications

New Product! WebSphere Process Server V6

Simple, flexible deployment of processes

- Built and optimized on the market leading application server, IBM WebSphere Application Server

Powered by Enterprise Service Bus (ESB)

- Built on top of an open standards based ESB
- Flexible connectivity infrastructure for integrating applications, data, and services to power your SOA.

Dynamically modify deployed processes

- Making plug-and-play of process components a reality
- Change business rules quickly and easily

WebSphere Process Server
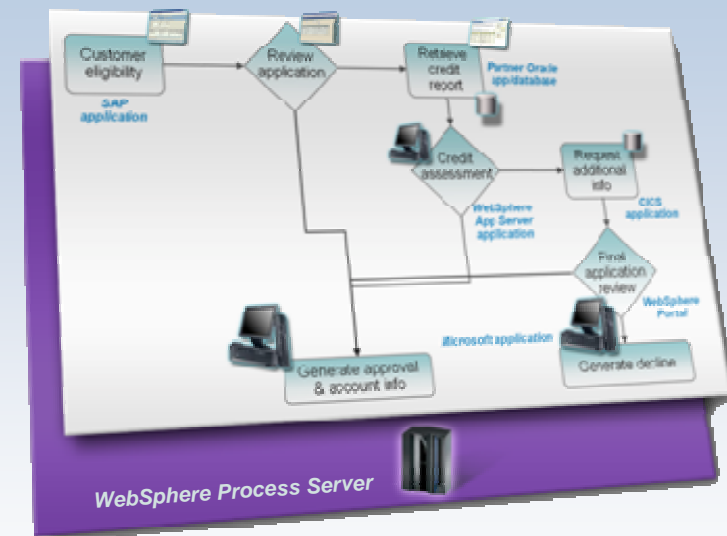
Planned Availability on System z9 and zSeries
- Linux for zSeries – 4Q2005
- z/OS – 1H2006

SOA on your terms and our expertise

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Enterprise Service Bus (ESB)

Flexible connectivity infrastructure for integrating applications and services to power your SOA

- ▶ **ROUTING** messages between services

- ▶ **CONVERTING** transport protocols between requestor and service

- ▶ **TRANSFORMING** message format between requestor and service

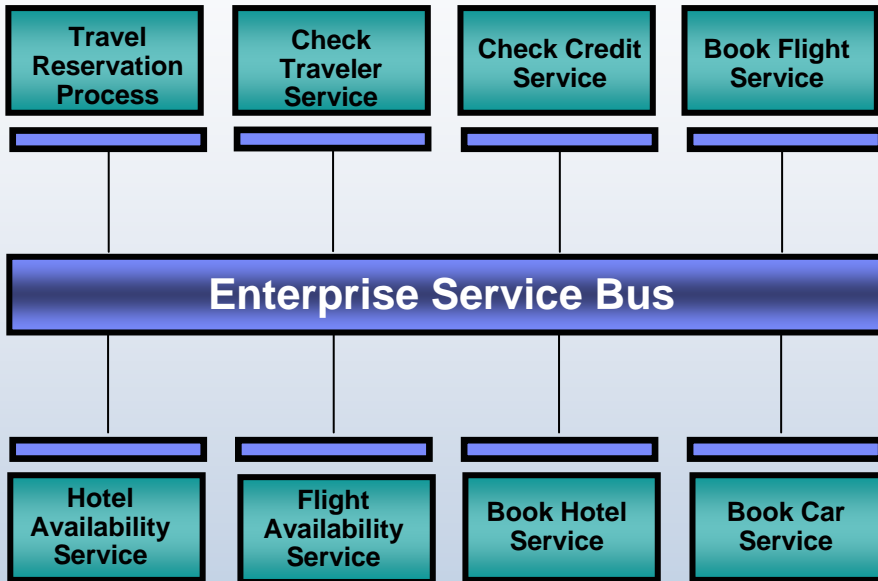- ▶ **HANDLING** business events from disparate sources
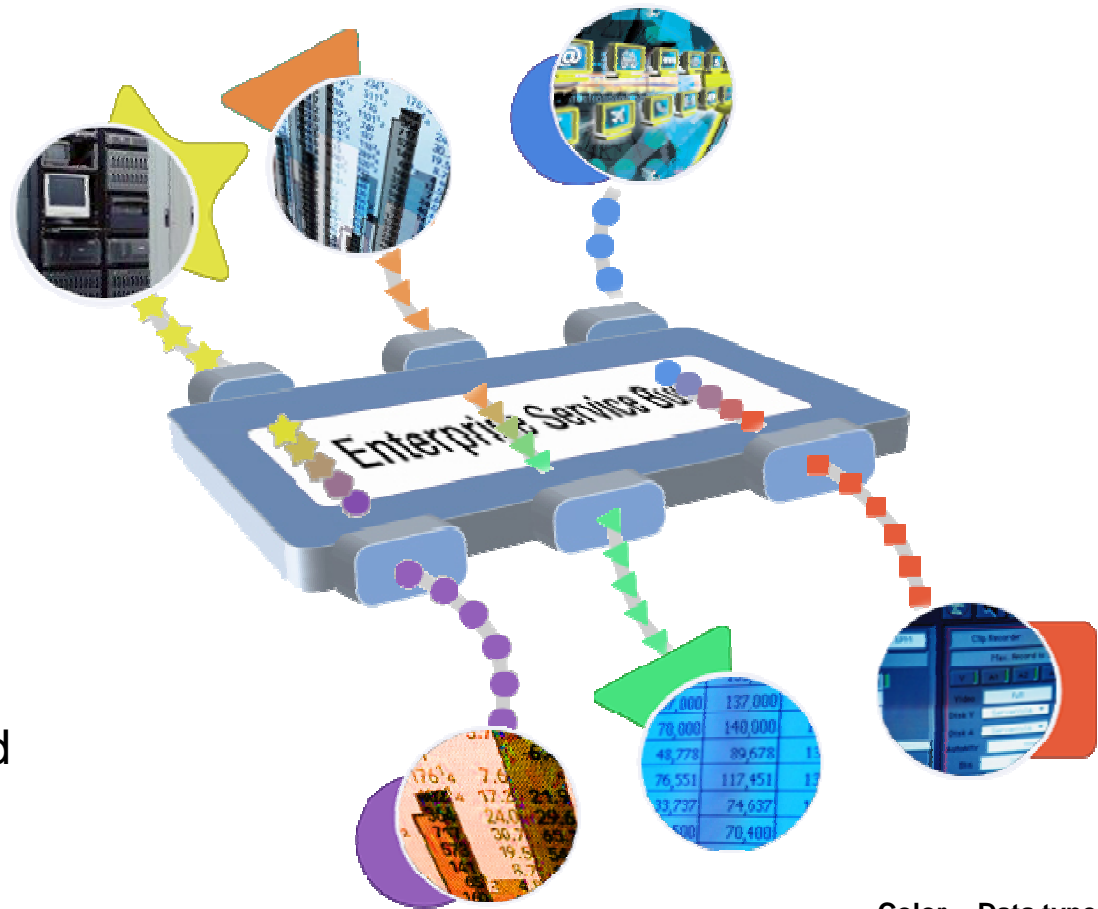
Color = Data type

