Extending Your Mainframe For More Business Value

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

Mainframe Extension Solution – 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**
  - How to expose access to back end systems?
  - Significant increase in transactions is typical
  - Constrain I/T costs to grow slower than business revenue

Service Oriented Finance's Technical Challenges

How can we leverage our existing mainframe investments?

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Service Oriented Finance Solution Picture

Customer

Field Agent

Customer Service

Access via Portal

Optimize process

Reuse with SOA

WebSphere Portal Server

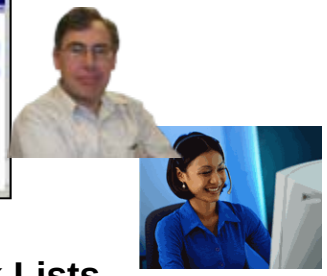
WebSphere Process Server

CICS Customer Management System

DB2

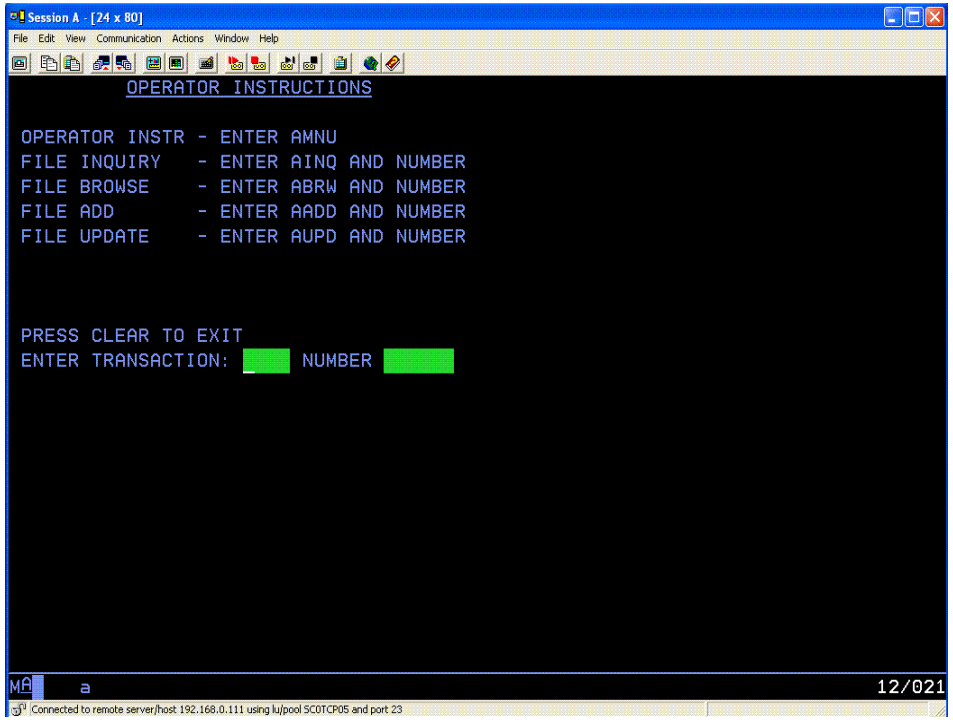
IMS Billing System

IMS DB



Employee Tasks Notified via Work Lists

Existing CICS Investment: Customer Management System



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

We have invested millions of dollars in this asset

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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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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

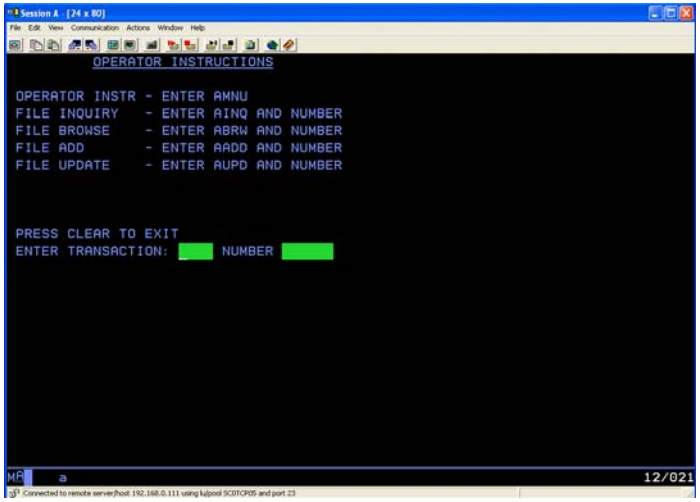
… service oriented architecture (SOA)?

