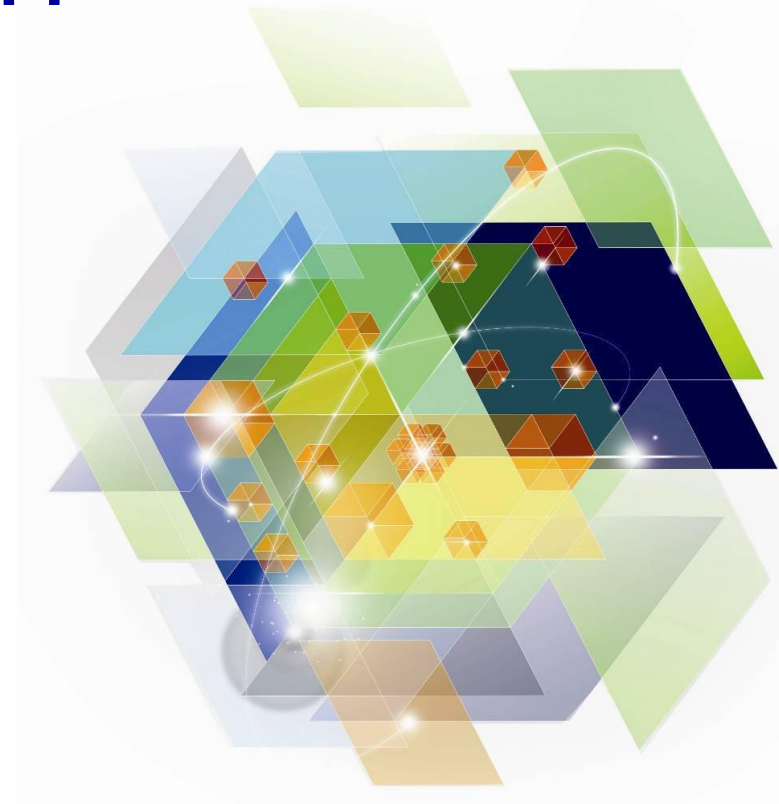# WebSphere Solutions on zEnterprise - Improving Business Agility through Automation and Enhanced Application Services

Yvonne Perkins,
Vice-President,
WebSphere on System z Development,
IBM Software Group

Successful CEOs Are Charting Their Roadmap to Agility

3 | Accelerate change with optimized processes and decisions | → | *Business Process Management*

2 | Strengthen relationships and integrate with customers, suppliers and partners | → | *Service Oriented Architecture*
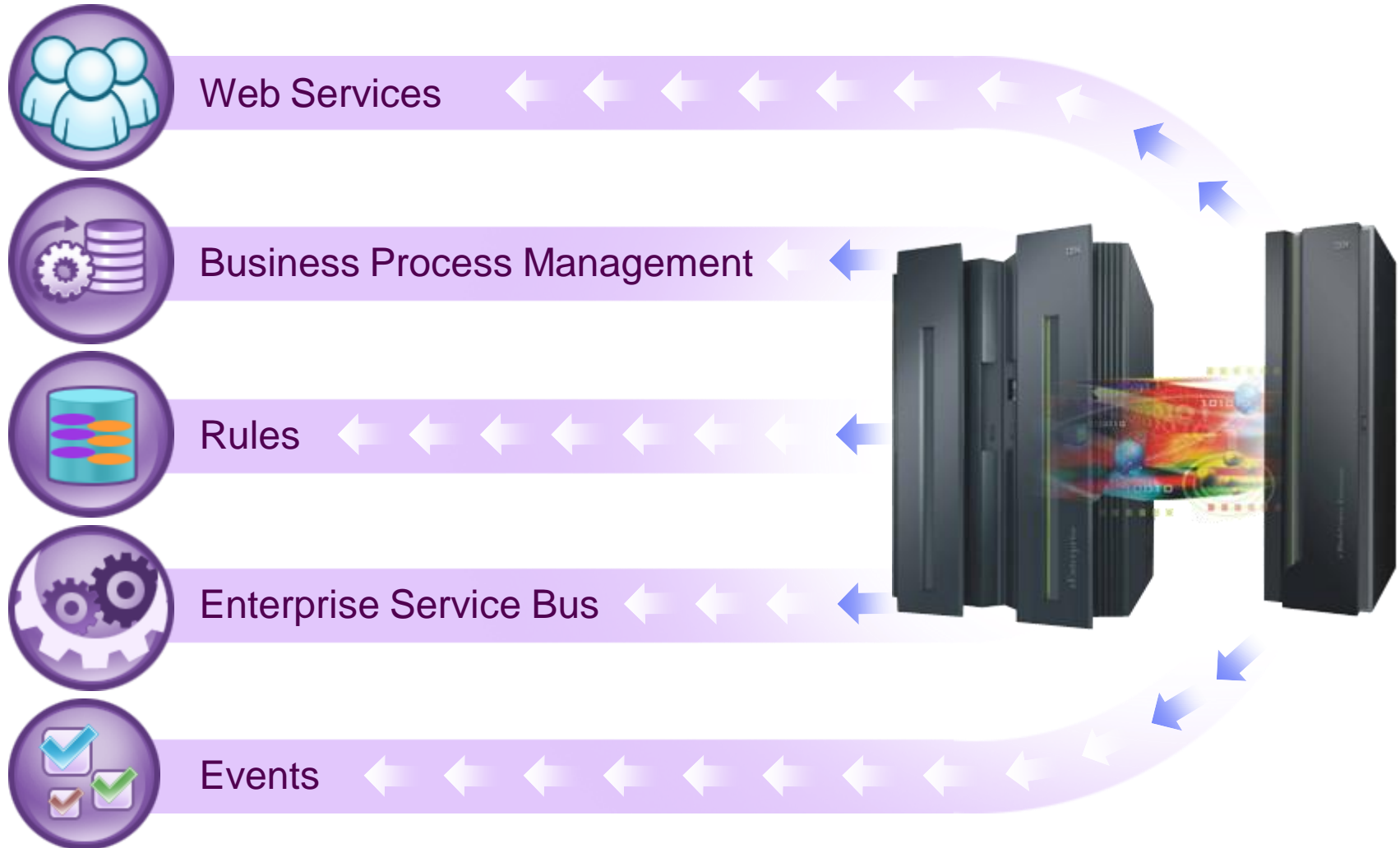
1 | Control costs and add flexibility with virtualization and cloud | → | *Application Infrastructure*
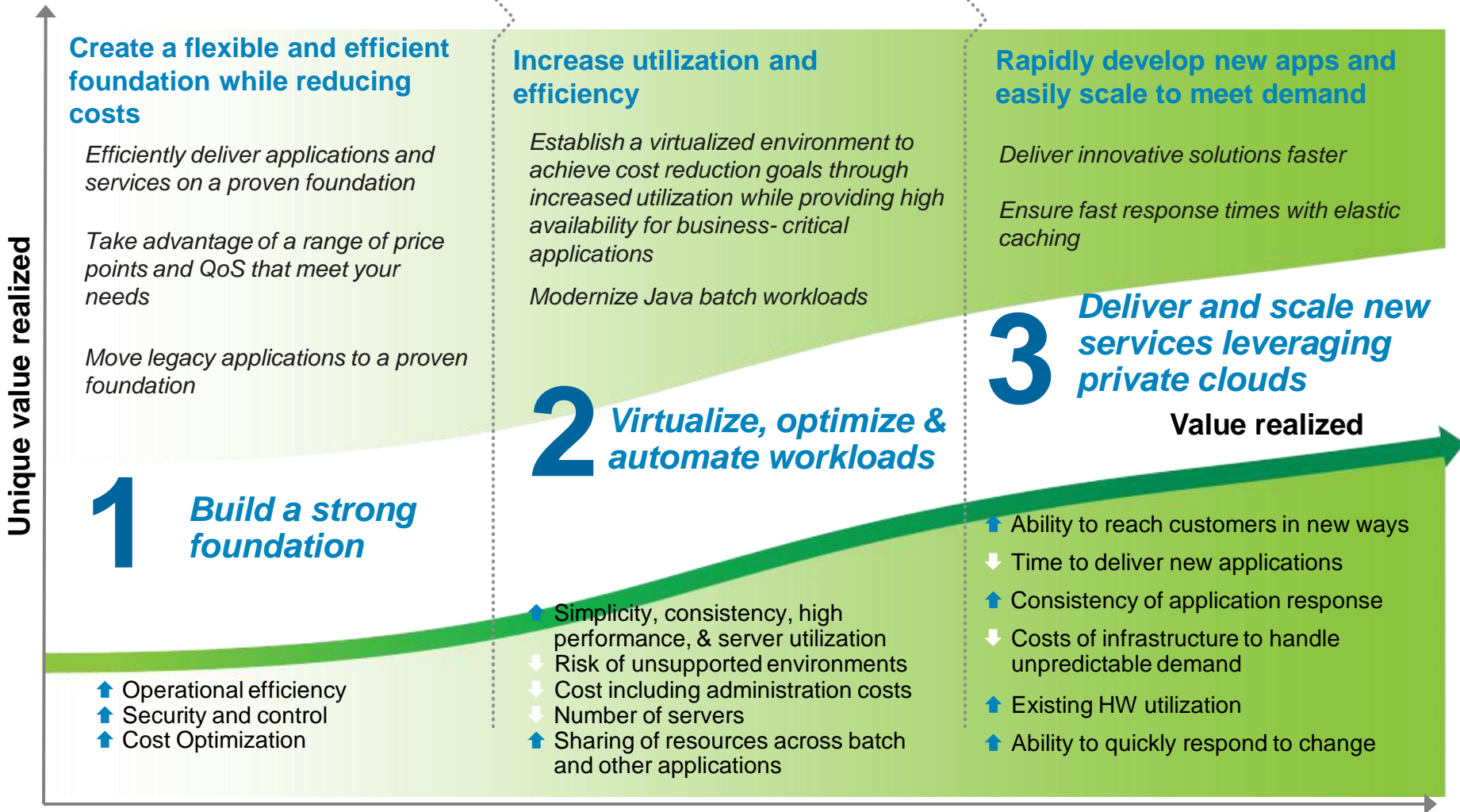
Across a Dynamic Business Network