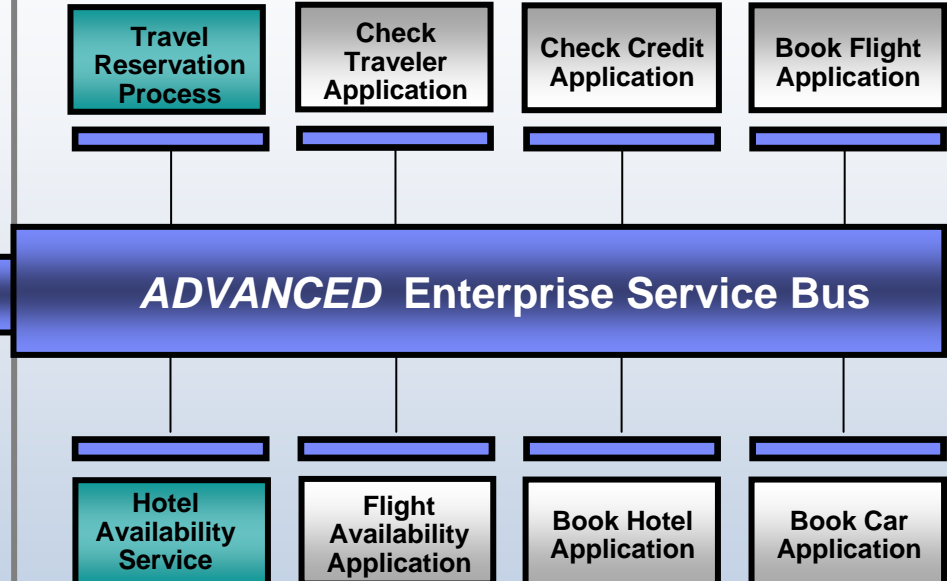**Shape = Protocol**

Two key requirements for an Enterprise Service Bus

1   **If all your applications conform to the Web Services standards…**

Travel Reservation Process	Check Traveler Service	Check Credit Service	Book Flight Service

Enterprise Service Bus

Hotel Availability Service	Flight Availability Service	Book Hotel Service	Book Car Service

…then all you may require is an **ESB** focused on standards-based service integration.

2   **If not all your applications conform to the Web Services standards…**

Travel Reservation Process	Check Traveler Application	Check Credit Application	Book Flight Application

ADVANCED **Enterprise Service Bus**

Hotel Availability Service	Flight Availability Application	Book Hotel Application	Book Car Application

…then you may require a more **advanced ESB** focused on the integration of services with existing non-services assets.

ON DEMAND BUSINESS™

Delivering an Enterprise Service Bus to power your SOA

New Product! WebSphere ESB

Provides Web Services connectivity, JMS messaging and service oriented integration

- Improve flexibility through the adoption of service oriented interfaces
- Minimize disruption by using an ESB to handle integration logic

Ease of use

- Easy to use tools that require minimal programming skills
- Simple to install, configure, build and manage

Improve time to value

- Cost effective solution for services integration
- Support for over hundreds of ISV solutions
- Save time and development costs by utilizing pre-built mediations
- Dynamically re-configure to meet changing business processing loads

Seamless integration with the WebSphere platform

- Leverages z/OS qualities of service: highest level of availability, guaranteed service levels, deep end-to-end security integration on the industry's most efficient operating environment.
- Easily extends to leverage WebSphere Process Server as needs dictate
- Integrates tightly with IBM Tivoli security and systems management offerings

Availability date on System z9 and zSeries to be announced.

