SOA for System z
Overview

Pamela (PJ) Baron
Business Unit Executive
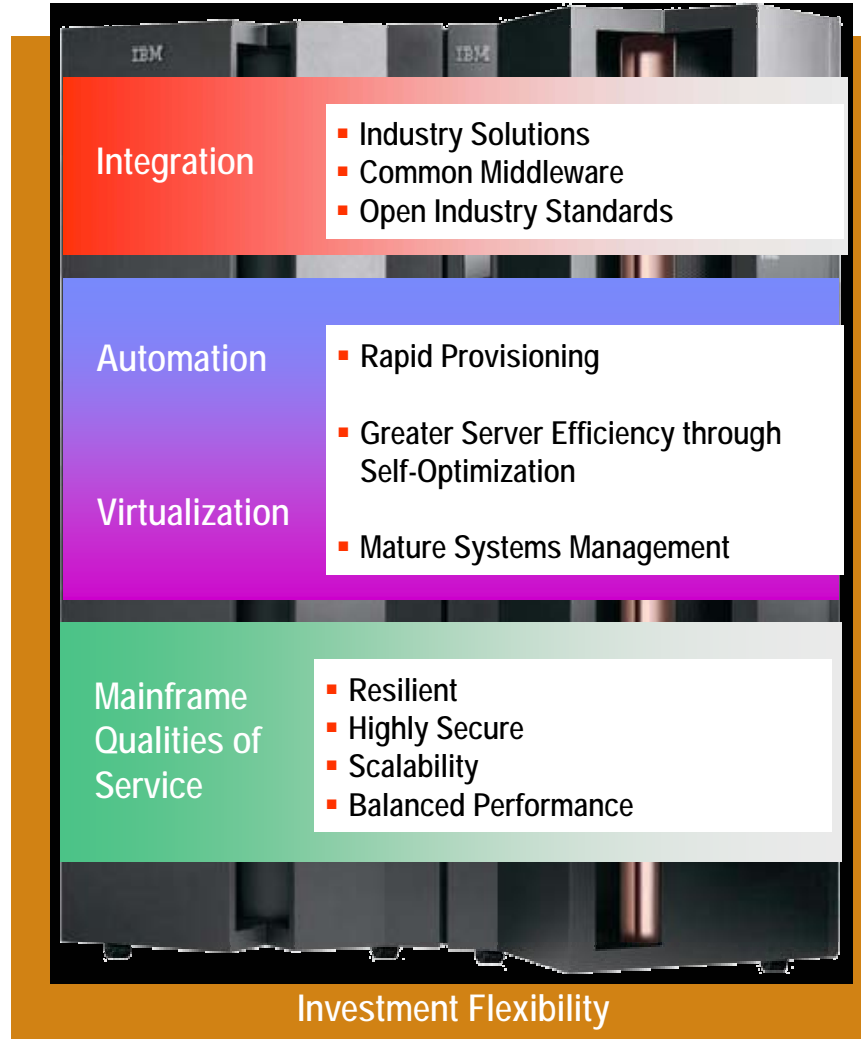Americas System z, Application Development Tools

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IBM

System z core values – Built upon a 40-year heritage. . . And still relevant

Business Challenges

- **Financial Pressures**

- **Security and Operational Resiliency**

- **Simplify Infrastructure Complexity**

- **Accelerate Time-to-Market**

- **Increase Revenues**

- **Deploy New Capabilities**

Integration
- Industry Solutions
- Common Middleware
- Open Industry Standards

Automation

Virtualization
- Rapid Provisioning
- Greater Server Efficiency through Self-Optimization
- Mature Systems Management

Mainframe Qualities of Service
- Resilient
- Highly Secure
- Scalability
- Balanced Performance

Investment Flexibility

IT Challenges

- **Be responsive to changing business needs**

- **Meet service level agreements**

- **Increase server and IT resource utilization**

- **Help reduce IT Costs**

- **Develop new applications while mitigating risk**

System z™ Value Proposition

- **Extremely High Availability and Overall Reliability**

- **Fast Transaction Processing**

1964   2004   **2006**

- **Massive end-to-end Scalability**

- **Capacity on Demand**

- **Rock Solid Security and Privacy**

- **Advanced Virtualization Capabilities**

- **Highly Manageable, Responsive and Autonomic via Workload Manager (WLM) and Intelligent Resource Director (IRD)**

- **Utilizes Open and Industry Standards**

- **World-class Integrated Support**

- **Higher Utilization and Balanced System Design**

System z Leadership:Now 42+ years in the making!

System z average system utilization often exceeds 80%, and System z servers are designed to handle sustained peak workload utilization of 100% without service level degradation to high priority workloads.
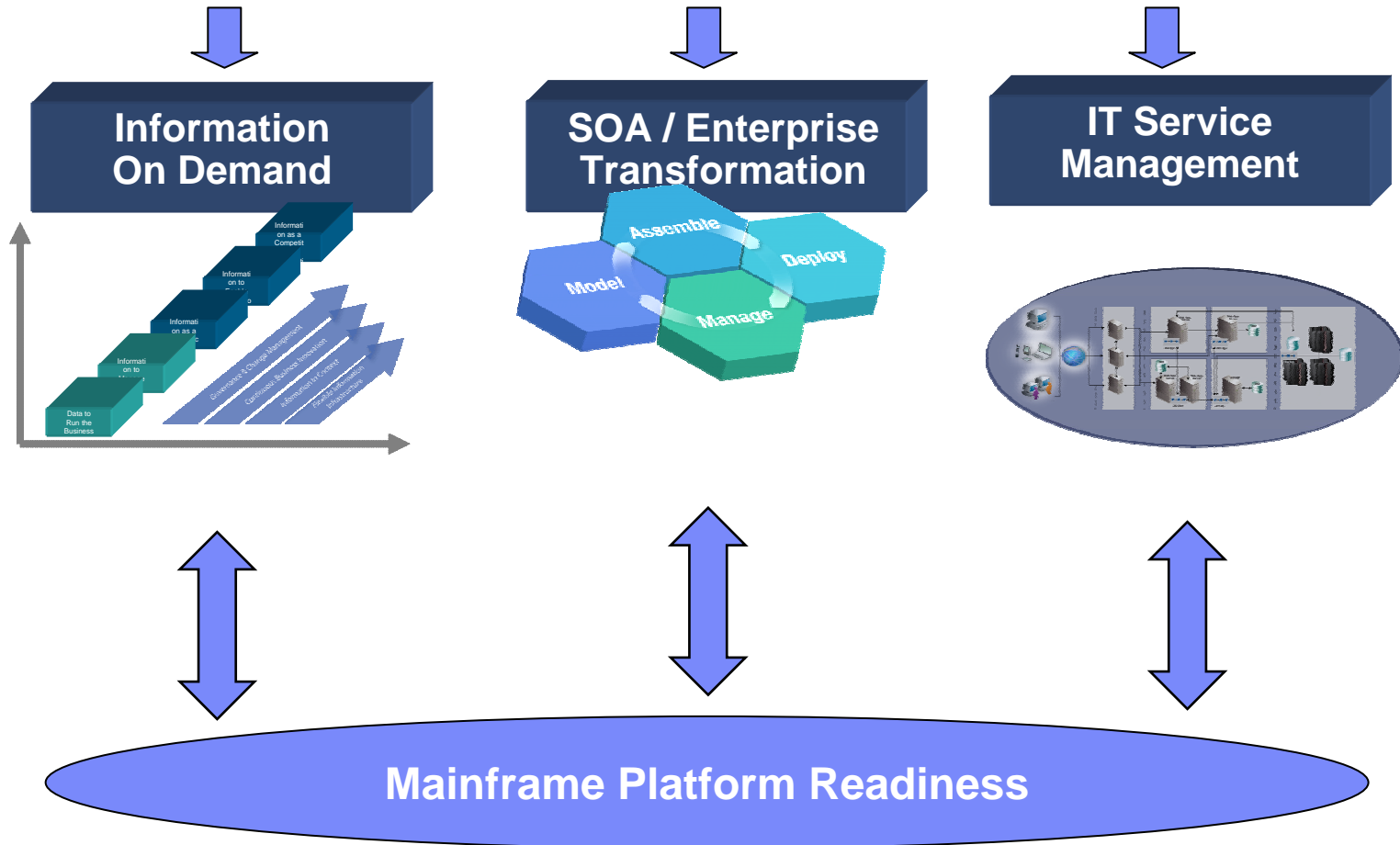
4

System z Software Strategy

- Extend, leverage and modernize our Customers' System z environments while protecting investments.