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

Portlet

SOAP / HTTP

CICS TS V3
Web Service

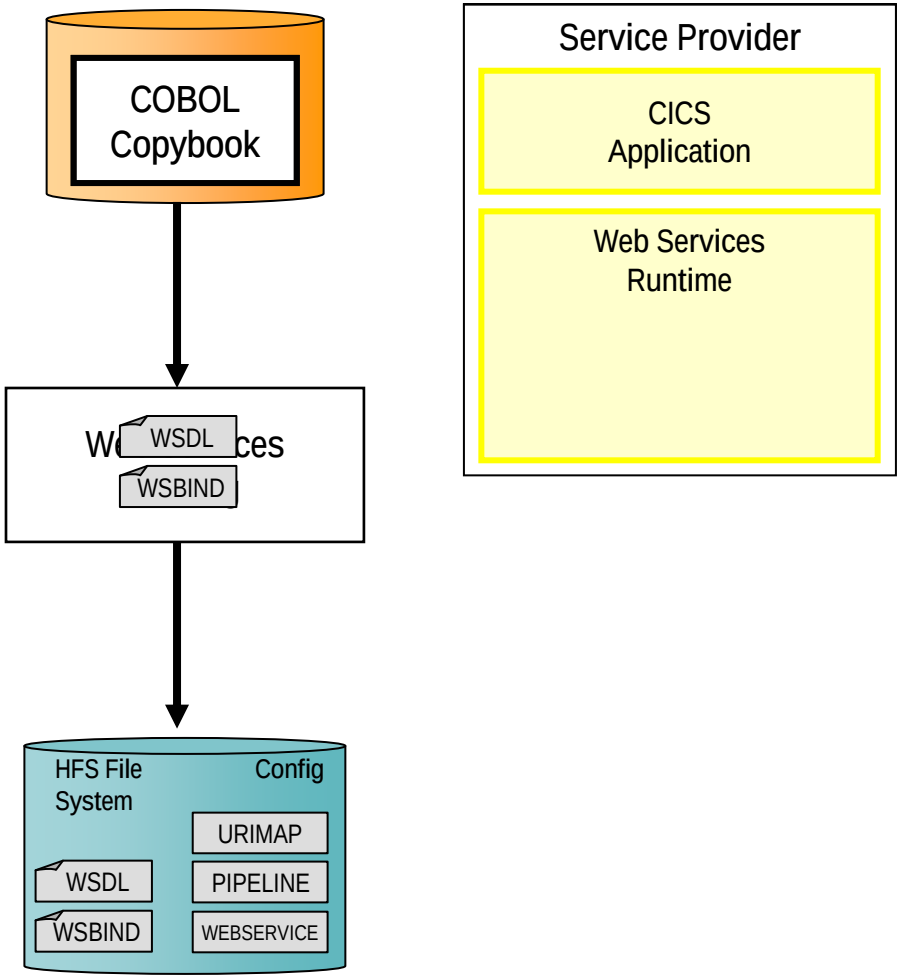
CICS Web Services

- Native Web Services capability offered by CICS
  - A CICS application can be a web service provider and requester
  - Fully integrated into CICS
    - Resource definition using CICS admin screen, problem determination, monitoring & statistics
    - New tooling support for easier application development
  - SOAP requests can flow over HTTP or WebSphere MQ transports

- Rich set of Web services standards supported
  - SOAP 1.1 and 1.2 — to send and receive web service messages
  - WS-I Basic Profile 1.0 — for interoperability with between providers and requesters
  - WS-Coordination — transaction coordination
  - WS-AtomicTransaction
  - WS-Security — for authentication and encryption of messages

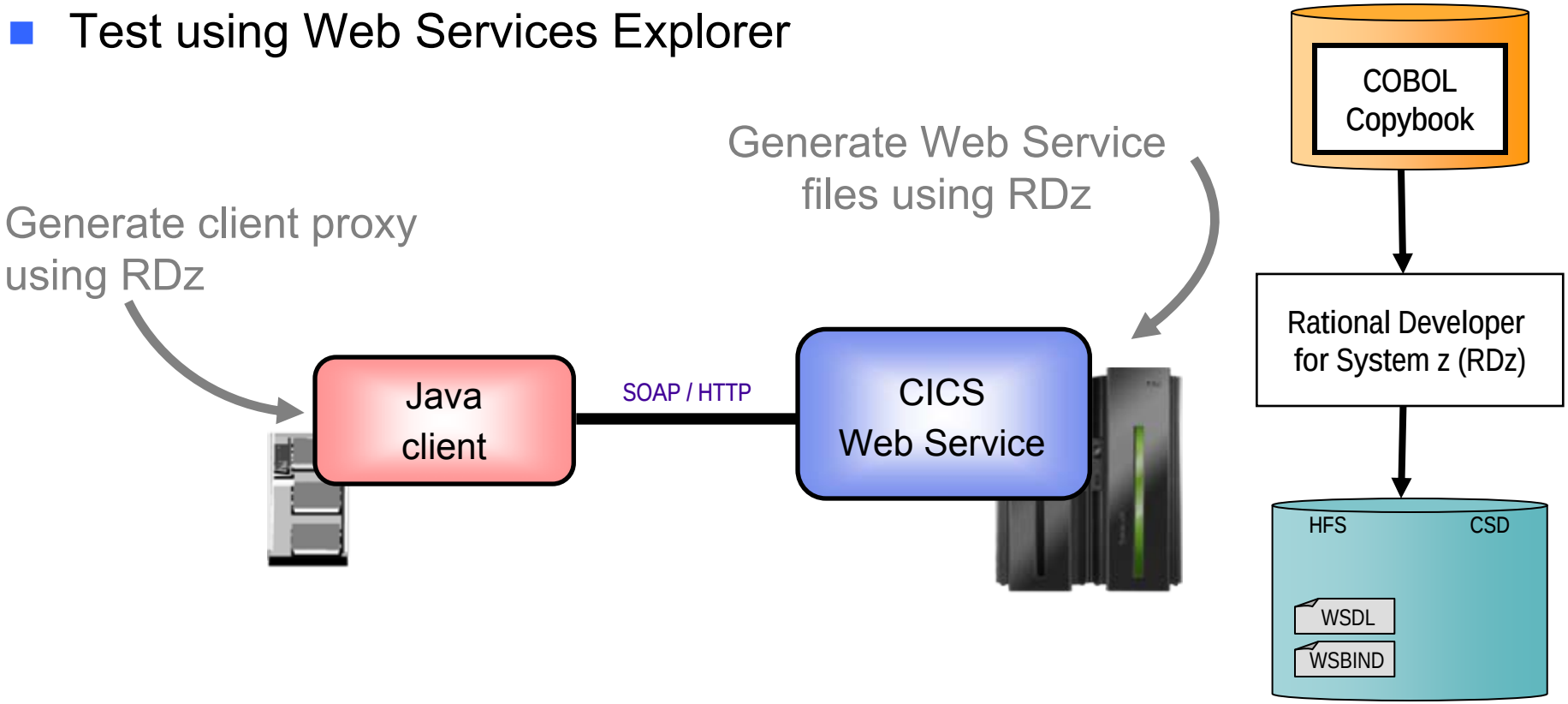
Development Steps To Expose CICS Application As A Web Service Provider

