



# **Extending Your Mainframe For More Business Value**

Add New Workload –  
Extend Access Channels with SOA

# Service Oriented Finance's Business Problem

**We want to grow revenue and improve customer satisfaction by extending new access channels to our business**



**Service Oriented Finance  
CEO**

# Service Oriented Finance's Technical Challenges

**Our core business processing runs on the mainframe**



**Service Oriented Finance  
CIO**

# Extend Access Channels

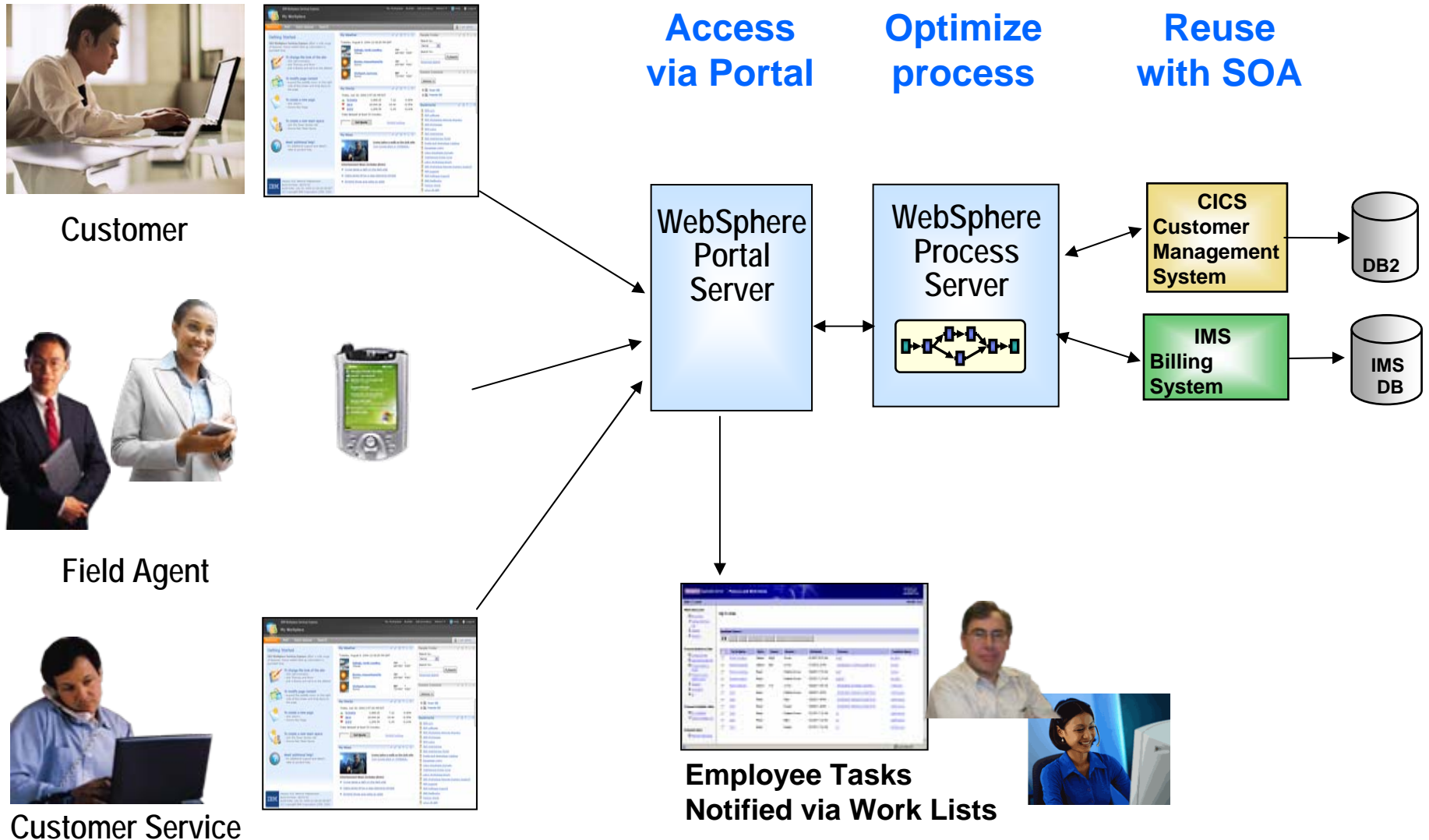
## ■ Key Access Channels

- ▶ Web access by customers and business partners
- ▶ Call centers
- ▶ Front offices
- ▶ Enabled by internet technologies

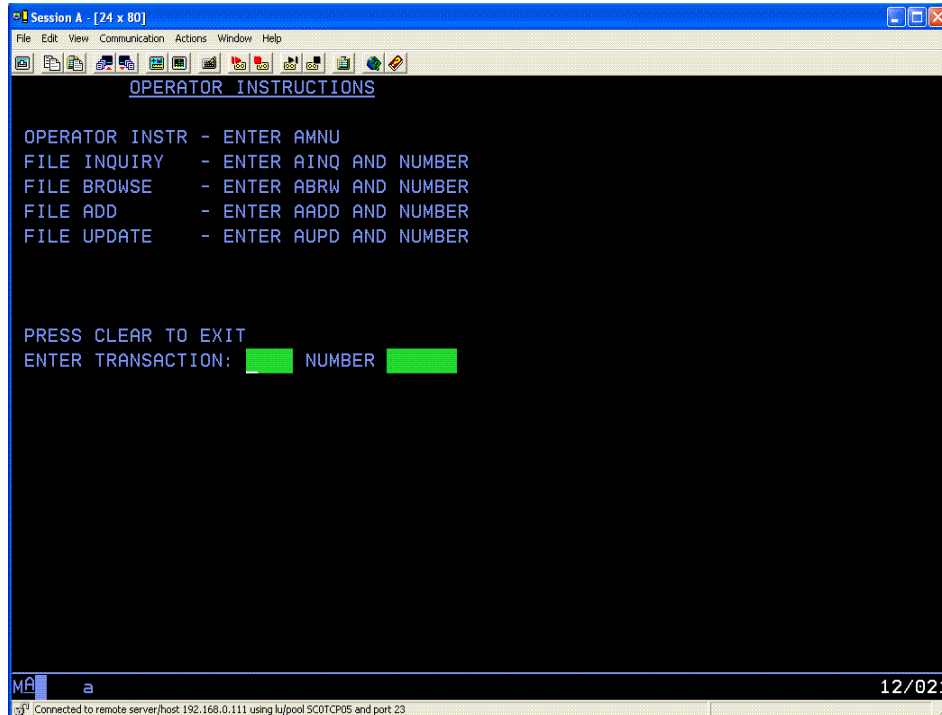
## ■ Growing pains and requirements

- ▶ Leverage existing back end transaction systems
- ▶ Connectivity is required
- ▶ Increase in back end transactions is typical

# Service Oriented Finance Solution Picture



# Existing CICS Investment: Customer Management System



The screenshot shows a terminal window titled "Session A - [24 x 80]". The menu bar includes "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". The main content area displays "OPERATOR INSTRUCTIONS" with the following list:

- OPERATOR INSTR - ENTER AMNU
- FILE INQUIRY - ENTER AINQ AND NUMBER
- FILE BROWSE - ENTER ABRW AND NUMBER
- FILE ADD - ENTER AADD AND NUMBER
- FILE UPDATE - ENTER AUPD AND NUMBER

Below the list, it says "PRESS CLEAR TO EXIT" and "ENTER TRANSACTION: [green box] NUMBER [green box]". The status bar at the bottom shows "MA a" and "12/021". A small icon in the bottom left corner indicates a connection to a remote server.

