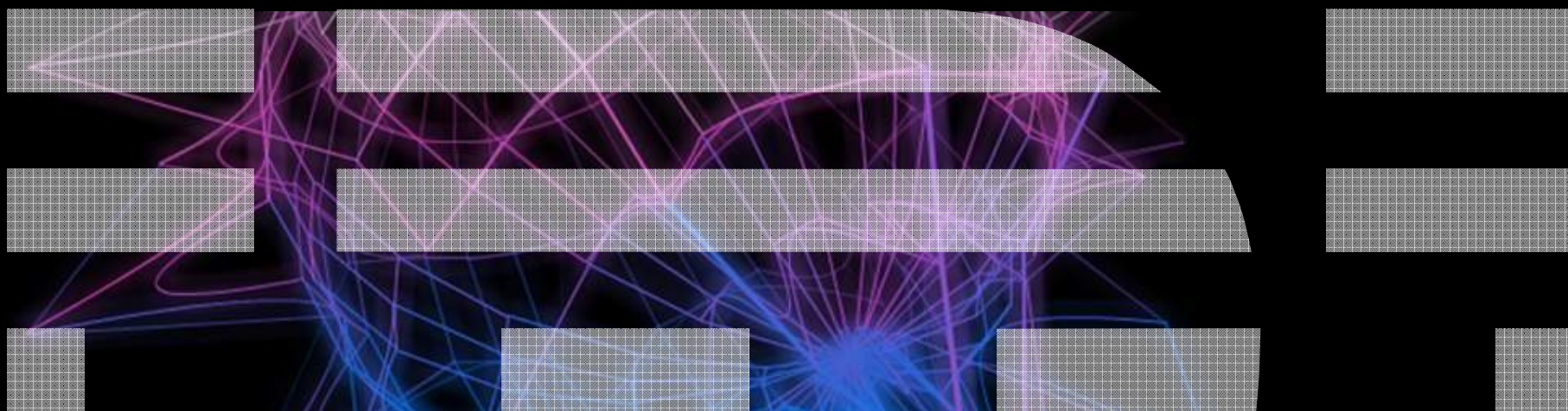




Paul Rivot – Worldwide Director, Information  
Management

July 2010

Accelerating Business Value  
with Smarter Systems (Workload Optimized) -  
*Software, Hardware and Services*



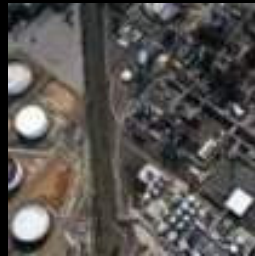
IBM Smarter Systems Tour 2010

# The world is getting smarter

More instrumented, interconnected, intelligent



Smart traffic systems



Intelligent oil field technologies



Smart food systems



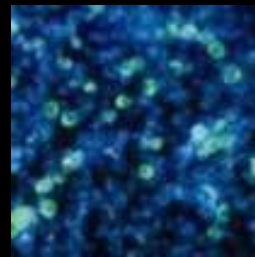
Smart healthcare



Smart energy grids



Smart retail



Smart water management



Smart supply chains



Smart countries



Smart weather

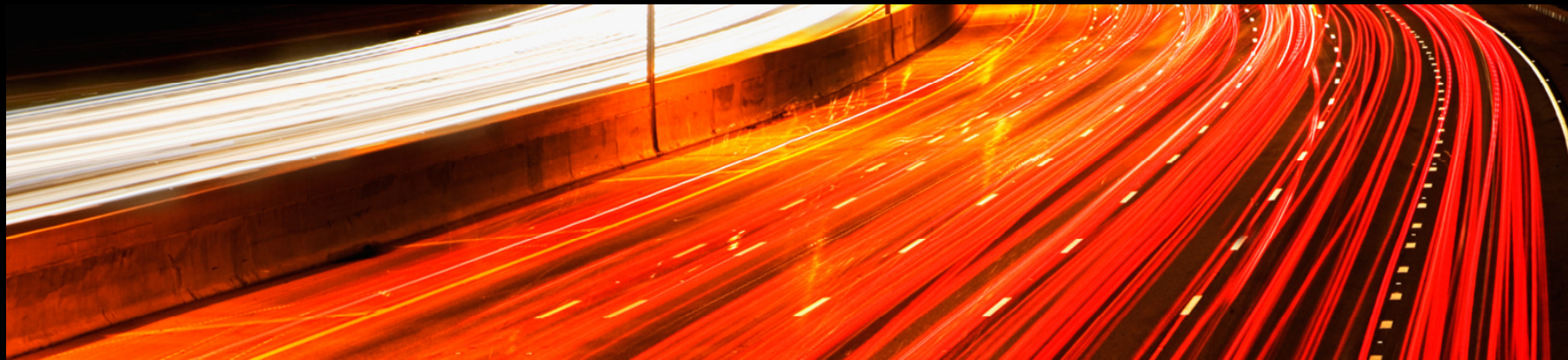


Smart regions



Smart cities

Think about the workloads that enable intelligent traffic systems ...



**Electronic Toll Collection**

Transaction processing systems (OLTP) linked to bank accounts and credit cards needing high integrity and availability

**Traffic Flow Prediction**

Analytic workload system looking for patterns in large volume of real-time and historical data