- Improve management of the infrastructure and applications

- Ready our customers' platform for growth, integration, management and lower total cost of ownership

Value of the Mainframe

Information On Demand

SOA / Enterprise Transformation

Model
Assemble
Deploy
Manage

IT Service Management

Mainframe Platform Readiness

System z – Designed for On Demand Solutions

Performance
- Fast, consistent and predictable
- 64-bit Architecture
- Balanced system design
- End-to-end performance management
- SSLs/sec

Scalablity
- Scale up, scale out to meet unpredictable demand
- Capacity On Demand
- Variable Workload Charge (VWLC) Software

Efficiency
- Share resources for greater utilization and reduced costs
- End-to-end prioritization
- Outstanding utilization rates
- Energy, floor-space, networking, administration costs

Open
- Embracing standards for ease of integration

Resilient
- Superior reliability and security
- Self-healing, self-protecting
- Multi-site business continuity solutions

Secure
- Unmatched capabilities

Virtual
- Cost-effective consolidation and integration
- 100s of virtual blades
- Network in a box - HiperSockets

Getting different vs. getting better

CIO Magazine October 2004; survey of 544 CIOs and CEOs

CEO's Wish List*

1	Reduce costs through efficiency/ increased productivity	→ PRODUCTIVITY
2	Enable/drive business innovation	
3	Create/enable competitive advantage	→ SUSTAINABLE DIFFERENTIATION
4	Enable growth	
5	Improve ext. customer satisfaction	
6	Enable regulatory compliance	
7	Enable global operations	

Reducing "Time to Change"
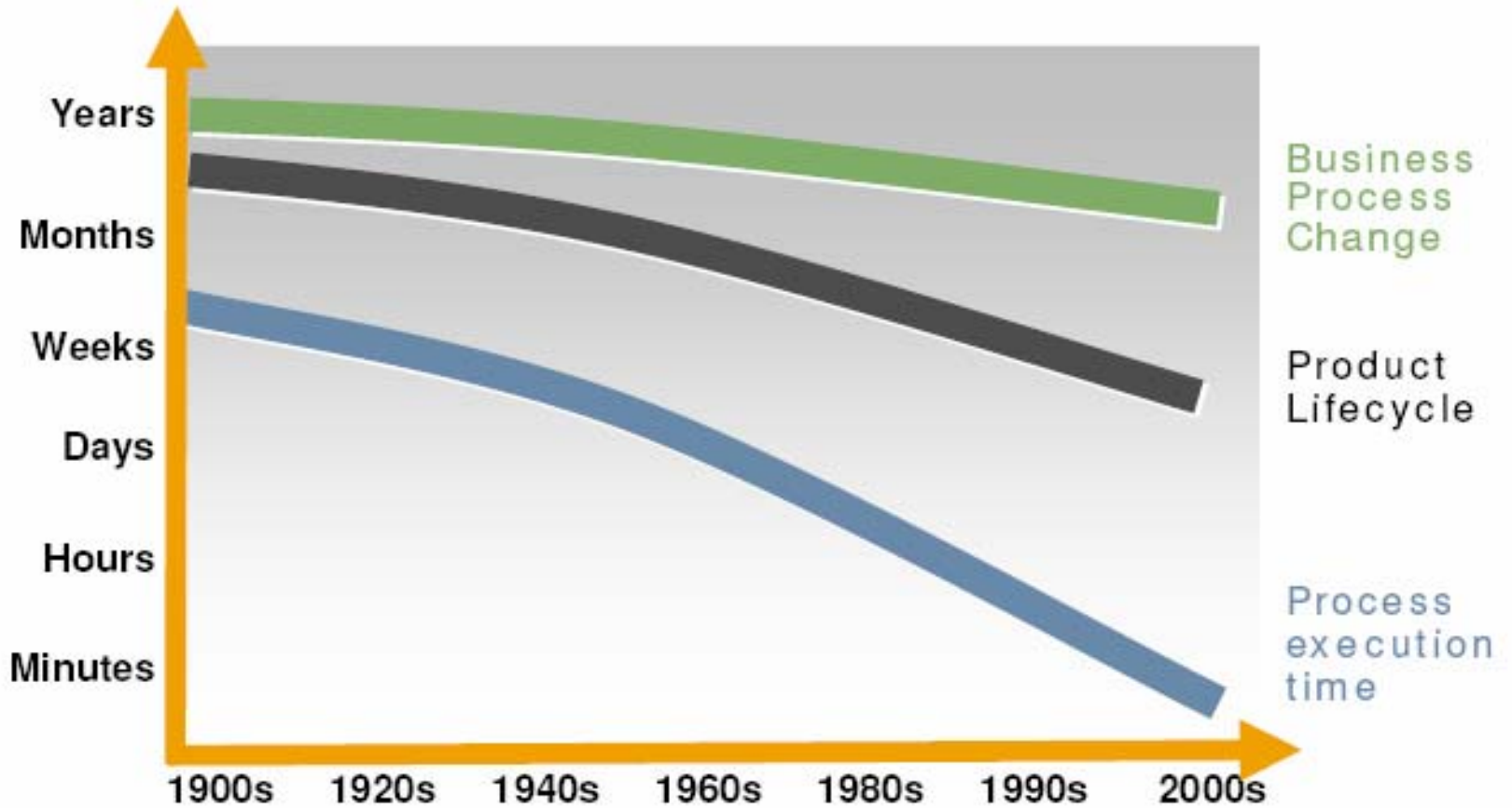
Source: Gartner

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?**

What is SOA?

… a service?

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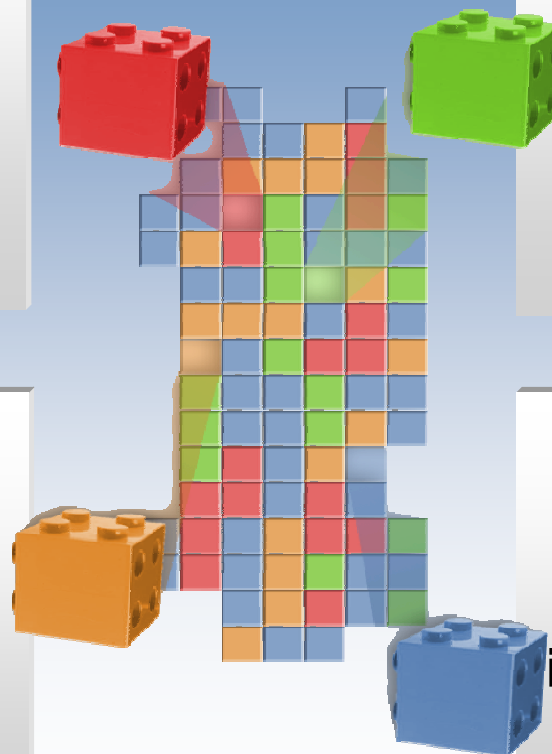
… service orientation?

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
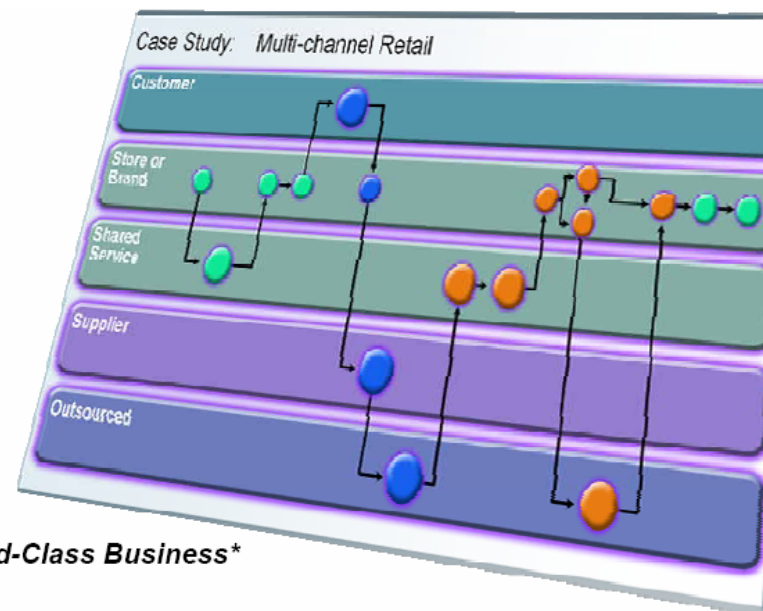
… a composite application?