Existing application consists of CICS programs accessed via “green screen” terminals.

**We have invested millions of dollars in this asset**



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CIO**

# Use SOA To Extend Your Mainframe Assets

We want to make portions of this CICS application available to our new channels



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CIO**

CICS TS Version 3 has built-in capabilities to expose programs as web services



**IBM**

# The Basics: What Is SOA?

... a service?

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



... **service oriented architecture (SOA)?**

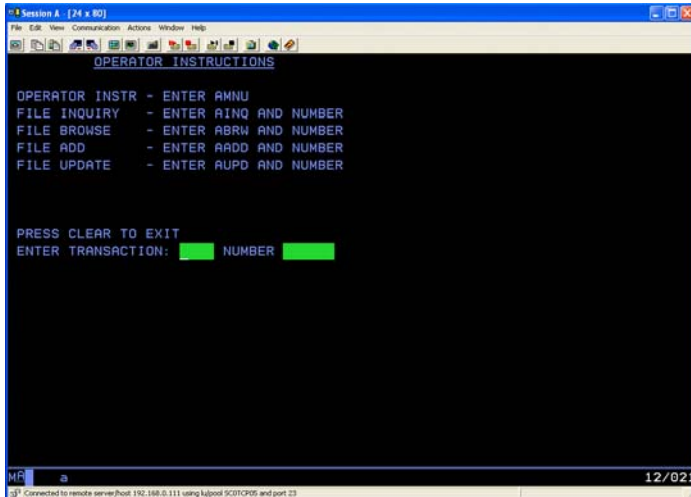
An IT **architectural style** that supports  
integrating your  
business as linked  
services

“SOA impacts every aspect of IT and business.”

**Gartner**



# DEMO: Portal Calls CICS Program Using Web Services

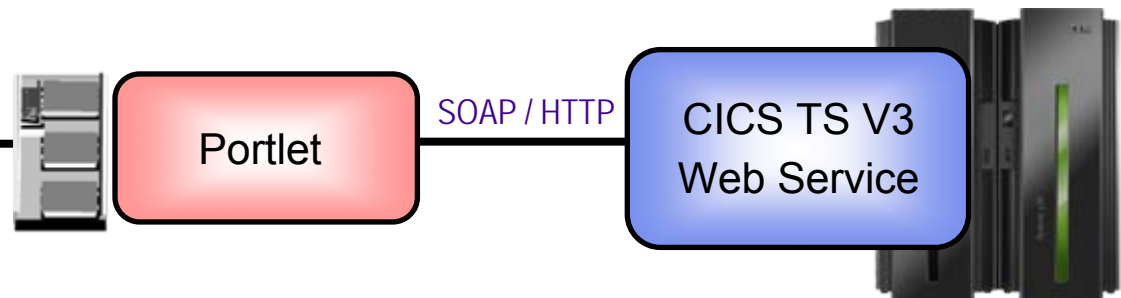


- Customers accesses the Portal
- A portlet talks to the CICS Loan application using Web Services