**Weather, Local News, Major Events and Other Relevant Informational sources**

Integrate processes and people in an agile fashion

***Smarter Planet solutions have diverse workloads***

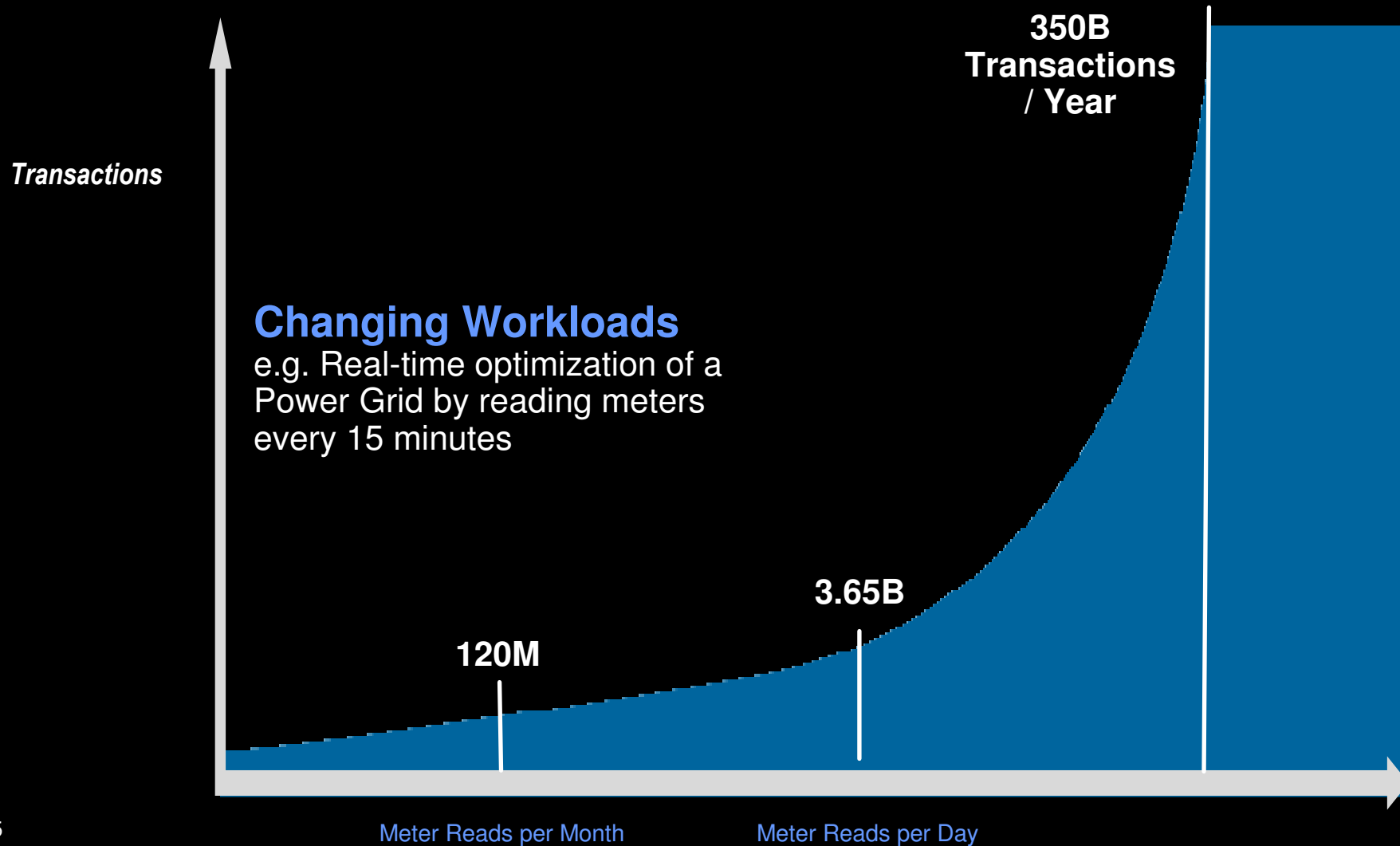
## What does this all mean to IT?

*Workload's are driving IT organizations to ...*



*... which require systems that are optimized*

Organizations are challenged to handle the ever growing volume and velocity of data and transactions



Organizations are challenged to uncover deeper insights and optimize business decisions and processes

98%

of CEOs need to restructure the way their organizations work

5.3

hours wasted per employee per week due to inefficient processes

3x

increase in gap between expected change and ability to handle change

1 in 3

Business leaders frequently make decisions based on information they don't trust, or don't have

1 in 2

Business leaders say they don't have access to the information they need to do their jobs

# Different workloads have different characteristics

## TRANSACTION PROCESSING AND DATABASE



- Thousands of online users
- Large transactional databases
- 24x7 operation

## BUSINESS INTELLIGENCE AND ANALYTICS



- Fewer users
- Complex queries
- Multiple data sources
- Large data warehouse

## BUSINESS PROCESS MANAGEMENT



- Unite content, people and process flows
- Orchestrate multiple services
- Empower business users

# Different workloads have different requirements

## TRANSACTION PROCESSING AND DATABASE



- High scalability
- High availability
- Moderate to high I/O bandwidth
- Larger cache per core

## BUSINESS INTELLIGENCE AND ANALYTICS



- Faster query performance
- High I/O bandwidth
- Deep compression for warehouse databases

## BUSINESS PROCESS MANAGEMENT



- Moderate to high volume processing
- Low to moderate I/O bandwidth
- Tools for diverse business users



# Introducing Smarter Systems for a Smarter Planet



**Smarter Systems for a Smarter Planet**

## **Benefits:**

- *Faster Time to Value*
- *Greater Agility & Management*
- *Embodies Deep Client Experience*
- *Better Performance, Lower Cost*