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

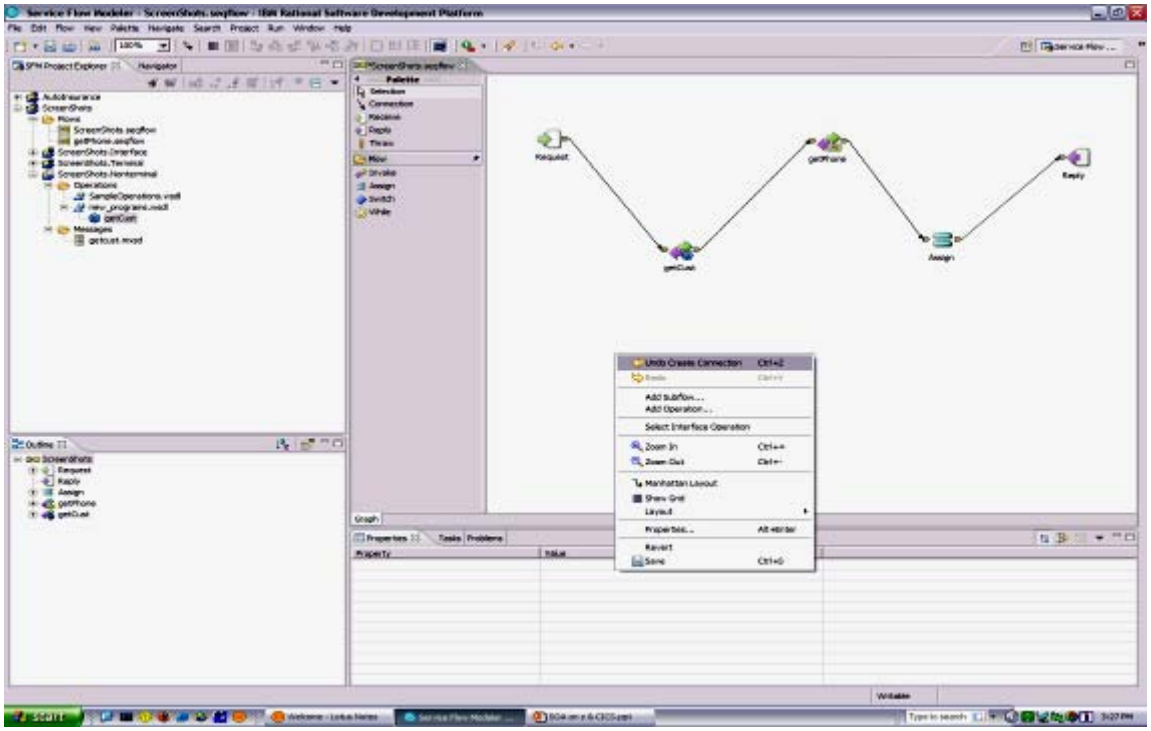


CICS Service Flow Feature

- Business Logic is often spread across multiple screen interactions
- The CICS Service Flow Feature allows you to sequence fine-grained CICS program and screen interactions into a higher level step
  - This can then be exposed as a web service
- Consists of:
  - CICS Service Flow Runtime in CICS TS V3
    - Runtime in CICS executes a sequence of terminal or commarea based interactions
  - Service Flow Modeler in Rational Developer for z
    - Visually design flow
    - Tool can record flow as user navigates through BMS screens
    - Use Web Services wizards and test facilities in RDz

DEMO: Service Flow Modeler

- Use Visual Designer in RDz
  - Record Screen interactions
  - Wire CICS programs together



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
- 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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CIO

Use WebSphere Portal to build a customer facing portal

IBM

IBM WebSphere Portal Supports Extended Channels

Customers

Employees

Natural, Intuitive, Adaptive User Experience

WebSphere Portal Server

User interface to SOA services
Delivery of business information

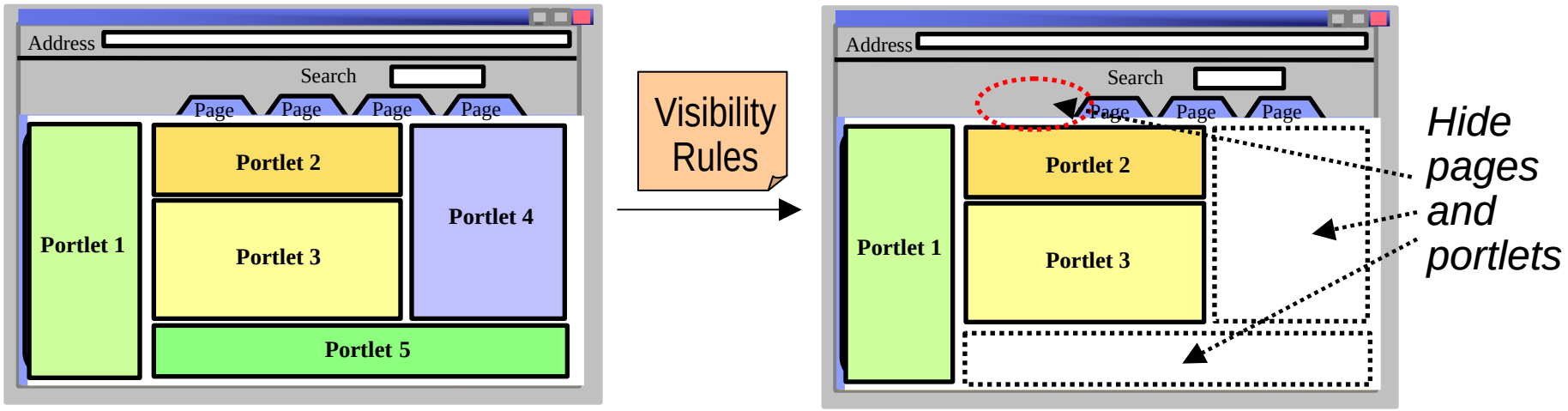
Services

Business Transactions	*Management Dashboards*
Business Workflows	*Sales Force Automation*
Employee Tasks	*Customer Relationship Management*
Collaboration	*In line Analytics*
e-Mail	*E-Forms*
Instant Messaging	*Personal Productivity*