Smarter Computing means extracting maximum business value from existing assets

Web Services

Business Process Management

Rules

Enterprise Service Bus

Events

Application Foundation, Virtualization and Cloud
Efficiently deliver innovative applications while optimizing resources and reducing costs

Unique value realized

Create a flexible and efficient foundation while reducing costs

Efficiently deliver applications and services on a proven foundation

Take advantage of a range of price points and QoS that meet your needs

Move legacy applications to a proven foundation

Increase utilization and efficiency

Establish a virtualized environment to achieve cost reduction goals through increased utilization while providing high availability for business- critical applications

Modernize Java batch workloads

Rapidly develop new apps and easily scale to meet demand

Deliver innovative solutions faster

Ensure fast response times with elastic caching

3 *Deliver and scale new services leveraging private clouds*

Value realized

2 *Virtualize, optimize & automate workloads*

1 *Build a strong foundation*

- ⬆ Ability to reach customers in new ways
- ⬇ Time to deliver new applications
- ⬆ Consistency of application response
- ⬇ Costs of infrastructure to handle unpredictable demand
- ⬆ Existing HW utilization
- ⬆ Ability to quickly respond to change

- ⬆ Simplicity, consistency, high performance, & server utilization
- ⬇ Risk of unsupported environments
- ⬇ Cost including administration costs
- ⬇ Number of servers
- ⬆ Sharing of resources across batch and other applications

- ⬆ Operational efficiency
- ⬆ Security and control
- ⬆ Cost Optimization

New workloads on System z match the top CIO priorities, accelerated by the capabilities of zEnterprise
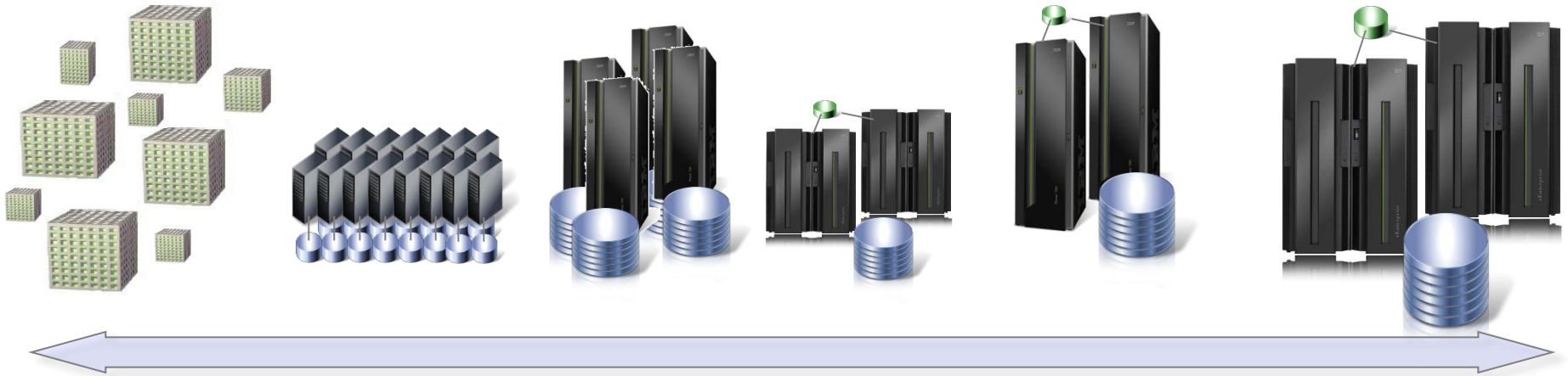
Strategic workload

- ▶ Transaction Processing
- ▶ Virtualization
- ▶ Application Infrastructure/SOA
- ▶ BPM/BRMS

Why zEnterprise?