*Web Services expose CICS and IMS investments for a new generation of re-use*



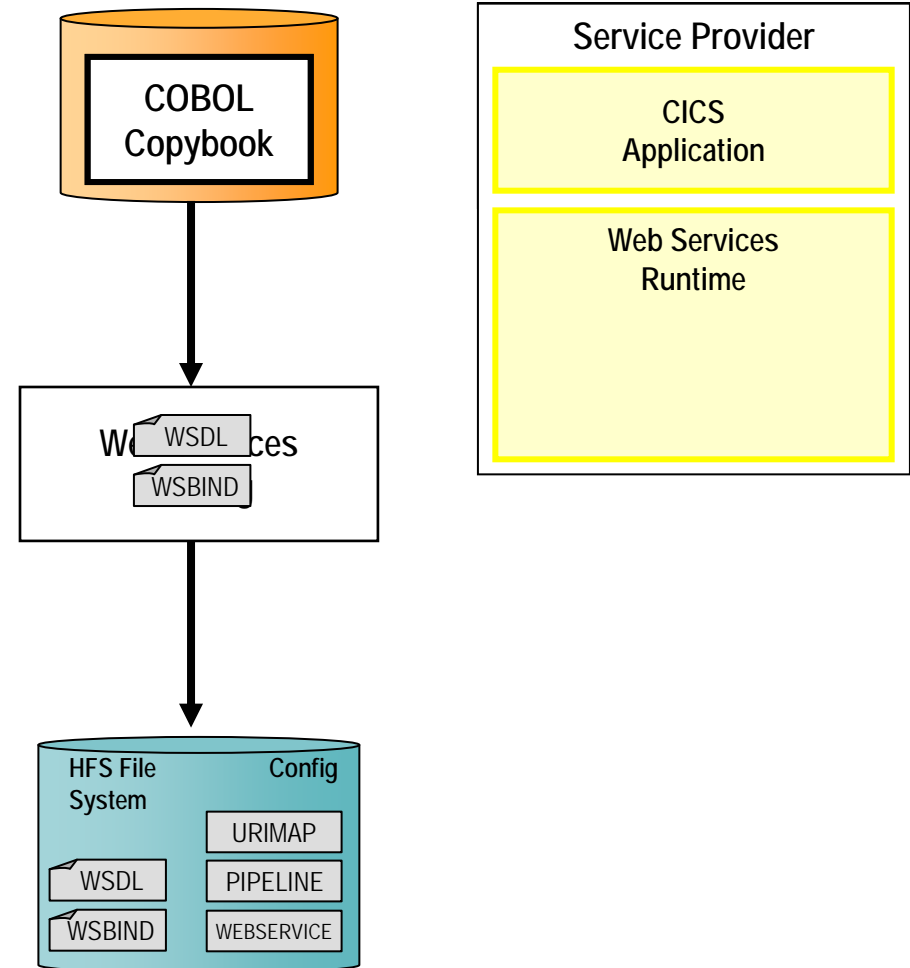
Customer





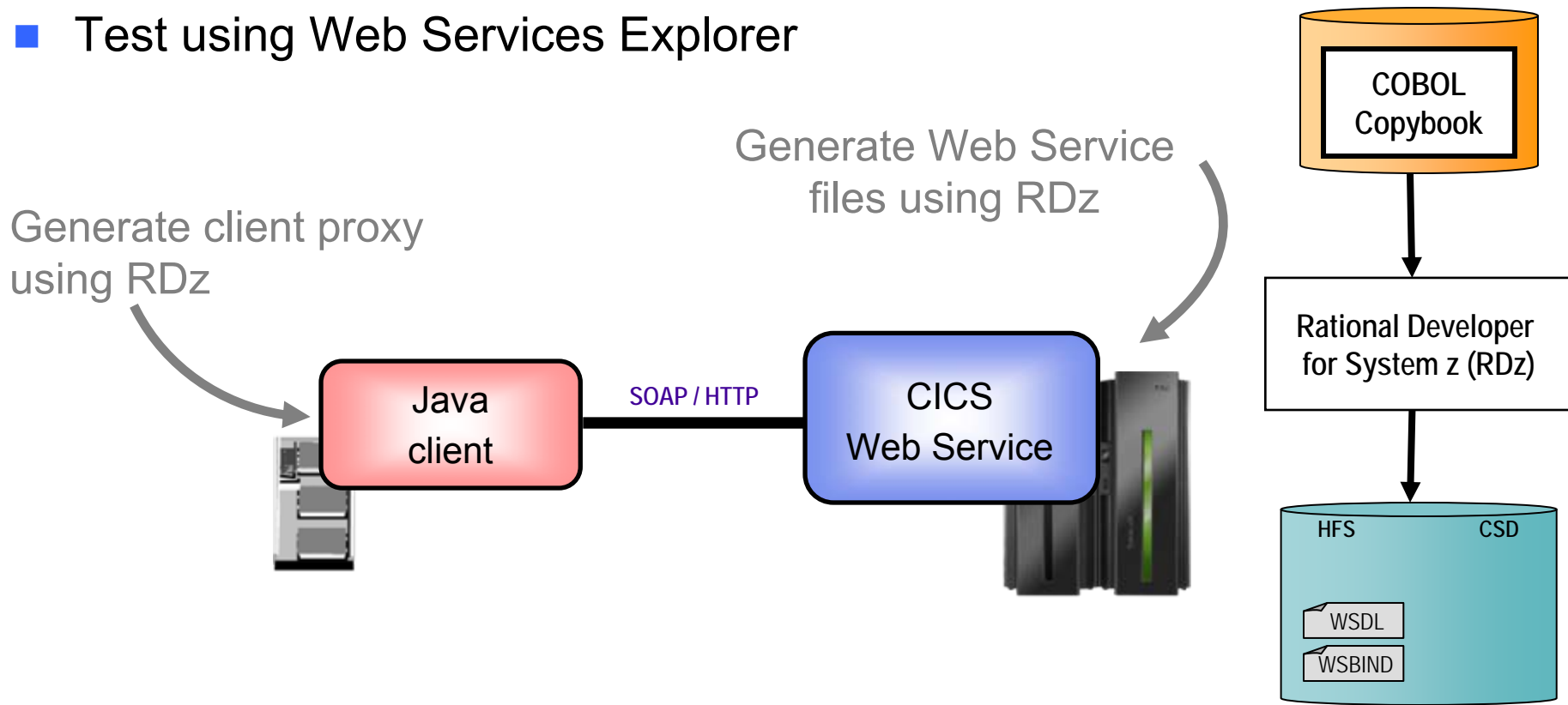
# Development Steps To Expose CICS Application As A Web Service Provider

1. Start with COBOL copybook
2. Generate WSDL from copybook
3. Copy files to host file system.
  1. Use standard CICS supplied PIPELINE definition
4. CICS automatically installs other related definitions
5. CICS application is now web service enabled



# DEMO: Use Rational Developer For System z To Expose CICS Program As Web Service

- Generate WSDL and WSBIND files
- Deploy files to host file system
- Test using Web Services Explorer



# What About IMS Assets?

- Use the **IMS SOAP Gateway** and **IMS Connect** in IMS V10
- Integrates IMS assets into SOA by providing a standard Web Services interface
  - ▶ Expose your IMS application as a web service with easy deployment and configuration
    - No programming needed
- Same tooling support
  - ▶ IBM Rational Application Developer for System z generates Web Service artifacts like WSDL and XML converters
    - From COBOL copybook of IMS application
- Transforms XML data without changing IMS application
  - ▶ IMS Connect XML Adapter transforms XML data
    - No need to modify the IMS application code

# Customer Self-Service Access

**We want to provide a superior self-service experience for our customers...**



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**Use WebSphere Portal to build a customer facing portal**



**IBM**

# IBM WebSphere Portal Supports Extended Channels

Natural, Intuitive,  
Adaptive User Experience

## Services

*Self-service  
Transactions*

*Customized  
User Experience*

*E-forms*

*Initiate Business  
Process Requests*

*Employee Tasks*

*Mobile Access*

*Management  
Dashboards*

*Customer  
Relationship Mgmt.*

*In line Analytics*

*Collaboration*

WebSphere  
Portal  
Server

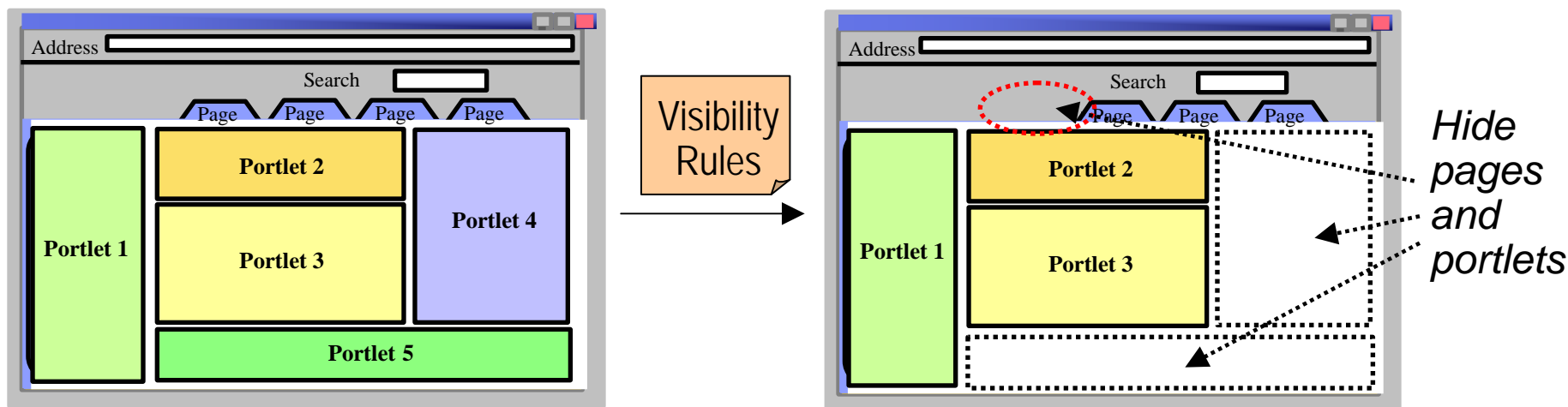
User interface to SOA  
services  
Delivery of business  
information