Plus added value for extended channels:

In line analytics, collaboration, …

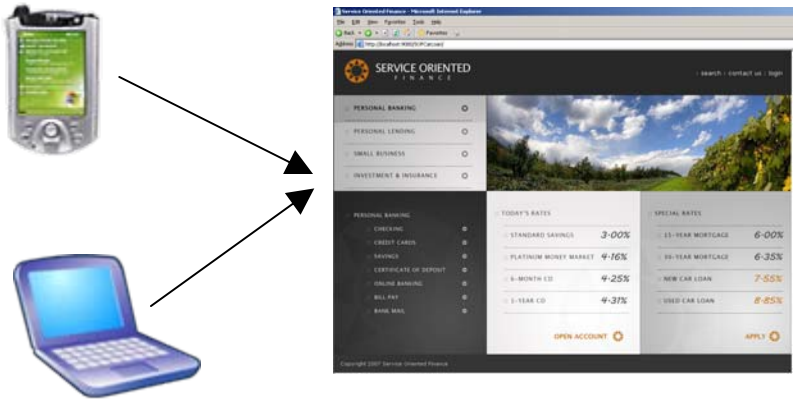
Create a Specialized User Experience With Advanced Personalization



- 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

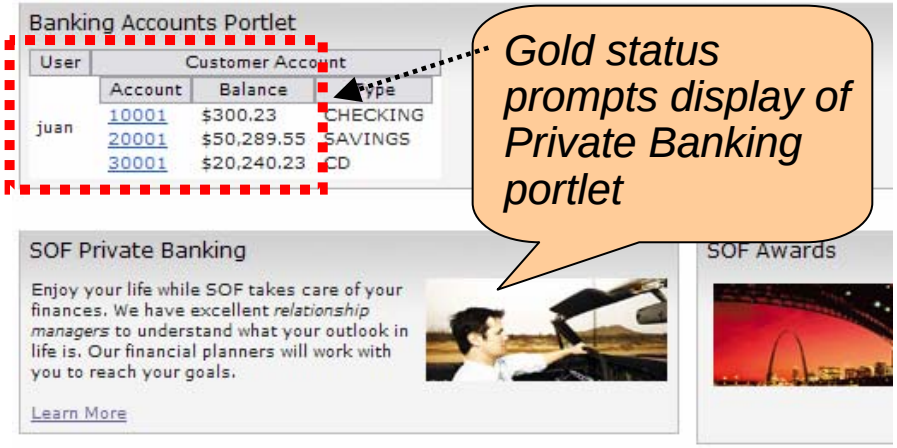
DEMO: Service Oriented Finance Customer Portal

- Customer Portal:
  - Access using Browser and Mobile Client

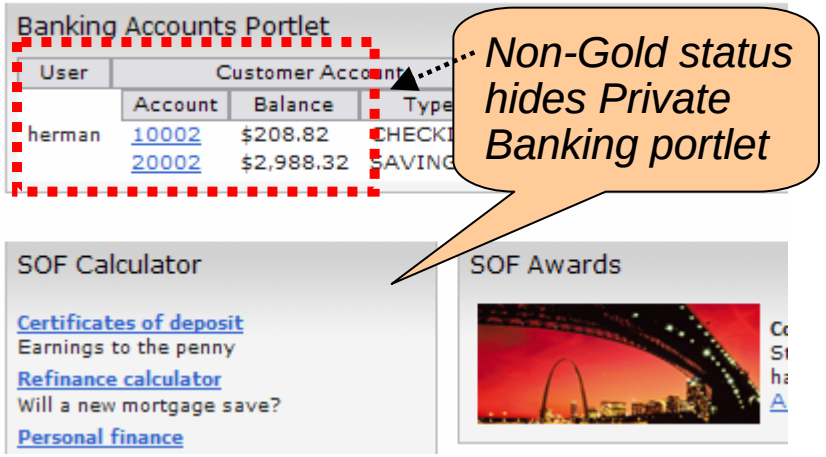


- Content Personalization:

Juan's Portal / Portlet View



Herman's Portal / Portlet View



Optimize Processing Of Car Loan Applications

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

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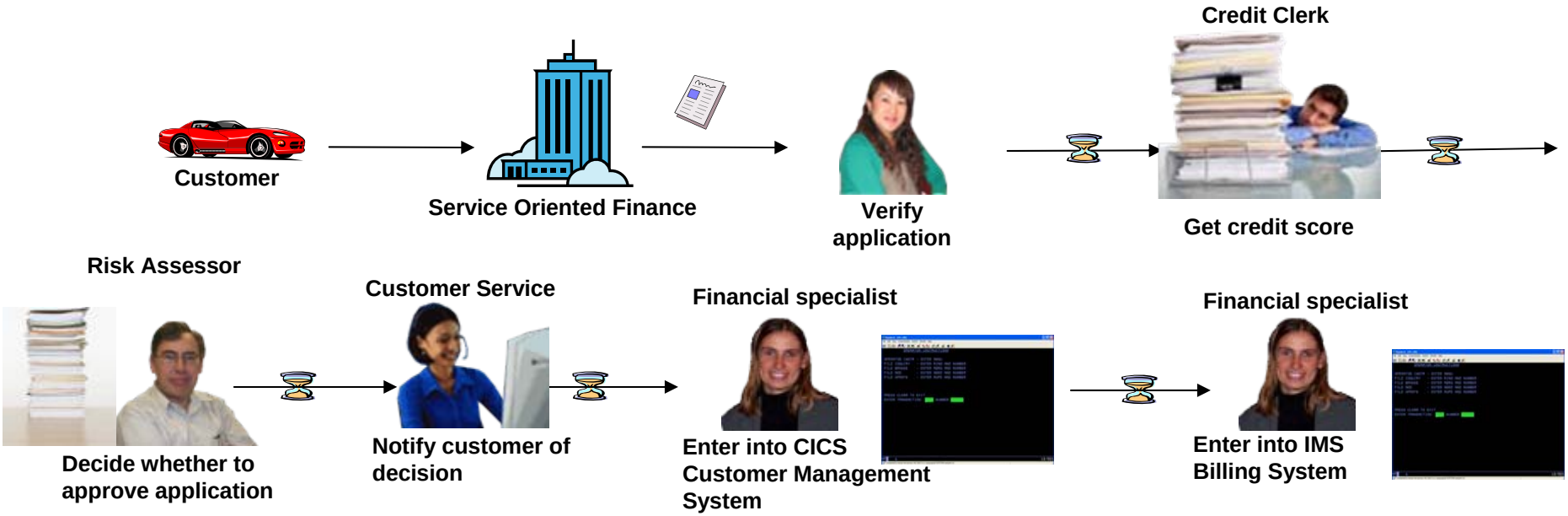
Create an improved process with WebSphere Process Server