- ▶ Qualities of Service
- ▶ Capacity
- ▶ Efficiency
- ▶ Flexibility
- ▶ Leverage existing System z assets

Transaction processing capabilities can be combined to meet the changing demands of the business
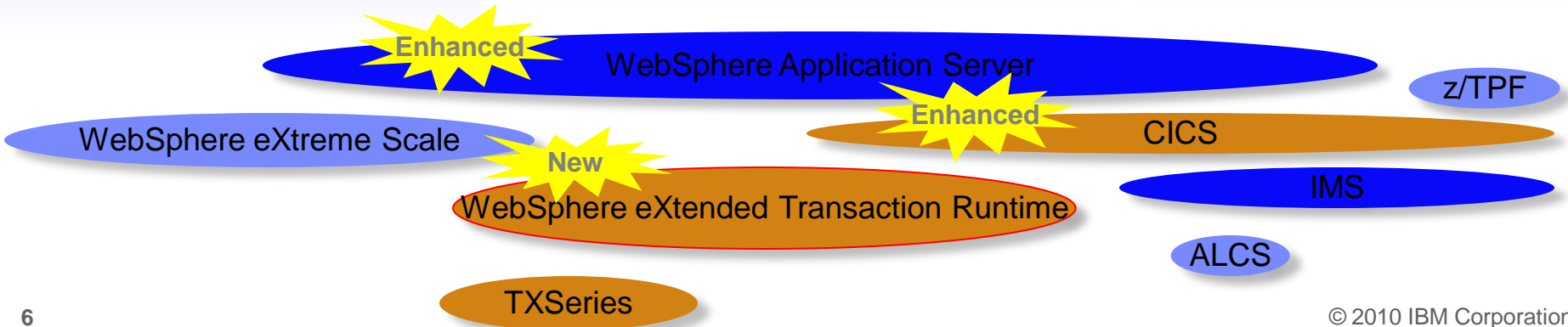

Extreme Scale-Out

- Elastic distributed caching, in-memory databases, and XTP/Data Grid applications
- Performance and QOS focused

Broad Applicability in the Center

- *Extensive standards and language support*
- High ISV, application, and skill availability
- Broad platform and database support

Extreme Scale-Up

- Optimized for centralized data
- Database options affect scale
- Performance & QOS focused

Enhanced WebSphere Application Server

WebSphere eXtreme Scale

Enhanced CICS

z/TPF

New WebSphere eXtended Transaction Runtime

IMS

ALCS

TXSeries

Scalable, dependable transaction processing supports hundreds of millions of end users

Transaction Processing

Today's challenges

▶ Thousands of simultaneous users

▶ Infrastructure overload

▶ Data inconsistency

Why zEnterprise

▶ High volume reliable processing with sub-second response time

▶ Maintains the integrity of the transaction against all types of failures.

▶ Intelligent, automated error processing

SOLUTIONS

WebSphere Application Server

IBM Transaction Processing Facility

CICS Transaction Server

"Visa relies on System z for global transactions processing-- and confirmed the ability to handle the 2010 Christmas peak of almost 11,000 transactions a second.".

VISA

When is WebSphere Application Server for z/OS the right choice?

WAS offers unique capabilities for z/OS now and in parallel with business needs

- Expanded support for productivity enhancing programming models

- Faster time to value through a simplified and centralized product install

- Faster time to application development completion

- Enhanced security and governance capabilities

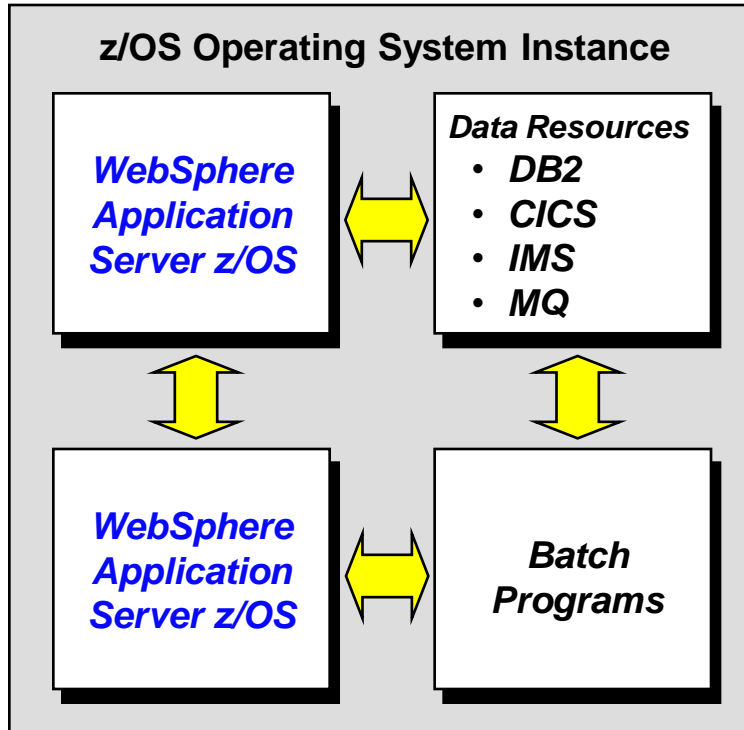- Improved administration and migration capabilities

- Performance improvements

- Enhanced collocation

WAS V8

New!

