



# System z Software – Strategy for Maximizing Business Value and Return on Investment

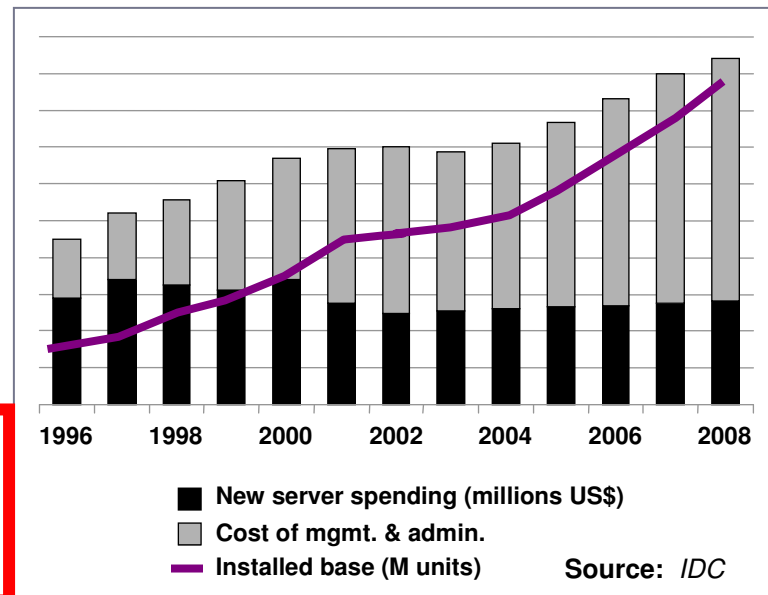
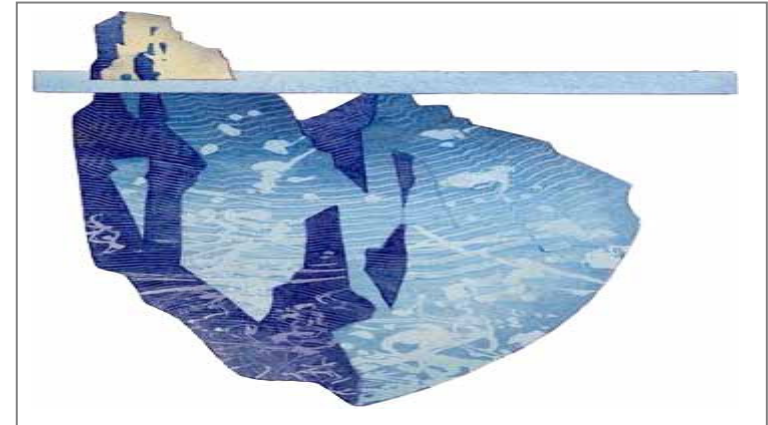
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# IT Complexity Drives Many Hidden Costs

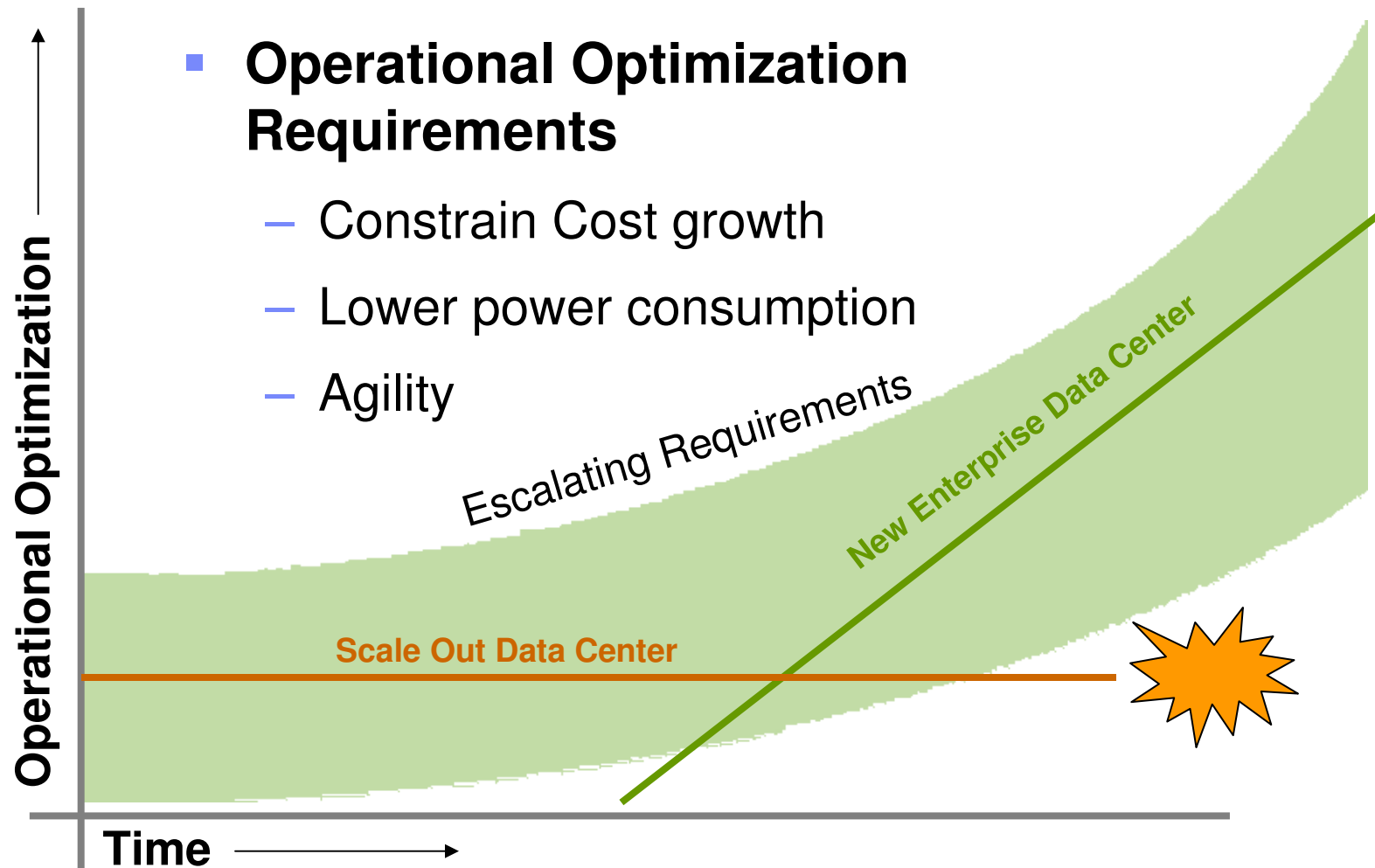
*This one just won't go away*

- Managing today's mixed IT platform environments can be complex and costly
  - Thousands of servers
  - Underutilized assets
  - Thousands of software licenses
  - Thousands of distributed control points
  - Ineffective costing methodologies
  