IBM

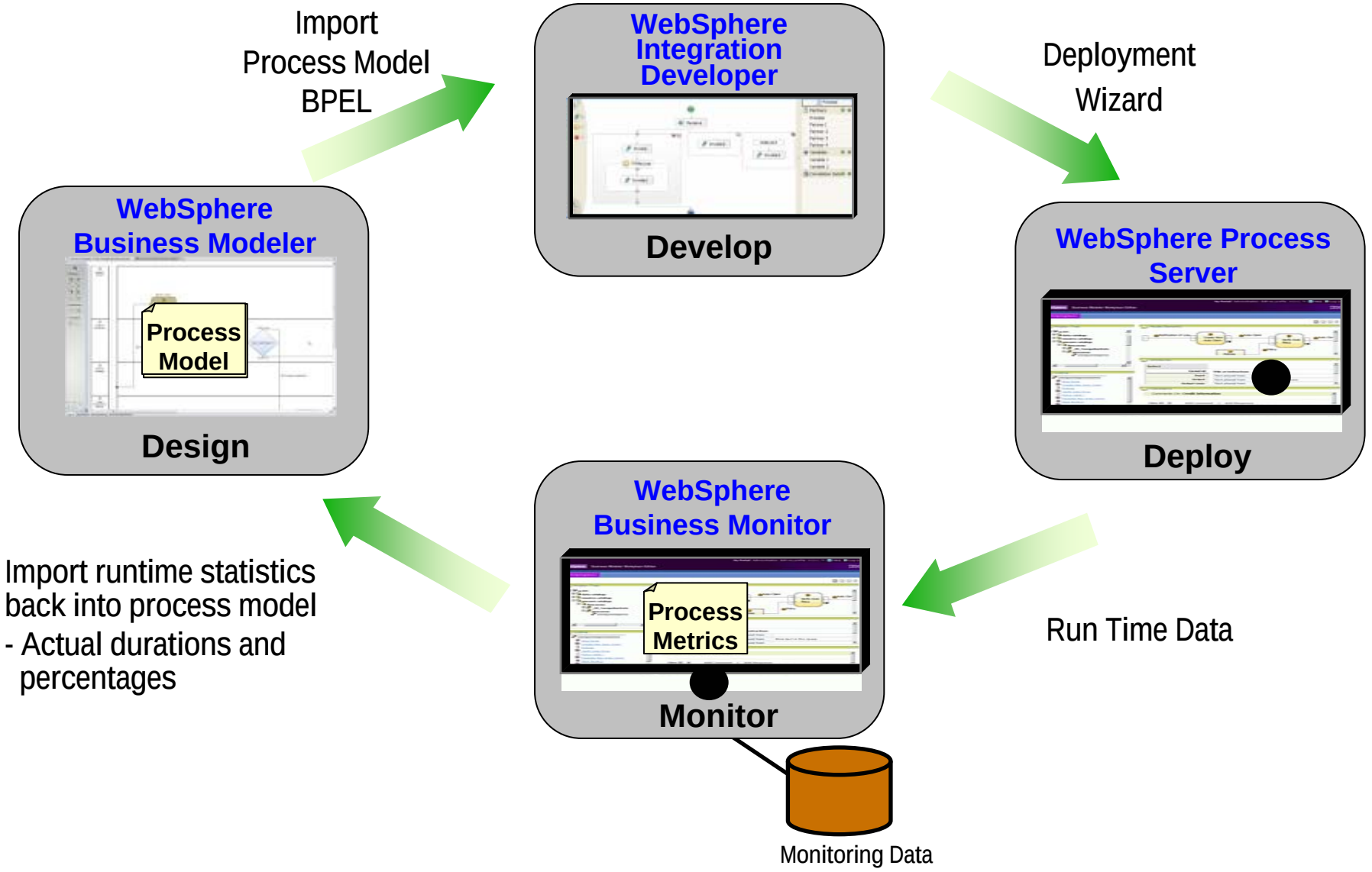
Current Process For New Car Loans



Issues with the current process:

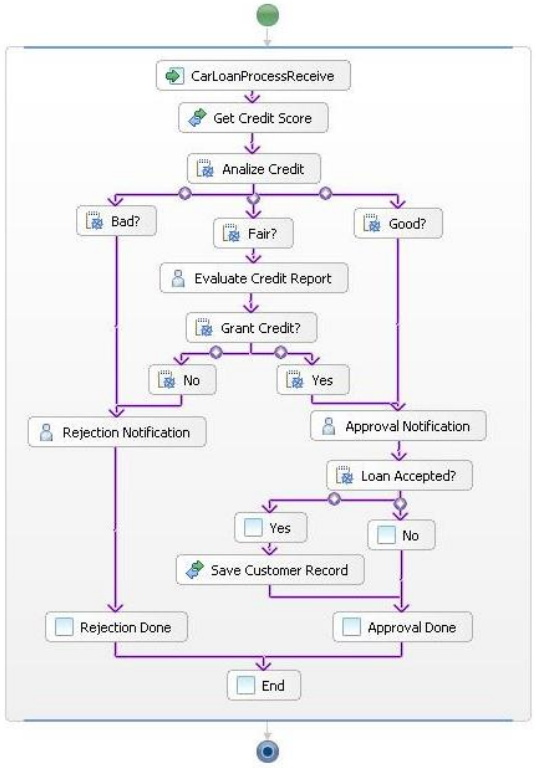
- Manual process won't scale
- Manual data entry results in errors
- Sequence of handoffs makes it difficult to determine status of any particular loan request

