System z Executive Software Innovation Briefing
Unlocking the Value of SOA

David R Disney

WW Director, Tivoli z Software

September 2006
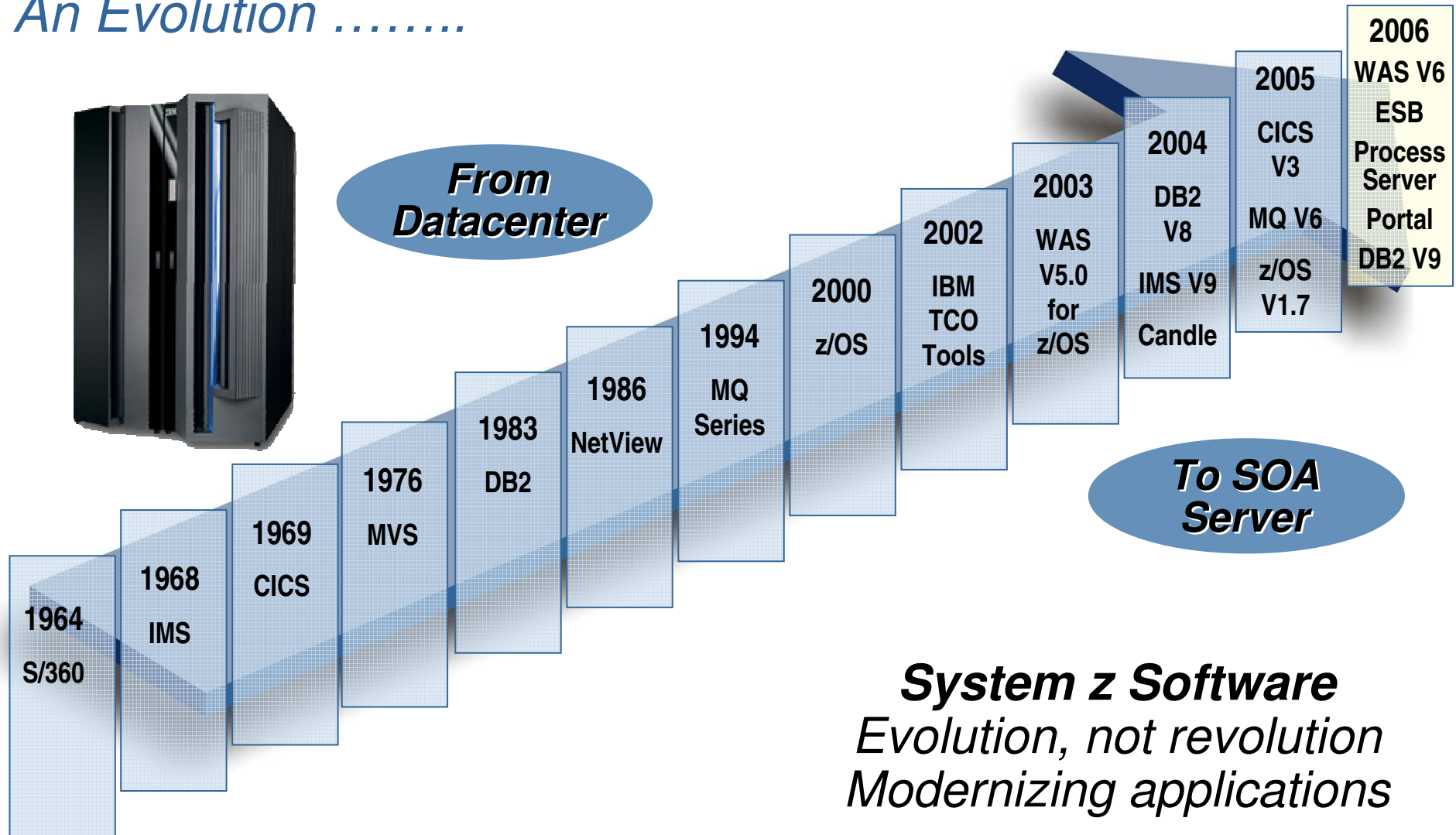
@business on demand.

IBM System z Technology
An Evolution ....