- **The Result**
  - Massive complexity
  - Spiraling people costs
  - Increased availability and downtime costs
  - Increased security breach costs
  - Sub-optimal investment choices



***Many infrastructure management Initiatives are focused on changing this direction but adoption has been slow & difficult !!***

# New Enterprise Data Center – Reinventing The Data Center To Meet Requirements



# The z Software Strategy

- **Reinvigorate the System z Ecosystem:**
  - Attract New System z Customers and Application Workloads
  - Retain and Grow Existing System z customers
  - Make the Mainframe Relevant to a new IT Generation
- **Platform Modernization and Simplification are**



- **Evolve as a Modern Server**
  - Systematic Reengineering of the Software Stack
  - More Open Standards Compliant and Common Middleware
  - Integration with the z Platform for Added Functions
  - Accelerate innovation on System z with new Application Development Capabilities
- **Deliver Extensive Data Management Services**
  - Leading Edge Relational Function
  - Reinvigorated Data Warehousing Competitiveness
  - Autonomic Tooling to Augment Human Expertise
- **Bring Virtualization to a new Level**
  - Logical as well as Physical Consolidation
  - Manage many Systems as if they were One
  - More End to End Management Capability from a z Central Point of Control

# z/OS V1.10 Preview - Integration with the z10

## ... scalability and performance

- HiperDispatch for intelligent dispatching of work for optimized performance<sup>1</sup>
- Up to 1TB of real memory<sup>2</sup> and 64 processors (zIIPs, zAAPs, and CPs)<sup>3</sup> per LPAR
- Extended Address Volume (EAV) capability for large storage volumes, improved storage management<sup>4,5</sup>
- Large (1 MB) pages expected to reduce memory management overhead for exploiting applications<sup>3</sup>
- Support for Hardware Decimal Floating Point enables high performance computing for your commercial workloads<sup>3</sup>
- Support for InfiniBand Coupling Links<sup>1,6</sup>

## ... networking and connectivity

- Policy-based networking helps create a network responsive to your application needs<sup>1</sup>
- Automatic intrusion defense capabilities<sup>4</sup>

## ...availability

- Basic HyperSwap – for high availability disk<sup>3,\*</sup>
- Parallel Sysplex and GDPS enhancements

## ... simplified operations

- Capacity Provisioning Manager can monitor and dynamically activate/deactivate capacity<sup>3</sup>
- New z/OS Management Facility – planned – a single, modern, Web-browser based management console for z/OS, intended to simplify day to day operations and administration of a z/OS system. \*

## ....improved economics

- Added XML exploitation of specialty engines<sup>3</sup>
- zIIP assisted z/OS Global Mirror (XRC)<sup>3</sup>

(1) available with z/OS V1.7 with appropriate maintenance

(2) available with z/OS V1.8 and appropriate maintenance, 1TB memory on z10 E56 and E64 only