SOA on your terms and our expertise

Delivering an advanced ESB to power your SOA

New Version! WebSphere Message Broker

Provides universal connectivity

- Provides Web Services connectivity and non standard interface connectivity
- Unmatched ability in integrating many systems, platforms, devices, and APIs
- Facilitates service oriented integration
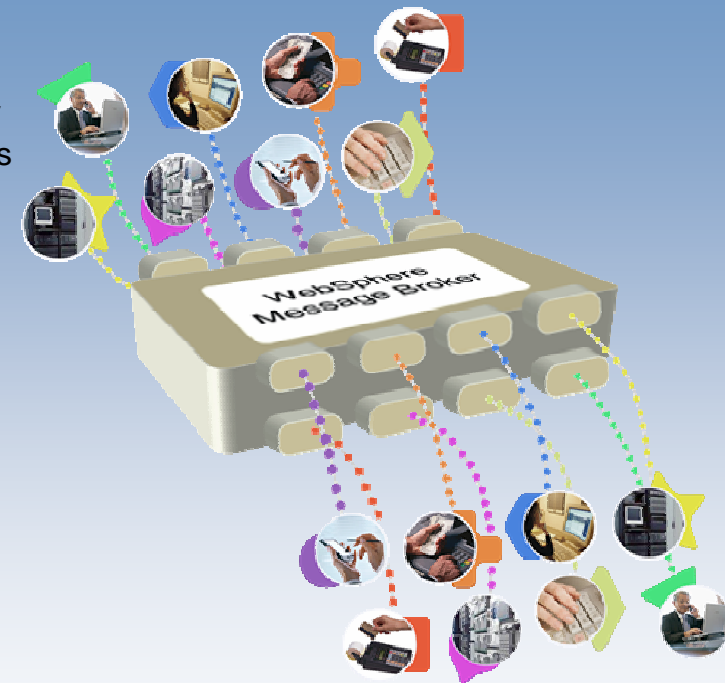
Provides universal data transformation

- Advanced message transformation, enrichment, and routing
- Option to use WebSphere DataStage TX
- Support for industry standard data formats (AL3, HL7, SWIFT, HIPAA, EDI, etc.)

New & improved pre-built capabilities to improve ROI

- Leverage existing skills with rich Java™ and XML support
- Implement complex event processing with no programming
- Offers simple and easy to use tools with advanced capabilities

Leverage the performance

Availability for z/OS: October 28, 2005

- Offers performance of traditional transactional processing environments
- Provides performance improvement of 50% or better as compared to prior version.

Integrate your existing environment with the world of Web Services

ON DEMAND BUSINESS™

IBM leads the way with flexible deployment options for an SOA environment!

Deploy

Increased capabilities / automation

Business Process

WebSphere Process Server

For customers who want a higher level solution to design, automate and manage composite applications and operational business processes. **Built on WebSphere ESB.**

ESB

WebSphere ESB

A new product that delivers an Enterprise Service Bus. Provides Web Services connectivity and data transformation. **Built on WebSphere Application Server.**

WebSphere Message Broker

A new version of our proven product that delivers an advanced Enterprise Service Bus. Provides universal connectivity and data transformation. **Built on WebSphere MQ.**

Application/Transaction Servers

WebSphere Application Server

A world-class J2EE foundation providing industry-leading levels of availability, scalability, and performance.

CICS

IMS

WebSphere MQ

Provides reliable integration messaging to connect applications and Web services across more than 80 supported platform configurations.

ON DEMAND BUSINESS

Enabling a robust, flexible SOA runtime environment

Deploy

Enhanced! *WebSphere Application Server v6.0.2*

J2EE Enhancements

- J2EE 1.4 Compliance
- Java Server Faces (JSF) support
- Programming Model Extensions
- WebSphere Rapid Deployment (WRD) framework for simplified J2EE application construction and deployment
- Embedded JMS provider implementation with exceptional scaling, and interoperation with MQ

Web Services

- Services Oriented Architecture support
- Web Services Gateway with pre-defined mediations, workload balancing
- Service Data Objects, WS-I Basic Profile 1.1 Conformance
- Multi-protocol support (SOAP/HTTP, SOAP/JMS, Local Optimization) under a common JAX-RPC client interface

Ease of Use

- Packaging aligned with distributed platforms
- Deployment Plans to support strong separation of application configuration requirements
- Unified clustering for consistent cluster management and improved workload balancing
- Administration Improvements
- Tooling enhancements

Common code base
- z/OS and distributed platforms

#1 in market share

Concurrent delivery on zOS and Distributed

Network **Computing** WebSphere tops Network Computing App Server Reviews

IBM WebSphere Application Server comes out on top

Available July 2005

SOA on your terms and our expertise

ON DEMAND BUSINESS

Delivering high qualities of service to your SOA

Deploy

NEW!! *WebSphere Extended Deployment for z/OS V6.0.1*

Service mixed environments more efficiently

- *Enables REAL IT environments*
  - *Mixed application servers (WebSphere and non-WebSphere)*
  - *Mixed workloads (Java transactional batch and OLTP)*
- *Enhances quality of service management for a mixed application servers and data sources*

Easily manage large scale production implementations

- *At-a-glance assessments of system vitality and improved application management*
- *Interruption-free application updates to manage deployment of multiple application versions*

Improve the performance and throughput of your transactions

- *Near linear scalability for **high-end transaction processing***
- *Enhanced data access for accelerating throughput*
- *Partitioning facility enables development of highly scalable, high performance J2EE applications*

Accommodate peaks in demand by better utilizing existing resources

- *Compliment the value of z/OS workload manager (WLM) with granular prioritization of J2EE workloads and enhanced cross-LPAR routing capabilities*
- *Functions with Intelligent Resource Director (IRD)*