From Datacenter

2006
WAS V6
ESB
Process
Server
Portal
DB2 V9

2005
CICS
V3
MQ V6
z/OS
V1.7

2004
DB2
V8
IMS V9
Candle

2003
WAS
V5.0
for
z/OS

2002
IBM
TCO
Tools

2000
z/OS

1994
MQ
Series

1986
NetView

1983
DB2

1976
MVS

1969
CICS

1968
IMS

1964
S/360

To SOA Server

System z Software
Evolution, not revolution
Modernizing applications

2

IT Infrastructure Trends – Cost

Decrease in Efficiency as IT Spending Shifts to Operations Labor

70% of 2005 CIO Budget is Labor

- Hardware
- Services
- Labor
- Software

App Development **App Supt/Maint** **IT Operations**

Application development & support labor has dropped from 48% to 34% of IT Labor spend over previous 4 years
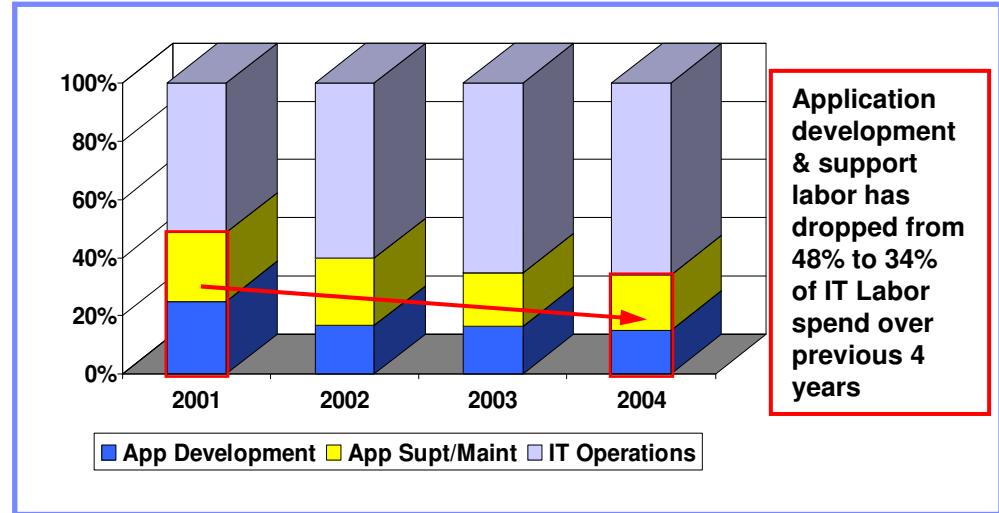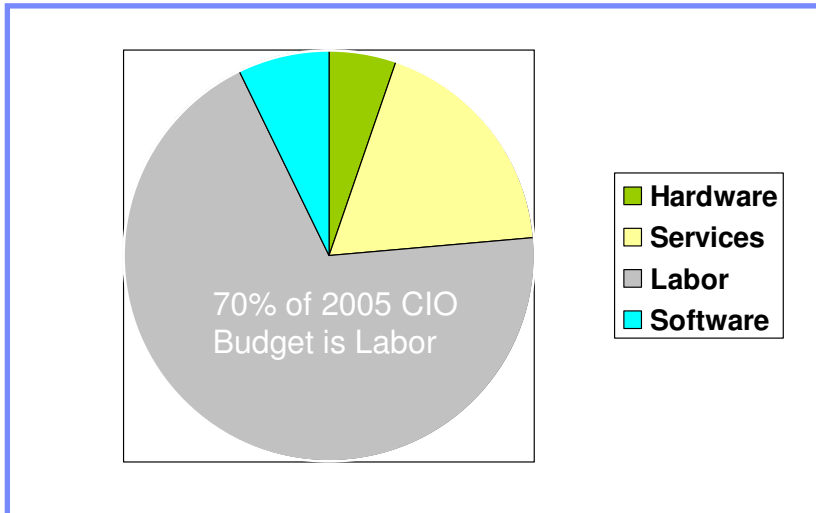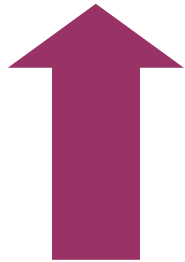
- 70% of CIO budget is labor
- Operations labor will be 73% of CIO labor budgets by 2008
- at -10% CGR to 2008 Application development will decline
- $325B in operations labor by 2008
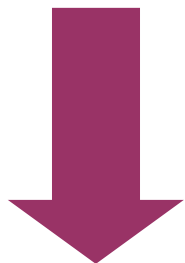
- Administration
- Development
- Operations
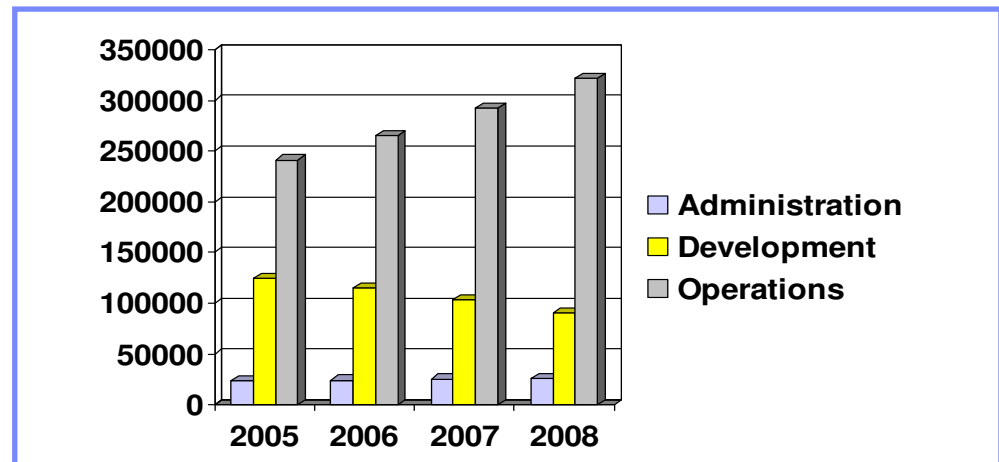
The New Face of z/OS

Simplifying and Modernizing the Mainframe for the New Generation of IT Professionals

Fill the pipeline with new talent:

- IBM Academic Initiative is reaching out to colleges and universities
- Acquire new customers, especially in Emerging Markets
- Port new ISV applications and Acquire new workloads

Reduce z/OS complexity; make it easier to develop experts:

- Eliminate, automate, and simplify complex tasks
- Modernize the "face" of z/OS
  - Maintain current "faces" for experienced users
- Reengineer the z Software stack to be more open
- Evolve to an SOA Server

Announcing… *System z for ISVs*

Comprehensive resources helping System z ISVs build middleware-based applications, develop skills and close business

- **Training and education**
  - ▶ Providing skills for students, developers and business partners

- **Integrated technical support environment – fees waived for 2006***
  - ▶ Online tools, 24/7 support
  - ▶ Remote access to System z hardware
  - ▶ Worldwide centers for in-person technical support

- **Hardware and software discounts**
  - ▶ Substantial discounts for application development on z/OS

- **Go-to-market support**
  - ▶ Investing in driving leads and closing business for *System z ISVs*
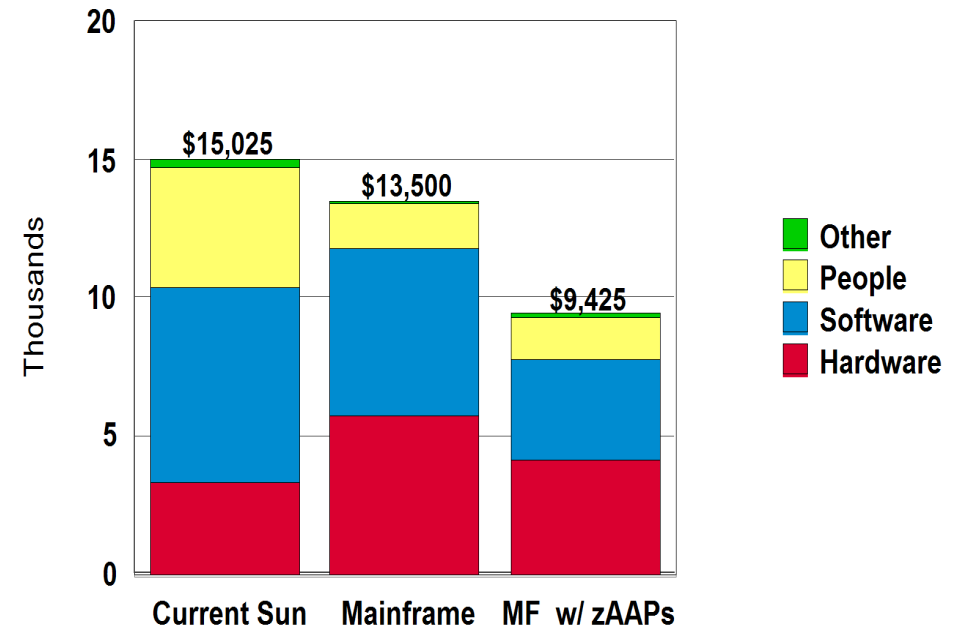 - ▶ Assigned dedicated IBM sales reps to close business

Builds upon the SOA community resources announced at PartnerWorld

*certain qualifications apply

People costs are often *hidden* in distributed implementations

- In a recent typical study, a customer thought they only had 24 UNIX servers

  ▶ But these were just the PRODUCTION servers

  ▶ In addition they had 49 servers for Development, Test and Disaster Recovery

- They needed <u>14 people</u> to support these servers and $7M software

  ▶ Running at only 20% utilization

- A comparable System z implementation would have required just 20 engines

  ▶ Requiring <u>5 people</u> to support

  ▶ Using $6M software (over 3 years)

- They thought the Solaris environment was 1/5 the cost of the mainframe…
  …but in fact the **zSeries TCO was 37% less**

3 Year Cost of Ownership

Thousands

$15,025		
	$13,500	
		$9,425
Current Sun	Mainframe	MF w/ zAAPs

Legend:
- Other (green)
- People (yellow)
- Software (blue)
- Hardware (red)

Benefits of zAAP on the Mainframe: Farmers Insurance

FARMERS

Gets you back where you belong.

- Farmers online application experiences CICS transaction volumes of up to 45 million per day, supporting approximately 50,000 users

- 90% of the revenue business is supported by applications running within WAS for z/OS, which also communicates with applications running off-platform

- zAAPs reduced the MIPS on a key application from 1200 MIPS to 700 MIPS

"Experiences tell us that zSeries is a must, because that is the only platform that can help us deliver all of these qualities. Quality is really, really important, because our customers are dependent upon the availability of these applications and the platform."