# IBM offers smarter systems for specific workloads



**Smarter systems for  
Transaction Processing  
and Database workloads**

*Flexibility  
Performance  
Integrity*



**Smarter systems for  
Business Intelligence  
and Analytics workloads**

*Discover insights  
Predict outcomes  
Act faster*



**Smarter systems for  
Business Process  
Management workloads**

*High performance  
Process integrity  
Ensure compliance*

# WAS optimizations for POWER7

## Better performance

### IBM WebSphere Application Server 7

1 JVM  
AIX TL4  
64 bit  
16 threads



IBM Power 750  
8 cores



**3920**

Transactions/sec

**6.8x**

More work

### Competitive application server

1 JVM  
Solaris  
64 bit  
16 threads



Sun T5140  
8 cores



**570**

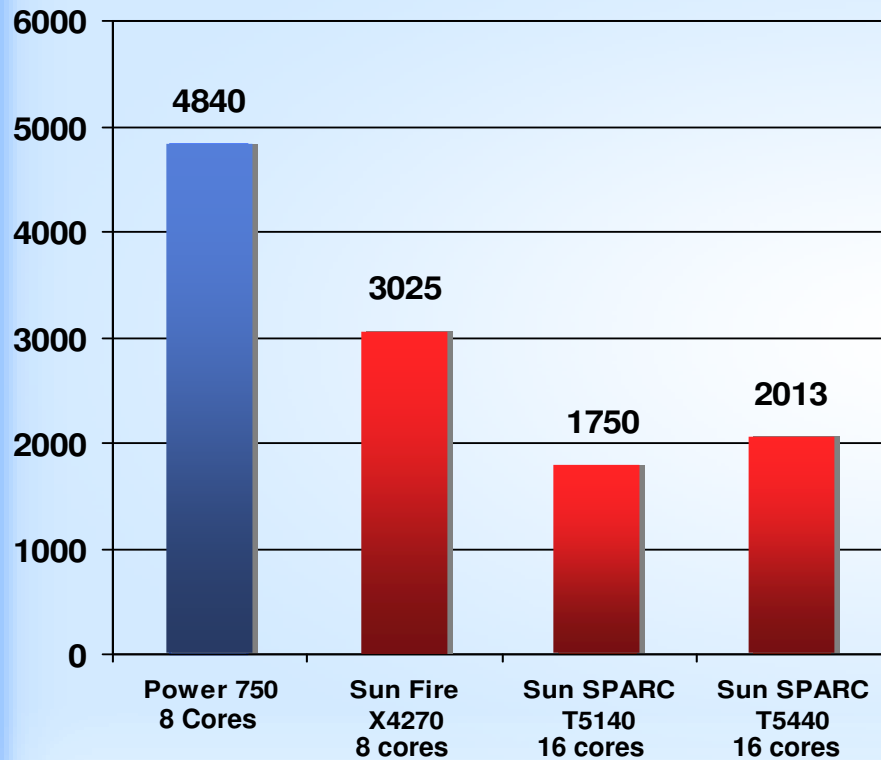
Transactions/sec

# WAS optimizations yield lower cost

**1/4<sup>th</sup>** the Cost

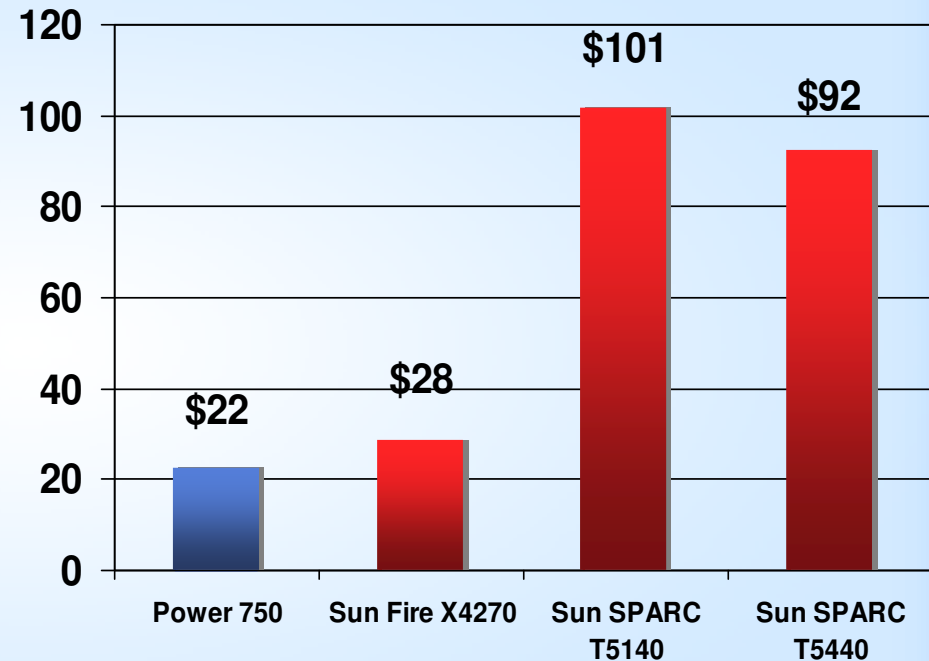
## Transactions Per Second (TPS)

JVM's Configured for Maximum Throughput



## Total Cost of Acquisition per TPS

(Cost of Hardware, Software, and 3 Years' Maintenance)



Prices as of 03/18/2010


<http://www.oracle.com/corporate/pricing/pricelists.html>

Source: IBM Internal Studies

Sun Fire x4270 estimated from test run on a comparable IBM System x Sun SPARC T5440 estimated from test run on a T5140

# DB2 optimizations reduce infrastructure requirements

**SAP and DB2 on Power 780**

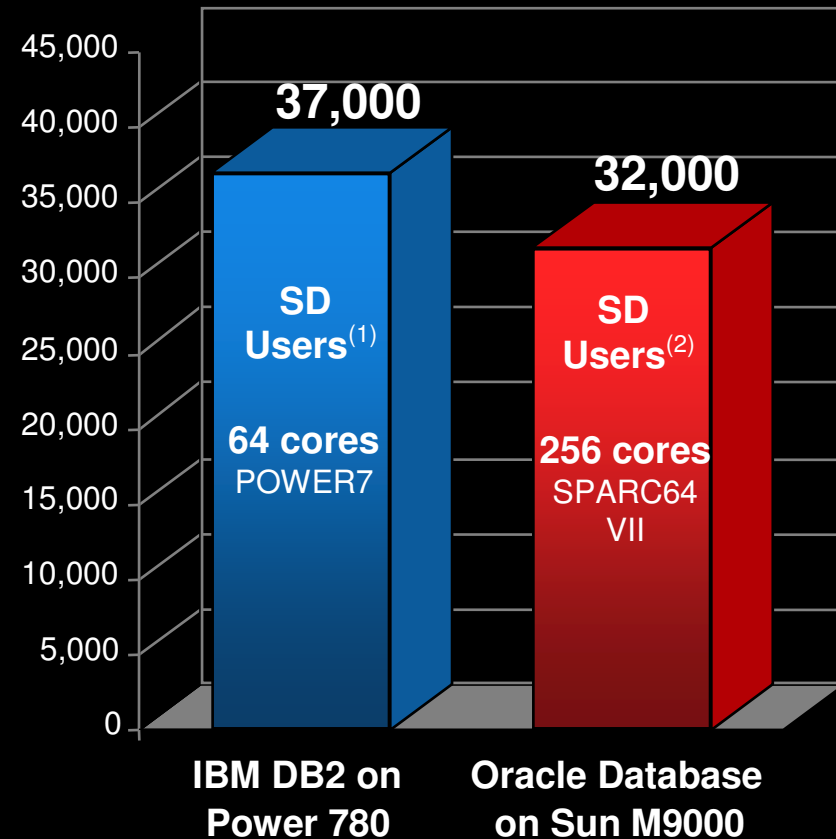


**1/4<sup>th</sup>**

The number cores required for IBM DB2 and Power 780 than Oracle Database on Sun M9000