*add value to extended  
channels with  
in line analytics,  
collaboration, ...*

Customers

Employees

# Create a Customized User Experience With Advanced Personalization



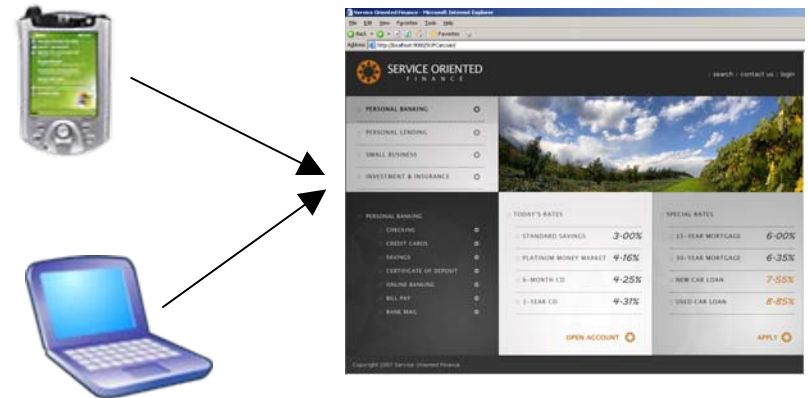
- Attribute-based personalization based on “visibility rules” allows for a more flexible and dynamic user experience
- Visibility rules instruct the portal to:
  - ▶ Show or hide pages and portlets...
  - ▶ ...based on dynamic characteristics that are determined at runtime...
  - ▶ ...according to business rules



# DEMO: Service Oriented Finance Customer Portal

## Customer Portal:

- ▶ Access using Browser and Mobile Client



## Content Personalization:

### Juan's Portal / Portlet View

Banking Accounts Portlet

User	Customer Account		
	Account	Balance	Type
juan	<a href="#">10001</a>	\$300.23	CHECKING
	<a href="#">20001</a>	\$50,289.55	SAVINGS
	<a href="#">30001</a>	\$20,240.23	CD

*Gold status prompts display of Private Banking portlet*

SOF Private Banking  
Enjoy your life while SOF takes care of your finances. We have excellent *relationship managers* to understand what your outlook in life is. Our financial planners will work with you to reach your goals.  
[Learn More](#)

SOF Awards

### Herman's Portal / Portlet View

Banking Accounts Portlet

User	Customer Account		
	Account	Balance	Type
herman	<a href="#">10002</a>	\$208.82	CHECKING
	<a href="#">20002</a>	\$2,988.32	SAVINGS

*Non-Gold status hides Private Banking portlet*

SOF Calculator  
[Certificates of deposit](#)  
Earnings to the penny  
[Refinance calculator](#)  
Will a new mortgage save?  
[Personal finance](#)

SOF Awards

# Optimize Processing Of Car Loan Applications

The new channel is generating more new business! Our current manual processing can't keep up.