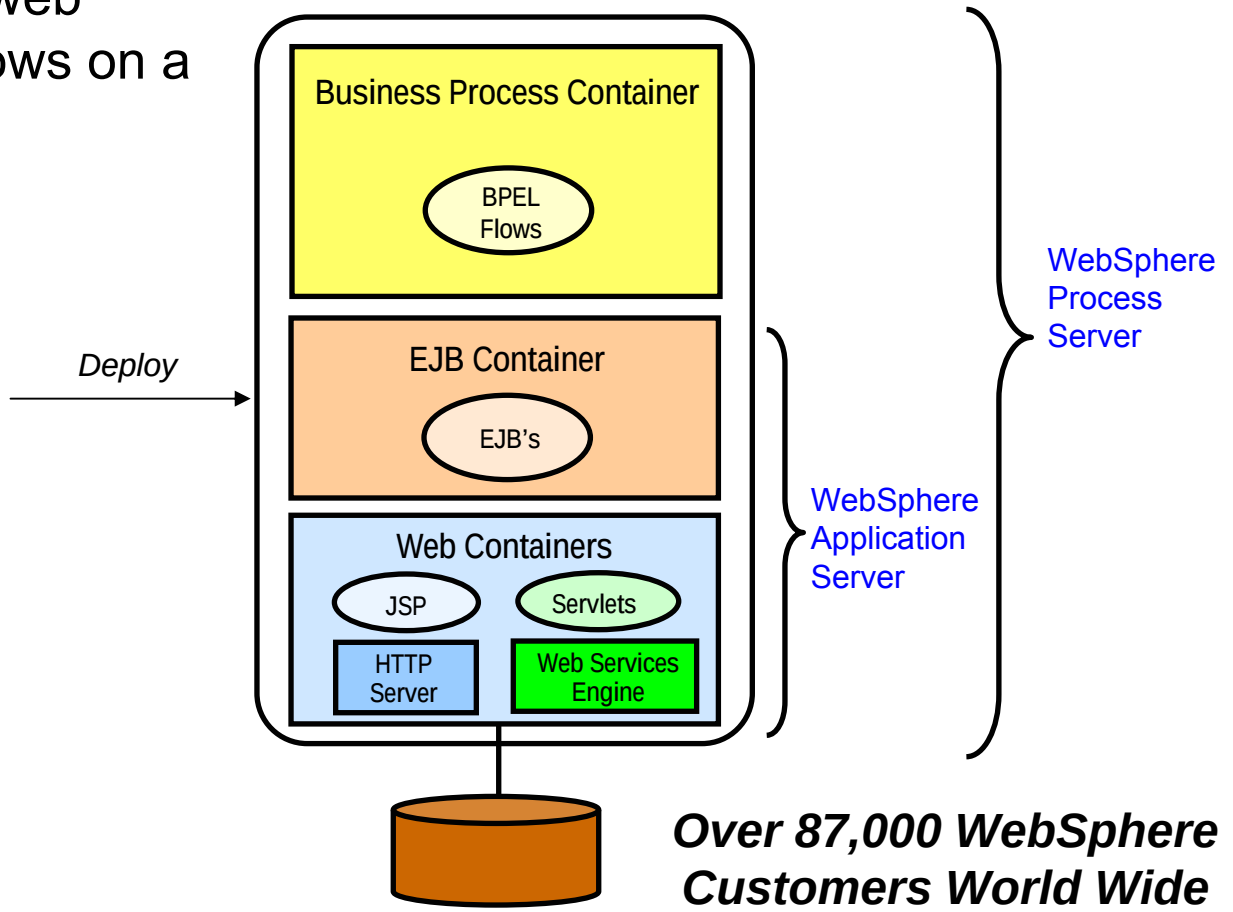
Design, Develop, Deploy, And Monitor The New Process



The Completed Process Runs On WebSphere Process Server (WPS)