ON **DEMAND BUSINESS**™

Monitoring business performance across your SOA

New Product! *WebSphere Business Monitor V6*

Real-time process execution visibility

- Management dashboards and reporting capabilities, including trending information

- Tools to define or customize your dashboards

Ability to intervene in deployed processes

- Action Manager – supporting real-time response and action as performance data is received

Supporting continuous process improvement

- Ability to export data to WebSphere Business Modeler for analysis and process improvement

- Run modeling simulations based on real data from the Business Monitor
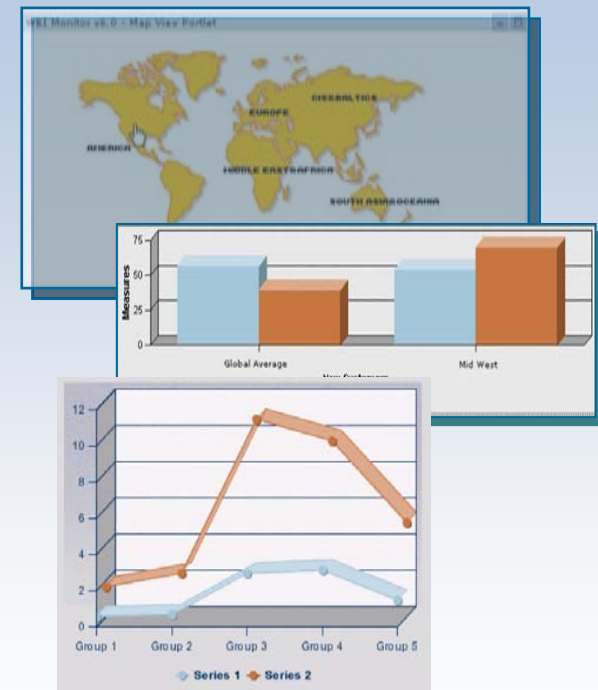
Planned Availability is February 2006 in Windows and AIX environments.

SOA on your terms and our expertise

Some entry points along your roadmap

Example	Entry Point	"How To Get Started"
Fireman's Fund® — A company of the Allianz Group	SOA a strategic initiative for application development and integration at an **Enterprise level**	**Component Business Modeling**
Cabela's	**Line of business level**, or across a set of related projects	**Client Architecture Readiness Evaluation**
Travelex worldwide money	**Single project** implementation at IT group level. "Testing the waters"… gradual adoption approach	**SOA Jumpstart**

ON DEMAND BUSINESS™

Get started today! Three ways to help you!
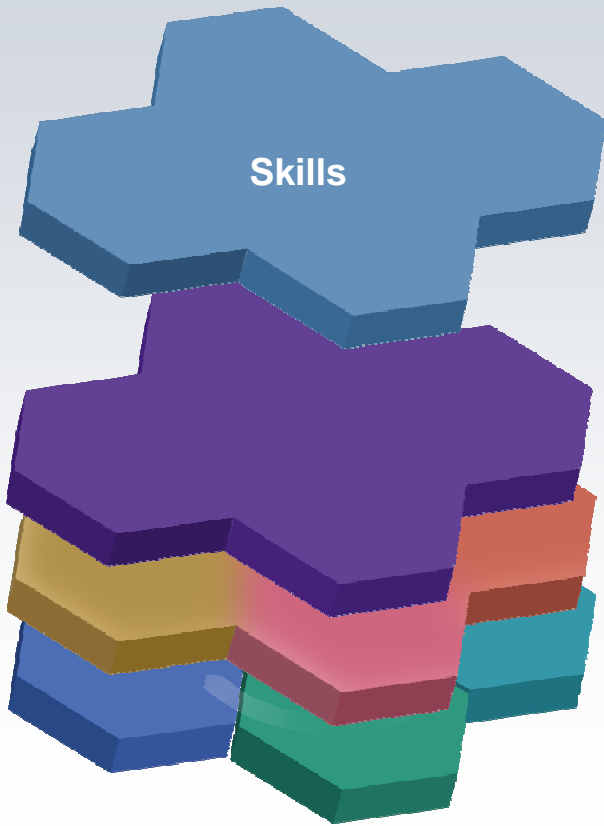
SOA Industry Teams

- Industry aligned SOA expert teams
- Deep vertical industry knowledge/expertise
- Identify/resolve your unique business problem
- Ability to leverage resources/assets across IBM to enable SOA deployment in weeks vs. months

Client Architecture Readiness Evaluation

Free!

- Review business/IT Initiatives and architecture alignment
- Evaluate enterprise architectures SOA support readiness
- Analyze governance maturity
- Provide SOA-based solution adoption roadmap

SOA Jumpstart

Free!