Benefit of z196 and WAS z/OS V8

Here we see the benefits of both the z196 hardware improvements as well as the WAS z/OS V8 improvements:

An additional 15% with Version 8
(164-143)/143 = 14.68%

43% due to z196 benefits

Baseline for the relative throughput comparison

64%

When z196 and V8 are combined

100%	143%	164%
Version 7	**Version 7**	**Version 8**
z10	**z196**	**z196**

DayTrader 2.0 Workload
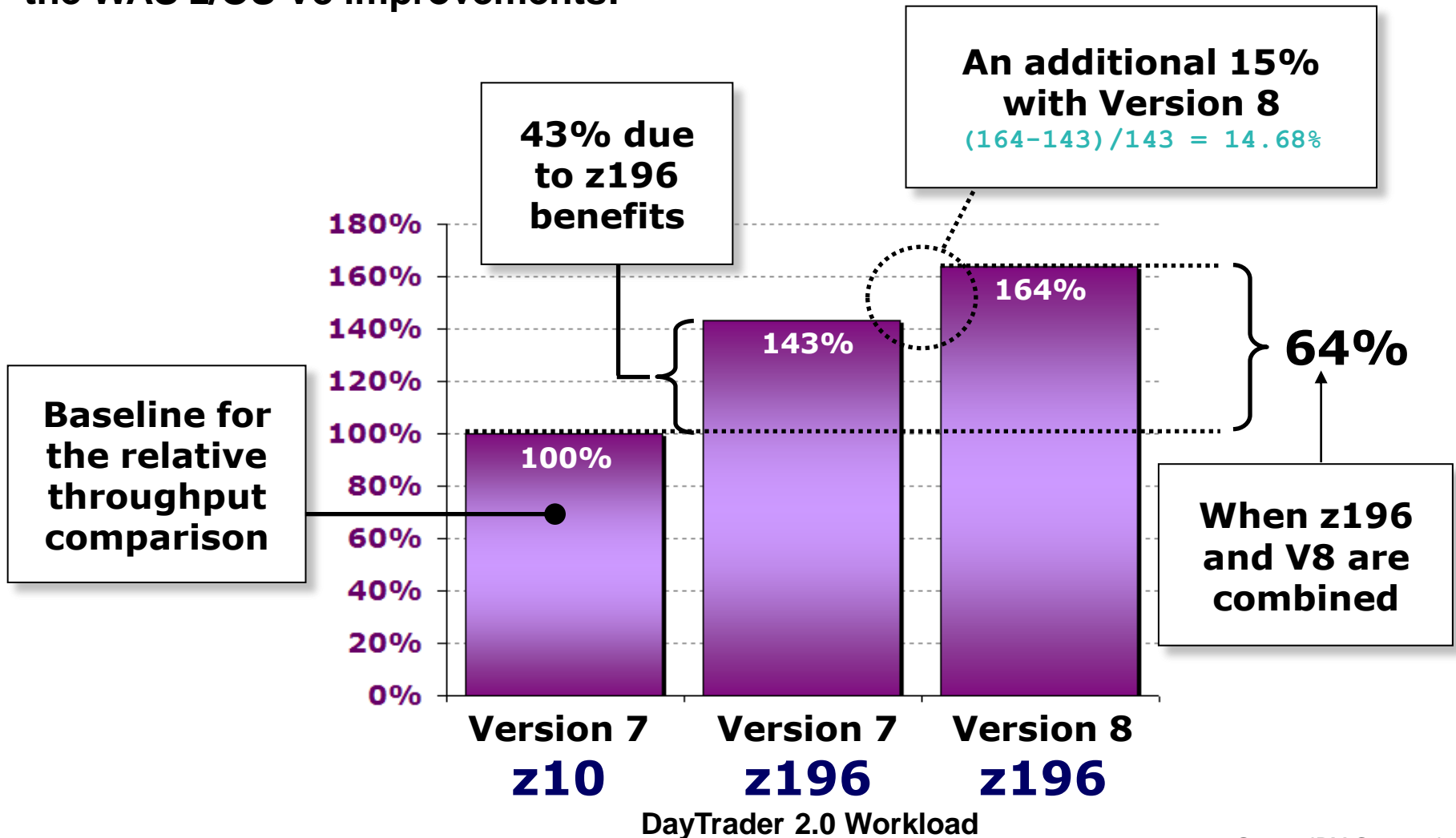
Is it important to integrate web or Java applications to back end systems and achieve security and performance benefits from collocation?

z/OS Operating System Instance

WebSphere Application Server z/OS ⟷ *Data Resources*
- *DB2*
- *CICS*
- *IMS*
- *MQ*

WebSphere Application Server z/OS ⟷ *Batch Programs*

- *Extremely* fast data transfer

- Tightly controlled by z/OS authorization processes

- Eliminate need to serialize and deserialize data and objects

- Eliminate need for encryption overhead

- Propagate several forms of user identity

Efficient -- very low overhead so scalability can be addressed

Secure -- no network, can't be sniffed or hacked

Fast -- for very high volume workloads

WAS enables concurrent execution of Java batch and OLTP for faster output, cost savings

Feature Rich Java batch execution platform	WebSphere Compute Grid

| Subset of functions provided by WebSphere Compute Grid | → | Feature Pack for Modern batch |

WAS V8

WebSphere Application Server AppServer

Web Container	EJB Container	Batch Container
Web Modules	EJB Modules	Batch Modules

WebSphere Application Server Foundation Services
Security, Transaction, Data Access, Logging ...

What is it?
Pre-integrated application framework to help increase developer productivity and time to value for Java batch applications allowing sharing of business logic between batch and OLTP applications

Value proposition
- Reduce cost of infrastructure due to concurrent execution of batch and OLTP workloads using shared business logic on a shared infrastructure integrated with WebSphere Application Server

- Reduced operational cost due to integrated administration of OLTP applications and batch jobs

- High throughput and low resource consumption on z/OS for Java Batch when collocated with data subsystems

CICS Transaction Server V4.2 enhances events, Java development, connectivity, management, and scalability

- Events: including system health events to warn of potential problems

- Java: including 64-bit, multithreaded JVM, optimized for zEnterprise

- Connectivity: including option to offload Web services parsing to zAAPs

- Management: including cross system transaction tracking capabilities

- Scalability: including threadsafe and 64-bit exploitation

New!

CICS TS V4.2

CICS delivers enhanced price/performance on z196

- **Workload**
  - Representative of a customer CICS WebServices Workload
    - Based on SOA Benchmark
    - XML SOAP messages directly into CICS via TCPIP
  - 5 CICS regions
    - 500 TCPIP clients per region
- **The Application**
  - Fairly complex XML
    - 3K and 69 elements inbound
    - 10K and 321 elements outbound
  - Back end application
    - COBOL Threadsafe OPENAPI
    - 1 additional link to another COBOL program
    - Average of 20 VSAM Reads
    - Data in memory
- **Hardware**
  - Systems under comparison
    - z10 2097-763 and z196 2817- 772
      - LPARs with 5 dedicated CPs
  - Separate LPAR for Network simulation
  - 4 data points highlighted on each machine
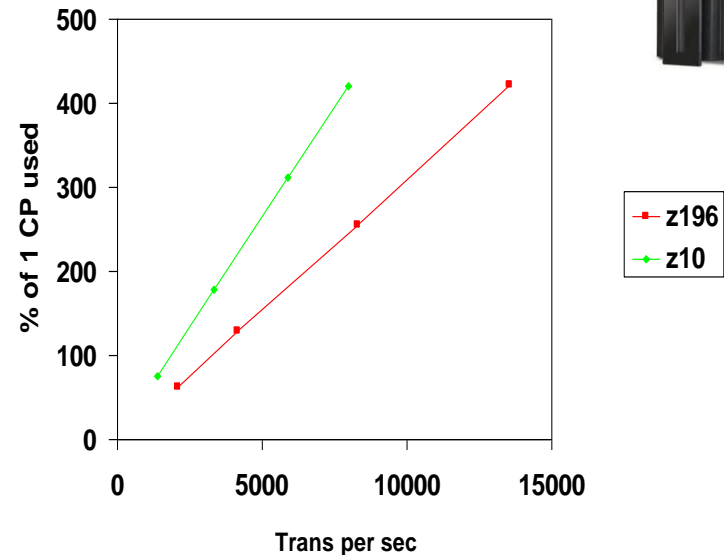
- Comparing 2097-705 with 2817- 705
- ITRs 9365 vs 16274 gives 73% improvement