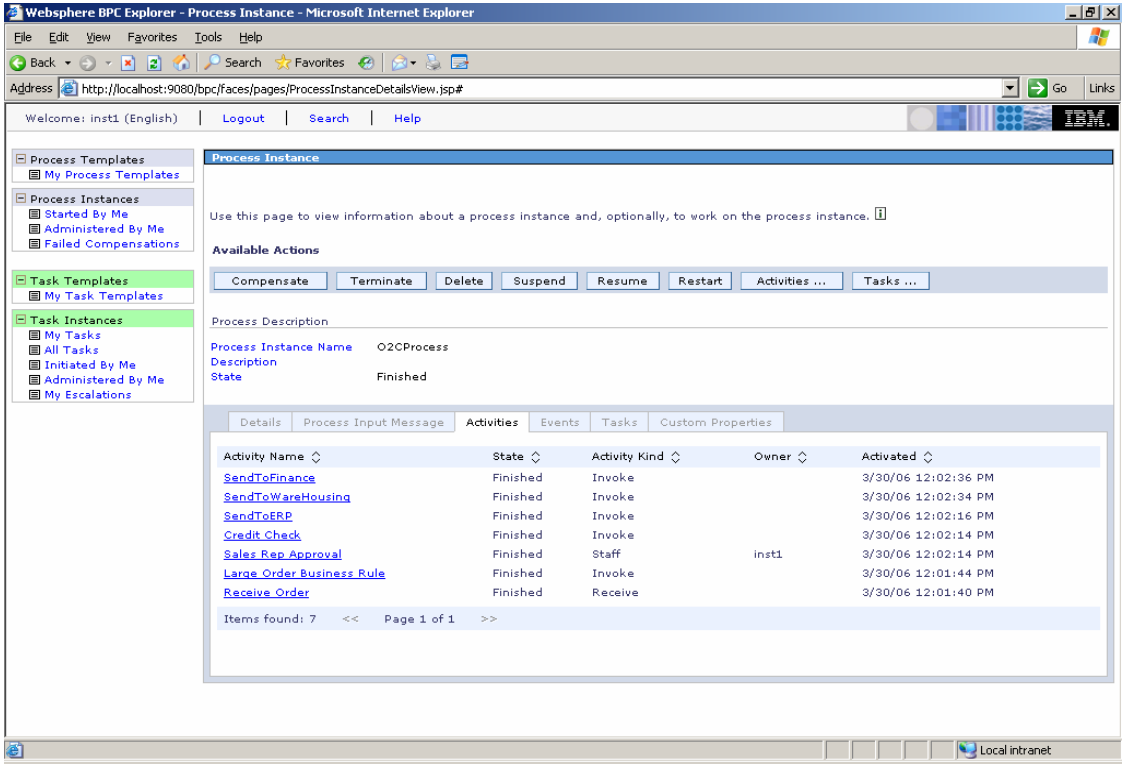
- The completed BPEL process can be deployed easily to WPS
- WPS supports J2EE, web services, and BPEL flows on a unified code base





Over 87,000 WebSphere Customers World Wide

DEMO: Run The New Car Loan Process



- 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

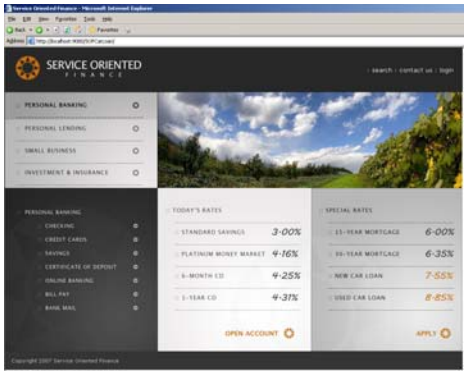
Channels Can Deliver Operational Intelligence With Embedded Analytics

- 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

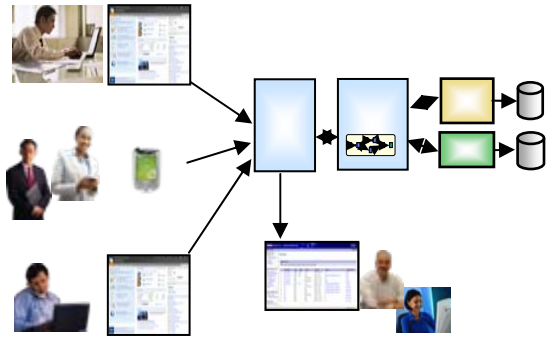
- Customer service representative uses inline analytics to make a real-time decision



Customer

Service Oriented Finance Customer Service Representative

Deployment Decisions



What platform should I use to deploy these channel solutions?

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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*

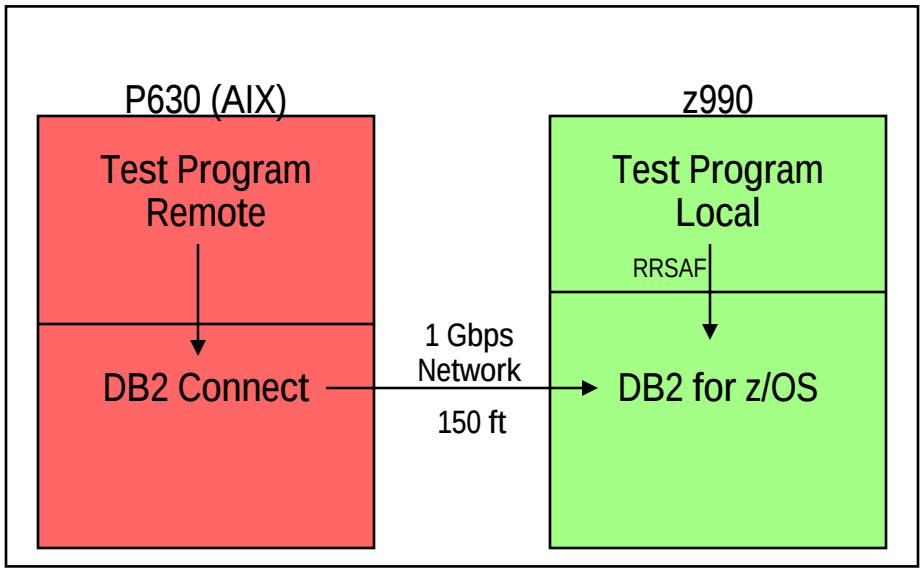
- IBM's core SOA framework runs on z/OS
  - WebSphere Application Server
  - WebSphere Process Server
  - WebSphere Portal Server
  - WebSphere Enterprise Service Bus