- Multi-day on-site session
- Available worldwide at no charge
- Skill development and governance
- Integration architecture workshop
- Actionable next steps

Skills

IBM SOA Assessment Tool
On line or on site
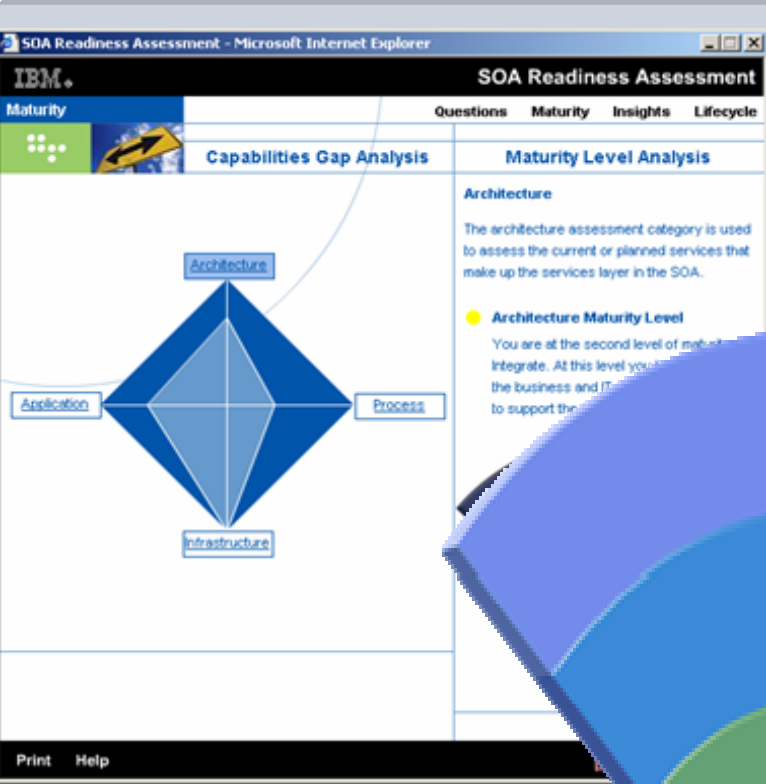
Receive actionable recommendations customized to your level of SOA maturity

How Do I Get Here?

You Are Here
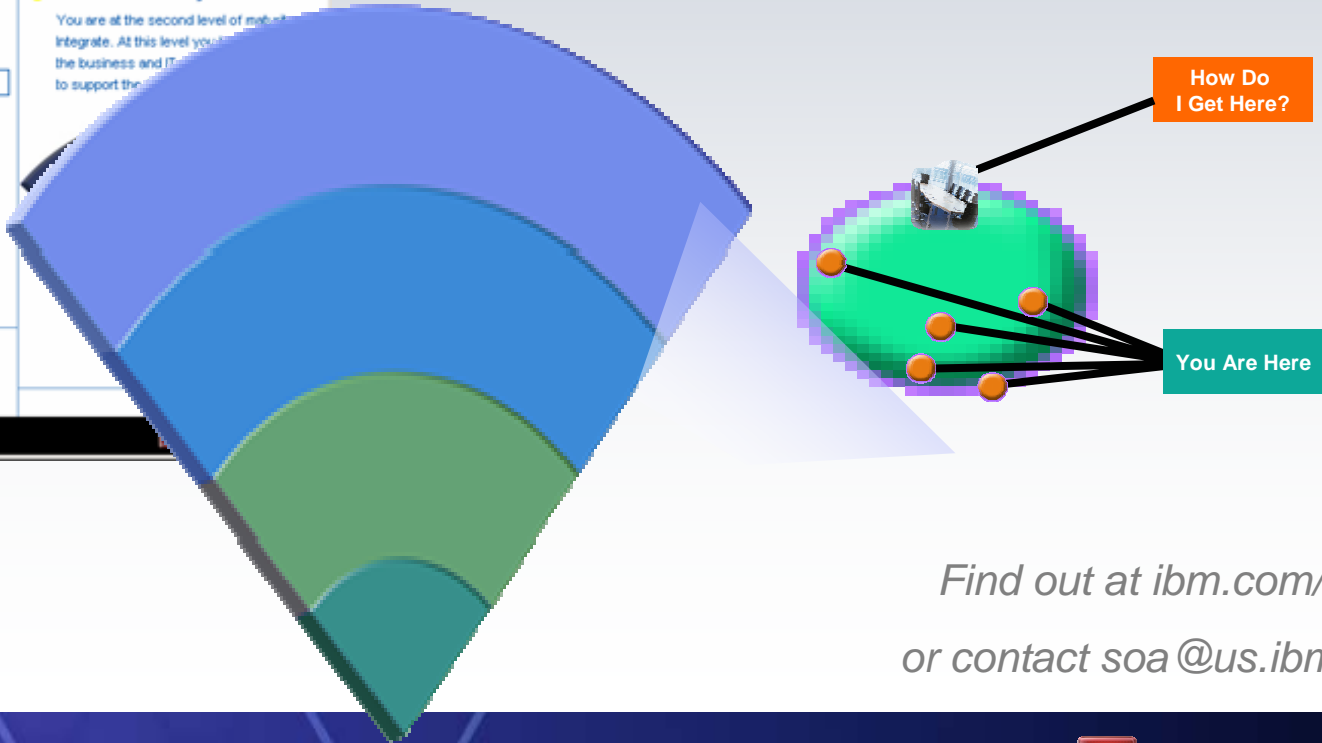
Find out at ibm.com/soa

or contact soa @us.ibm.com

SOA on your terms and our expertise

ON DEMAND BUSINESS

zSeries and System z9: SOA for Today and Tomorrow

1. **Leverage** zSeries infrastructure foundation platform for integration.

2. **Model & discover** business functions and processes.

3. **Transform, modernize & extend** legacy applications, processes and data.

4. **Integrate** applications, processes and data; new and old.

5. **Manage** workload performance against business objectives.

- ✓ **Resiliency & Security**
- ✓ **Mixed Workloads**
- ✓ **Data Sharing**
- ✓ **Virtualization**
- ✓ **Workload Optimization**
- ✓ **zArchitecture**
- ✓ **Sysplex Clustering**

System z9 offers an advanced SOA integration platform for the on demand world!

