Smarter technology for a smarter planet:

IBM® Enterprise Advance

Advancing Business Intelligence

The New Era of Business Analytics from IBM

Mike Biere - Sr. Marketing Manager

IBM Silicon Valley Lab

mbiere@us.ibm.com

IBM®

System z: The platform for the future

"you cannot think seriously about your longer-term IT architecture without thinking equally seriously about what today's mainframe environment has to offer"

CIO Magazine: Mainframe computing is set for a rebirth – September 29, 2009

IBM® Enterprise Advance
Advancing Business Intelligence

IBM

The World is Changing.
The Reality of Living in a Globally Integrated World is Upon Us.

6x Increase in global water usage since the 1900s, twice the rate of human population growth

40% to 70% The losses of electrical energy due to inefficiency - around the world

85% Idle computer capacity

$11.5 billion Worth of produce is wasted in India because of outdated post-harvest infrastructure

$0.70 per $1.00 Spent on IT maintenance

$100 billion Lost annually in the US due to healthcare fraud

22% of total port volume in North America is empty containers

$40 billion Annual consumer product and retail sales lost in United States due to supply chain inefficiencies

Annual impact of congested roadways

$78B lost
3.7B lost hrs
2.3B gallons of gas

Information-Led Transformation

Leveraging information & analytics is now the top priority for CIOs, and organizations that do so outperform their peers…

Business Analytics	**83%**
Virtualization	76%
Risk Management & Compliance	71%
Mobility Solutions	68%
Customer & Partner Collaboration	68%
Self-service Portals	66%
Application Harmonization	64%
Business Process Management	64%
SOA / Web Services	61%
Unified Communications	60%

IBM® Enterprise Advance
Advancing Business Intelligence

IBM
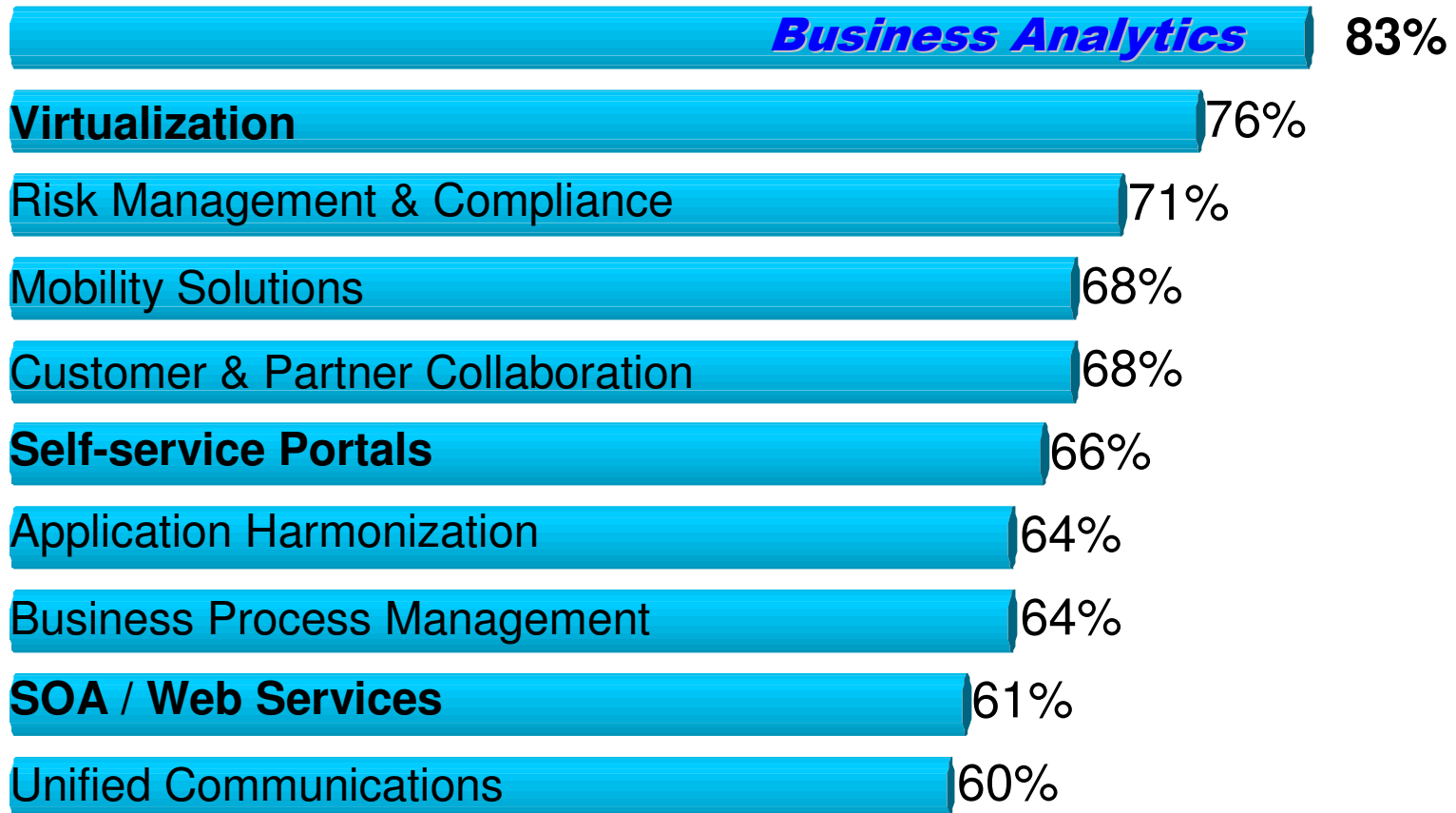
Organizations are Operating with Blind Spots