(3) available with z/OS V1.9 and appropriate maintenance

(4) planned for z/OS V1.10

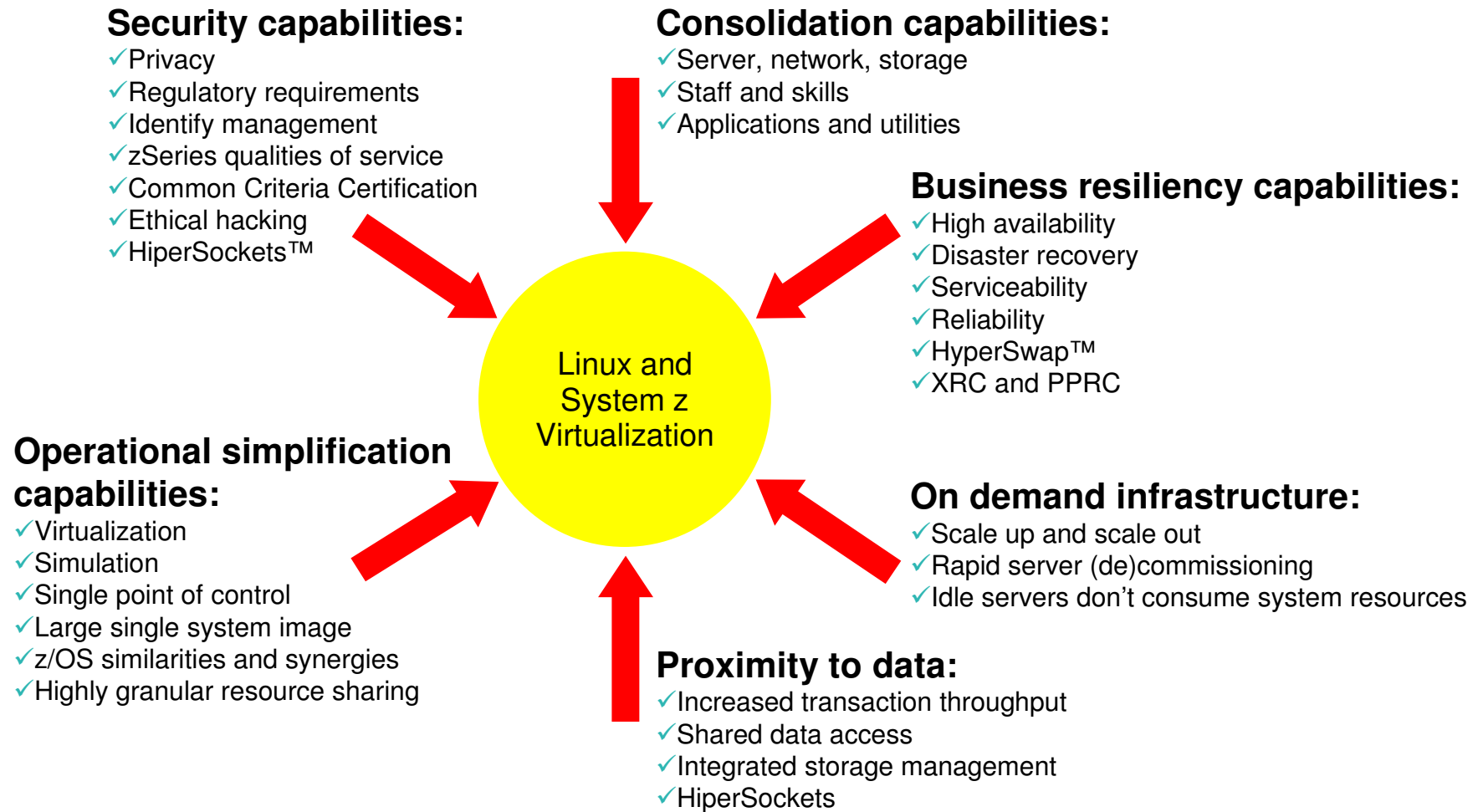
(5) with appropriate storage

(6) Planned availability 2Q08

(\*) All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represents goals and objectives only

# Linux and z/VM on System z

## *Providing Value Propositions for Linux Workloads*



# Benchmarks don't always demonstrate the right value

**Bladecenter + System z = Enterprise Solution**



- 40 Miles/gallon - Gas
- 7 cubic feet of storage
- 4 passenger
- \$15,000



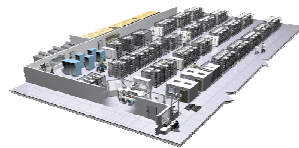
- 10 Miles/gallon - Diesel
- 7 cubic feet of storage
- 2 passenger
- \$55,000



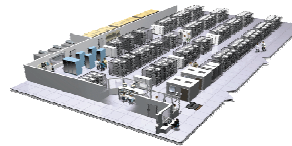
- Problem 1: Which is cheaper to commute to work with?
- Problem 2: You want to move contents of your home:
  - How many vehicles and trips will be required to move?
  - Are extensions, such as the trailer, valuable?
  - How do you get the Grand Piano moved? What if it rains?
- They aren't mutually exclusive either:
  - The family rides in the car, the furniture rides in the truck



# Choices To Run A Banking Workload



HP Servers



HP Servers with VMWare



System z10

	<u>HP Servers</u>	<u>HP Servers with VMWare</u>	<u>System z10</u>
Server Model	DL145	DL585	System z
# of Servers	350	45	1
Cores	700	360	24
Memory GB	700	720	352
Software Licenses	742	352	40
System Administrators	35	18	5
Floor Space (m <sup>2</sup> )	12.5	7	5
Utility (kWh/Year)	3.2M	697K	127K

*5 to 7  
millions  
annual  
operational  
savings  
with  
System z*

2,466,450 rated capacity

1,263,555 rated capacity

14,238 MIPS

Low Utilization

Medium Utilization

High Utilization



# Run-time Environment

## *High-Volume Transaction Processing for Mission-Critical Applications*

### WebSphere

- WebSphere portfolio is designed to be common across all platforms
- Use of Java insulates the programs from the actual platform and provides the cross-platform portability
- Common code provides the same functionality across platforms
- Common set of APIs
- Common programming model, common administrative functions

### CICS

- Support of CICS transactions as a services requester or services provider in an SOA with full support for WSDL and SOAP

### IMS

- Provides connectivity infrastructure to integrate and re-use services within an SOA
- IMS SOAP Gateway exposes IMS transactions as Web services and provides access without additional software requirements

# WebSphere Application Server v7.0 (3Q 2008)

## Standards Currency

- Standards currency with Java EE 5, including EJB 3.0, enhances productivity and ease of use.
- New JDK 6 for improved performance and reduced footprint.
- Enhanced Web services standards.

## Consumability, Simplicity and Performance Improvements

- Flexible systems management options.
- Enhanced diagnostic tools that help pinpoint problems.
- Security enhancements.
- New virtual image delivery option.
- Tight integration across the WebSphere family of products improves ROI .

## New Application Types and Workloads

- Improved performance, scaling and reliability.
- Reduced cost of managing and administering large numbers of individual servers.

### zOS Key Differentiation

#### Performance

- ✓ Improvements in response time for static and dynamic content with Fast Response Cache Acceleration in z/OS 1.9.
- ✓ Increased application runtime performance with focused analysis and code path improvement effort for JEE, WebServices and Connectors.

#### High Availability and Reliability

- ✓ High Availability Manager based on Cross-System Coupling Facility (XCF).
- ✓ Thread Hang Recovery improves server reliability and performance.

#### Consumability and Usability

- ✓ Redesigned data collection facility to improve chargeback capabilities.
- ✓ More unified install and configuration tasks (load modules in HFS).

# Compiler Optimizations & Performance

## ■ Maximize Exploitation of z10 Hardware Architecture

- Exploit latest hardware without need of expert knowledge of architecture
  - *Enables users to exploit performance edge of hardware without source code changes*
- Exploit 36 NEW z10 instructions from the General-Instructions-Extension facility
- Exploit IEEE Decimal Floating-Point (DFP)
- Exploit Additional Floating-Point Registers (AFP)
- Exploit 64-bit instruction set and registers even in 32-bit code
- Support IEEE Binary Floating-Point which eases platform portability
- Maximize application performance using new & innovative optimization technologies

*• Reduces total cost of ownership*  
<sup>1</sup> Individual features in the content list may not be applicable to all IBM compiler languages. Check specific language documentation for details.  
*• Up to 10-25% Performance Improvements<sup>2</sup>*

<sup>2</sup> Performance improvement results based on select benchmarks. Results will vary depending on application.