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

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*

# SOA builds flexibility on your current investments
The next stage of integration

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 making them operational

- ***Automate*** process im_____tion, eliminating manual deployment task_

- ***Immediately e_____*** and processes

- ***Visualize*** actu_____ against key performance indicators

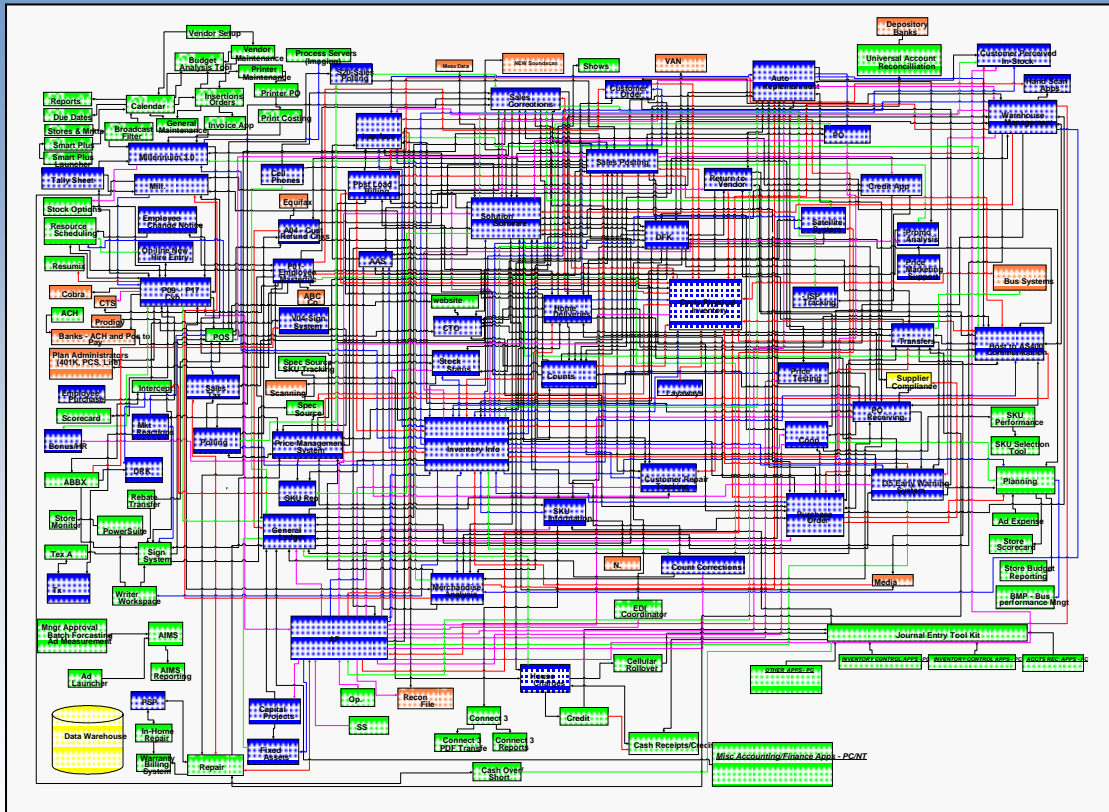- ***Pinpoint*** future process improvements
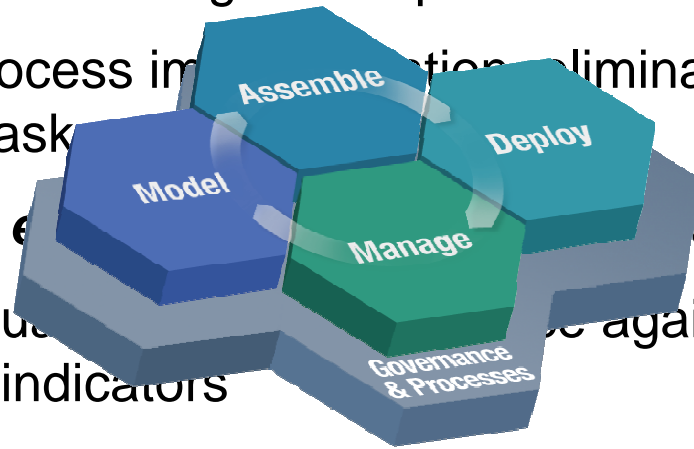
Without business process management, this would be achieved manually or through a non-integrated set of tools from multiple vendors

Problem -- typical topologies look like this…..

Actual application topology for a company
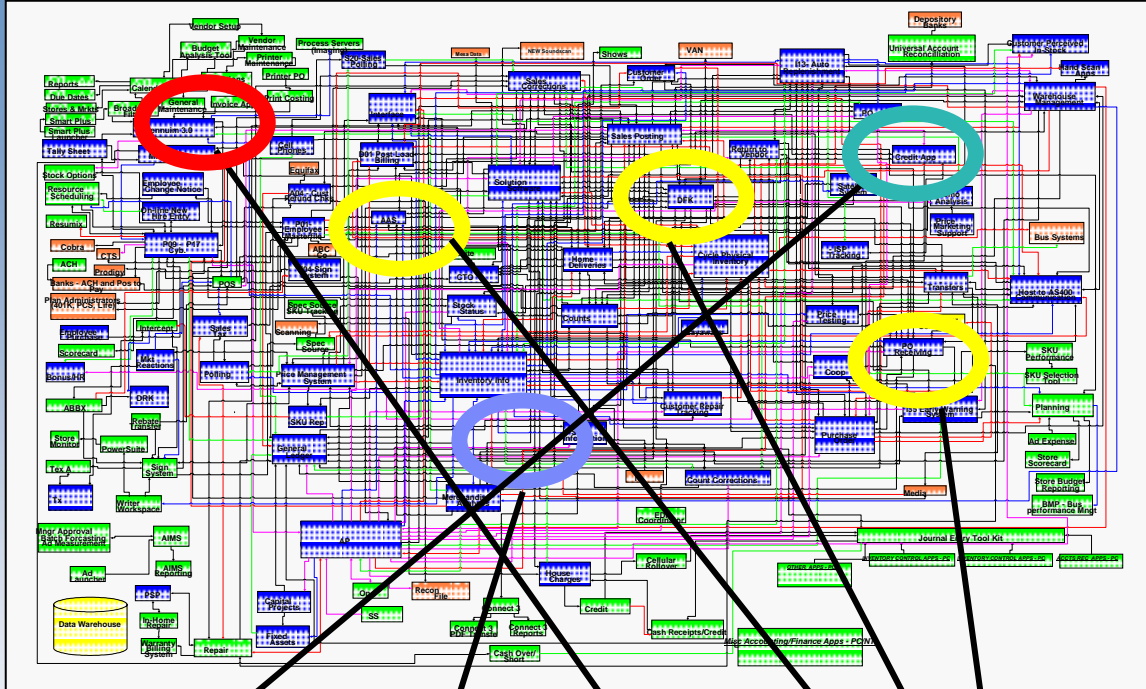

What problem needs addressing?

Building and maintaining application interfaces is difficult and expensive

"Point-to-point interfaces result in an ever-increasing maintenance burden."