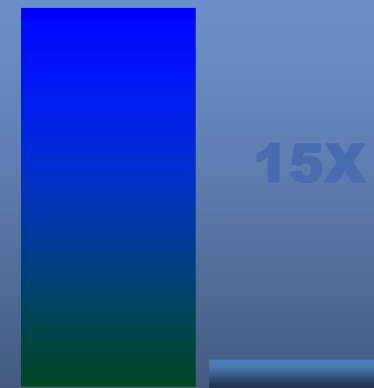## 1 in 3
Business leaders **frequently make decisions** based on information they don't trust, or don't have

1 in 2
Business leaders say **they don't have access to the information they need** to do their jobs

Top Performers Demonstrate Expertise

15X

Predict and prepare for the future by evaluating trade-offs proactively

- Industry Top performers
- Industry Under performers

Source: IBM: Break Away with Business Analytics and Optimization Study

IBM® Enterprise Advance
Advancing Business Intelligence

IBM

60% of Enterprise Information is on System z
Unlocking the Business Value of Information to Optimize

$3 trillion/day transferred through IMS by one customer

95% of top Fortune 1000 companies use IMS

Over 15 billion GBs of production data in IMS…

8 of every 10 of the largest retail banks in the US, Germany, Japan, and Australia use IMS for their core banking

24x7 ATM Deposits & Withdrawals

Reserves airline seats

Runs the world's stock exchanges & banking networks

Tracks the world's packages

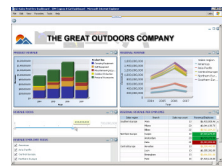*DB2 for z/OS supports the world's largest known peak database workload*

DB2: 9 of the top 10 global life/health insurance providers

DB2: 59 out of the top 59 banks in the world

23 of the top 25 US retailers

Information on Demand Software Stack is now on System z …

IBM® Enterprise Advance
Advancing Business Intelligence
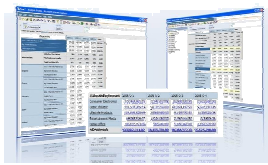
IBM

Business Analytics Demands are shifting!

Dashboards

Reporting

Analysis

Real-time Monitoring

The Voice of the Business

- Need to ensure smart business decisions

With…

- Support for more users
- More/faster access to business data
- Less tools
- More functionality
- Ability to work the way we work
  - How
  - What
  - When
  - Where

Executive

IT

Business Manager

Architect

Casual Business User

Administrator

The Voice of IT

- Need to simplify the delivery, access & management of our expanding data infrastructure

While….

- Reducing costs
- Reducing complexity
- Reducing the time to value
- Meeting SLA objectives
  - Performance
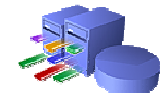 - Availability/ Reliability
- Ensuring security