Why SOA On System z?
2. Co-location

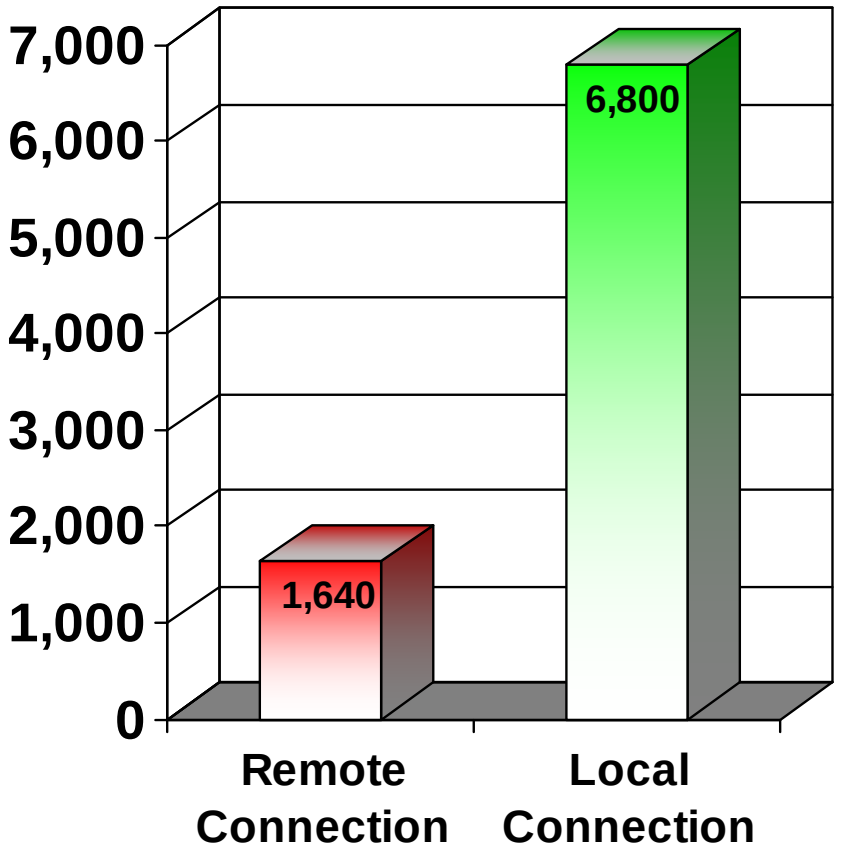
- The mainframe already houses the core CICS and IMS applications and data for the business
  - Quickly expose them as services, and continue the QoS the business depends on
- Having the Process Server and Portal Server in close proximity to each other and the assets they access provides better performance 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

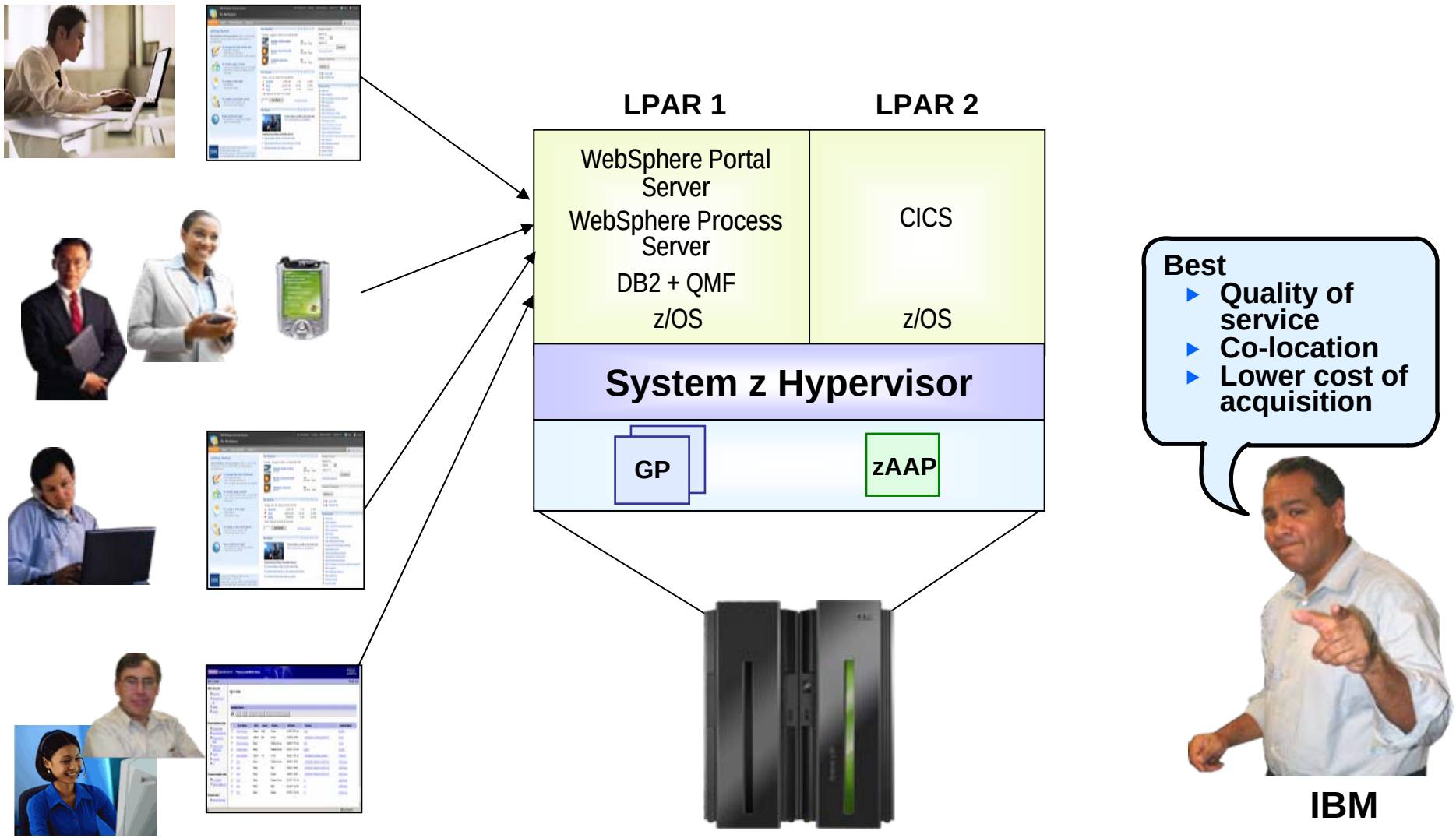


Results:
SQL Statements / Second



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

IBM Study: "Local versus Remote Database Access: A Performance Test", 2005
http://publib-b.boulder.ibm.com/abstracts/redp4113.html

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