# Simplification for faster time to market

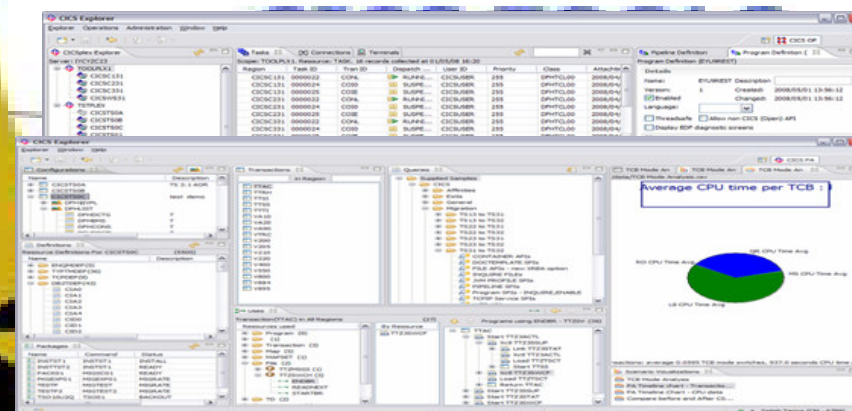
## *CICS Explorer - New Face of CICS*



Foundation

**Coming  
4Q2008**

- **Simplified access to CICS**
  - Extending the success of eclipse based Explorers to CICS
  - Delivering revolutionary integration of development, administrative, and operations tools
- **Enable new staff to become effective almost immediately**
- **Enable shorter development cycles**
- **Provide faster time to market**
- **Improve productivity & protect service-levels**
- **Offer reduced cost of ownership for key CICS applications**



“1000 times better than the previous UI.” - Customer believe it will be greatly received in our environment. Two of our development groups are keen to try it as soon as it becomes available.” - Independent Software Vendor  
 “Much, much more intuitive”, “A lot more room to grow”,

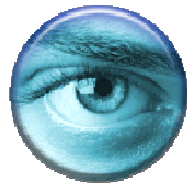
**“If you are not using it, or you're not trying it, well, you should!”**