— Claudia Ku,
Dir of Tech Services

IBM

- **Nationwide** is a US-based Fortune 100 insurance & financial services company
  - ▸ $21B+ revenue, 30,000+ employees (6,000 in IT)

- **Situation:**
  - ▸ 5000+ distributed servers under management with low utilizations
  - ▸ Linux and J2EE being used for new applications, with no single point of failure

- **Problems:**
  - ▸ High TCO including data center power and floor space scarcity (new facility would cost $10M+)
  - ▸ Long server provisioning process
  - ▸ Need to "over-provision" for peaks leading to inefficient utilization

- **Solution:**
  - ▸ Server Consolidation using System z Virtualization (System z990, IFLs, z/VM…)

- ▶ **Result: <u>Vastly improved TCO, Speed & Simplification</u>**
  - ▸ 50% reduction in Web hosting monthly costs, 80% reduction in floor space & power conservation
  - ▸ 50% reduction in hardware & OS support efforts; significant savings on middleware costs
  - ▸ 350 servers virtualized with 15 z990 IFLs, supported by 3 FTEs
    - ▶ 12 mission critical applications with 100,000+ users/day
  - ▸ Fast deployment (4 months)
  - ▸ Significantly faster provisioning speed (months → days)
    - ▶ Provisioned 22x the anticipated load for SuperBowl AD using CoD (1 processor for 2 weeks)
  - ▸ Dynamic allocation of compute power eliminates need to "over-provision"
  - ▸ Simple, robust mainframe high availability & disaster recovery

DataPower Product line – Today
XML Appliances Continue SOA Foundation Enhancements

WebSphere Integration Developer
Rational Application Developer

XI50 XML Message Handling

Process:

WebSphere Process Server

WebSphere ESB & Message Broker
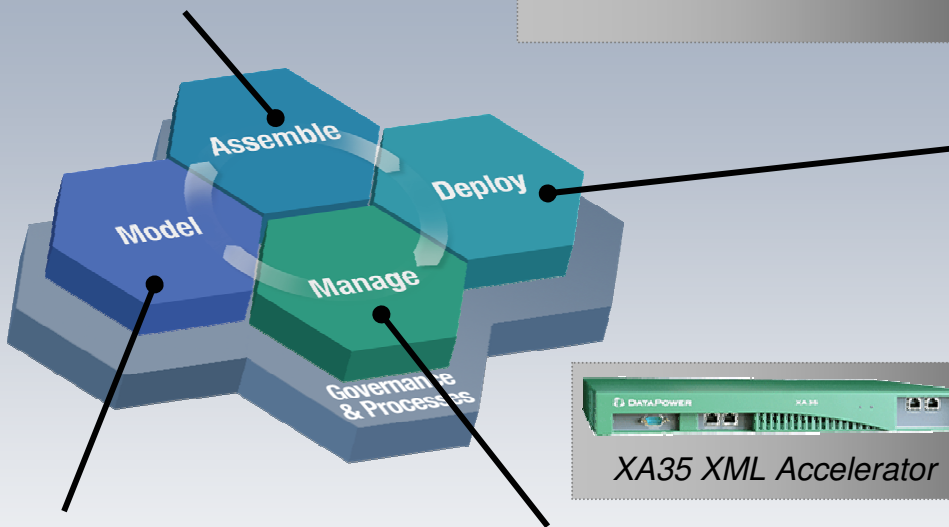
WebSphere Partner Gateway & Adapters

People:

WebSphere Portal

WebSphere Everyplace Deployment

Workplace Collaboration Services

Information:

WebSphere Information Integrator

XA35 XML Accelerator

Application Infrastructure:

WebSphere Application Server & XD

Model

Assemble

Deploy

Manage

Governance & Processes

WebSphere Business Modeler
Rational Software Architect

WebSphere Business Monitor

Tivoli Composite Application Manager

Tivoli. software *does*

+

DataPower does
B2B XML Security Policy Enforcement

Tivoli Federated Identity Manager
Tivoli Access Manager for e-business

SOA Security Management
Policy Management
Federated Identity Management
Auditing and Compliance for SOA
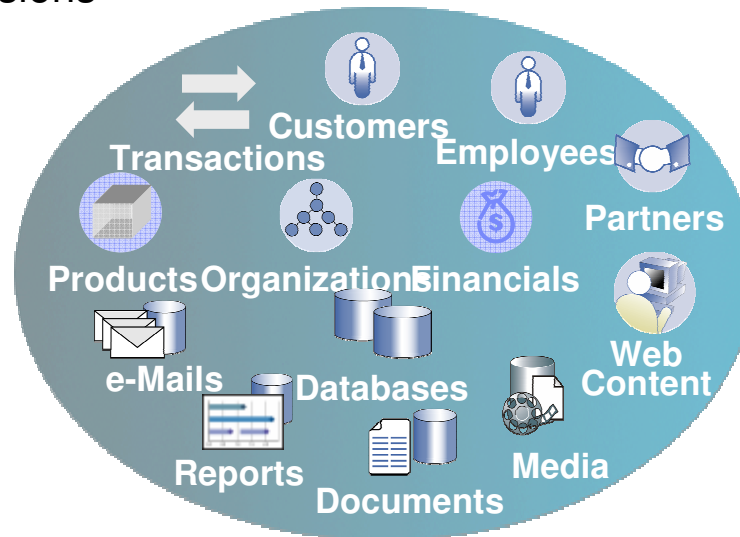*User Provisioning*

Helping to manage the data explosion with z Series and tools to address TCO

60%+ of CEOs need to do a better job capturing and understanding information rapidly in order to make swift business decisions

30-50% of design time is copy management

79% of companies have 2+ repositories… 25% have 15 **or more…**

…and **48** disparate financial systems & 2.7 ERP systems in the average $1B company

Customers
Transactions
Employees
Partners
Products Organization Financials
e-Mails Databases Web Content
Reports Media
Documents

30% of people's time is spent searching for relevant information

40% of IT budgets may be spent on compliance

122 Terabytes disk storage in 2005…
37% CGR disk storage growth '96-'07

The zIIP processor and DB2 tools address each of these areas

Types of DB2 for z/OS Workloads That May Benefit from zIIP

1 -ERP or CRM application serving*

- For applications, running on z/OS, UNIX, Linux, Intel, or Linux on System z, that access DB2 for z/OS V8 on a System z9 109, via DRDA over a TCP/IP connection DB2 gives z/OS the necessary information to have portions of these SQL requests directed to the zIIP

TCP/IP   CP   z/OS

TCP/IP   CP   z/OS   New Engine

2 - Data warehousing applications*

- Requests that utilize DB2 for z/OS V8 star schema parallel queries may have portions of these SQL requests directed to the zIIP when DB2 gives z/OS the necessary information

3 – Some DB2 for z/OS V8 utilities*

- A portion of DB2 utility functions used to maintain index maintenance structures (example LOAD, REORG, and REBUILD INDEX) typically run during batch, can be redirected to zIIP.

* The zIIP is designed so that a program can work with z/OS to have all or a portion of it's Service Request Block (SRB) enclave work directed to the zIIP. The above types of DB2 V8 work are those executing in SRB enclaves, portions of which can be sent to the zIIP.