IBM Power System 780, 8p / 64-c / 256-t, POWER7, 3.8 GHz, 1024 GB memory, 37,000 SD users, dialog resp.: 0.98s, line items/hour: 4,043,670, Dialog steps/hour: 12,131,000, SAPS: 202,180, DB time (dialog/ update):0.013s / 0.031s, CPU utilization: 99%, OS: AIX 6.1, DB2 9.7, cert# 2010013; **SUN** M9000, 64p / 256-c / 512-t, 1156 GB memory, 32,000 SD users, SPARC64 VII, 2.88 GHz, Solaris 10, Oracle 10g , cert# 2009046; **All results are 2-tier, SAP EHP 4 for SAP ERP 6.0 (Unicode) and valid as of 4/2/2010.**

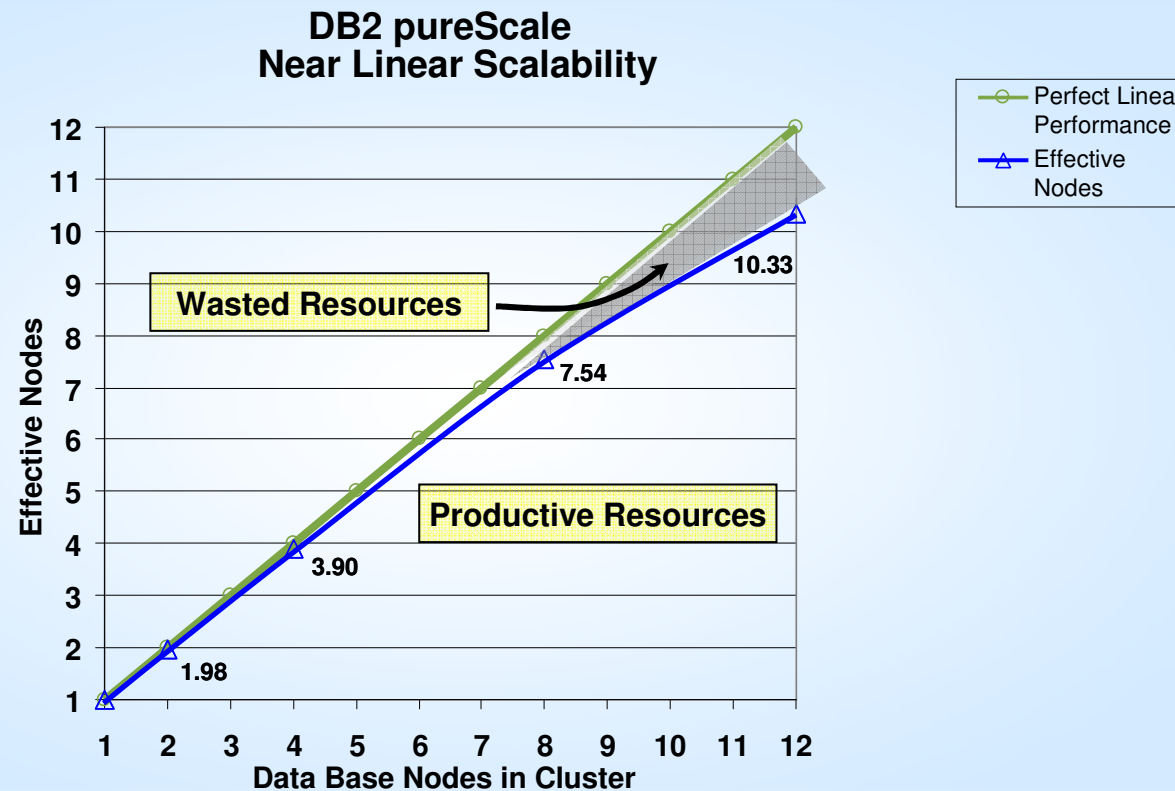
**SAP Sales and Distribution ERP 6.0 EHP4 2-Tier performance**



Results as of 4/02/2010

# Why DB2 pureScale is better than Oracle RAC

## Near-linear scale-out efficiency of DB2 pureScale



Transparently scalable and continuously available

## IBM pureScale Application System

*Scale Up, Scale Out, Scale Within*

### IBM Power 770

drives up to 90% server utilization with industry-leading virtualization, lowers energy consumption 70-90% with dynamic energy utilization, and provides resiliency without downtime

### DB2 pureScale

offers superior performance and scale-out efficiency

### WebSphere Application Server

on POWER7 provides 6.8x better performance than a competitive application server on Sun T5140



## SBI Sumishin Net Bank



### **Business Challenges:**

- New entrant into internet banking market
- Provide full range of services
- Get ahead of their competition

### **Benefits:**

- New banking platform, optimized for web-based transaction processing
- Shorter development time compared to conventional financial products
- Solution architecture reduced implementation risks substantially



## Smarter systems for **business intelligence and analytics**

### *Examples of optimization:*

- **DB2, IBM Information Server and Cognos leverage underlying platform capabilities**
  - Better query performance
- **DB2 advanced compression**
  - Optimized storage