- Gary Barnett, The Bathwick Group

# CICS EXPLORER

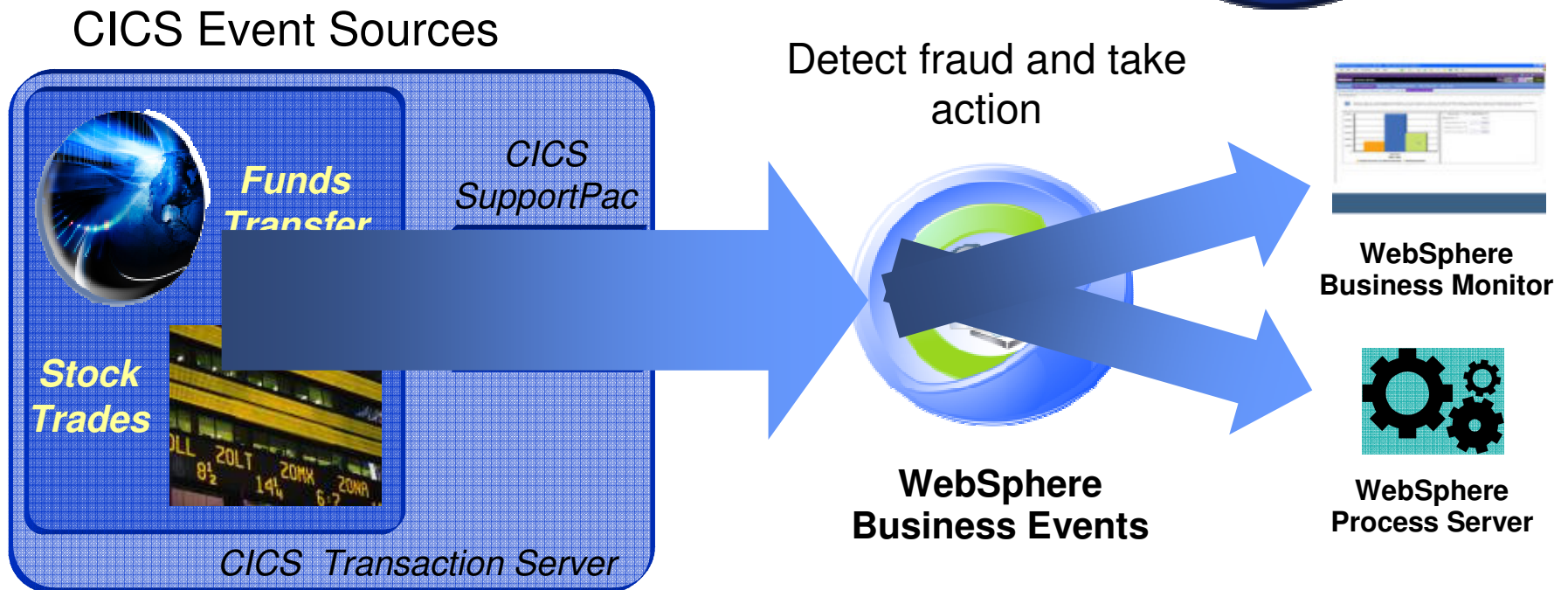
# IBM Powers Events on the Mainframe

## *Business Event Processing for 3,000+ CICS Customers*



Visibility

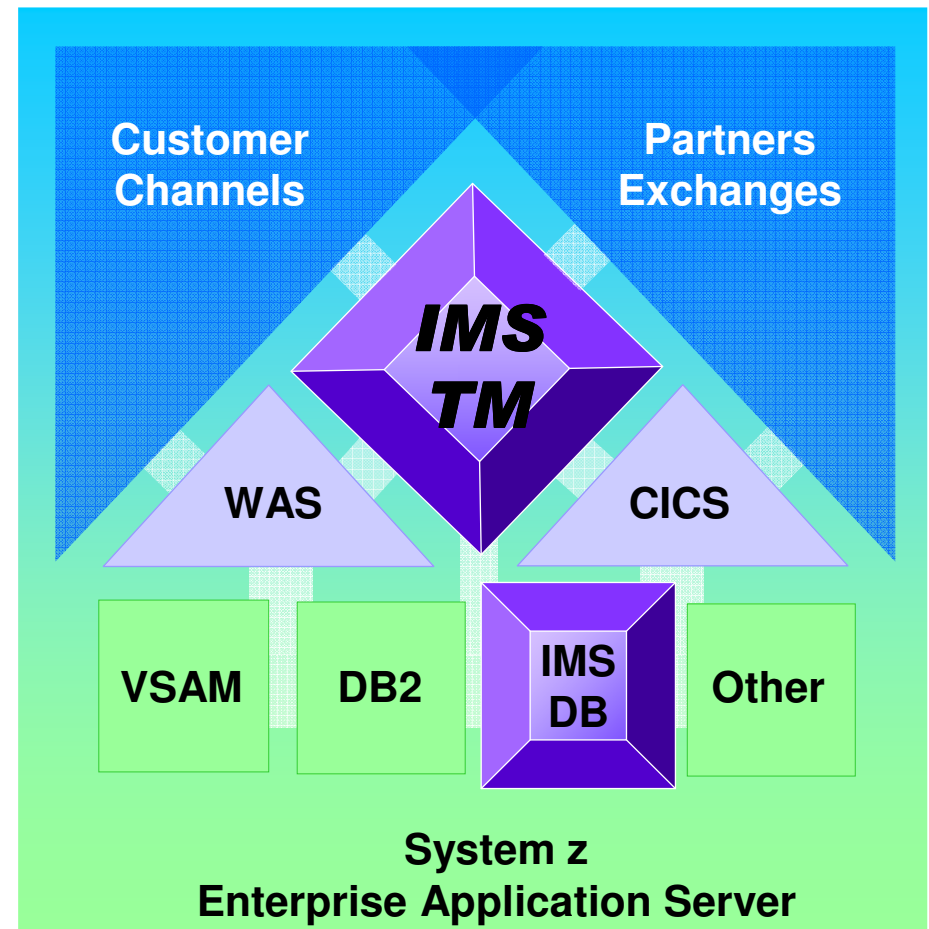
**Coming  
4Q2008**



Achieves visibility, business agility, governance and fraud recognition

## ***IMS: The High-Performance Application and Data Server for System z***

- \* Integration focal point for SOA: key to successful Enterprise Architecture services
- \* Remarkable performance
- \* Rock-solid reliability and security
- \* Most cost efficient run-time environment
- \* Integrated message queuing, transaction processing and data base management
- \* Open, standard interfaces allowing 'any-to-any' connectivity and access
- \* Fully integrated into today's A/D toolsets
- \* Natural XML support
- \* Flexibility and investment protection: Robust runtime support including JAVA, C, COBOL, PLI and Assembler



Learn more at [www.ibm.com/ims](http://www.ibm.com/ims)

# Announcing WebSphere MQ for z/OS V7.0

## ← UNIVERSAL MESSAGING BACKBONE →

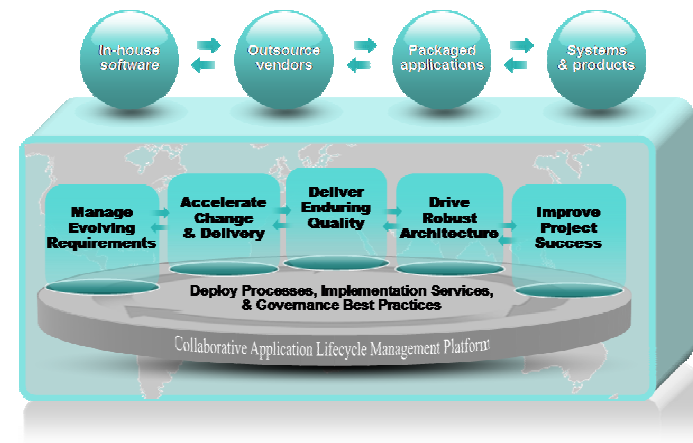
- **Latest Evolution of IBM's Universal Messaging Backbone for z/OS**
  - Enabling reliable connectivity from z/OS to virtually any other commercial IT system
  - Providing the messaging transport layer to underpin SOA, Web 2.0 and your ESB
- **New Publish and Subscribe support for z/OS**
  - Provides flexible, dynamic routing of messages based on topics or keywords helping reduce time needed for solution changes
  - Supports native MQ Interface and JMS API
- **Enhanced Ease of Use**
  - Remote, graphical configuration of JMS and Publish-and-Subscribe
  - Via Eclipse-based MQ Explorer now enabled for up to 5 connections without need for Client Attach Feature license
- **Enhanced JMS performance**
  - Increasing JMS listener throughput by up to 220%\*
- **New MQI verbs providing greater flexibility for:**
  - Selecting messages for processing via SQL queries
  - Adding custom properties to messages
  - Automatically notifying apps when messages arrive
- **Client Enhancements**
  - Heart-beat monitoring of client connections
  - Pre-emptive delivery for increased throughput
  - New Quality-of-Service that avoids waiting for confirmation of delivery – enables “receipts” to be received later
- **WebSphere MQ goes Web 2.0!**
  - Helps enrich Web 2.0 applications with real business data from z/OS applications
  - Web 2.0 developer needs no MQ skills to use
    - *Uses Ajax and simple RESTful interface to access data by URIs*
  - Helps simplify deployment and maintenance of large scale distributed applications
    - *Enables simple access to MQ without need to install MQ clients*

\* Preliminary results observed on pre-release level code.  
For the latest performance information please click on *Performance Reports* at [www.ibm.com/webspheremq/support](http://www.ibm.com/webspheremq/support)

# Software Delivery Platform

## Multi-Platform Application Development

- **Common Eclipse-based IDEs ... same look and feel similar to Java and Microsoft's IDEs**
- **Common programming model based on EGL, provides a platform-independent model for developing cross-platform SOA and Web 2.0 applications and deploying optimized code for the target platform (J2EE application server, IMS, CICS)**
- **Integration of mainframe runtime assets into Web 2.0 and an SOA runtime**
- **Compiler commonality across platforms**

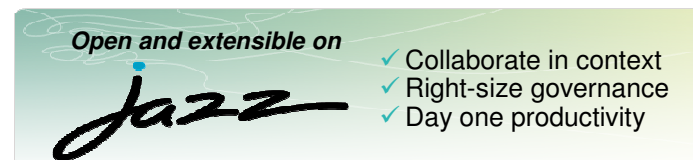


- **Same software testing and quality management tools**
- **Multi-platform discovery, re-use and management of software assets**
- **Consolidated team infrastructure leveraging “Jazz” to increase collaboration and communication**