DB2 for z/OS v9 – Addressing corporate data goals

- **Improved IT Infrastructure In Support of Compliance Efforts**
  - ‣ Trusted security context
  - ‣ Database roles
  - ‣ Auditing capabilities
  - ‣ Encryption improved

- **Simplify development and porting**
  - ‣ Many SQL improvements that simplify porting
  - ‣ Native SQL stored procedures
  - ‣ Default databases and tables paces
  - ‣ Automatic unique indexes to support primary keys

- **Decrease Complexity and Cost**
  - ‣ Fast table replacement
  - ‣ Partition by growth
  - ‣ Table append
  - ‣ Volume-based COPY/RECOVER
  - ‣ Optimization Service Center

- **Evolve Your Environment & SOA**
  - ‣ Integrated XML
  - ‣ WebSphere integration
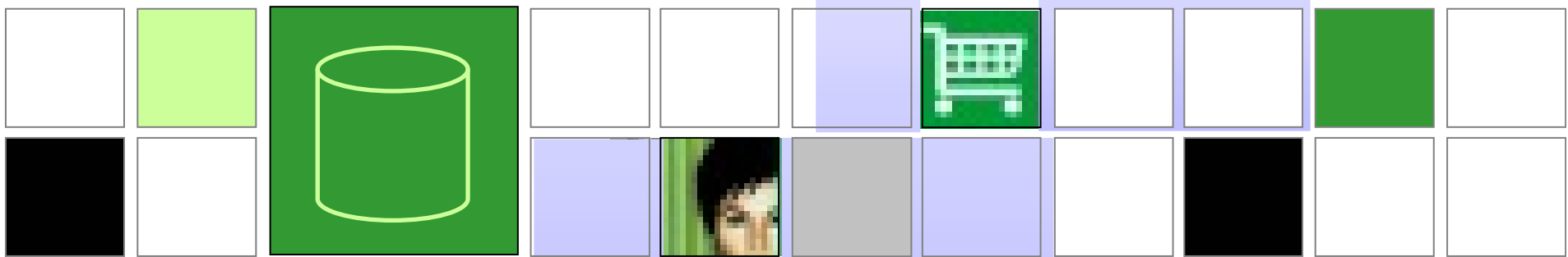
Is re-writing COBOL logic appropriate?

- **Significant business intelligence exists in core systems**
  - "200 Billion lines of COBOL code in existence" *eWeek*
  - "5 Billion lines of COBOL code added yearly" *Bill Ulrich, TSG Inc.*
  - "Between 850K and 1.3 Million COBOL developers" *IDC*
  - "Majority of customer data still on mainframes" *Computerworld*
  - "Replacement costs $20 Trillion" *eWeek*

- **Rewriting - is it an option.....**
  - How long will it take? (lose strategic benefit)
  - Who will do it?
    (Who has the business knowledge?)
  - Can you certify accuracy of your business model?
  - How much will it cost?
  - Risk?
  - Longer path lengths

Developers
From an estimated worldwide market size
of 7 million "professional" developers
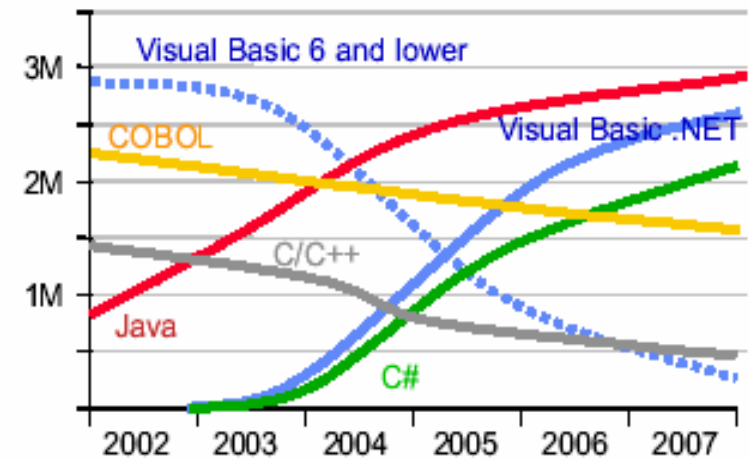
M = million

Gartner

Flexible IT requires Service-Oriented Architecture (SOA) tools from IBM

Branham Group has done the analysis vs MS .NET!

"IBM Tools are more productive for building robust server side applications"

- **Model key components of the app**   IBM 2.4x faster

- **Build Web Services from scratch**   IBM 2.1x faster

- **Build Web Services from existing code**   IBM 2.6x faster

- **Build a portlet**   IBM 2.2x faster

- **Build a portlet & attach to core systems**   IBM 3.2x faster

SOA, WAS z/OS, & the Mainframe

Recent data indicates that 41% of mainframe customers are building or deploying new applications on System z - up from 31% a year ago.

WebSphere is the key to unlocking & reusing many core assets and extending their value, and the mainframe is at the heart of many SOA customers.

WebSphere Application Server for z/OS
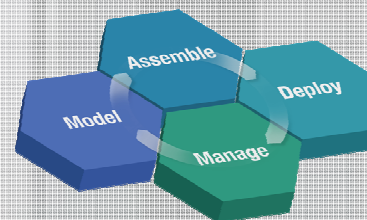
- **Commitment to open standards**
  - ▶ **J2EE**
  - ▶ **JMS support**
  - ▶ **XML support**
  - ▶ **Advanced Web services**
- **Commitment to SOA**
  - ▶ **SCA & futures**
- **WebSphere security**
- **WebSphere high availability**
- **Engine for WebSphere expansion products on z/OS**

Assemble
Deploy
Model
Manage

- **Platform integration**
  - ▶ **z/OS WLM**
  - ▶ **Automatic Restart Mgr**
  - ▶ **Parallel Sysplex**
  - ▶ **Security (RACF)**
- **Asset integration**
  - ▶ **Local DB2 connections**
  - ▶ **IMS & CICS integration**

CICS, IMS, & DB2

WebSphere Application Server V6.1

Generally available June 30, 2006

Focus on innovation not implementation

- J2SE support (JDK 5.0)
- Application Server Toolkit enhancements
- Installation factory
- Portlet support
- JSF widget library

Standards and security driven SOA runtime

- Security configurations out of the box
- Web Services security enhancements
- Government standards
- Performance improvements

Deliver key function in new ways

- Flexibility through new Web services
- Session Initiation Protocol (SIP) servlets
- Flexibility with your messaging backbone

Administration enhancements and future SOD for ease of use

- IBM support assistant
- Web server for z/OS, powered by Apache
- 64 bit enablement for WebSphere for z/OS

CICS Directions

CICS provides technologies for an On Demand world

- ✓ Application Transformation
- ✓ Integration
- ✓ Operational Efficiency

CICS ensures lasting value of applications in modern Enterprise solutions

next 24 Months

03/05

CICS TS V3.1

- Web Services capabilities to extend apps to SOA
- Support for industry leading SSL protocol
- Optimised CICS data exchange capabilities
- New interfaces for Enterprise Management
- Leverage WD4Z for application tranformation and integration.
- Enhanced C/C++ programs performance

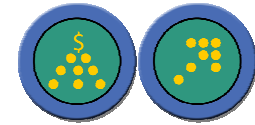### CICS TS V3.n

- CICS-to-CICS conne with an IP network
- Enhance Web Servic capabilities
- Higher application pa efficiency
- Extend Web Services support for COBOL d types
- Enterprise wide work management
- Remove capacity restraints relating to sources