— Gartner Group

March 2005

Create a Service from the various components

Step 1

Identify the Business Service – the basic SOA building block
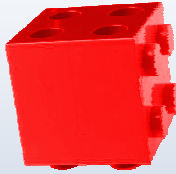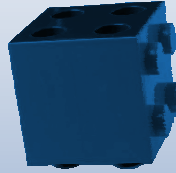
Step 2
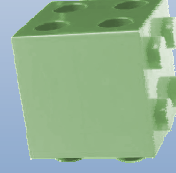
Locate the service components
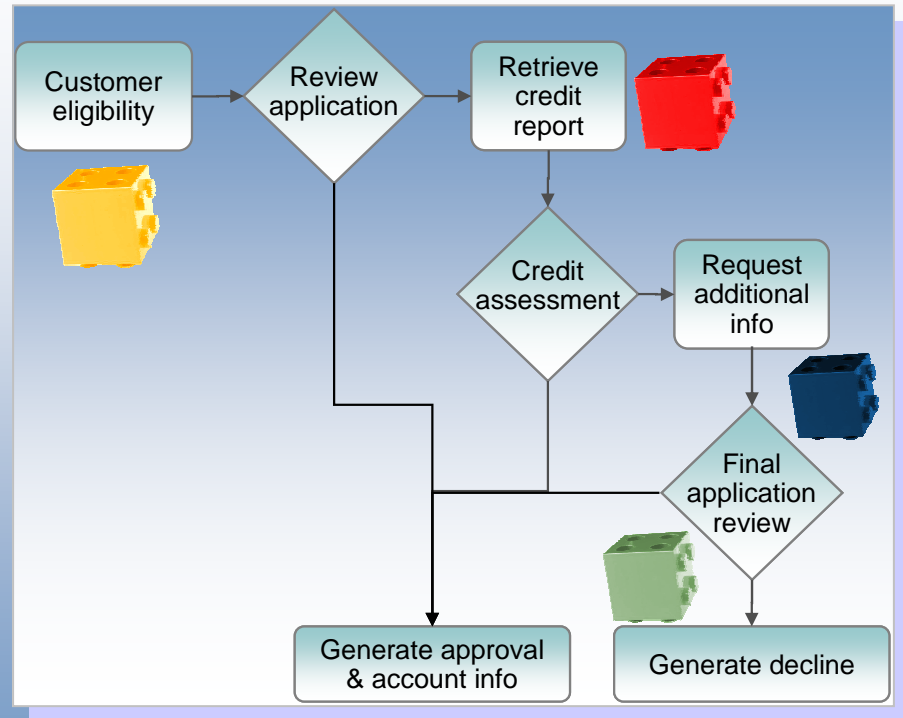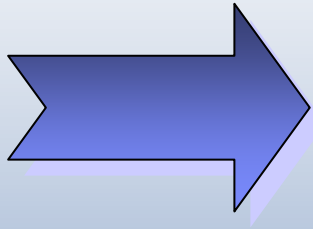
Step 3

Construct the interface

Step 4

Repeat

Now we have rendered the application as services

Determine Customer Eligibility

Retrieve Credit Report

Request additional info

Generate decline

Etc….

Business Process is implemented by integrating services

Why SOA now?

- **To keep pace with global competition:**
  - ▶ "We are taking apart each task and sending it … to whomever can do it best, … and then we are reassembling all the pieces"
    from Thomas Friedman's 'The World is Flat'
- **The standards and technology are finally in place, with broad industry support**
- **Availability of best practices for effective governance**
- **The necessary software to get started is available today**

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

What are the core elements that SOA brings together?

Coming together under
Service Oriented Architecture

Skills - assistance, and best practices

Applications

Industry know-how and best practices linked to business

Flexible, robust infrastructure that reuses existing IT assets

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**

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

IBM SOA Foundation

Software

Assemble

Deploy

Model

Manage

Governance & Best Practices

Skills & Support
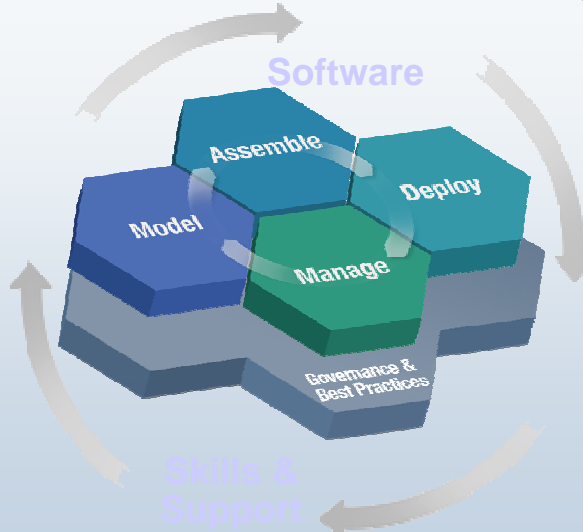
Scalable; start small and grow as fast as the business requires

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

Leveraging existing IT Infrastructure

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

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 System z − Modernizing your most valuable assets!
Extend and enrich core CICS, DB2, IMS and WebSphere applications

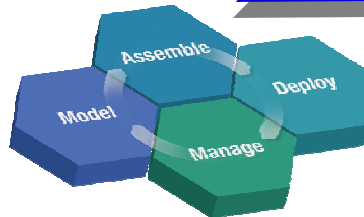CICS, IMS™ and DB2™ are enabled for SOA today!

Creates opportunities for new business processes with …

Running on any platform, including z/OS™ and zLin...

$5,000,000M ($5T) of core System z applications

Assemble

Model

Deploy

Manage

WebSphere™ , Tivoli™, Info Mgmt, SOA platform products

For asset reuse..
- time to value
- lower risk
- lower cost

.. and service integrity
- security
- availability
- recoverability

Unlocks the value of…

For advanced services..
- user interaction
- process management
- information integration
- enterprise service bus

Enhance business flexibility with System z

Meet new requirements by leveraging your most valuable System z assets

IBM can help you build a service oriented architecture around your core System z applications
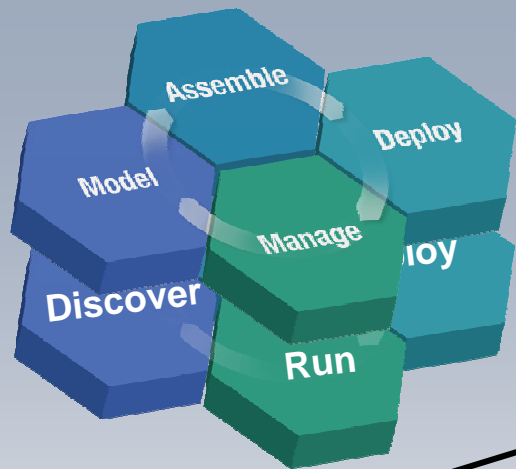
- Improve cooperation between your mainframe and client-server application teams using open integration technologies and common tools

- Program System z (WAS, CICS, IMS and DB2) with the latest Eclipse-based development workbench

- Analyze your applications to reveal reusable business services
- Trace usage patterns / service levels

- Use the latest middleware and management tools to reduce operational overheads

(Diagram: Model, Assemble, Manage, Deploy)

- Automatically generate web-interfaces for core **CICS and IMS** applications

- Create state-of-the art user interfaces without deep programming skills

- Integrate multiple core and new applications within the same workspace

- Compose business level web services from existing CICS and IMS transactions

- Retain mainframe availability, scalability, security and recoverability

- Connect applications right across your enterprise, across all platforms
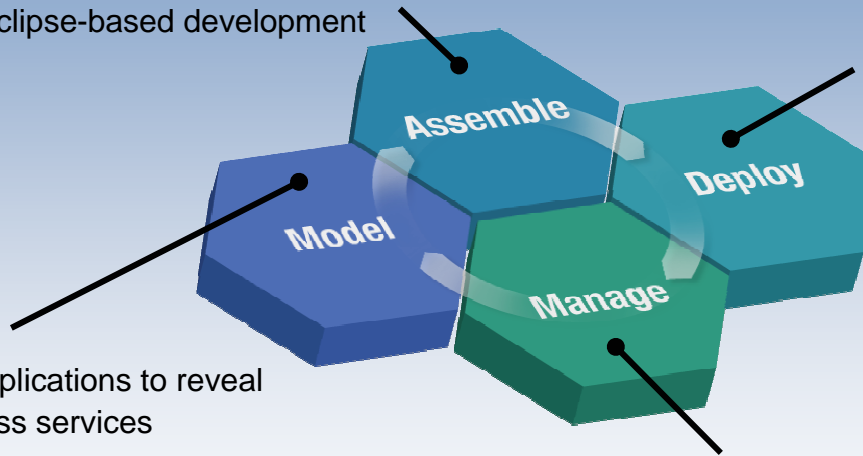
Choose SOA from IBM so that you can maximize re-use and avoid the cost and risk of new application development projects.