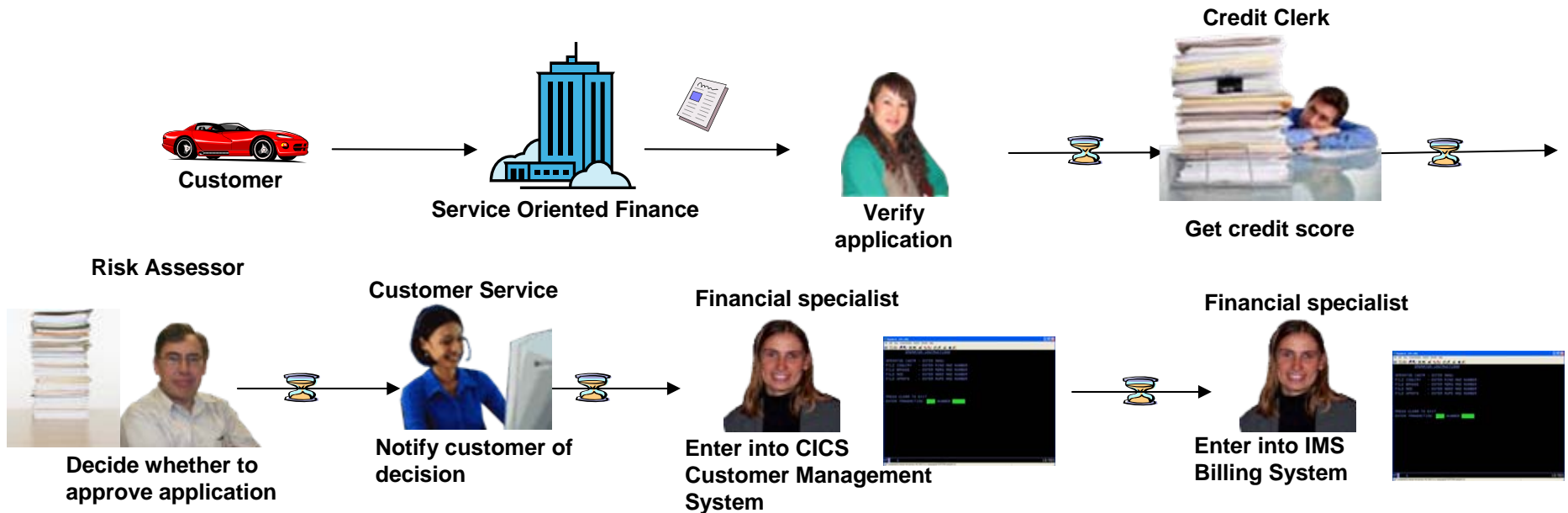
**Service Oriented Finance  
CIO**

Create an improved process with WebSphere Process Server



**IBM**

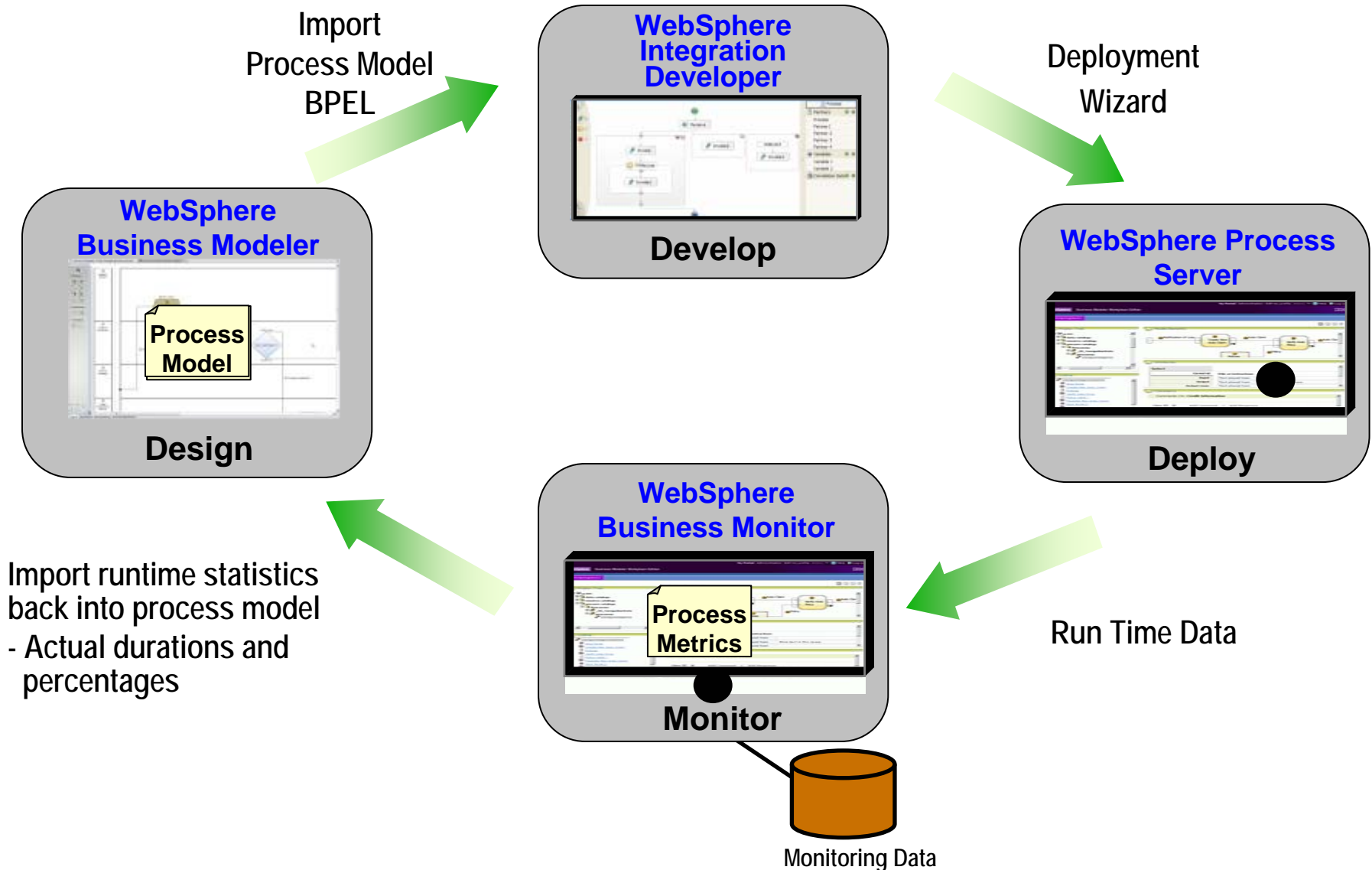
# Current Process For New Car Loans



## Issues with the current process:

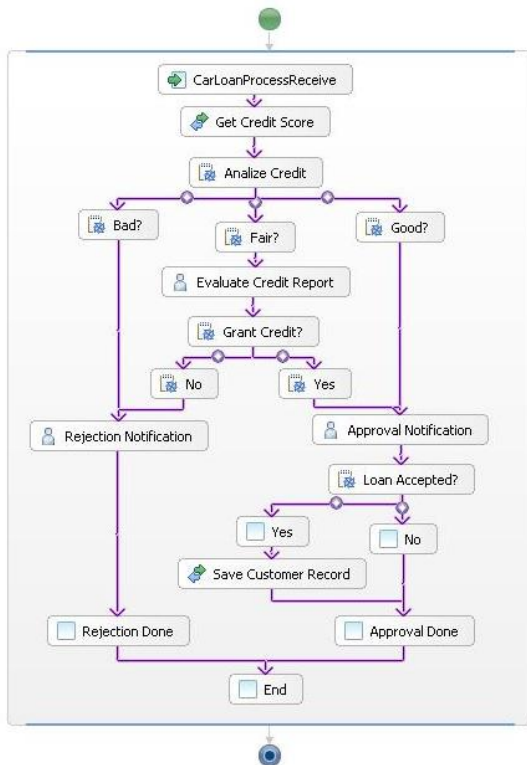
- Manual process won't scale
- Manual data entry results in errors
- Sequence of handoffs makes it difficult to determine status of any particular loan request