Improve application performance with tools for development, tuning, and deployment

Session and user views, Configuration, Broadcast, User and Admin commands

ISM

Daemon & Connection Status & Test

TG

Develop Test Etc

RDz

Configuration Status Control, Test

MQ

Status Situations Topology

XE

Threadsafe, File, CPU, Response Time, Statistics, Alerts, Graphical and Sheet views

PA

Deployment, Discovery, Visualization, Cloning, Automation & Control

DA

CICS, IMS, DB2, & z/OS Abend Reporting & Diagnosis

FA

CICS, IMS, DB2, & z/OS Application Debugging

DT

CICS, IMS, DB2, & z/OS Observation Requests & Reporting

APA

Execution Tree Dependencies Queries Command Flow

IA

CRUD/Install History, Audit Backout Search, Compare

CM

CRUD/Install Control, Filter Topology Events, ATOM

SM

ibm.com/cics/tools
ibm.com/cics/explorer
ibm.com/cics/explorer/download

SM	CICS Transaction Server
IA	CICS Interdependency Analyzer
PA	CICS Performance Analyzer
CM	CICS Configuration Manager
DA	CICS Deployment Assistant
TG	CICS Transaction Gateway
ISM	IBM Session Manager

APA	Application Performance Analyzer
FA	Fault Analyzer
DT	Debug Tool
MQ	WebSphere MQ
XE	OMEGAMON XE for CICS
RDz	Rational Developer for System z

zEnterprise helps to simplify the hybrid environment while reducing ongoing costs

Application Infrastructure/ SOA

Today's challenges

- ▶ Siloed resources prevent sharing

- ▶ Massive data movement causes network bottlenecks

- ▶ Complexity increases security exposures and downtime

Why zEnterprise?

- ▶ Robust and highly available solution

- ▶ Qualities of Service extended to other platforms

- ▶ Reduced points of failure through private network

- ▶ Unmatched scalability and 85%-100% utilization

SOLUTIONS

WebSphere Application Server Family

CICS Transaction Server

WebSphere Compute Grid

CICS and PD Tools

SOA

Business Outcomes

Business Strategy

Business Process Management

Connectivity and Integration

Application Infrastructure

Highmark's SOA investments…help to provide a flexible environment..that can be reassembled rapidly and cost-effectively into new services. .

HIGHMARK.

zEnterprise helps to address the risks introduced into the complex business environment

Today's challenges

- Massive amounts of data to collect, transfer,and integrate increase bottlenecks

- Complexity induces operational errors, expands security exposures and downtime.

Why zEnterprise

- Unmatched levels of security inherent in the System z mitigate exposure

- QoS (qualities of service) extended to other platforms

- Reduced points of failure through private network

- Data integrity preserved and available for compliance

SOLUTIONS
Websphere DataPower X150z
WebSphere Application Server
WebSphere Enterprise Service Bus
WebSphere Process Server
WebSphere Business Rules for z/OS
CICS

The University of North Carolina Health Care System found the ability to quickly analyze data improves regulatory compliance

UNC
HEALTH CARE

Hardware ESB offers universal connectivity capability to help enable Web 2.0 and Cloud

NEW!

What is it?

The IBM WebSphere DataPower Integration Appliance XI50 for zEnterprise *can help simplify, govern, and enhance the security of XML and IT services by providing connectivity, gateway functions, data transformations, protocol bridging, and intelligent load distribution.*

CICS

IMS

XI50z

- Consumable hardware ESB
- "Any-to-any" conversion at wire-speed
- Dynamic routing; intelligent load distribution

How is it different?

- **Security**: VLAN support provides enforced isolation of network traffic with secure private networks. And integration with RACF® security.

- **Improved support**: Monitoring of hardware with "call home" for current/expected problems and support by System z Service Support Representative.

- **System z packaging**: Increased quality with pre-testing of blade and zBX. Upgrade history available to ease growth. Guided placement of blades to optimize.

- **Operational controls**: Monitoring rolled into System z environment from single console. Time coordination with System z. Consistent change management with Unified Resource Manager.

Business Process Management on System z enables agile processes for change

BPM

Today's challenges

▶ Inflexible systems inhibit responsiveness

▶ Difficult to use existing business logic for new services

▶ Change management inefficient or nonexistent

Why zEnterprise?