Enterprise Application Lifecycle Portfolio

IBM WebSphere Business Integration Modeler ™
IBM Rational Software Architect ™
IBM CICS Interdependency Analyzer ™

IBM WebSphere Business Modeler
IBM Rational Software Architect ™
IBM WebSphere Asset Analyzer ™
IBM Asset Transformation Workbench ™

Model the Business

Define Requirements

Analyze & Design

Optimize

IBM Session Manager™
Online Transmission Time Optimizer™

Manage

Implement

IBM Batch Application Control™
IBM CICS Configuration Manager™
IBM VSAM Recovery™
SCLM AE™
Rational ClearCase™
Rational ClearQuest™
Tivoli Composite Application Manager for WebSphere ™
Tivoli Composite Application Manager for SOA * ™
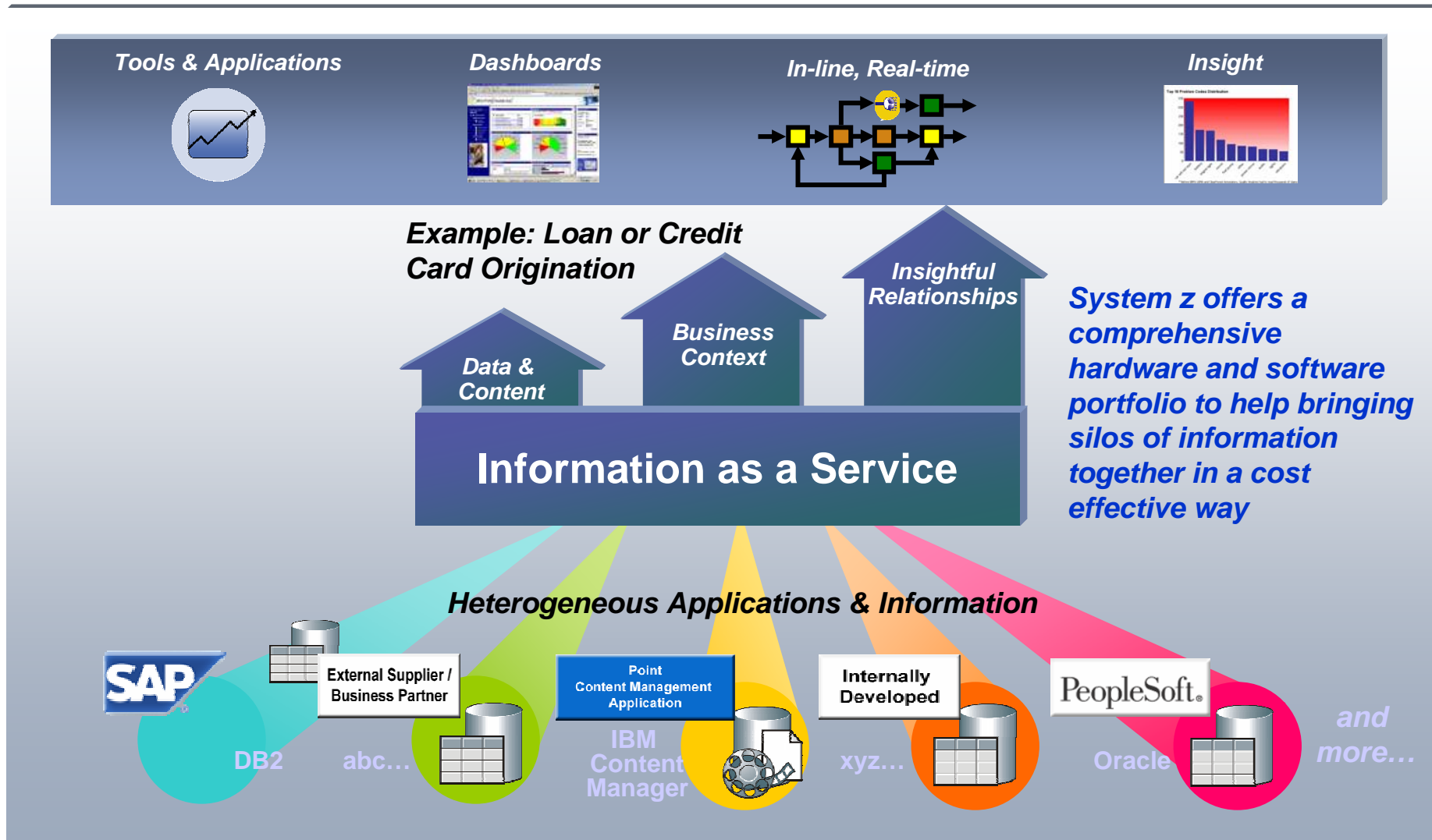Tivoli Federated Identity Manager ™

Deploy

CICS Performance Analyzer ™
Rational Performance Tester ™
Workload Simulator ™
Fault Analyzer ™
Application Performance Analyzer ™

Test

IBM CICS Performance Analyzer ™
Debug Tool ™
Fault Analyzer
File Manager ™
File Export ™

IBM Rational Application Developer ™
IBM WebSphere Developer for z/Series ™
IBM CICS VSAM Transparency ™
IBM Rational Software Architect
IBM CICS VSAM Copy ™
IBM WebSphere Developer for System z
IBM CICS Business Event Publisher ™
IBM WebSphere Integration Developer ™
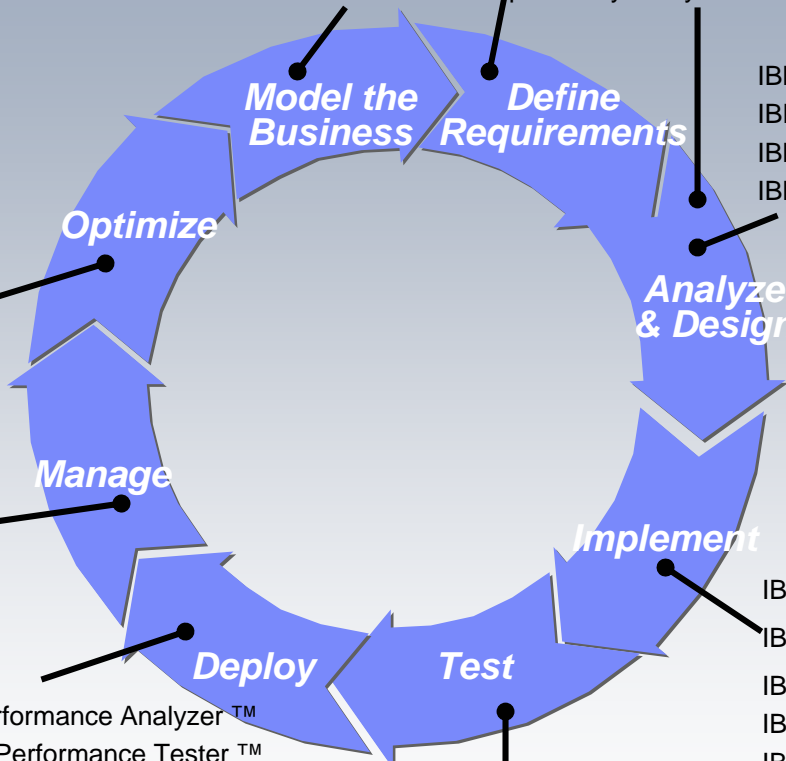
Moving Towards Information as a service enables customers toward getting the right information to the right people or processes at the right time in order to act on emerging opportunities and competitive threats.

Tools & Applications

Dashboards

In-line, Real-time

Insight

Example: Loan or Credit Card Origination

Insightful Relationships

Business Context

Data & Content

Information as a Service

System z offers a comprehensive hardware and software portfolio to help bringing silos of information together in a cost effective way

Heterogeneous Applications & Information

SAP

External Supplier / Business Partner

Point Content Management Application

Internally Developed

PeopleSoft.