# Design, Develop, Deploy, And Monitor The New Process With WebSphere

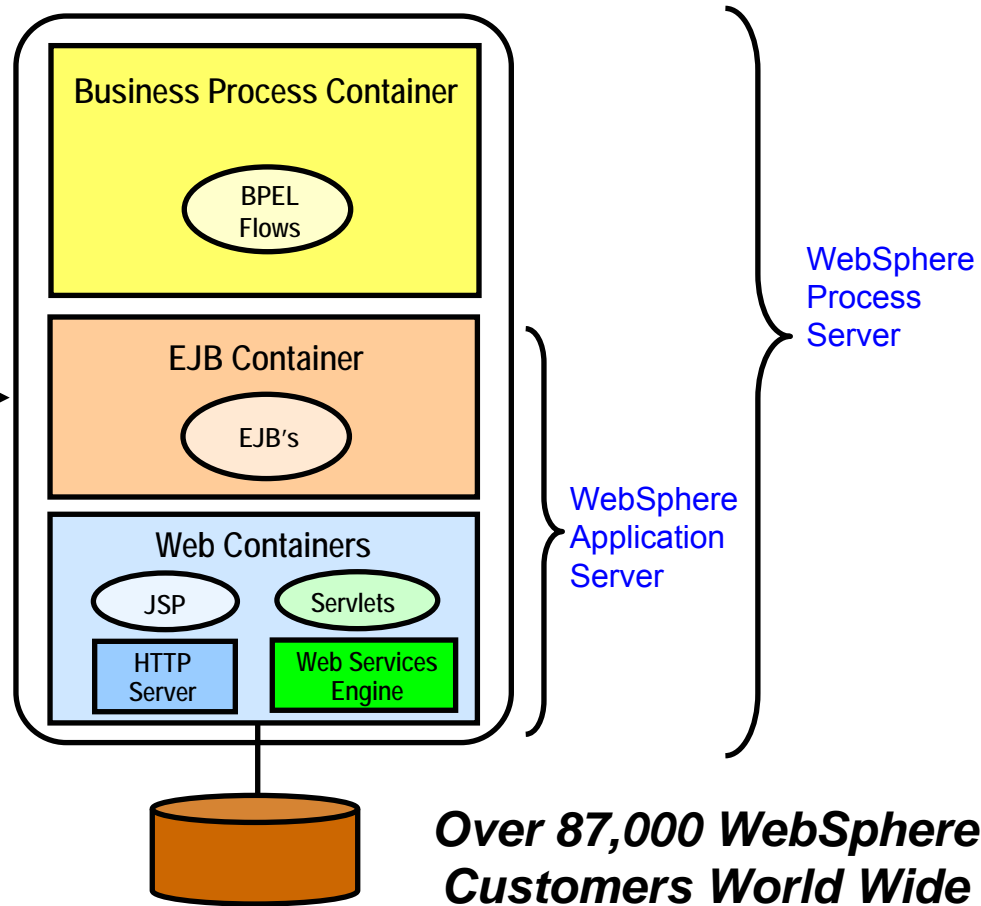


# The Completed Process Runs On WebSphere Process Server (WPS)

- The completed BPEL process can be deployed easily to WPS
- WPS supports J2EE, web services, and BPEL flows on a unified code base



Deploy



# DEMO: Run The New Car Loan Process

The screenshot shows a web browser window titled "Websphere BPC Explorer - Process Instance - Microsoft Internet Explorer". The address bar shows "http://localhost:9080/bpc/faces/pages/ProcessInstanceDetailsView.jsp#". The page content includes a navigation menu on the left with categories like "Process Templates", "Process Instances", "Task Templates", and "Task Instances". The main area displays "Process Instance" details for "O2CProcess", which is in a "Finished" state. Below this, there are "Available Actions" (Compensate, Terminate, Delete, Suspend, Resume, Restart, Activities..., Tasks...) and a table of activities.

Activity Name	State	Activity Kind	Owner	Activated
<a href="#">SendToFinance</a>	Finished	Invoke		3/30/06 12:02:36 PM
<a href="#">SendToWarehousing</a>	Finished	Invoke		3/30/06 12:02:34 PM
<a href="#">SendToERP</a>	Finished	Invoke		3/30/06 12:02:16 PM
<a href="#">Credit Check</a>	Finished	Invoke		3/30/06 12:02:14 PM
<a href="#">Sales Rep Approval</a>	Finished	Staff	inst1	3/30/06 12:02:14 PM
<a href="#">Large Order Business Rule</a>	Finished	Invoke		3/30/06 12:01:44 PM
<a href="#">Receive Order</a>	Finished	Receive		3/30/06 12:01:40 PM

- Submit new loan application through Portal
- Process-level monitoring
- Human workflow – Work list gets populated with tasks

# Employee-Facing Portal

**We want our customer service center to provide better customer satisfaction**



**Service Oriented Finance  
CEO**

**WebSphere Portal also provides easy access to business information and applications for your employees**



**IBM**



# Employees Need Easy Access To Business Information

- Customer service representative needs multiple screens
- Data not stored in a way to support conversations
- Customer ends up waiting on the phone, repeating information

Can you increase the limit on my credit card?



**Customer**

This might take a while.  
Please hold while I look up your information



**Service Oriented Finance  
Customer Service Representative**

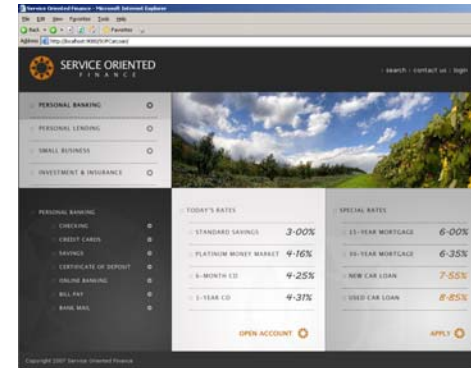


# Channels Can Deliver Operational Intelligence With Embedded Analytics

- In-line Analytics for Guided Analysis
  - ▶ Embedded into existing processes and web applications
  - ▶ Combines operational information (i.e. current point in time) with data warehouse (historic) information
  - ▶ Real-time
  - ▶ Suitable for large volumes of requests
- Use Alphablox to Embed Analytics
  - ▶ Prebuilt Blox (dashboards, KPI's, charts, scoreboards) to deliver embedded analytics with web applications
    - Extends business insight without programming!
  - ▶ Can run as portlet or web application on System z

# DEMO: Customer Service Center Employee Portal

- Customer service representative uses inline analytics to make a real-time decision

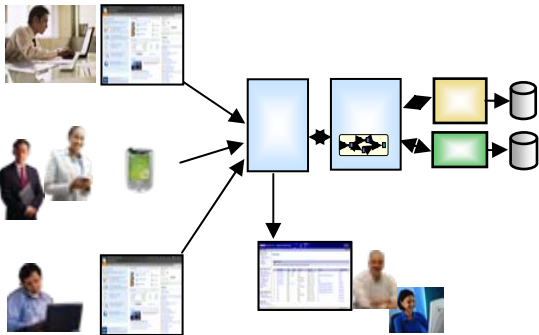


**Customer**



**Service Oriented Finance  
Customer Service Representative**

# Deployment Decisions



What platform should I use to deploy these channel solutions?



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**CIO**

System z is an ideal platform for your SOA solutions



**IBM**

# Why SOA On System z?

## 1. Qualities Of Service

- An effective SOA implementation requires very high Quality of Services (QoS) from the underlying environment
  - ▶ Continuous Availability/Disaster Recovery
  - ▶ Scalability and Clustering
  - ▶ Rock-solid Security
  - ▶ Workload Management to handle peak demand
  
- *These are fundamental characteristics of System z, making it an ideal platform to deploy an SOA solution*
  
- IBM's core SOA framework runs on z/OS
  - ▶ WebSphere Application Server
  - ▶ WebSphere Process Server
  - ▶ WebSphere Portal Server
  - ▶ WebSphere Enterprise Service Bus