▶ Allows multi-tier application integration

▶ Automatically prioritizes and routes work

▶ Monitors for critical business events and initiates actions
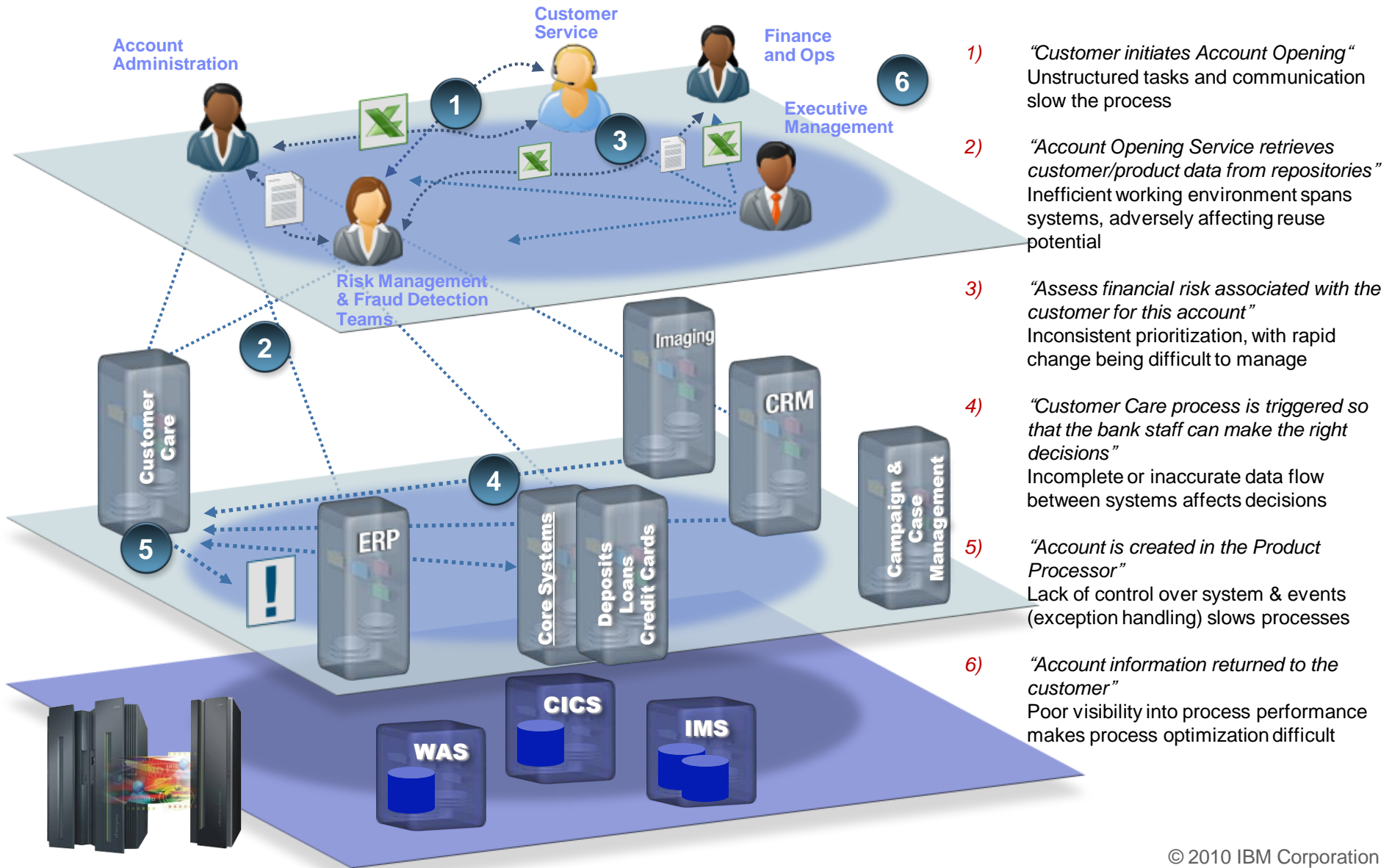
▶ Integrate and manage the entire enterprise

SOLUTIONS

IBM Business Process Management

WebSphere DataPower XI50z

WebSphere Decision Server

E. Sun uses WebSphere Message Broker and Process Server for an Enterprise Service Bus solution that connects applications across their heterogeneneous systems

玉山金控 E.SUN FHC

Typical Process Problems in a System z Environment

Account Administration

Customer Service

Finance and Ops

Executive Management

Risk Management & Fraud Detection Teams

Customer Care

Imaging

CRM

Campaign & Case Management

ERP

Core Systems

Deposits Loans Credit Cards

WAS

CICS

IMS

1) *"Customer initiates Account Opening"* Unstructured tasks and communication slow the process

2) *"Account Opening Service retrieves customer/product data from repositories"* Inefficient working environment spans systems, adversely affecting reuse potential

3) *"Assess financial risk associated with the customer for this account"* Inconsistent prioritization, with rapid change being difficult to manage

4) *"Customer Care process is triggered so that the bank staff can make the right decisions"* Incomplete or inaccurate data flow between systems affects decisions

5) *"Account is created in the Product Processor"* Lack of control over system & events (exception handling) slows processes

6) *"Account information returned to the customer"* Poor visibility into process performance makes process optimization difficult

BPM on System z Brings Order to the Chaos
Extract maximum business value from existing assets
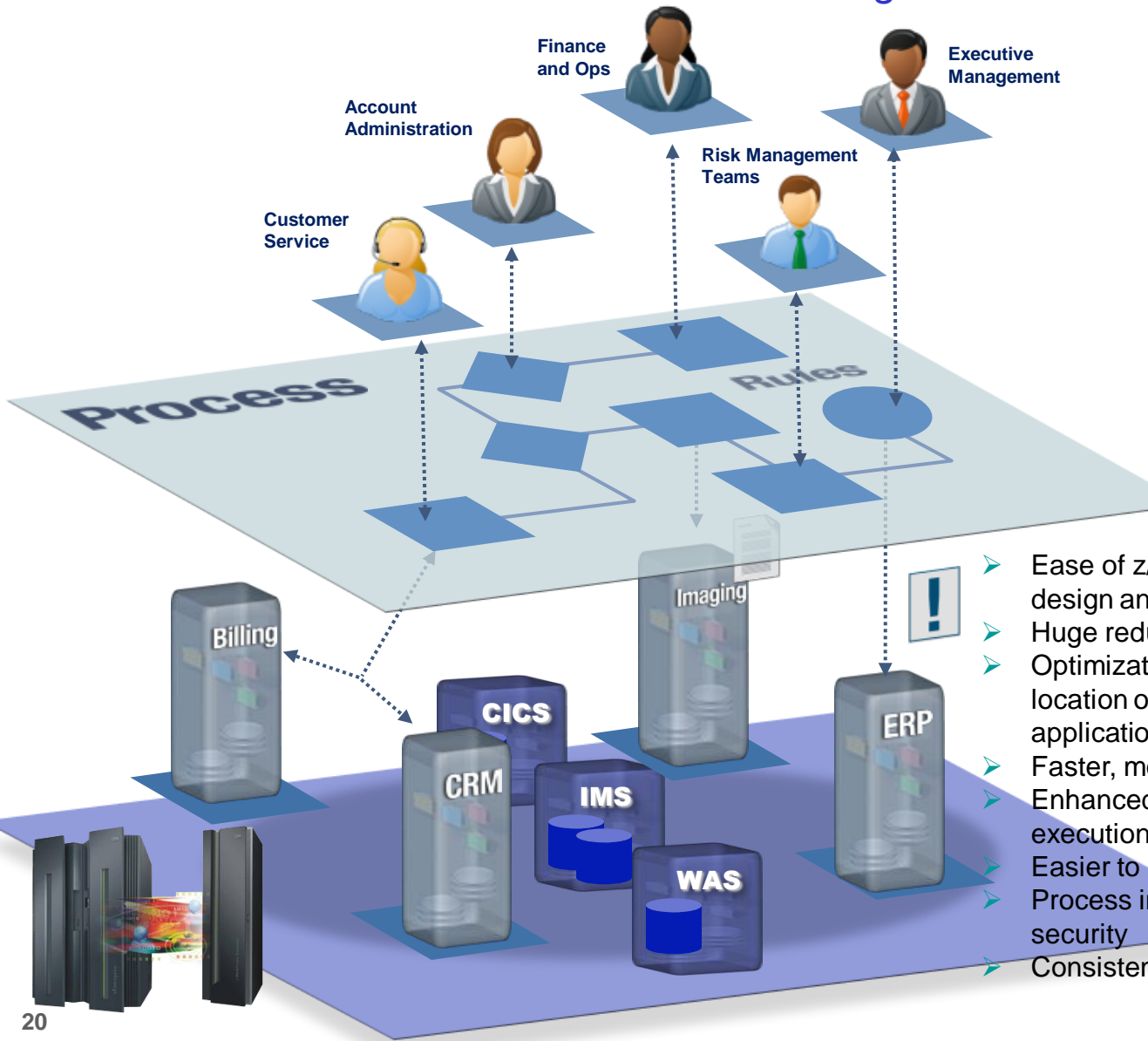
1) Automated workflow and decision making