DB2   abc…   IBM Content Manager   xyz…   Oracle   *and more…*

IBM's Information On Demand Solution Portfolio
System z View

Information Services

Master Data Management

Business Intelligence

**ABX
QMF**

Content Management

z/OS ™

Information Virtualization

**Data Stage
Quality Stage**

**II
Heritage**

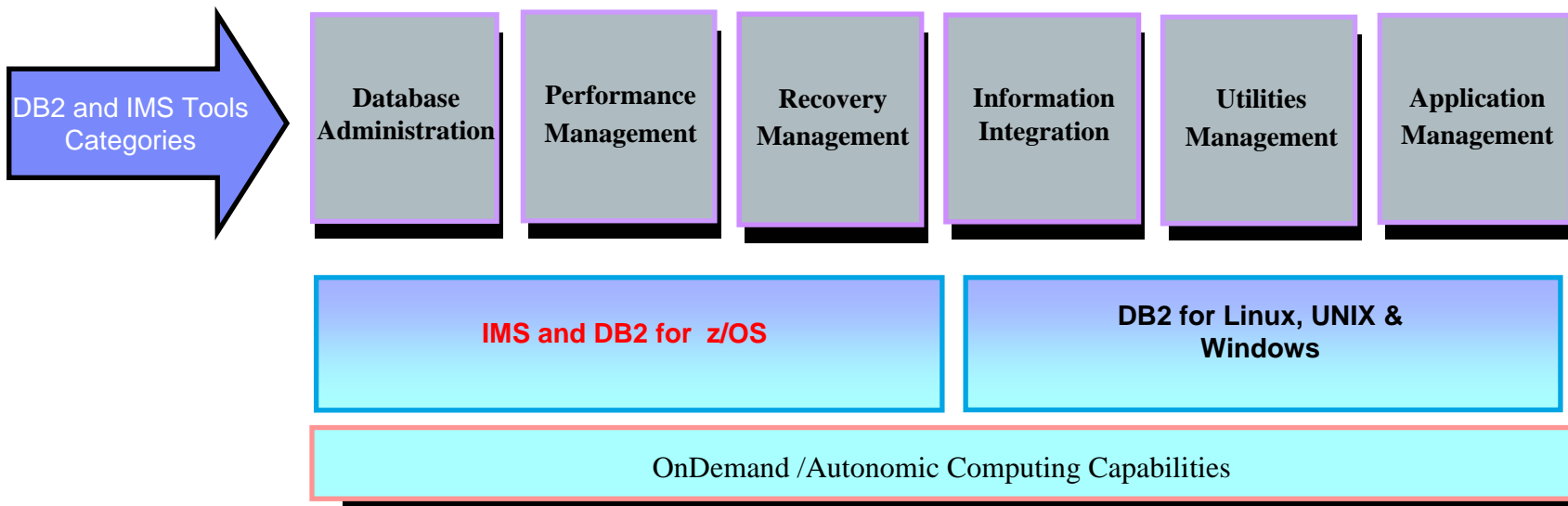**Information Integration**

**Z
A
A
P**
TM

**Z
I
I
P**
TM

Data Management

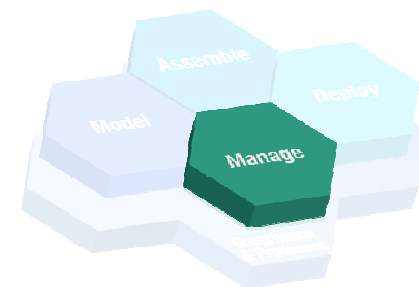<XML>
text
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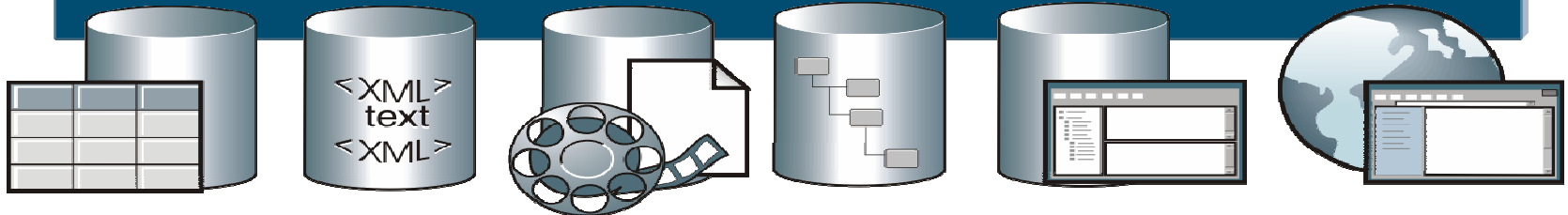
System z IBM Information Management Tools

DB2 and IMS Tools Categories

| Database Administration | Performance Management | Recovery Management | Information Integration | Utilities Management | Application Management |