SOA on your terms and our expertise

Service Oriented Architecture and zSeries:

Achieving business flexibility with strategic middleware and a world-class server technology

Jamie Thomas
Vice President, WebSphere Server Development
November 2005

SOA on your terms and our expertise

ON DEMAND BUSINESS™

Why IBM WebSphere software for SOA?

Nobody has the same breadth and depth

- Broad portfolio relied on by over 87,000 customers

- #1 across application integration middleware

- Extensive ecosystem – more than 4,000 partners and 3,150 active ISV solutions

Nobody invests more

- IBM investing over $1B a year around SOA and Web services

- Over 6,700 IBM developers

- Over 10,750 IGS technical practitioners trained on WebSphere
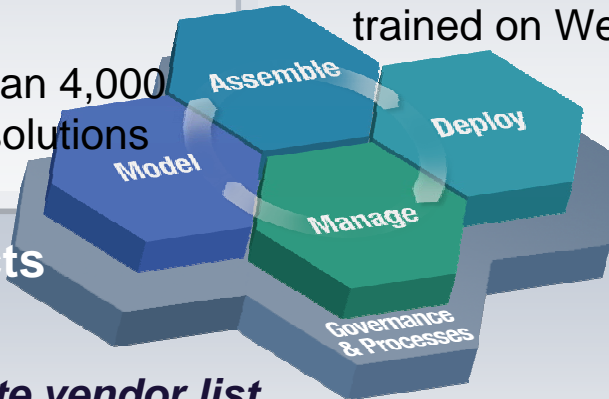
Award winning SOA products

IBM tops elite vendor list   -Intelligent Enterprise Editors' Choice Awards (April 2005)

IBM Overall Winner in Application Integration Middleware
-CRN Channel Champions Award (March 2005)

WebSphere: "impressive management options, support for Web services and general ease of use…"   – Network Computing (February 2005)

SOA on your terms and our expertise

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Backup

SOA on your terms and our expertise

Deploy – People

Deploy

Deliver Collaboration, Mobility, & Composite Applications 'on the glass'

Enhanced! *WebSphere Portal V5.1*

- **Ease of use**
  - Now supporting WebSphere Process Server V6 for process-driven portal capabilities
  - Support for DB2 V8 planned for mid-October with WP5102 fix-pack
- **Ease of management**
  - Virtual portals and policy-driven administration
- **Reduced total cost of ownership**
  - Reuse of SOA components across customer, employee, and partner/supplier portal environments

SOA on your terms and our expertise

ON DEMAND BUSINESS
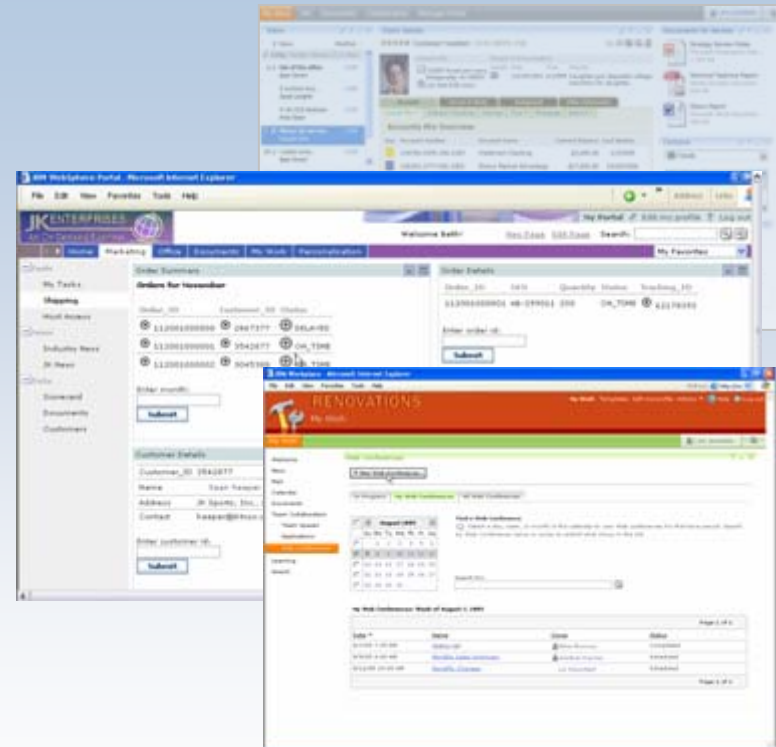
Deploy – Application Infrastructure

Delivering high qualities of service to a distributed SOA

Deploy

Enhanced! *WebSphere Extended Deployment*

Flexibility for your heterogeneous environment

- Efficiently support mixed workloads

- Effectively enable quality of service management for a mixed application servers and data sources

Optimizing the performance and throughput of your transactions

- ObjectGrid, a caching fabric which enables object data to be shared among multiple clients

- Partitioning facility enables the development of highly scalable, high performance J2EE applications

Enhanced manageability

- At-a-glance assessments of system vitality and improved application manageability

- Interruption-free application updates to manage the deployment of multiple application versions