2) Reduce errors and improve consistency

3) Standardize resolution across geographies

4) Leverage existing systems and data

5) Monitor for business events and initiate actions

6) Real-time visibility and process control

Customer Benefits:

- Ease of z/OS assets reuse with simplified design and specialized tooling
- Huge reduction in manual work & errors
- Optimization of z/OS resources through co-location of processes with z/OS data and applications
- Faster, more consistent issue resolution
- Enhanced usage of performance & process execution on z/OS platform
- Easier to manage the business
- Process integrity & stability with enhanced security
- Consistent case handling

Finance and Ops

Executive Management

Account Administration

Risk Management Teams

Customer Service

Process

Rules

Billing

CICS

Imaging

ERP

CRM

IMS

WAS

Powerfully Simple Process Improvement
IBM Business Process Manager V7.5

NEW!

- **Unified BPM platform** combines the **simplicity** of Lombardi Edition experience and the **power & scalability** of WebSphere Process Server.

- **Process Center and asset repository** provides maximum **collaboration & governance** required to scale up your BPM program.

- **Single product with multiple entry point configurations** and deployment options for companies & programs of all sizes.

- What's new in V7.5:

  – Joint WebSphere Lombardi Edition & WebSphere Process Server backward compatibility ensures preservation of your BPM investments to-date

  – WPS applications can tap into easy-to-use design, playback, rapid deployment, and optimization capabilities

  – WLE applications can extend their robustness & reach with SOA-based process automation, enterprise integration, and high reliability

Empowers business users to take back their business by providing federated visibility across all process participants.

Designed to enable business-led change

Simple enough to engage process participants, regardless of their role, yet powerful enough to scale as needed to support enterprise-wide transformation.

WebSphere ILOG Rules for COBOL enables easy, safe and reliable rule changes

Development

Application Developer,
Architect

Rule Studio
(Eclipse)

COBOL Execution

CICS, IMS, Batch Applications

Rule Repository

Rule
Management

Business Analyst,
Business Manager

Rule Team
Server

**Z Architected
Engine**

Rule Execution Server
zOS and Linux on z

Decision Validation
Services
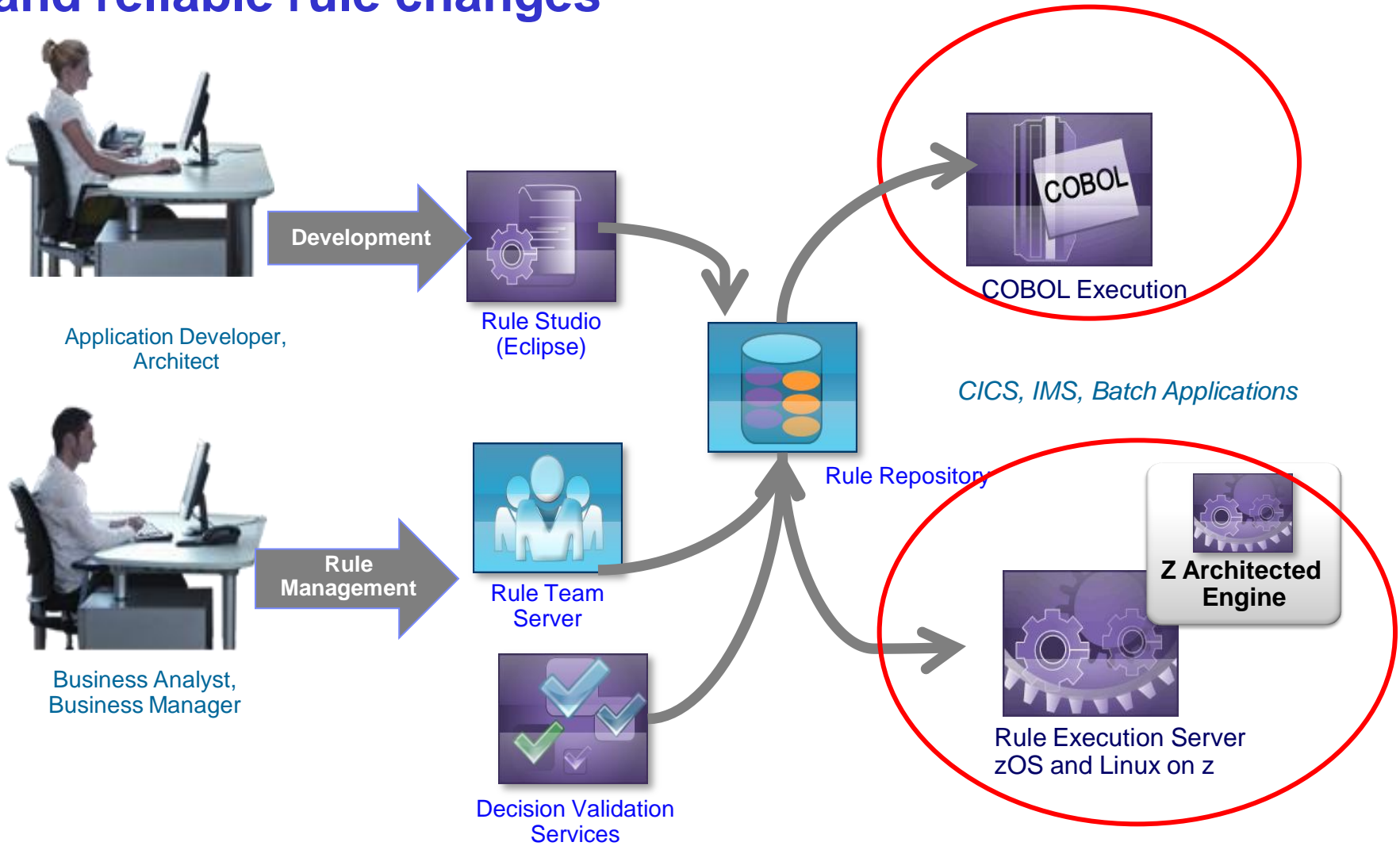
Look who's putting new workload on z

Challenge your enterprise architects to make the mainframe you already have more strategic

"We started our modernization project with open systems servers where **I had been a Java developer**. We were also heavy VMware users. What we really needed was a more stable, scalable environment. Performance for MQ was really impressive and **we moved a lot of MQ workloads to System z**. Now we are looking at other Java applications to move next. We see the dividing line for who owns and supports the server environment being the ESB layer. Infrastructure below the ESB is supported by the infrastructure team for System z servers which means the resources come from mainframe heritage. Within and above the ESB is now common middleware and is supported by the same team that supports our distributed open systems middleware implementations."