IMS and DB2 for z/OS

DB2 for Linux, UNIX & Windows

OnDemand /Autonomic Computing Capabilities

End-to-End Data Management

IT Service Management to Meet the Challenge

Performance Management

OMEGAMON XE ™

Composite Application Management

Composite Application Manager Solutions

Tivoli Enterprise Portal

New Face of z

High Availability

Tivoli System Automation NetView for z/OS ™

Security

RACF & Vanguard Solutions

End-to-End Systems Management
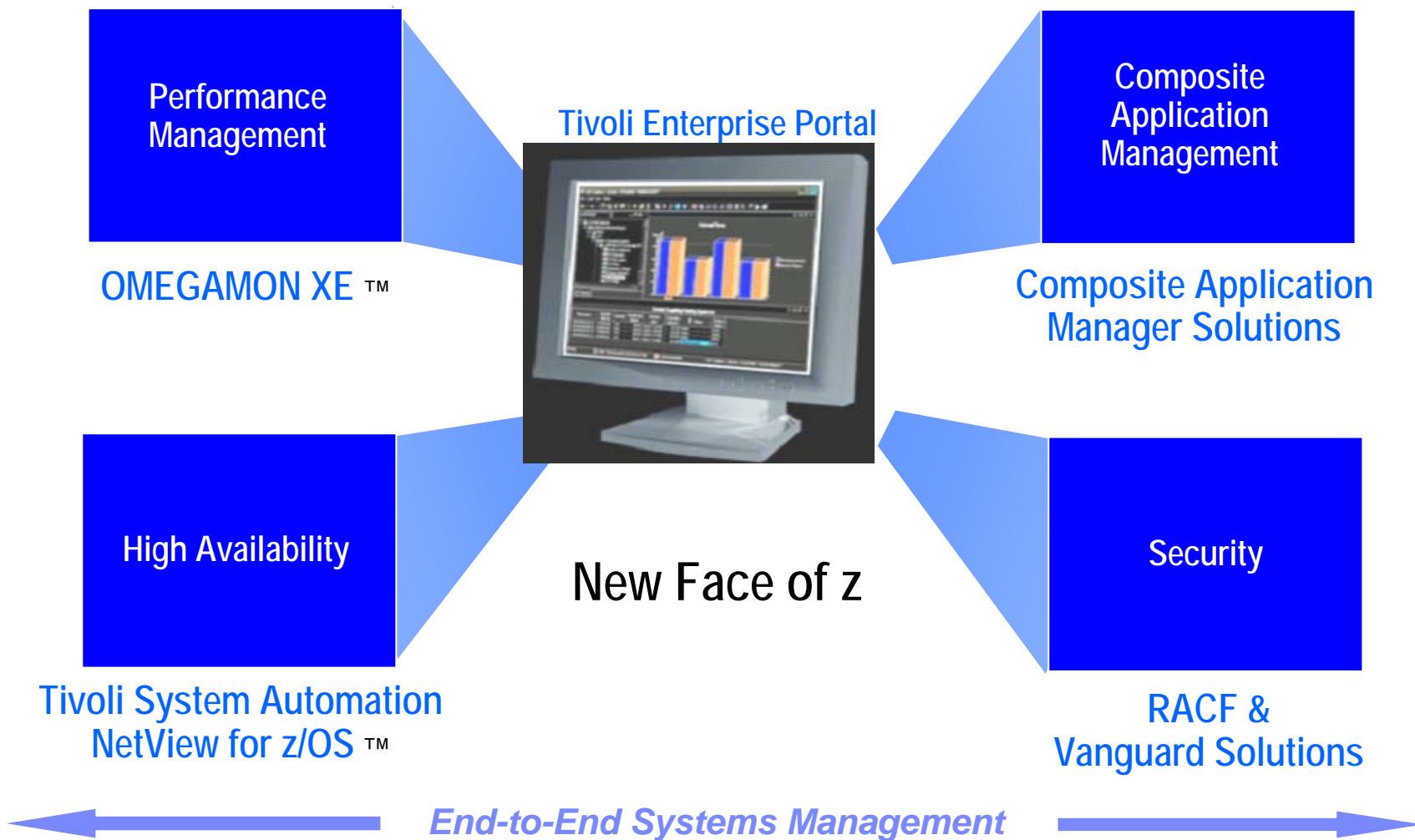
Tivoli Puts the Service into SOA
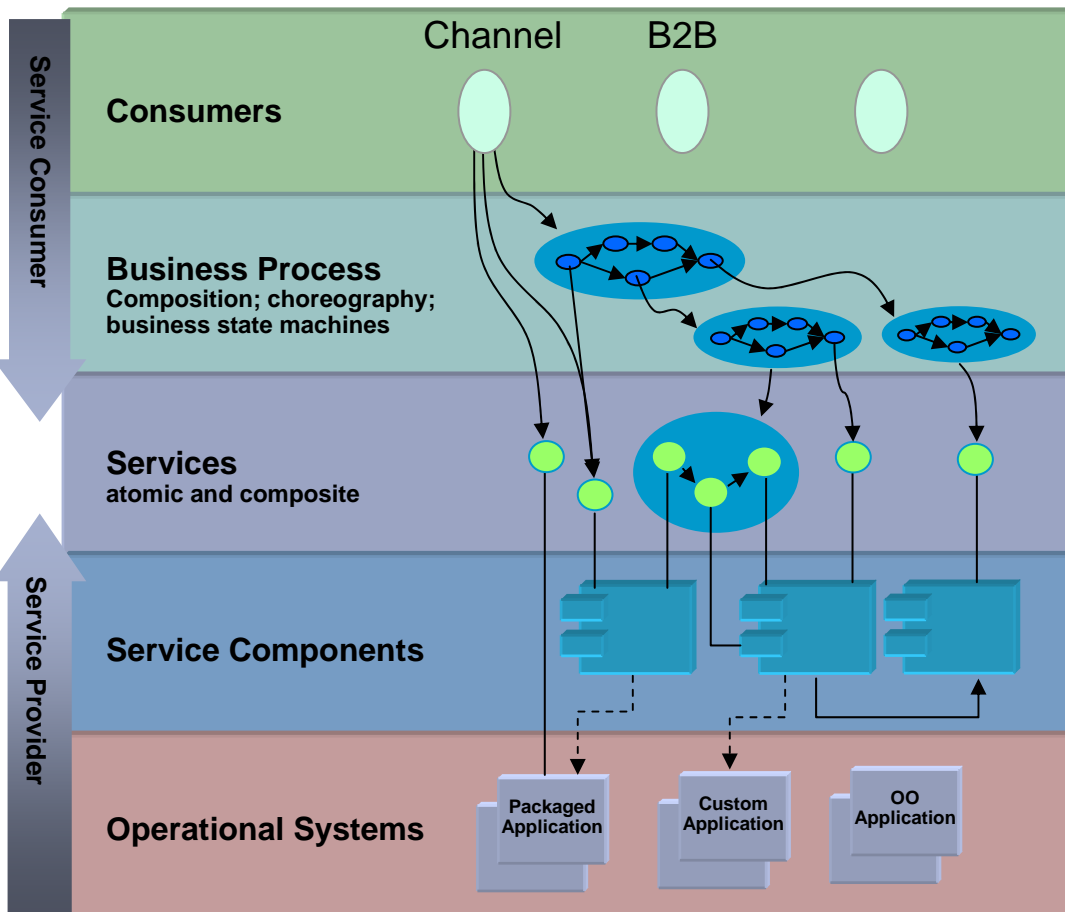
Manage Service Layer
- ❑ **Tivoli CAM for SOA** ™

Manage SOA Security
- ❑ **Tivoli Federated Identity Manager** ™
- ❑ **Tivoli Access Manager** ™
- ❑ **Vanguard**
- ❑ **RACF**

Manage Application Performance
- ❑ **Tivoli CAM for WebSphere** ™
- ❑ **Tivoli CAM for Response Time Tracking** ™
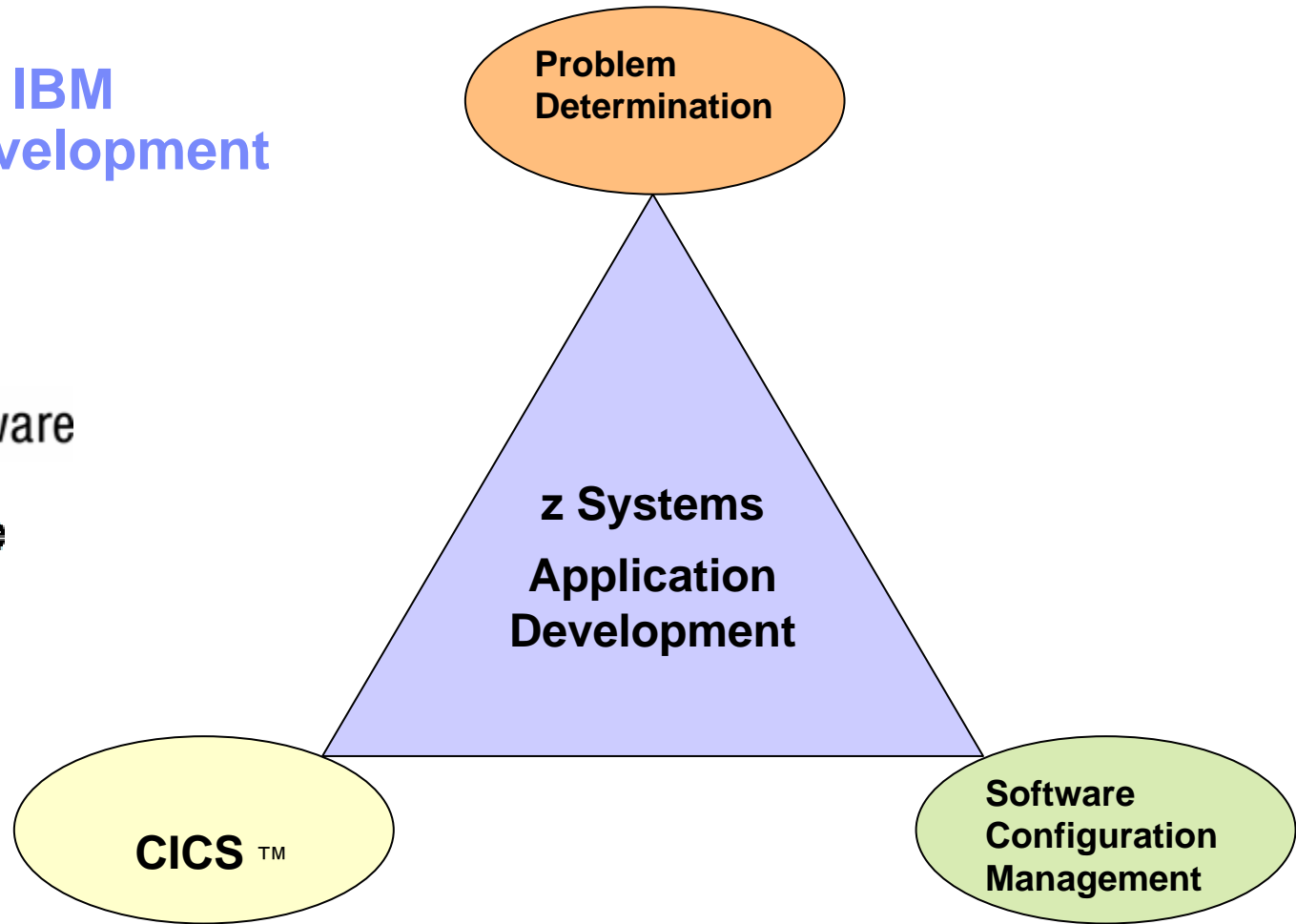- ❑ **Tivoli TWS** ™