12/03

CICS TS V2.3

- Performance improvements for Java programs
- Addition of CICS Web Support to the JCICS classes
- Interactive debugging for COBOL and Java applications
- SOAP for CICS
- Performance improvements in CICS-DB2® attachment

1/02

CICS TS V2.2

- Support for EJB'S
- JDBC/SQLJ Access to DB2 Data
- JCICS access to VSAM data
- ECI over TCP/IP
- Integrated Translator for COBOL & PL/l

EJB support

High Performance JAVA

Web Services

SOA

IMS Update
Continuing Growth, Function and Business Value

- ***IMS V9 Currently Available***
  - XML database support
  - Publish Transactions/Data as Web Services
  - Integrated Connect function for High Performance access
  - Integrated HALDB Online Reorganization for ultra scalable/available data
  - Tooling to easily develop/deploy/manage applications at low cost

- ***2006 Targeted Delivery***
  - SOA Enhanced Integration and Transformation
    - SOAP Gateway, XML Adapter, XQuery Preview, DLIModel Utility GUI Beta
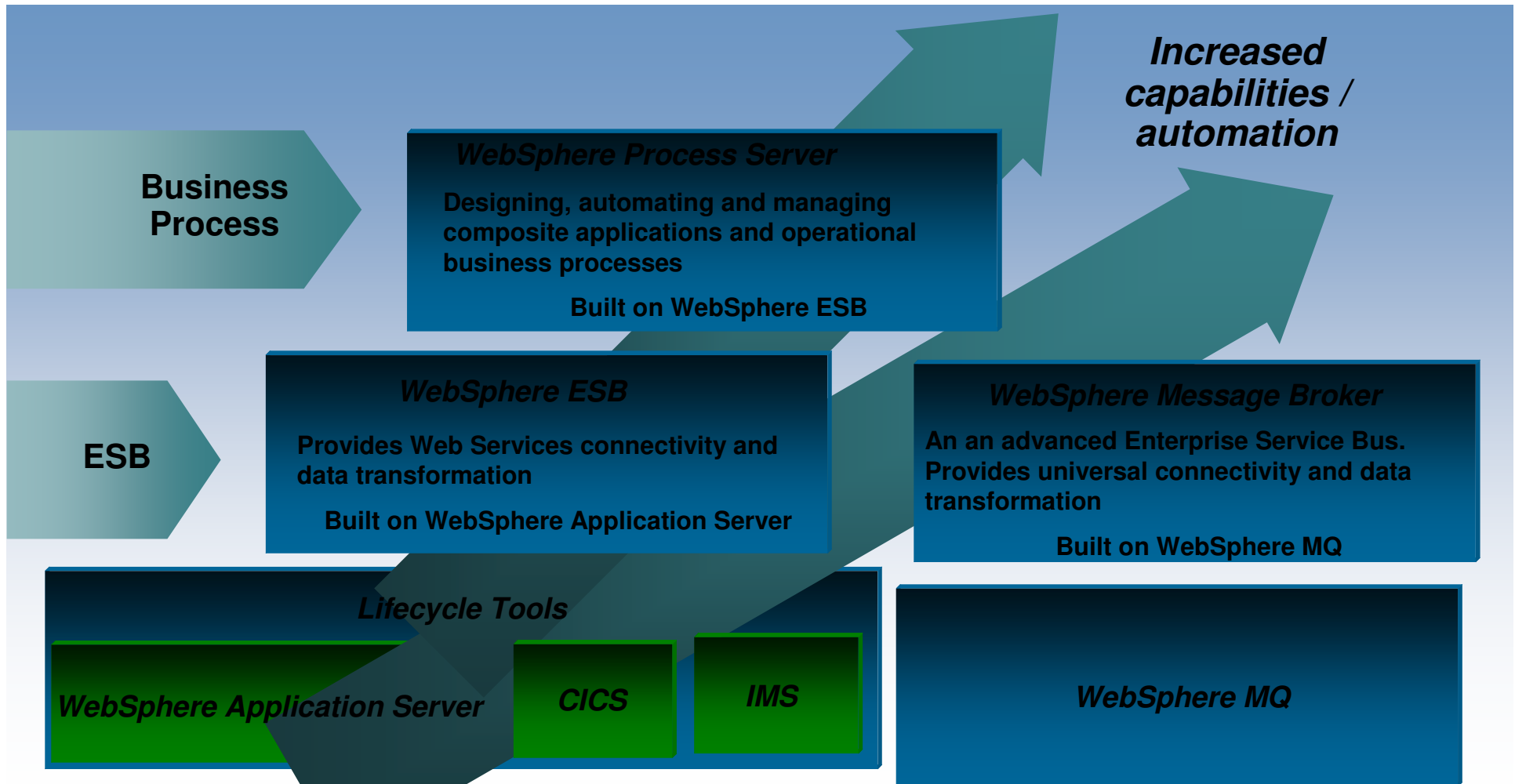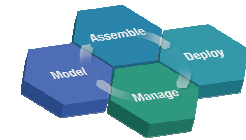 - Further Enhancements for Integration, Manageability, Scalability

- ***Next Steps***
  - Increasing Parallelism in Recovery/Connectivity
  - SOA Support Enhancements
    - XML, Web Services, PL/I Transactions, IMS as a Client
    - Integrated Operations across Subsystems/Platforms
    - Enhancing Security
 - Installation/Management Enhancements to Simplify Skill Requirements

New
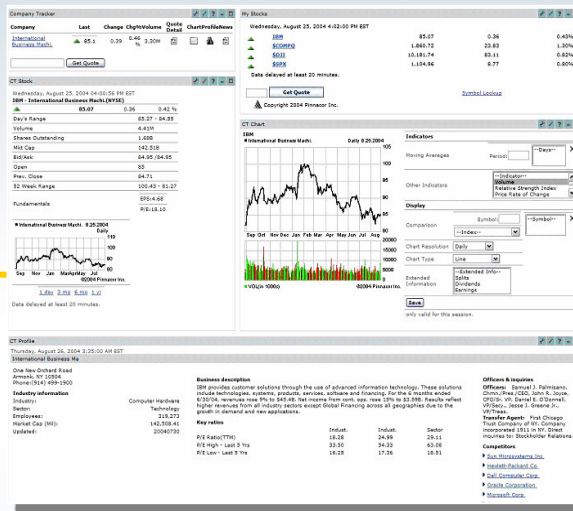
Flexible Options for a z SOA Environment

Business Process

WebSphere Process Server

Designing, automating and managing composite applications and operational business processes

Built on WebSphere ESB

Increased capabilities / automation

ESB

WebSphere ESB

Provides Web Services connectivity and data transformation

Built on WebSphere Application Server

WebSphere Message Broker

An an advanced Enterprise Service Bus. Provides universal connectivity and data transformation

Built on WebSphere MQ

Lifecycle Tools

WebSphere Application Server *CICS* *IMS*

WebSphere MQ

WebSphere Portal V6 integrated with Process Server
Integrate Process Flow on System z - And Portlet Factory
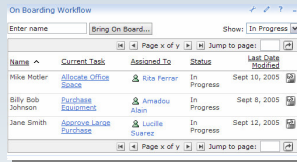
ENHANCED!