Resource Pool

100%

50%

0%

55%* Utilized Servers
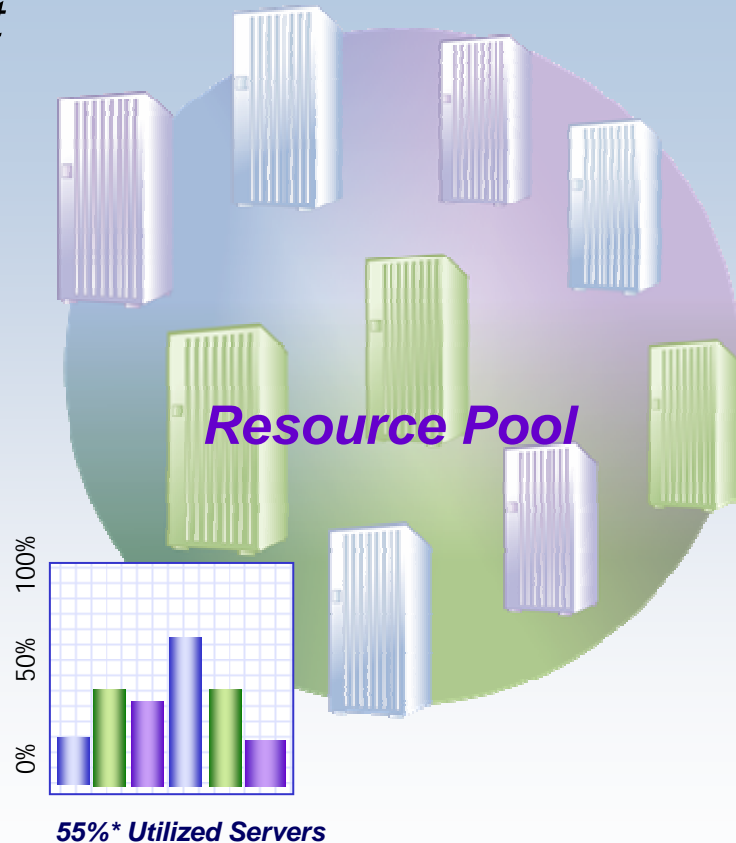
WebSphere Extended Deployment became generally available in August 2005.

ON DEMAND BUSINESS™

Announcing New and Enhanced Products…

Creating SOA composite applications with existing assets

Model

Model a new business process that builds on your current capabilities …..

WebSphere Business Modeler

…and discover program units and business rules you can reuse in the new process.
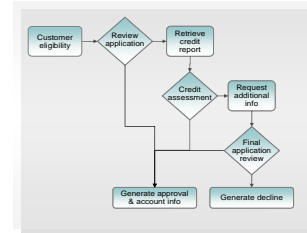
WebSphere Studio Asset Analyzer

Assemble

Wrap programs as services, creating composite appl'ns from core assets….

WebSphere Developer for zSeries, *plus Service Flow Modeler*

… and assemble the services across multiple platforms

WebSphere Integration Developer

Deploy

Choreograph and deploy your new composite applications ….

WebSphere Process Server

… using an advanced ESB to power your SOA

WebSphere Message Broker

Manage

Monitor the processes across your SOA, and intervene if necessary ….

WebSphere Business Monitor

…. and export data for analysis and process improvement, back to ….
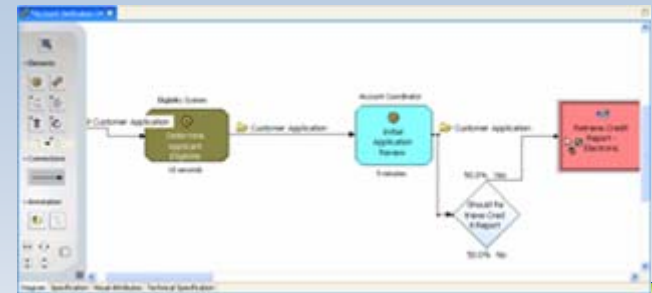
WebSphere Business Modeler

SOA on your terms and our expertise

ON **DEMAND BUSINESS**™

Model – Core Application Assets

Design Business Processes for SOA roll-out leveraging core apps.

Enhanced! ***WebSphere Business Modeler***

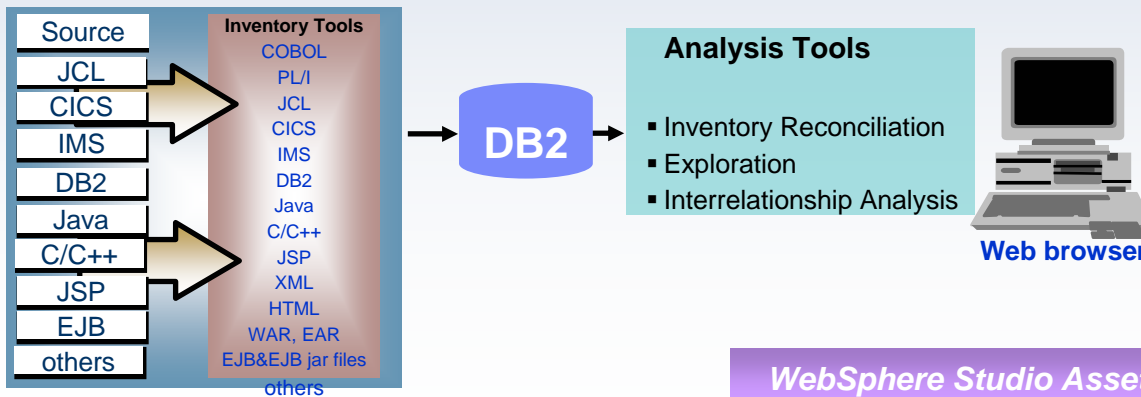*Planned Availability Dec 2005 on Windows*

- **Expanded user experience and analytical capabilities**

- **Collaborative modeling to help enable teamwork**

- **Business performance modeling**
  - **Ability to identify, generate, and gain feedback on Key Performance Indicators (KPI's)**

Enhanced! ***WebSphere Studio Asset Analyzer***

- **Automates asset discovery**

Source
JCL
CICS
IMS
DB2
Java
C/C++
JSP
EJB
others

Inventory Tools
COBOL
PL/I
JCL
CICS
IMS
DB2
Java
C/C++
JSP
XML
HTML
WAR, EAR
EJB&EJB jar files
others

DB2

Analysis Tools
- Inventory Reconciliation
- Exploration
- Interrelationship Analysis

Web browser

WebSphere Studio Asset Analyzer V4.1 became available in March 2005 and runs in Windows, AIX, and z/OS environments.