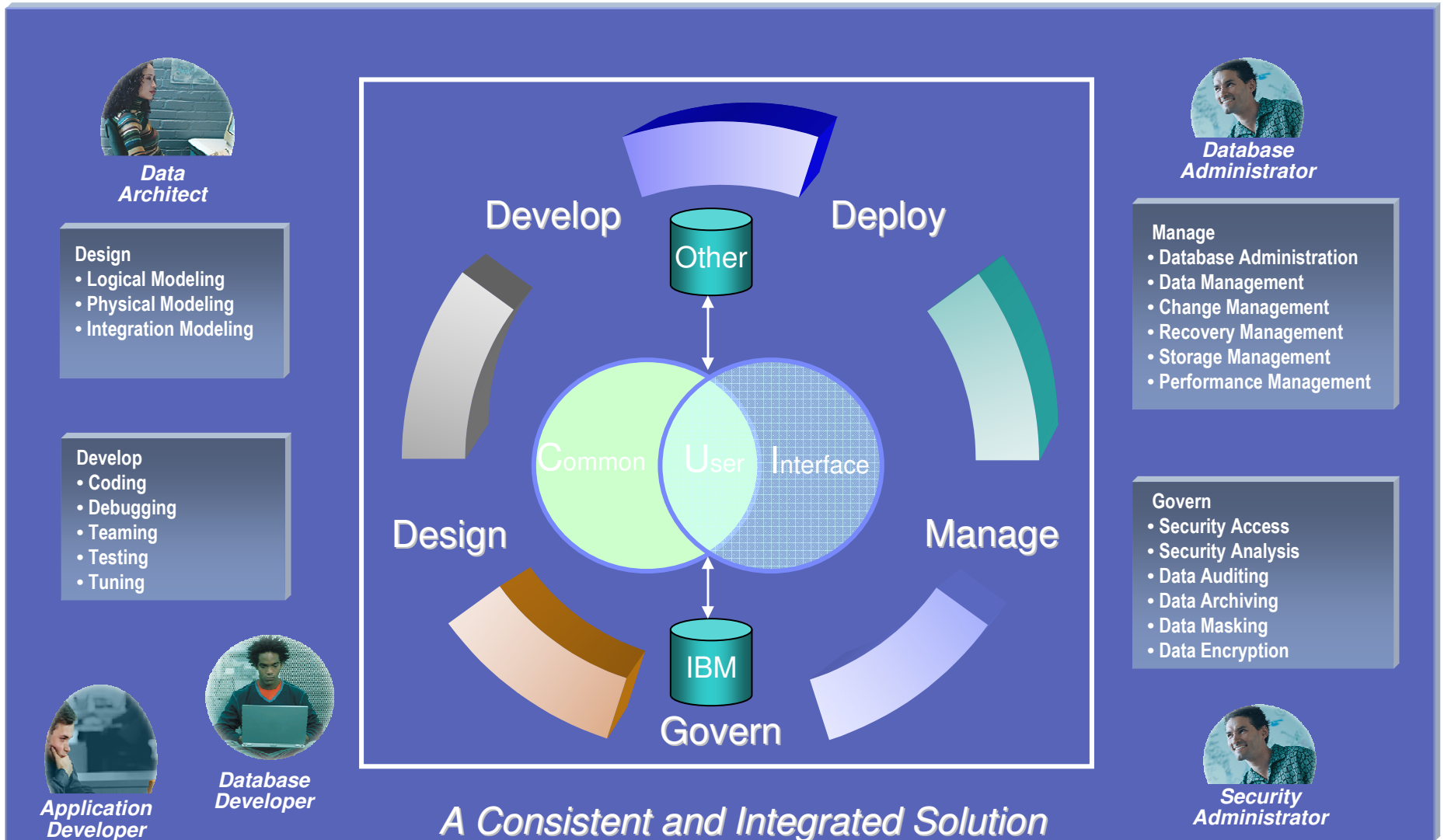


# Software innovation through collaboration

- **"Think and work in unison"**
  - Integrated source control, work item and build management
- **Assess real-time project health**
  - Capture data automatically and unobstrusively
- **Automate best practices**
- **Real time, in-context team collaboration**
  - Make software development more automated, transparent and predictive
  - Dynamic processes accelerate team workflow
  - Out-of-the-box or custom processes
- **Unify software teams**
  - Integrate a broad array of tools and clients
  - Extend the value of ClearQuest and ClearCase
  - Support for System z (3Q)