Process Orchestrating within Portal
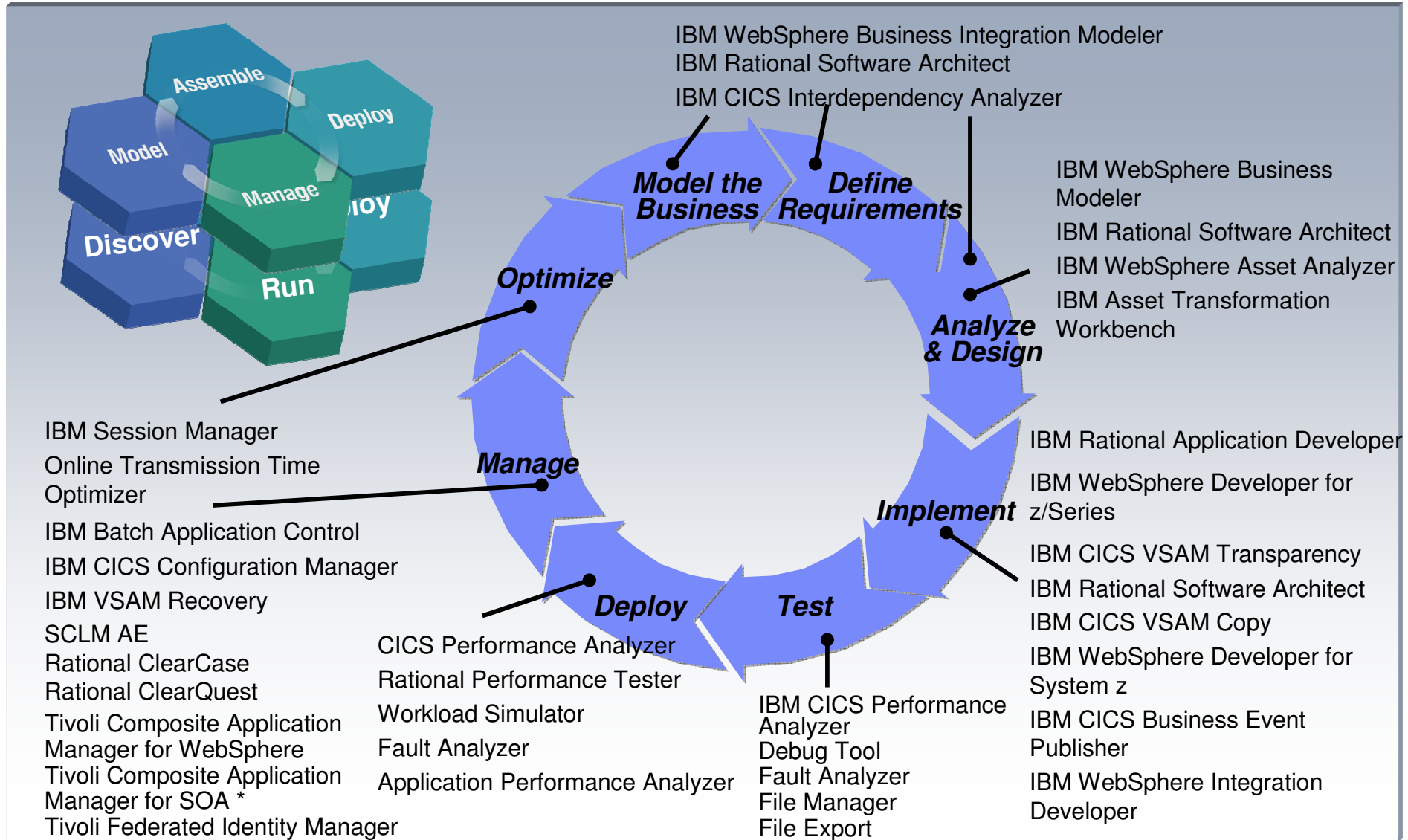
Form Driven Workflows

Portlet to Portlet Interaction

Ad-Hoc Person to Person Exception Handling and Problem Resolution

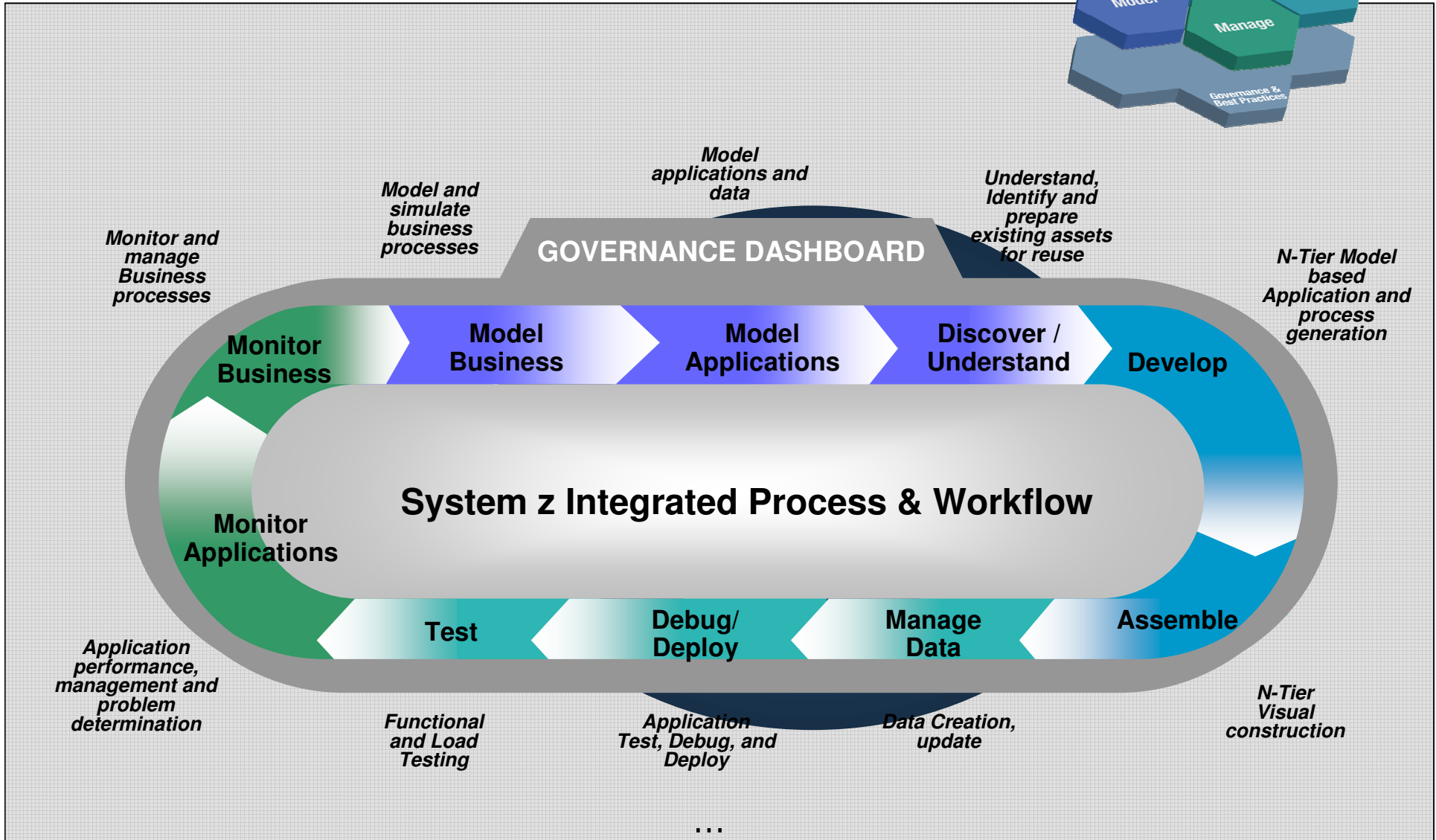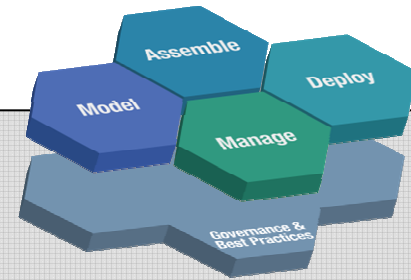**Dynamically Presented Based on Role & Security**