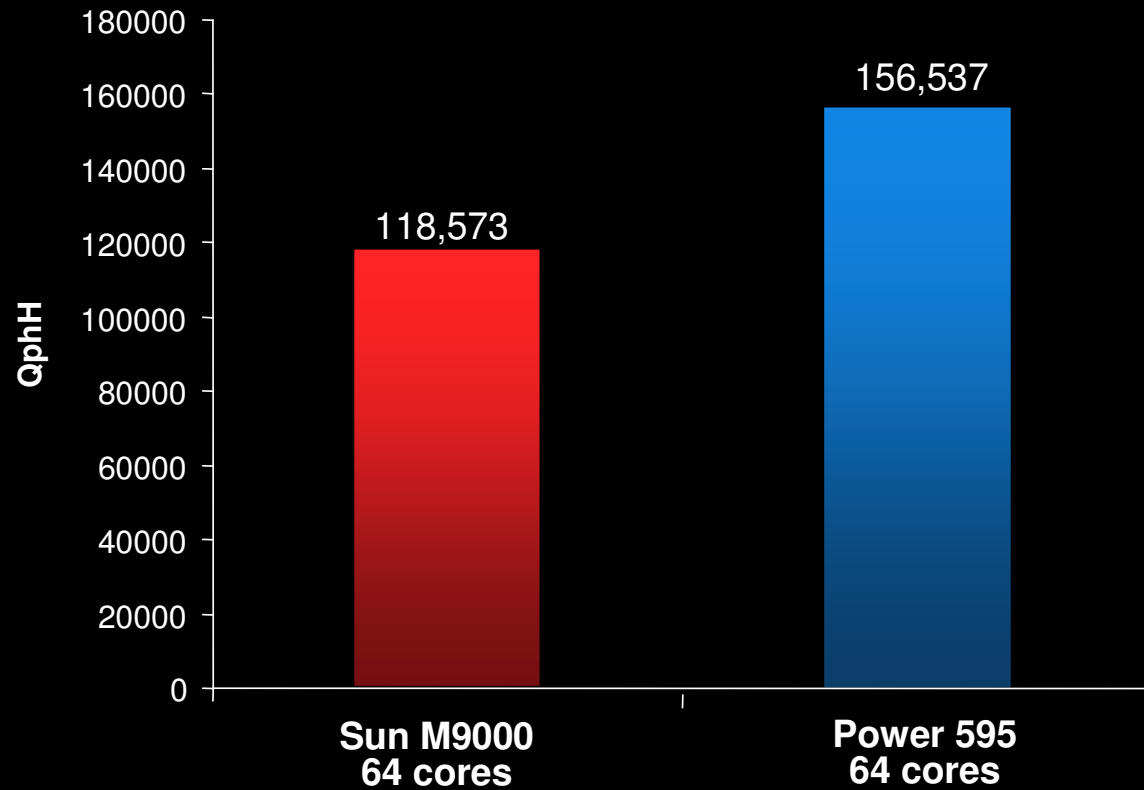


**IBM Smart  
Analytics System**

# Better data warehouse performance

**1.32x**

**More Query  
Performance**



QphH = TPC-H composite query per hour performance metric

# Efficient compression and XML data support

**2x**

**Better Compression**

**77x**

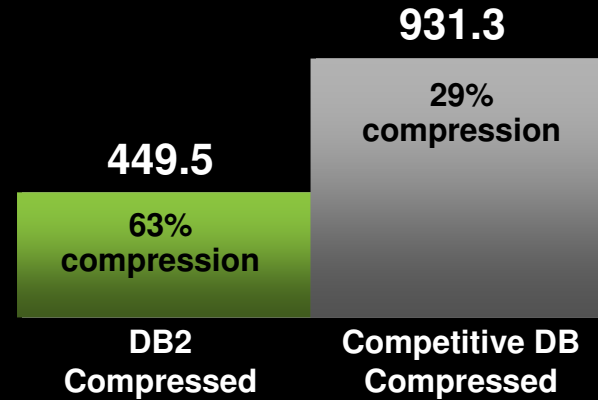
**Better XML Query Performance**

**50%**

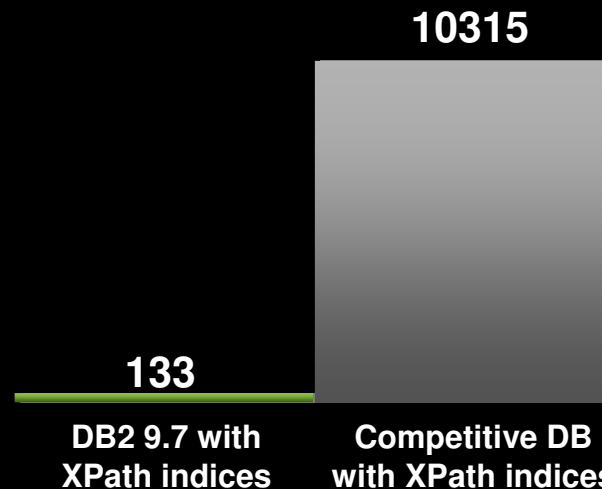
**Less Storage**

Source: IBM internal studies - compression based on TPC-H warehouse data, XML based on test cases from <http://tpox.sourceforge.net/>

Storage for 1200 MB Warehouse Benchmark



Time (sec) Per 1000 X Queries



# IBM Smart Analytics System

What smart organizations want and need for faster results

EVERYTHING you need for Business Analytics –  
not *just* a data warehouse appliance...

## Analytics Software

- Business Intelligence
- Cubing Services
- Text Analytics & Data Mining

## Powerful Data Warehouse

- Warehousing Platform
- Advanced Workload Management
- System Automation

## Hardware & Services

- Flexible Server Platform Options
- Modular Storage Capacity
- Build, Deploy, Health Check and Premium Support Services



*Transforming  
information into  
business insight*

**3x Faster** - Workload optimized analytics  
run business intelligence 3x faster

**50% less floor space**  
Data compression reduces storage cost

**World record performance**

## German travel and leisure organization



### **Business Challenges:**

- Staying ahead of fast changing market
- Maintaining profitable offerings
- Deliver consolidated, near real-time insight

### **Benefits:**

- Better alignment of capacity and demand
- Shorter product cycles
- Increased flexibility and lower costs using one-stop decision support
- Greater agility from comprehensive near real-time insight company wide