SOA on your terms and our expertise

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Enabling a robust, flexible SOA runtime environment

While maximizing the value of existing assets   *Fully SOA capable!*

WebSphere Application Server V6.0.2

- SDK 1.4.2 included in WAS runtime – easier serviceability.
- Tighter integration with WebSphere MQ and improved IJP support.
- Security enhancements helps enable applications to acquire Federal Government standards certification.

CICS Transaction Server V3.1

March 2005

- Exploit provider/requestor Web service support for CICS assets, based on full Web service standards
- Build Web services from CICS transactions with no change to existing applications.

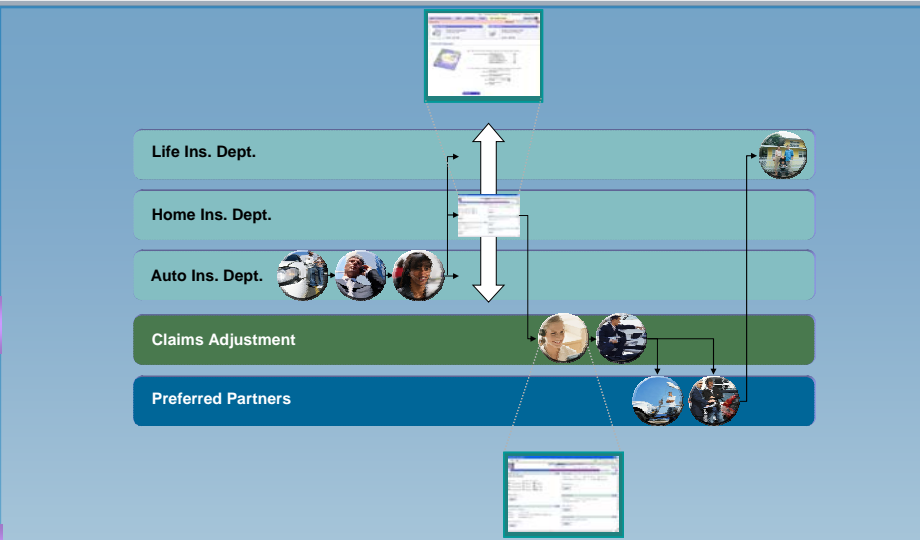## IMS Transaction and Database V9

October 2004

- Build Web services from IMS transactions with no change to existing applications

WebSphere MQ V6.0 Extended Security Edition

- Featured as SOD in April 2005 announcement of WS MQ V6.
- End-to-end application level security for WS MQ environment.
- Helps enable enterprise-wide, remote management of security policies.
- Upgrade from standard WebSphere MQ without changes to existing production MQ environment.

Planned for Y/E 2005

Life Ins. Dept.

Home Ins. Dept.

Auto Ins. Dept.

Claims Adjustment

Preferred Partners

#1 in market share for Application Server software

IBM WebSphere Application Server comes out on top

35+ years of maturity and innovation in transaction and data systems

Assemble Services Across Platforms
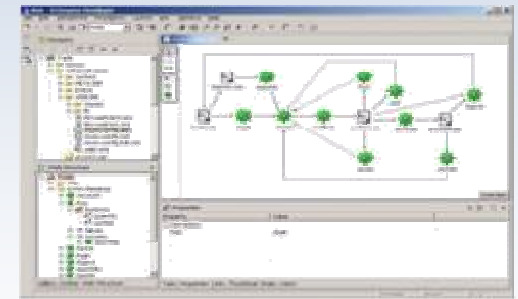*Create Business Services*

Assemble

Three Primary Sources of Business Services

1. Create new business services with Rational Application Developer (RAD) or WebSphere Developer for zSeries.
2. Wrap existing applications (i.e., asset re-use).
3. Provided via trading partner – often based on existing standards.

Enhanced! *WebSphere Developer for zSeries*

WebSphere Developer for zSeries became generally available in June 2005.

- **Bridges mainframe and client-server development**
- **For deployment to WebSphere, CICS, IMS, DB2 and batch**
  - Cross platform development
  - Workstation based development tool
  - Workstation based mainframe application analysis tool
- **Develop SOA systems that combine Web services, web applications and traditional applications:**
  - COBOL, PL/I, EGL (4GL)
  - Java, J2EE, WSDL, Java Beans, XML adapters
  - Portlets and complex user interfaces
  - Service flow modeler for CICS and HATS

- *New Feature!* **Service Flow Modeler in WebSphere Developer for zSeries:**
  - Identify service levels and service level requirements
    - Model new business flows, using processes or services and their interfaces.
    - Expose business flows as a service or Web service
    - Generate adapters to and from interfaces

Technology Preview in June '05

Planned GA with WDz V6.0.1 in Nov '05