Enterprise Application Lifecycle Portfolio

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

Model the Business

Define Requirements

Optimize

Analyze & Design

IBM WebSphere Business Modeler

IBM Rational Software Architect

IBM WebSphere Asset Analyzer

IBM Asset Transformation Workbench

Manage

Implement

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

Deploy

Test

IBM Session Manager

Online Transmission Time Optimizer

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

CICS Performance Analyzer

Rational Performance Tester

Workload Simulator

Fault Analyzer

Application Performance Analyzer

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

Assemble

Deploy

Model

Manage

Discover

Run

System z Application Lifecycle

Assemble
Model
Deploy
Manage
Governance &
Best Practices

Model and
simulate
business
processes

Model
applications and
data

Understand,
Identify and
prepare
existing assets
for reuse

Monitor and
manage
Business
processes

GOVERNANCE DASHBOARD

N-Tier Model
based
Application and
process
generation

Monitor Business

Model Business

Model Applications

Discover / Understand

Develop

System z Integrated Process & Workflow

Monitor Applications

Test

Debug/ Deploy

Manage Data

Assemble

Application
performance,
management and
problem
determination

Functional
and Load
Testing

Application
Test, Debug, and
Deploy

Data Creation,
update

N-Tier
Visual
construction

. . .

Manage Complexity and Deliver A Higher Level of Service
A Comprehensive Suite of Solutions Available Today

IT Service Management

IT Process Management Products

IT Service Management Platform

IT Operational Management Products

Best Practices

- Built on SOA, as well as manages and secures SOA environments

- Open, standards-based and federated Change and Configuration Management Database (CCMDB)

- Proven technology for integrating 'Process to Product' – including third-party vendors

- Based on self-managing autonomic technologies and best practices such as ITIL and eTOM

Tivoli Enterprise Portal – 2006 is all about Integration

A Dynamic Role-based Workspace for Integrating IT Operations Silos – One portal to monitor the overall health of the infrastructure

Business Services   **Distributed Resources**   **J2EE Transactions**   **Mainframe Resources**

Launch in Context

Everything at your Fingertips

End to End Management from Tivoli
Current System z Portfolio
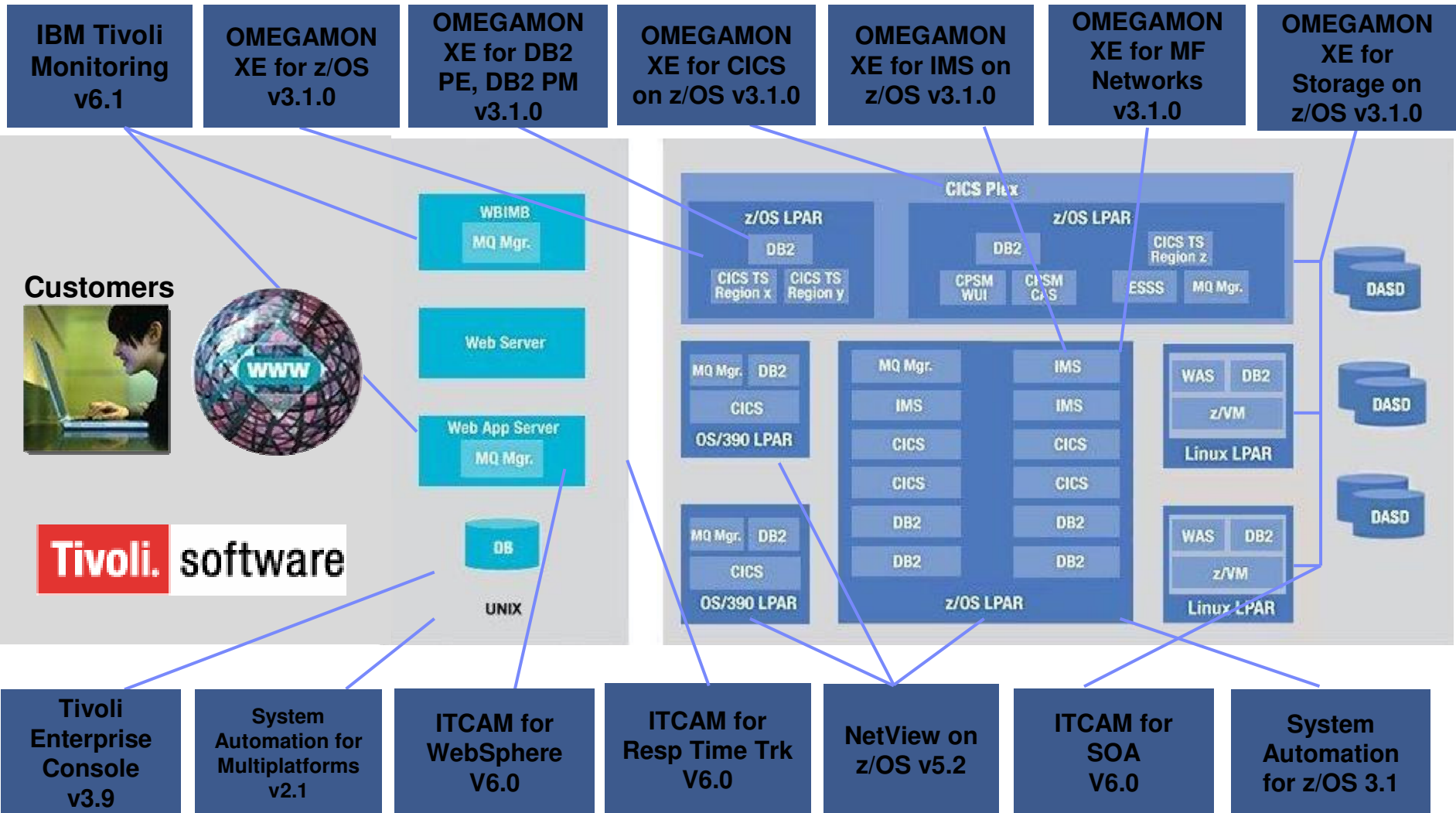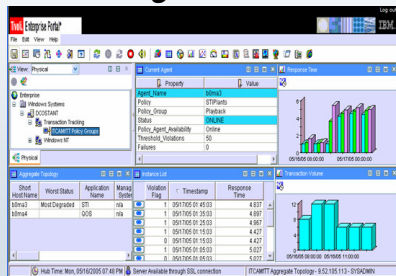
Tivoli Composite Application Management Portfolio
Delivering high-performing composite applications