Application & Web Servers

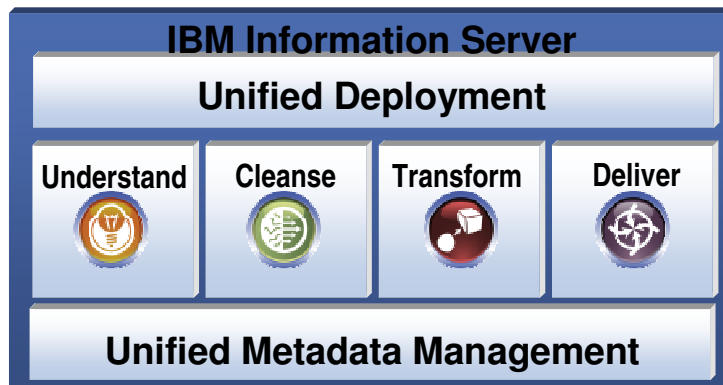*Data Integration & Data Quality Tools*

Security Providers & Firewalls

Platforms & Databases

IBM® Enterprise Advance

Advancing Business Intelligence

IBM

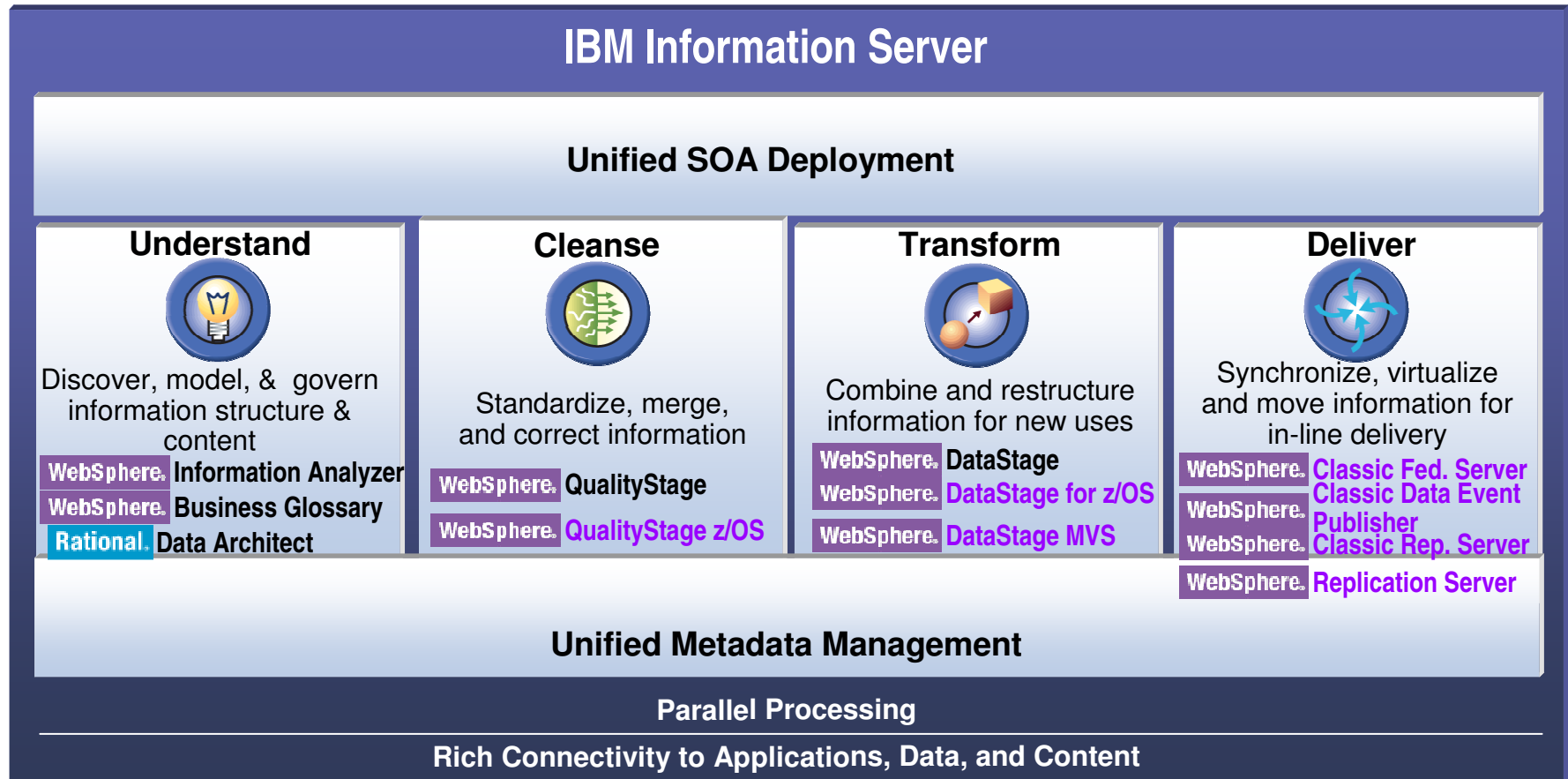# InfoSphere Information Server for System z
Accelerating the delivery of trusted information

**Profile, cleanse, and transform information
from heterogeneous data sources
to drive greater business insight**

Cognos 8 BI

Information Server

DB2

IBM Information Server

Unified Deployment

| Understand | Cleanse | Transform | Deliver |

Unified Metadata Management

- **Significant cost savings on System z**
- **Scalable to any volume and processing requirements**
- **Fully integrated, auditable data quality**
- **Metadata-driven integration for increased productivity**