# IBM Data Studio

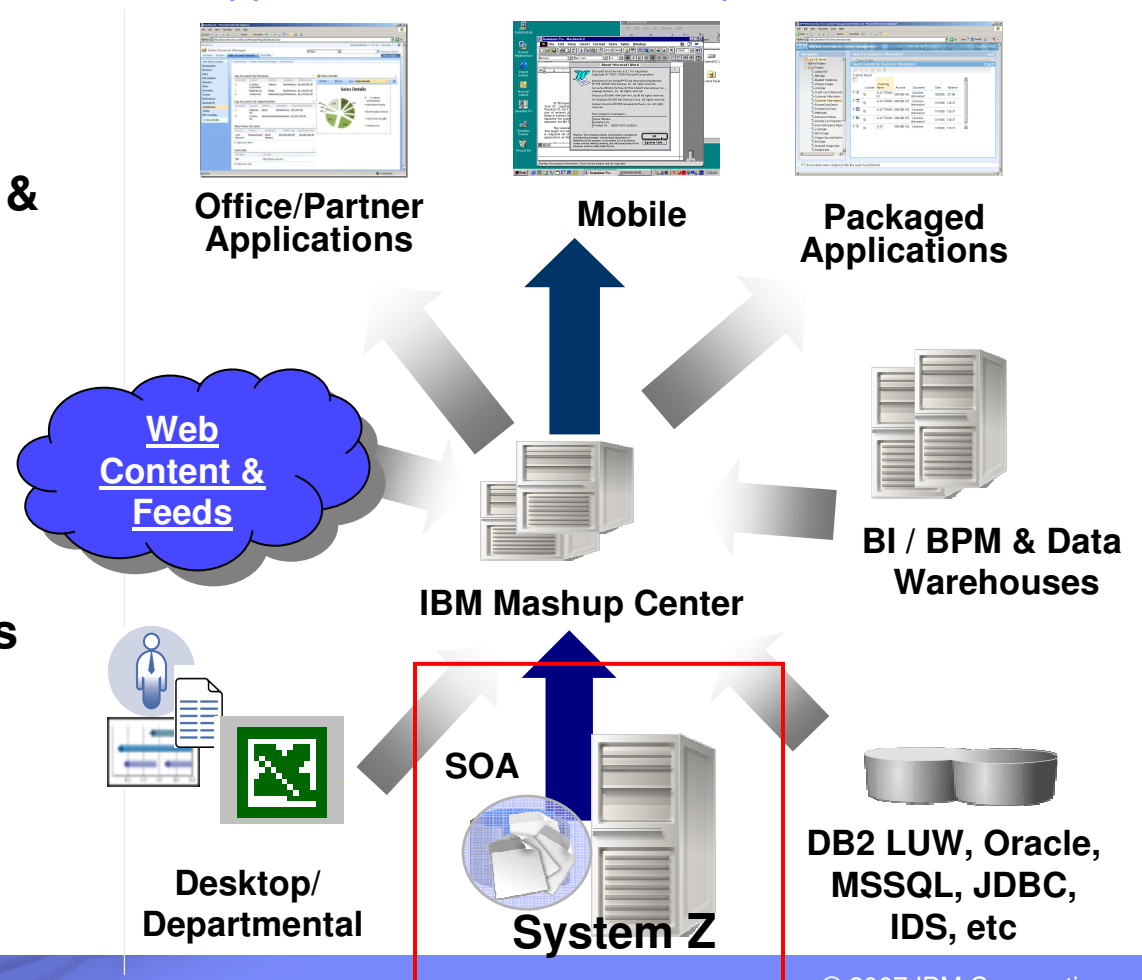


# Enterprise Modernization & Web 2.0

## Mashups with IBM Mashup Center

- **Unlock System z data for use in Web 2.0 mashups**
- **Mashup System z data with web, personal, departmental & enterprise information**
- **Reduce development costs with reuse of existing IT assets**
- **Reduce cycle time to minutes not weeks with LOB created applications**

*IBM Mashup Center Extends System z Data Management repositories into new applications & new consumption modalities*



# Information Management

## Commonality Across Platforms

- **Common client for accessing databases. Identical database semantics across SQL, XQuery (XML), JDBC, ODBC, etc.**
- **Identical methods to transform stored procedures or queries into Web services**
- **Same database logical and physical design tools**
- **Database developer productivity optimized across platforms with tools such as IBM Data Studio, Rational Data Architect, and IBM Optim**
- **Same Eclipse-based GUI database application development tools**

## People, Processes, Applications



- **Content repositories located on multiple platforms are virtualized for platform-neutral access with IBM's Information Integration Content Edition**
- **New CMIS content standard enables applications to interoperate with multiple ECM repositories from different vendors on different platforms**
- **Common set of database admin. and SQL tuning tools**
- **Information Server provides appropriate connectors for common applications**

## DB2 for z/OS Technology Themes

- ✓ **Extend the lead in transaction processing availability, scalability and performance**
- ✓ **Reduce cost of ownership and System z-specific skill needs**
- ✓ **Enable high-volume transaction processing for next wave of applications**
- ✓ **Improve data warehousing and OLTP reporting**

DB2 9 for z/OS delivers on more than 225 requirements submitted by customers, business partners, and worldwide user group communities

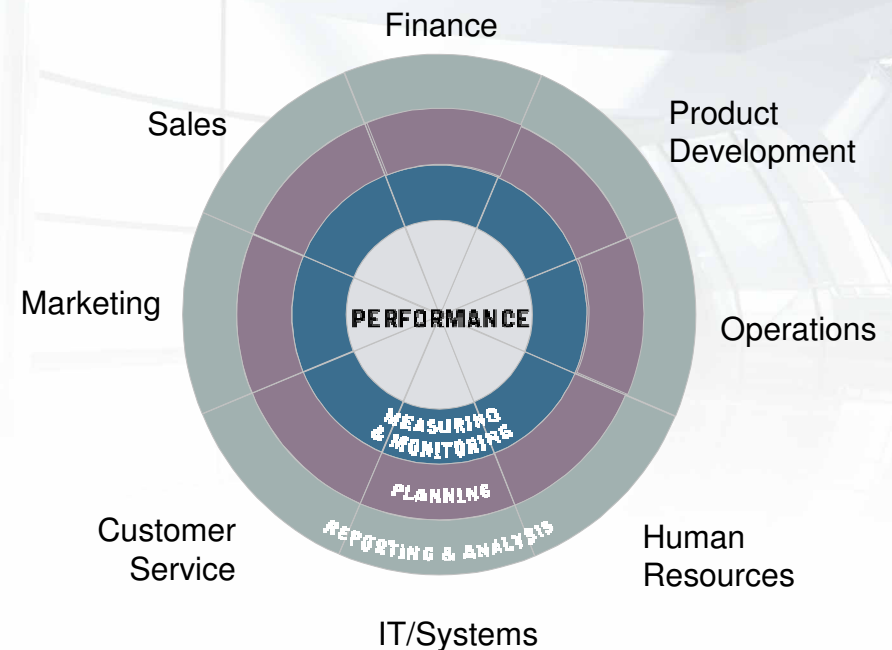
Next DB2 release will continue driving these themes

# Cognos 8 Business Intelligence for System z

## *Unlock the Business Value of Information to Make Better Decisions*

### A Complete BI Management Platform for System z

- **Cognos 8 BI for System z enables businesses to gain a competitive advantage from their business data**
- **Improved decision making by combining the targeted information delivery and analysis capabilities of Cognos 8 BI with the power and reliability of System z.**
- **Addresses fundamental business questions such as:**
  - How are we doing?
  - Why?
  - What should we be doing?