# Why SOA On System z?

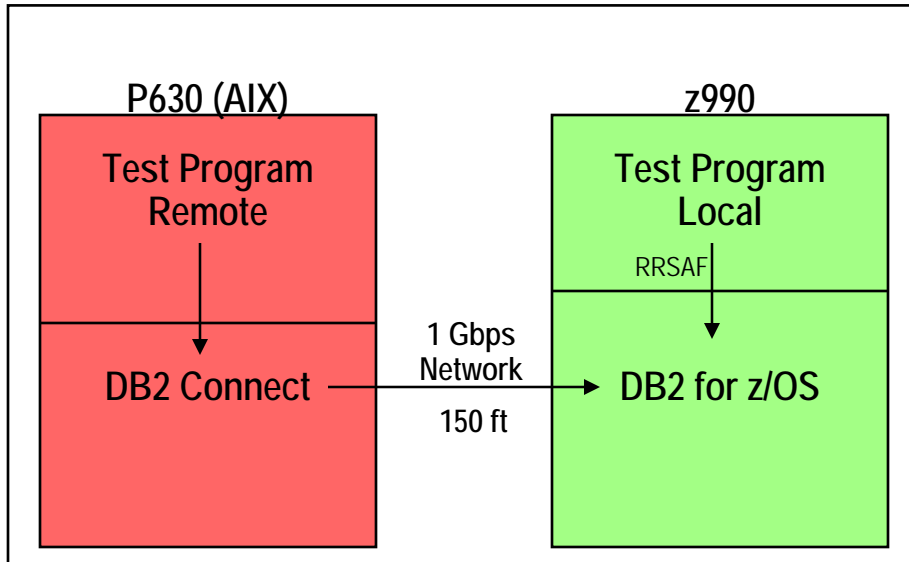
## 2. Co-location

- The mainframe already houses the core CICS and IMS applications and data for the business
  - ▶ Quickly expose them as services, and continue the QoS the business depends on
- Having the Process Server and Portal Server in close proximity to each other and the assets they access provides better performance and throughput
- HiperSockets technology means less network overhead
  - ▶ Memory to memory communication

# Co-located Environments Maximize Throughput

## IBM Study Shows Effects Of Network Latency On SQL Processing

### Test Configuration

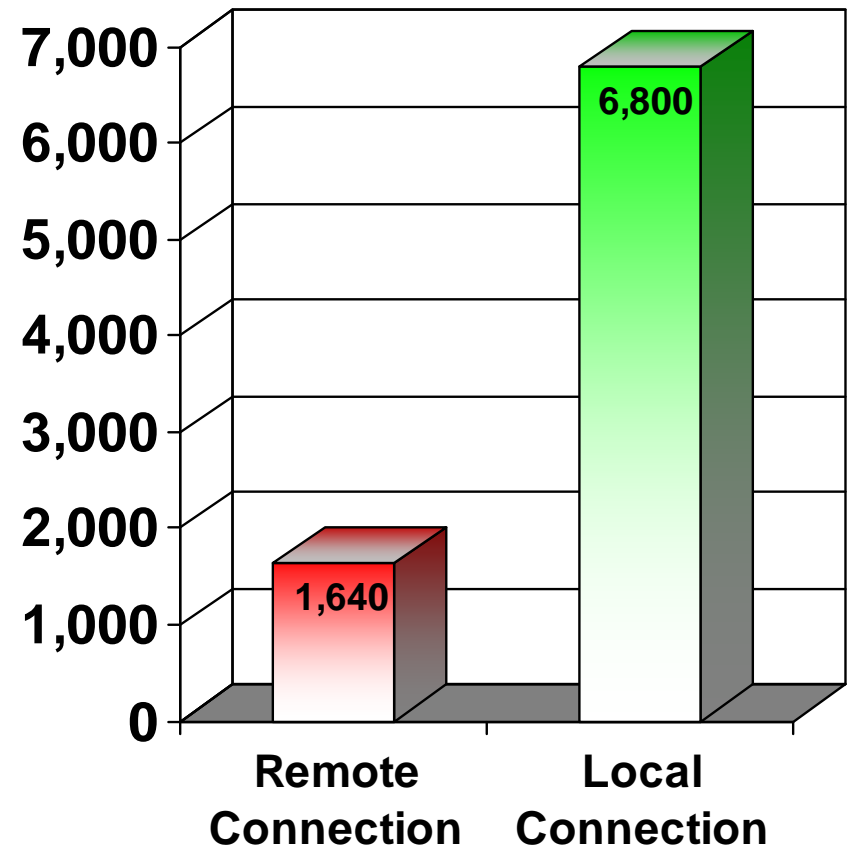


### Why the big difference in SQL throughput?

- Elimination of network latency incurred by remote database connections increased SQL throughput **4x!**
- Hipersockets provide this benefit for consolidated applications on zLinux