Analyze and Measure Transactions & Services

Manage Application
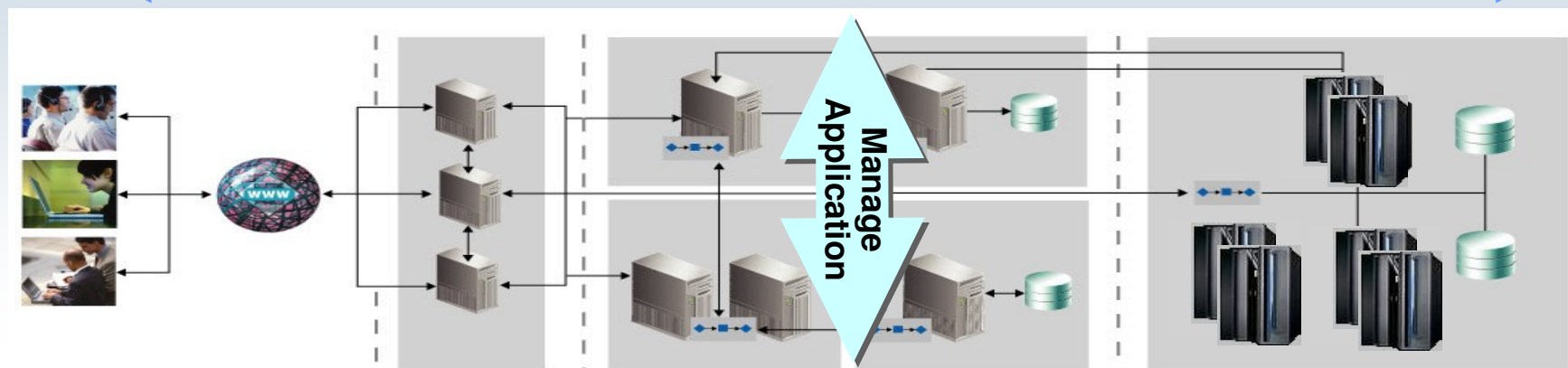
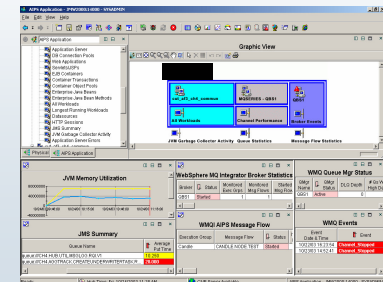**Monitor Infrastructure**

Composite Application Manager for for RTT

Composite Application Manager for WebSphere
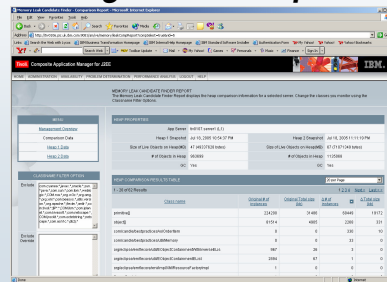
Composite Application Manager for SOA
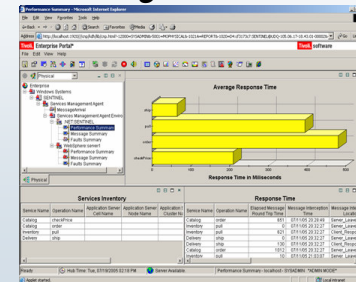
OMEGAMON XE and ITM

Tivoli Portfolio Today
Integrated End to End Support for Heterogeneous Environments
Available with ITM 6.1, Omegamon, ITCAM management, and **Micromuse**
Available with ITM 6.1, OMEGAMON & ITCAM management

Platforms	Databases	Applications & Messaging	Business Integration	Web Infrastructure	Frequently Requested for ITM	Best Practice Library
Unix	DB2 (Z & Distributed)	SAP MySAP	CICS	WebSphere (Z & Distributed)	Network Apps Network Host FTP RMON2/SLA Comverse Nortel Magellin RADIUS Robomon SunNet Castlerock Tibco Cisco ComMgr DEC VAX Cisco VoIP	Agent-less Adapter URL, SNMP, File, Socket, UDB….
Windows		.NET (full suite of MS apps)	Web Services	IIS		Agent Quick attach API
Cluster(s)	Oracle		IMS			Syslog Probe Syslog Daemon
Linux	SQL	Citrix	WebSphere MQ	iPlanet		ISV Support
z/OS	Sybase	Siebel		Apache		•BMC Patrol •CA Unicenter •MOM •HP OV NNM •HP OV Ops •Aprisma
VMWare	Informix	Tuxedo	WebSphere MQ Integrator	WebLogic		
OS/400			MQ Integrator	WebLogic		
Tandem	Informix	Domino Exchange				

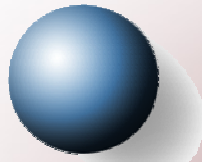# How is Security Different on the Mainframe?

A highly secure business environment with compliance to standards helps build industry creditability and gain consumer trust
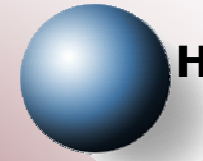
Information & Applications
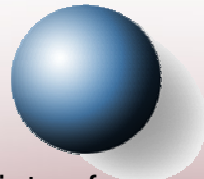
Supports a variety of encryption standards to help keep **current with industry and government security regulations**
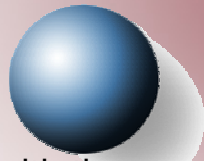
People

Manage access of critical data for users through **Multiple Level Security**
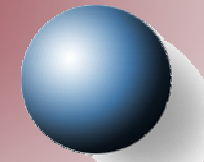
Hardware

End-to-end protection that helps keep data uncorrupted and uncompromised

Networks

Integrates security with the network with built-in technology **resistant to hackers**

Operating System

Architected for security from within to **reduce risk** and **not be susceptible to viruses**

*"The **IBM mainframe** is the **only** computing system to earn the **highest level of industry security** certification, EAL5."* Bob Hoey, Worldwide VP Sales for System z

"Operating systems generally called 'secure' rarely reach higher rankings than EAL4." wikipedia.org

*EAL (Evaluation Assurance Level) = International standard to define security requirements in computer systems.

Secure and Efficient "Smart Card" Solution at Banco Itaú Fights Fraud and Saves

- **Banco Itaú S.A.** is one of the largest banks in Brazil
  - approximately 3,000 branches, 20,400 automated teller machines and 42,200 employees
  - 15M checking accounts, 9M savings accounts, 6M credit cards

- **Situation:**
  - To meet efficiency objectives and ensure the security of its 12 million issued debit cards, Banco Itaú replaced its regular cards with security chip-enabled smart cards.
  - Need improved security so that new markets and customers can trust the bank while getting quick and easy access to their accounts

- **Problem:**
  - Performance bottleneck with Thales e-Transactions security servers (which process "smart cards")

- **Solution:**
  - Leverage superior mainframe security, eliminate separate security server and migrate smart card solution to the mainframe
    - All core business systems run on mainframes
    - System z reliability and technical support also key factors in this decision
    - Better price performance
  - Install mainframe PCI Cryptographic Coprocessor cards (PCICC)
    - Encryption keys are generated and stored on PCICC cards and used for smart card authentication, blocking and password change
    - Use IBM z/OS V1.6 security APIs

- **Result:** <u>**Reduced fraud from stronger smart card security, reduced costs, PLUS increased stability, efficiency, and faster processing**</u>

Summary

➢ We are continually improving TCO and TCA on System z

➢ We are investing in and delivering new technologies on z Software and Hardware.

➢ We are exploiting the Integration of the System z to deliver new Value for SOA

➢ We have Affordable and Competitive Tools to enable SOA with System z

➢ We are increasing Investment in z Technical skills and Applications.

Thank You