## Smarter systems for **business process management** workloads

### *Examples of optimization:*

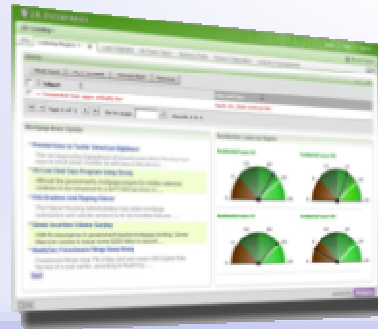
- **Tools optimized for business users**
  - Less effort, time and risk to develop and deploy BPM workloads performance
- **BPM leverages POWER7 hardware capabilities**
  - Better performance
  - Higher scale



## BPM tools optimized for business users

Less effort, time and risk compared to Oracle's developer-only tools

1. **Model Driven, code-free BPMS platform**
2. **Extend rule authoring to business users**
3. **Define event patterns and correlations**
4. **Unite content, process and people with Advanced Case Management**



*Also, free cloud-based tools for business users  
Get started quickly with an easy on-ramp to BPM Oracle doesn't offer!*

# Leverage the scalability and reliability of IBM Systems to enable critical process automation workloads

## Process Integrity

enables consistent transaction processing

## Scalability and High Availability

ensures your business processes are always accessible

## High Performance

drives increased throughput for critical business processes to meet fluctuating process activities

## Ensure Compliance

reduces the risk of non-compliance and errors due to manual tasks





## BPM optimizations on POWER7

### Optimize costs with WebSphere process server on POWER7

- **Up to 50%** improved performance on **POWER7\***
- **Over 5x** increased scaling on **POWER7 \***
- Drive **increased throughput** for critical, high volume business processes
- **Optimized for virtualized environments** enabling higher hardware utilization

\*Performance based on POWER6 over POWER7



## IBM BPM Suite

Achieve growth and agility through process discovery, interactions and optimization

Take control of your processes to fuel new growth, optimize costs and drive **Greater Business Agility**

### WebSphere Lombardi Edition

- Build and manage process applications in a single executable platform

### WebSphere ILOG Business Rule Management Systems

- Accelerate business rule automation by leveraging business user expertise

### WebSphere Business Events

- Easily capture and correlate events from a wide range of sources for a more agile response to market demands

### WebSphere Process Server

- Advanced Case Management capabilities that support structured and unstructured activities



## Ball State University



### **Business Challenges:**

- Maintaining single view of a student
- Graduates not receiving diplomas
- Lack of data integrity across the campus

### **Benefits:**

- Improved user satisfaction by reducing registration processing times
- Reduce new application development from 1-2 months to a few days
- Higher quality of service to their students

Organizations are challenged to optimize their data center resources and deliver greater system utilization

41%

of data center managers claim their data centers will max out their energy capacity within one to two years<sup>1</sup>

80%

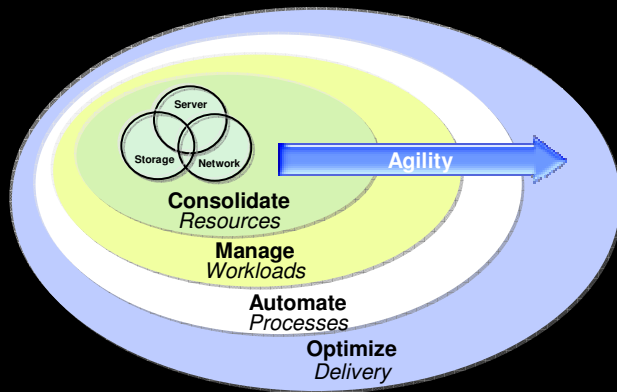
of digital data is now unstructured<sup>2</sup> and requires greater effort to transform it into usable intelligence

Up to 85%

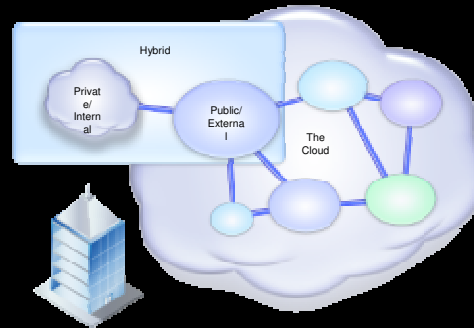
of computing capacity is idle in distributed data centers<sup>3</sup>

- **Improve Service**
  - Ensure high availability and quality of existing services
- **Reduce Cost**
  - Contain operational cost and complexity
- **Manage Risk**
  - Address today's security, resiliency, and compliance challenges

Building a **smarter business infrastructure** requires looking at IT delivery from the business perspective, leveraging:



**Virtualization with Integrated Service Management**



**Flexible Delivery Models**



**Workload Optimized Systems**

# Smarter business infrastructure enables smarter planet solutions

## Virtualization with Integrated Service Management

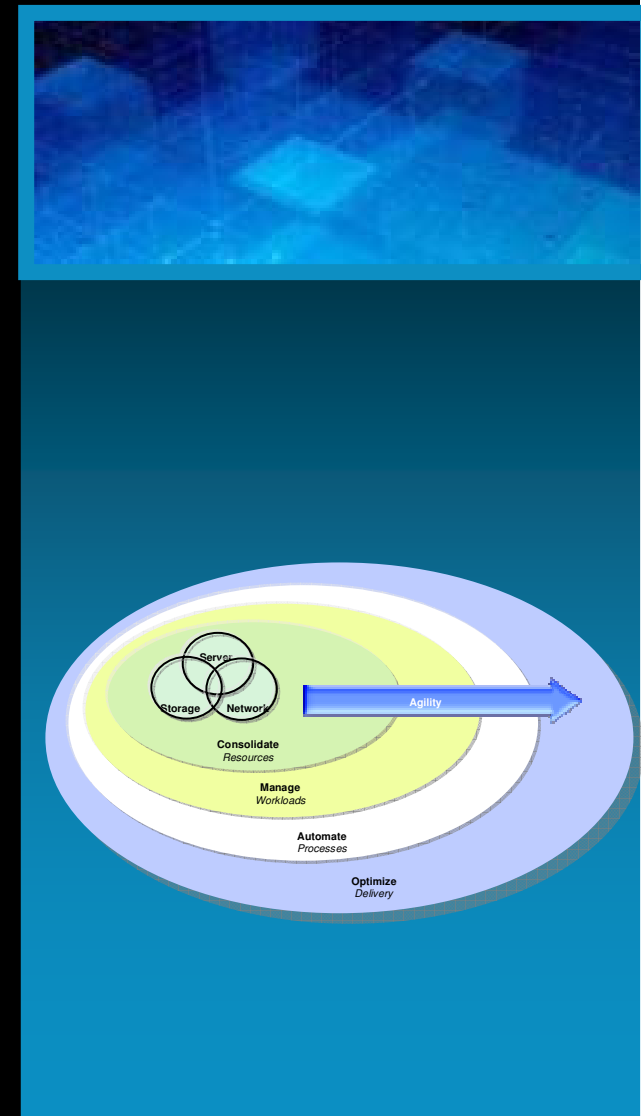
### *Examples of optimization:*

- **Consolidation** reduces infrastructure and license costs
- **Integrated management** improves productivity
- **Automated** processes based on best practices reduces labor
- **Optimize** delivery by aligning IT resources with business imperatives

- **Server Virtualization:** Up to **30-70%** savings

- **Storage Virtualization:** Up to **\$10M** annual cost savings

- **Application Virtualization:** Up to **98%** reduction in unplanned outages



How many servers are needed to run these workloads?  
POWER7 enables large scale virtualization

*Run 45 online banking workloads,  
each driving 745 transactions per second*

1



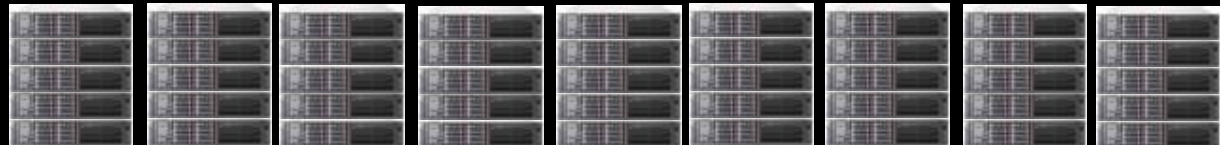
Power 770 server

2



Power 750 servers

45



Sun Fire servers

10100100101001  
**IBM WebSphere Application Server**  
10100100101001

10100100101001  
10100100101001

# Systems to match your consolidation and virtualization needs

## System z



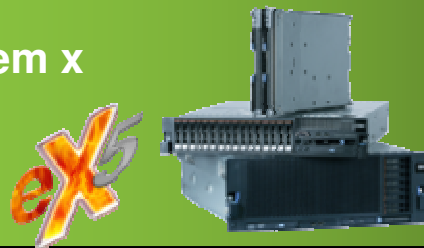
- Extreme consolidation for extreme cost savings of over 70%
- Gold standard reliability, dynamic scalability and extensive virtualization functions for superior service & support

## Power Systems



- More performance per core than any other system in the industry
- Drive over 90% utilization and dynamically scale per demand

## System x



- Pre-loaded with VMware virtualization solution
- 78% more virtual machines for same VMware cost

## System Storage



- Virtualize existing storage and increase utilization by up to 30%
- Reduce TCO up to 66% by deploying automated, virtualized storage



# Oracle cannot match IBM's workload optimized systems IBM solutions meet the demands of a smarter planet

## Workloads



**TRANSACTION  
PROCESSING  
AND DATABASE**

*Keep up with exploding data growth with fast and secure transaction handling*



**BUSINESS  
INTELLIGENCE  
AND ANALYTICS**

*Uncover deeper insights hidden among diverse information sources*



**BUSINESS  
PROCESS  
MANAGEMENT**

*Respond to change more efficiently and effectively with Business Process Management*

## Smarter Business Infrastructure



**CONSOLIDATION &  
VIRTUALIZATION**

*Reduce costs and increase agility through consolidation and Integrated Service Management*

# Simply put, IBM is making systems smarter



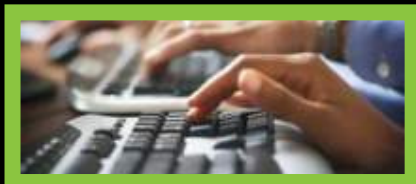
**TRANSACTION  
PROCESSING  
AND DATABASE  
WORKLOADS**

*pureScale Application System*



**BUSINESS  
INTELLIGENCE  
AND ANALYTICS  
WORKLOADS**

*Smart Analytics System*



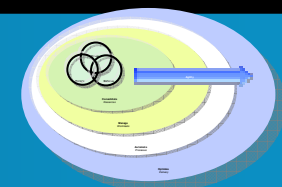
**BUSINESS  
PROCESS  
MANAGEMENT  
WORKLOADS**

*BPM Suite*



**LEVERAGE  
CONSOLIDATION &  
VIRTUALIZATION**

*Virtualization with Integrated  
Service Management*



## Reinhausen



### Challenges:

- Due to overall business growth, Oracle database performance was suffering, which impacted user productivity and business efficiency.
- Client needed to:
  - Reduce server infrastructure costs
  - Optimize supply chain performance

### Benefits:

- Migration of Sun/Oracle infrastructure to Power Systems / DB2 reduced licensing costs and improved application performance
- Improved performance
  - **44%** for batch and reporting processes
  - **71%** for backup jobs
  - **25%** reduction in query response time
  - Reduced SAP licensing costs