Manage Operational Systems
- ❑ **OMEGAMON** ™ **Product Family**
- ❑ **Tivoli Monitoring** ™

System z IBM Application Development

WebSphere software

Rational software

Problem Determination

z Systems Application Development

CICS ™

Software Configuration Management

End-to-End Application Management

System z IBM Application Development

Application Reuse / Data Migration

CICS Business Event Publisher for MQ

CICS VSAM Transparency

Application / Performance Management

Application Performance Analyzer

CICS Performance Analyzer

Operational Efficiency

CICS OTTO

IBM Session Manager

CICS Batch Application Control

Resource Recovery

CICS VSAM Recovery

CICS VSAM Copy

COBOL Modernization

Debug Tool Utilities Adv Funct

Migration Utility

Software Configuration Management

SCLM Advanced Edition

Rational ClearCase, ClearQuest

Test, Deploy, Manage Data Environment

Fault Analyzer

File Manager

File Export

Debug Tool Utilities Adv Funct

WDDz

CICS V2V

CICS Interdependency Analyzer

CICS Configuration Analyzer

CICS Performance Analyzer

Testing

Workload Simulator

Rational Performance Tester z/OS

Rational Functional Tester Terminal Based Apps

Core COBOL ™, Pl1, Assembler, C++, HP Java, DB2, IMS, CICS Applications

Gartner finds that data center staffing levels for z have not significantly changed despite large increase in MIPS

"Since we published our last high-level perspective of the ratio between MIPS and head count in 2001, the largest z/OS installations have more than doubled their 'MIPS to head count' ratio."
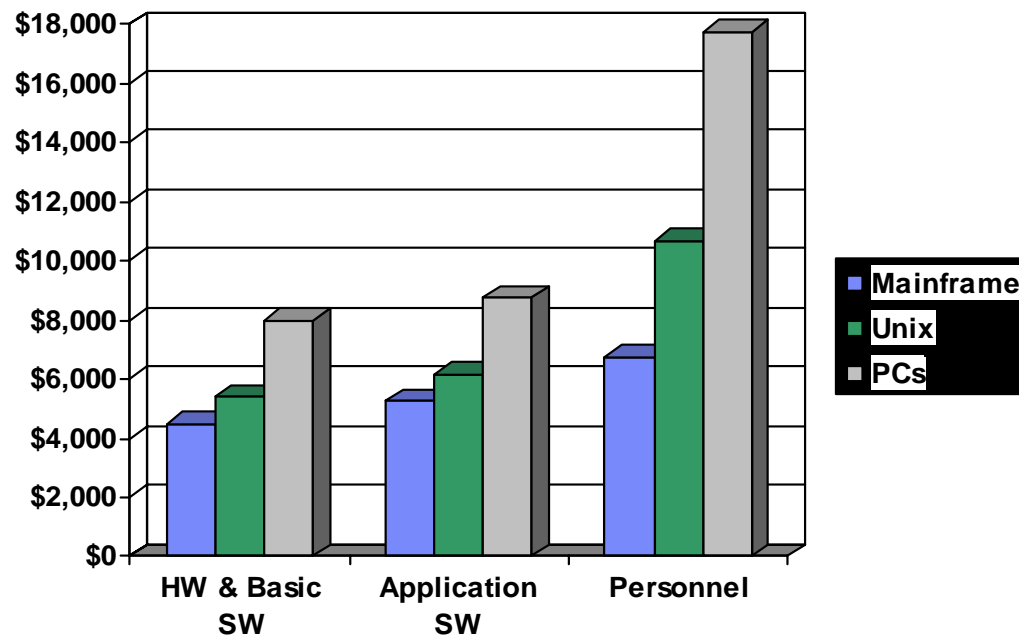
L. Mieritz, M. Willis-Fleming – Gartner, 2004

13,272 MIPS

289 Ops Staff

5,994 MIPS

260 Ops Staff

2001   **2004**

Gartner
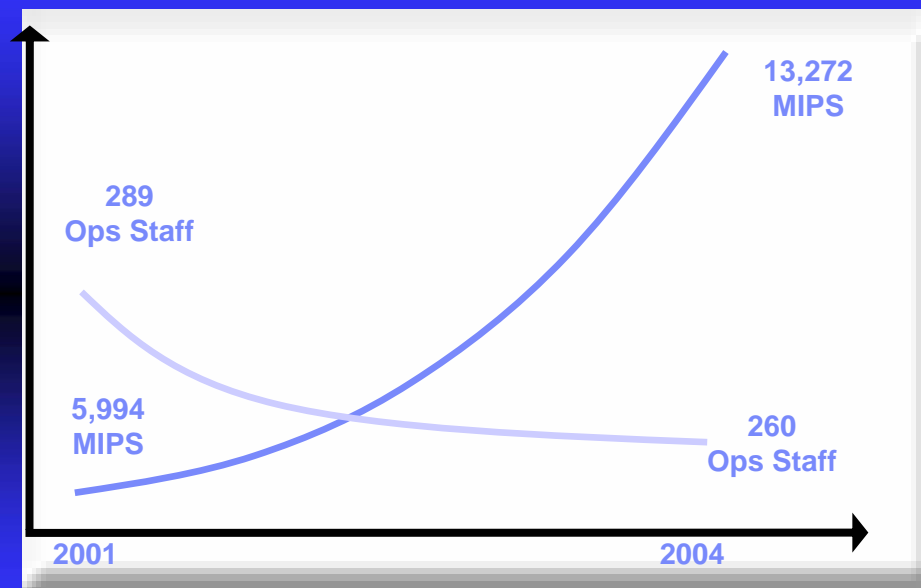
Cost of Ownership:
The true costs of computing from a per user perspective

- Cost effectiveness weighed on TCU instead of TCO
- Mainframes utilization potential far outweighs non-mainframe options
- Visibility of costs on the mainframe vs. hidden costs for non-mainframe options
- Staffing on mainframes:
  - ▸ 1 system programmer for 250 end users

  - ▸ # of systems programmers per mainframe MIPS has fallen ten-fold in the past 7 years and is expected to halve in the next 5 years

Bar chart legend: Mainframe, Unix, PCs. Y-axis from $0 to $18,000. Categories: HW & Basic SW, Application SW, Personnel.

Get More Value out of your Mainframe platform

- Platform readiness
  - ▶ SOA capabilities and OnDemand Pricing options are available only in the most current releases
- Examine 3rd party software in your portfolio
  - ▶ IBM is offering competitive prices on mainframe platforms and tools; as well as, flexible workload pricing on key products
- Simplify to 2-tier infrastructure on System z
  - ▶ Improve QoS
  - ▶ Leverage price-per-MIP advantages of growing mips
  - ▶ Potentially lower unnecessary distributed computing overhead
  - ▶ Position for more value from your core applications through SOA
- Take a close look at charge-back policies
  - ▶ Mainframes often "carry" the costs of other platforms causing misleading conclusions about mainframe cost.
- Increase workload on z-Series
  - ▶ Collapse multiple tiers onto z
  - ▶ Consolidate Workloads
  - ▶ Improve system QOS

IBM Software SOA Summary

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.

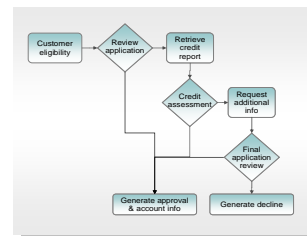**WebSphere Studio Asset Analyzer**

CICS Interdependency Analyzer

Assemble

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

WebSphere Developer for System z, *plus* Service Flow Modeler

… and assemble the services across multiple platforms
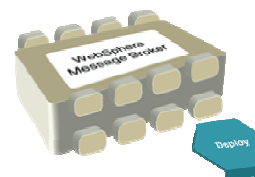
WebSphere Integration Developer

Deploy

Choreograph and deploy your new composite applications ….

WebSphere Process Server

DB2 and IMS Tools

… using an advanced ESB to power your SOA

WebSphere Message Broker

Manage

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

Tivoli Omegamon

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

Tivoli Composite Application Manager

Where to Find More Information

Internet
ibm.com/software/System z

The Mainstream
ibm.com/software/System z/mainstream