### Results:

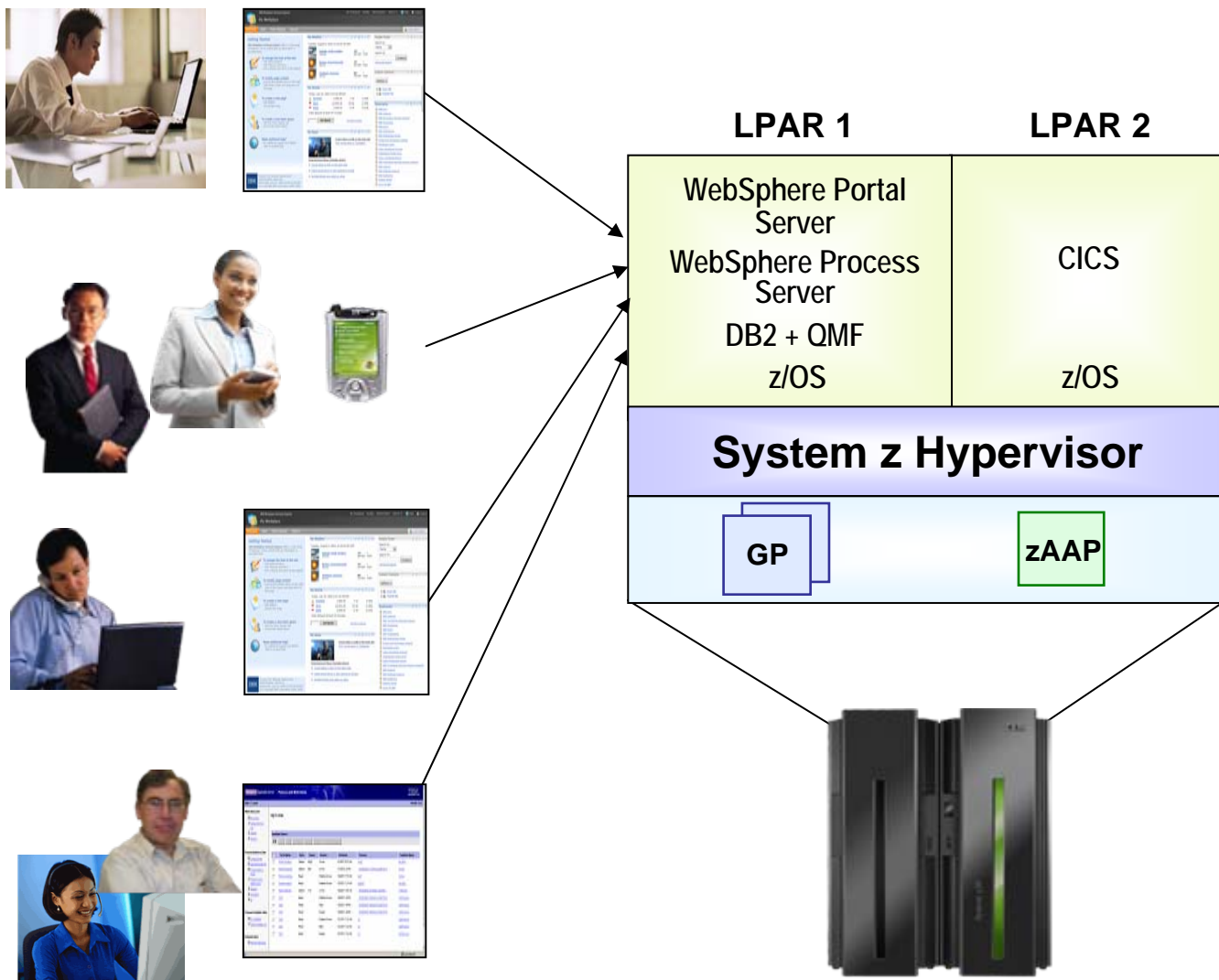
### SQL Statements / Second



IBM Study: "Local versus Remote Database Access: A Performance Test", 2005

<http://publib-b.boulder.ibm.com/abstracts/redp4113.html>

# Mainframe Extension Solution – Access Channels



**Best**

- ▶ Quality of service
- ▶ Co-location
- ▶ Lower cost of acquisition



**IBM**

# Deploy WebSphere Process Management Application on Mainframe vs. HP Servers

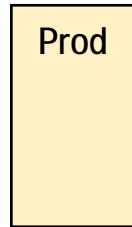
*Existing Mainframe*



*Existing Disaster Recovery Site*

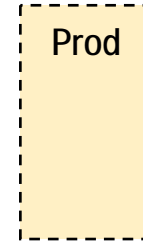


*Add LPAR for New Web Application w 1.28 TB storage*



1,624 MIPS additional workload

*And Add Disaster Recovery w 1.28 TB storage*



3 year cost of acquisition \$4.01M

Existing z10:  
2 GP 1,720 MIPS  
DB2 and utilities  
With 20TB storage

Existing:  
1 GP processor for hot disaster switch-over  
1 "dark" DR processor  
With 20TB storage

Incremental:  
1 zAAP 920 MIPS WPS & Portal (85%)  
1 GP 541 MIPS DB2  
163 MIPS WPS & Portal (15%)  
2 GB memory

Capacity Backup:  
1 GP  
1 zAAP

*Or Add HP Integrity Superdome 9140 Server w 1.67 TB storage*



*And Add Disaster Recovery w 1.67 TB storage*



3 year cost of acquisition \$12.27M

HP DR solution is used in software and hardware



# WebSphere Process Management Incremental Cost Breakdown

## Mainframe Incremental Hardware

OTC		ANNUAL	
GP	\$1,358,000	Processor Maintenance *	\$90,142
zAAP	\$125,000	(For year 2, 3)	
DR Processors	\$27,000	Storage Maintenance	\$5,272
Memory (2 GB)	\$12,000	(For year 2, 3)	
IBM Storage (1.28TBx2)	\$141,750		
<b>TOTAL</b>	<b>\$1,663,750</b>	<b>TOTAL</b>	<b>\$95,414 (year 2, 3)</b>

## Mainframe Incremental Software

OTC		ANNUAL	
DB2 Utilities	\$346,565	Utilities S&S	\$49,931
WebSphere Process Server	\$383,760	Process Server S&S	95,940
		Portal Enable S&S	\$45,920
WebSphere Portal Enable	\$230,420	DB2 MLCx12	\$107,088
		z/OS MLCx12	\$52,296
		OMF MLCx12	\$47,724
<b>TOTAL</b>	<b>\$960,745</b>	<b>TOTAL</b>	<b>\$398,899</b>

## Distributed Incremental Hardware

OTC		ANNUAL	
HP Integrity Superdome 9140 Server	\$1,341,121	Server Maintenance	\$154,974
DR Hardware	\$804,673	(Prepaid in year 1 for 3 years)	
HP storage (1.67TBx2)	\$749,805	Storage Maintenance	\$44,400
<b>TOTAL</b>	<b>\$2,895,599</b>	<b>TOTAL</b>	<b>\$509,322 (year 1) \$44,400 (year 2,3)</b>

## Distributed Incremental Software

OTC		ANNUAL	
Oracle EE & Utilities	\$615,000	Oracle S&S	\$135,300
WebSphere Process Server	\$3,330,000	WS Process Server Maint	\$666,000 (Year 2, 3)
WebSphere Portal Server	\$1,905,500	WS Portal Server S&S Maint	\$381,100 (Year 2, 3)
Unix	\$132,720	Unix S&S	\$96,843 (prepaid in year 1 for 3 years)
<b>TOTAL</b>	<b>\$5,983,220</b>	<b>TOTAL</b>	<b>\$425,828 (year 1) \$1,182,400 (year 2, 3)</b>

\* Mainframe Processor Maintenance includes the maintenance for general purpose processors and specialty engines

# Deploy WebSphere Process Management Application on Mainframe vs. SUN Servers

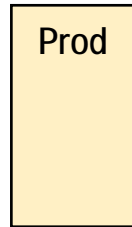
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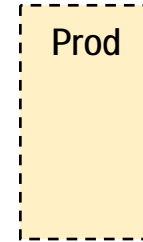


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3 year cost of acquisition \$4.01M

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Capacity Backup:  
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*Or Add SUN SPARC M9000 Server w 1.67 TB storage*



*And Add Disaster Recovery w 1.67 TB storage*



3 year cost of acquisition \$26.23M

Typical vendor DR solution is used in software and hardware

# WebSphere Process Management Incremental Cost Breakdown

## Mainframe Incremental Hardware

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## Mainframe Incremental Software

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<b>TOTAL</b>	<b>\$960,745</b>	<b>TOTAL</b>	<b>\$398,899</b>

## Distributed Incremental Hardware

OTC		ANNUAL	
SUN SPARC M9000 Server	\$3,585,645	Server Maintenance (Prepaid in year 1 for 3 years)	\$206,409
DR Hardware	\$2,151,387		
HP storage (1.67TBx2)	\$749,805	Storage Maintenance	\$44,400
<b>TOTAL</b>	<b>\$6,486,837</b>	<b>TOTAL</b>	<b>\$663,626 (year 1) \$44,400 (year 2,3)</b>

## Distributed Incremental Software

OTC		ANNUAL	
Oracle EE & Utilities	\$1,891,125	Oracle S&S	\$416,048
WebSphere Process Server	\$7,200,000	WS Process Server Maint (Year 2, 3)	\$1,440,000
WebSphere Portal Server	\$4,120,000	WS Portal Server S&S Maint (Year 2, 3)	\$824,000
<b>TOTAL</b>	<b>\$13,211,125</b>	<b>TOTAL</b>	<b>\$416,048 (year 1) \$2,680,048 (year 2, 3)</b>

\* **Mainframe Processor Maintenance includes the maintenance for general purpose processors and specialty engines**