# IBM has a proven track record of optimizing systems and data centers

## 1950s...1960s

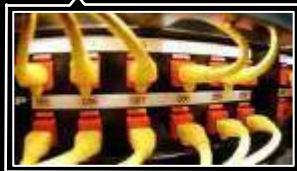
**TPF:** Airline Reservation System

**IMS & s/360:** Transaction & Database System



## 1990s

**IMS, CICS, and DB2 Parallel Sysplex:**  
High-scale Application and Data Serving



## 1970s...1980s

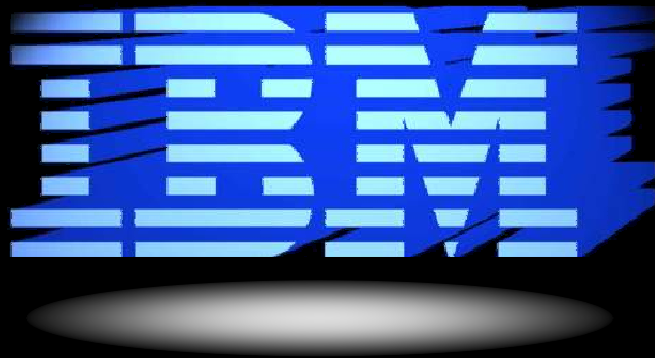
**System 38 and AS/400:**  
Integrated Application and Data Serving  
**DB2 & S/370:** Online Transaction Processing



## 2000s

**IBM Smart Analytics System**  
High-scale Business Intelligence and Relational / XML Data Warehousing  
**DB2 pureScale on PowerHA:**  
High-Scale Database Management  
**WebSphere Edge Server:**  
High-scale Web Application Serving  
**Datapower:**  
XML & Web services appliance

## How Smarter Systems for a Smarter Planet can help



1. Smarter Business Infrastructure
2. Smarter Systems – optimized hardware, software and services
3. Investment Protection and Ease of Migration
4. Commitment

## Take action now!

- Learn more about how the [IBM Migration Factory](#) can help make your move to IBM Systems efficient and successful
- Do your own complimentary consolidation assessment using the [IBM Systems Consolidation Evaluation Tool](#)
- Contact your IBM seller or business partner for a complimentary IBM Systems Makeover Analysis to help you get started
- [The Server Makeover Analysis](#) (including for SAP or Oracle Environments)



**200**

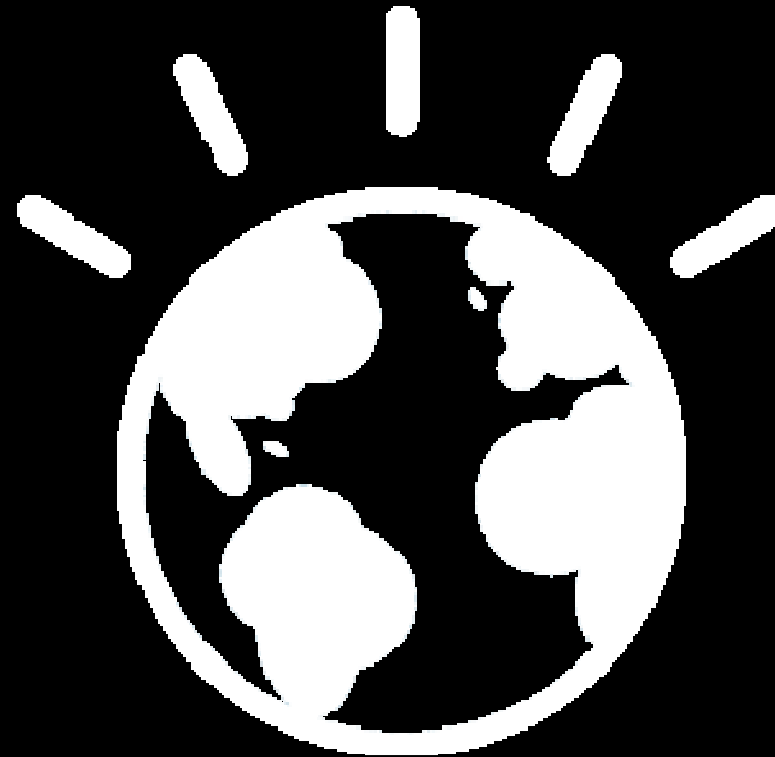
Customers have moved critical workloads to IBM systems from Oracle/Sun, HP and others in 1Q2010 alone

**2,700**

Customers have switched to IBM in the last 4 years

# Thank You!

[ibm.com/smarterystems](http://ibm.com/smarterystems)



Simply put, IBM is making systems smarter.

## Singapore Land Transportation Authority



### Challenges:

- Growing population
- Need to head off traffic congestion
- Maintain world-class business climate
- Recover lost revenue

### Benefits:

- **80%** reduction in revenue leakage
- **2%** reduction in the lifecycle cost of fare processing system
- **2x** performance capacity to 20 million fare transactions per day
- Accommodate multiple fare card issuers



## Brazilian financial institution



### Challenges:

- Understand client buying behaviors
- Create cross and up-sell opportunities
- Discover new market trends

### Benefits:

- Leverage in-database mining to understand clients and reduce operational risk
- Reduce CRM model deployment cycle from eight months to a few weeks
- Execute analytical models in near real time

## State tax agency



### Challenges:

- Slow, expensive, paper-intensive, manual processes
- Lengthy exception processing times
- No real-time management reporting

### Benefits:

- **80%** reduction in average age of work
- Real-time process visibility and reporting
- **80%** reduction exception backlogs
- Reduced inventory by **60%**

## Gruppo FIAT Italy



### Challenges:

- Reduce electricity consumption
- Reduce data center complexity – servers, storage, and network devices
- Keep major SAP systems operational

### Benefits:

- **2:1** target for consolidation achieved
- **30%** improvement in response times
- **50TB** increase in available storage
- **70%+** fewer discrete databases

## ... workloads that drive holistic risk management ...

### **Manage Financial Risk**

Analytic workloads to understand risk exposures across silos and make risk decisions consistent with business objectives

### **Prevent, Detect and Remediate Financial Crime**

Secure all transactions (high volume and speed) and forms of interaction real-time and effectively manage detected events

### **Monitor and Manage Compliance**

Automatically manage business processes while providing regulatory compliance reporting and monitoring at minimal cost

... and workloads that underlie tomorrow's energy and utility systems

**CRM System and Customer Information System**

Analytic workload system to enhance customer participation and experience

**Localized and Distributed Energy Resources**

Transforming the grid from a one-way system to a dynamic, automated information network

**Regulation and Target Fulfillment**

Monitoring and managing emissions levels while maintaining a reliable, cost-effective power supply