--Gustavo Tadao, Senior Architect, Serasa Experian, Brazil

"**I do not come from a mainframe background myself but felt we should consider all possible options.** We ran a number of TCO platform comparisons for WAS and MQ messaging----and in every scenario, Linux on System z TCO came out far better. We currently support over 6M transactions per day, use far less memory than before, and are now looking for other workloads that are a fit for moving to System z for cost reductions. "

---Brent Halsey, Infrastructure Manager, Enterprise Middleware Infrastructure, Huntington Bank, USA

"For Garanti Bank, the mainframe also offers extremely low costs per transaction—we believe it to be lower than for any other platform. And each time we increase the capacity, the cost per transaction falls. A significant element in that is personnel costs, which are typically the single most costly element in IT operations. Although we've tripled the capacity of our System z environment, the number of staff managing it has remained steady at 40 people. **We want to put as many workloads as we can on the mainframe.** It gives us a highly robust transactional back end that can interact with any technology we choose for the front end.."

---Tufan Alatan, Executive Vice President, Garanti Bank, Turkey

SDV faced several challenging business requirements from application owners

- **Customer expectations**. Changing consumer and customer expectations toward more consultancy and customer care. New applications need to support those requirements.

- **Exploit Internet**. 24-by-7 access to a majority of services and products of the banks via the Internet is crucial.

- **Change, change, change**. New banking products need to be created and changed regularly within the IT applications.

- **More users**. Strong growth in users of Internet and Intranet applications

IBM System z196 and software helped SDV address these business challenges

- **Quality of Service**
  - New applications are built on a rock-solid mainframe z/OS core banking system. That keeps risk low and allows for fast implementation of new applications.
  - Linux for System z has become one of the most flexible and agile application environments at SDV.

- **Efficiency**
  - WebSphere on z/OS in comparison to x86 was clearly more efficient.
  - WebSphere Portal on z/OS has shown an excellent growth path. We can grow this environment extensively and keep costs and administration efforts low.

- **Capacity**
  - System z196 has shown a tremendous increase in CPU power for all workloads.
  - Increased network capacity allows us to place bandwidth-heavy Java z/OS and Linux applications on z196.
  - Powerful disaster recovery functions such as capacity backup in System z196 help us meet our availability targets easily.
  - IFL – I/O-bandwidth seems to be endless, and clock-speed is appealing.

"Our disaster recovery test showed we can recover the entire System z environment including Linux within 2 minutes, with I/O back up within 15 seconds, and some applications up within 30 seconds."

---Bernd Bohne, Manager,
Central Systems, SDV

Continuous price/performance enhancements for zEnterprise improve total cost of ownership

Enhanced Sub-Capacity Pricing for the z196

NEW!

New!
Integrated Workload Pricing on zEnterprise

Solution Edition for WebSphere

zSW License
LPAR ▶
50%
GSSP ▶
Application Workload Size

zAAP on zIIP
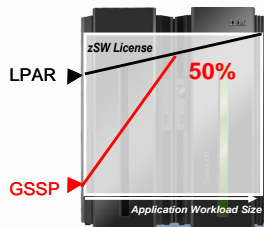
Getting Started Sub-capacity Pricing (GSSP)

Example zEnterprise Performance Improvements:

- CICS 75% throughput improvement over z10 for web services workload

- WebSphere 93% performance over z10 via hardware and software improvements

Forward-thinking companies are making strategic investments in zEnterprise to propel business growth

Qualities of Service

– Ability to extend the z/OS legendary qualities of service to the entire enterprise

Capacity

– Accommodates 50 billion instructions per second

Efficiency

– End-to-end management of the hybrid computing environment

Flexibility

– Freedom to deploy applications based on business objectives instead of platform

Next step: Let's get together now

Fit for Purpose System z Integrated Application Workshop

- A consultative process (zIAW) to evaluate and recommend the best platform(s) for a specific workload which can include zEnterprise components.
  - Evaluation based on:
    - Operational requirements
    - Workload characteristics
    - Other local factors
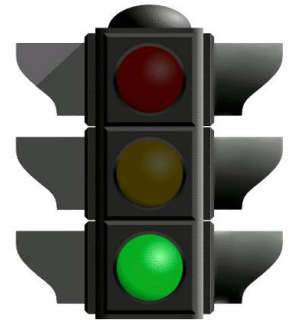
Resources

- WHITE PAPERS
  - **The Hybrid Computing Proposition**
    - ftp://public.dhe.ibm.com/software/websphere/pdf/Wintergreen_Research_Hybrid_Computing_Proposition_May_2011.pdf
  - **PD Tools Competitive Analysis**
    - ftp://public.dhe.ibm.com/software/htp/pdtools/reports/PD_Tools_Competitive_Analysis_Executive_Summary.pdf
  - **New Project Platform Selection for CICS Users**
    - ftp://public.dhe.ibm.com/software/htp/cics/pdf/Lustratus_Research_Paper_New_project_platform_selection_for_CICS_users.pdf
  - **Considerations for making System z your ESB deployment platform**
    - http://download.boulder.ibm.com/ibmdl/pub/software/solutions/soa/websphere/app_integration/WSW11335-USEN-01_Final_Nov6_10.pdf

- REDBOOKS
  - **IBM zEnterprise System: Smart Infrastructure for Today's Heterogeneous Business Applications**
    - http://www.redbooks.ibm.com/redbooks.nsf/RedbookAbstracts/redp4645.html?Open

- CASE STUDIES
  - **SDV delivers innovative banking solutions with a Web solutions build on IBM WebSphere Portal software**
    - http://www-01.ibm.com/software/success/cssdb.nsf/CS/LMCM-7YZR5B?OpenDocument&Site=default&cty=en_us

  - **IBM zEnterprise/z196 case study: JD Williams- *z196 enables new mainframe workloads***
    - ftp://submit.boulder.ibm.com/sales/ssi/ecm/en/zsl03116usen/ZSL03116USEN.PDF

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