# Data Warehouse Accelerator Features

- **A special purpose, network attached x86 accelerator system**
  - Offload typical DW queries from traditional database server
  - Based on research prototype
  - No changes to the applications
  - DB2 transparently exploits the accelerator for applicable queries
- **Improving performance of typical DW queries 5-10 times**
- **Achieving linear scaling with the number of CPUs**
- **Reducing need for tedious tuning of DB2 (MQTs, indexes, etc.)**
- **Significant price/performance and TCO improvement**
  - Offloading very CPU intensive operations from System z
  - Using commodity hardware
  - Order of magnitude performance improvement for offloaded queries
  - Reduced DBA effort for tuning offloaded queries
- **Appliance-like form-factor**
  - User/reference guide assisted installation, initial configuration
  - Hands free operations

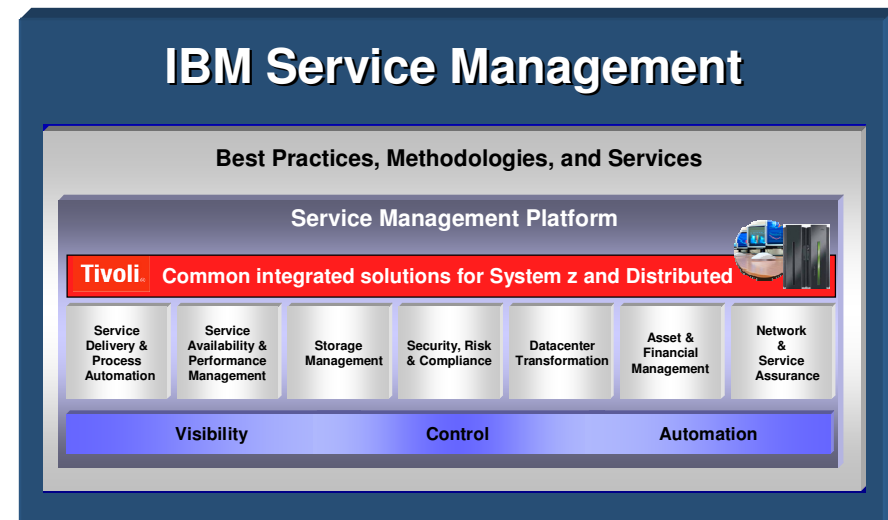
# Service Management

## *Enterprise-wide Unified Service Management Across All Platforms*

### Common User Experience

- **End-to-end management across all platforms**
- **Common user interface / Dashboards**
- **Unified reporting**
- **Process flows based on ITIL v.3**
- **Automated, integrated threshold setting and reporting across z and distributed platforms**
- **Common data warehouse for integrated reporting**
- **Common financial and asset management across all platforms**

### IBM Service Management



### Built on a Common Infrastructure

- **Monitoring solutions all use a shared infrastructure across all platforms**
- **Process automation engine based on a shared infrastructure – common solution for discovery & configuration management**
- **Business Service Management based on a shared infrastructure for events**



## IBM Tivoli Service Management Center for System z



**Tivoli**®

**Service Management  
Center for System z**

The multi-OS focus of the SMCz manages a complete service landscape running on System z from bare metal up to the application as if it were homogeneous

- Offers an **integrated system management view** of a complex application environment comprising System z and Linux.
- **Leverages best practices** for a SaaS landscape.
- One installation and one **“glass cockpit” point of control** for the an integrated System Management view of the solution across environments.
- **Monitoring and Managing** for a complete application landscape around DB2 z/OS and WebSphere on Linux
- For customers who want to put System z into the middle of their heterogeneous application environment and **manage these enterprise services as a utility**
- Leverages IBM Tivoli z/OS and Linux on System z management products, along with other IBM offerings, services, and best practices

## Investment in System z for Hybrid Systems Management



### ***Linux on System z Management***

Delivered ITSM infrastructure, systems and workload automation as well as provisioning and deployment solution to Linux on System z – providing a centralized ISM infrastructure on the most reliable platform in the industry



### ***Asset & Financial Management***

Continue to invest in asset management – both IT and Enterprise assets, software license usage, capacity management and usage and accounting



### ***Green Data Center***

IBM's Project Big Green dedicating \$1 billion to energy topics over the next three to five years, aims to deliver new, power-centric management solutions designed to help our customers reduce IT data center power consumption. IBM Tivoli Monitoring for Energy Management is the only product on the market that provides visualization into the data center energy usage.



### ***SOA Management***

Invested in a comprehensive integrated SOA service lifecycle management solution running on System z



### ***End-to-End Security Management***

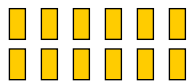
IBM continues to focus on the enterprise security market, spending \$1.5 billion on security research and integration to round out our security offerings

# IBM System z Application Hosting

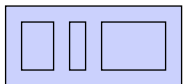
## Offering Clients Industry-Leading Virtualization Options



- z/OS and Linux: mix and match as business demands dictate
- Linux-on-z/VM: large-scale virtual server hosting side-by-side z/OS systems
- Consider WebSphere Application Server for z/OS and Linux
- z/OS: large-scale application integration with transaction and data services
  - Both adhere to the WebSphere development model and tools
  - Both adhere to WebSphere systems management and admin model and tools
  - Each provides unique value for WebSphere applications



- **The Linux value proposition:** simplify and optimize existing infrastructure for end-to-end WebSphere applications with the goal of reducing costs and complexities



- **The z/OS value proposition:** provide highest possible qualities of service (QoS) in an efficient, cost-effective manner via integration with z/OS WLM

# System z Deployment Considerations

- **Supports Open Programming models**
  - Web services, Java, C/C++, EGL - in both Linux for z and z/OS systems
- **Benefits of Scale Out environment in a Scale Up container**
  - Modularized to add server instances and functionality where and when needed – Software As a Service – On Demand
- **System z provides an open programming model with operational superiority to other platforms**
  - Applications can leverage best of x86/RISC worlds with mainframe to produce best **Global IT Infrastructure TCO** to customers.
- **System z becomes more of a Service Bureau for the enterprise, deploying Software as a Service – but it's home grown/RYO**
  - **Rethink** your end to end **Spreadsheets**
- **How you put the pieces together makes a financial difference!**

## Summary

- **We are delivering a New Generation of z Software and Hardware**
- **The z Ecosystem Now Enables Leap Frogging to the Next Generation of Applications**
- **System z is Being Rearchitected for Enterprise Data Serving**
- **Evolving and Emerging Applications are Driving Hybrid Systems Approaches**
- **Its All About the Economies of Scale and How z Capability and Quality of Service makes a Difference – especially in hybrid topologies**



Thank You