IBM Information Server - for Linux on System z

IBM Information Server

Unified SOA Deployment

Understand

Discover, model, & govern information structure & content

WebSphere Information Analyzer
WebSphere Business Glossary
Rational Data Architect

Cleanse

Standardize, merge, and correct information

WebSphere QualityStage
WebSphere QualityStage z/OS

Transform

Combine and restructure information for new uses

WebSphere DataStage
WebSphere DataStage for z/OS
WebSphere DataStage MVS

Deliver

Synchronize, virtualize and move information for in-line delivery

WebSphere Classic Fed. Server
WebSphere Classic Data Event Publisher
WebSphere Classic Rep. Server
WebSphere Replication Server

Unified Metadata Management

Parallel Processing

Rich Connectivity to Applications, Data, and Content

InfoSphere Warehouse on System z

Adds core data warehouse and analytics capability to DB2 for z/OS

– Advanced physical database modeling and design

– In-database data movement and manipulation capabilities of *SQL Warehouse Tool* (SQW)

– Optimize multidimensional reporting and analysis of data with *Cubing Services*
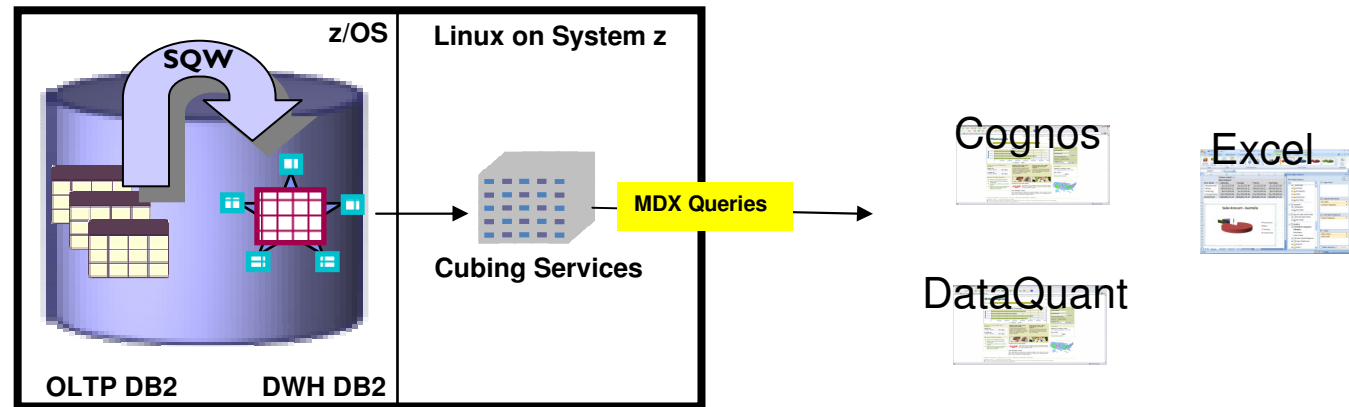
System z Environment Enhanced with InfoSphere Warehouse

IBM® Enterprise Advance
Advancing Business Intelligence

IBM Smart Analytics Optimizer
Technology Preview for System z

What is it?

- ✓ A high performance extension that easily integrates with IBM data systems, delivering predictable, order-of-magnitude faster, analytic query response times, while lowering operating costs

How is it different

- ✓ **Deep integration with IBM data management systems**

- ✓ **High performance query software, based on advanced data in-memory technologies**

- ✓ **Leveraging existing data system investment and values without any changes to applications**

- ✓ **For System z, extends gold-standard manageability, security, and availability to high-performance analytic applications**

Currently in Beta

The IBM Smart Analytics System 9600

- Is an **integrated hardware, software and services offering** that enable customers to quickly and cost effectively capitalize on game changing analytics across an enterprise

- Delivers an expanding portfolio of easy to deploy business analytics, that **seamlessly integrate** into operational fabric of a business.

- Enables a centralized view of the business, with an highly available, **advanced workload manager** that can easily prioritize critical queries within a large pool of queries.

- Allows for **reductions in costs with a highly available infrastructure**, causing customers to reevaluate the mainframe.

✓ **An integrated, high-performance analytics solution for accelerating delivery of insights for faster, smarter action**

✓ **Able to adjust and grow based on your company's ever changing business needs**

- ❏ *broad analytic capabilities*
- ❏ *powerful warehouse capabilities*
- ❏ *scalable and fully-integrated IBM hardware*
- ❏ *set-up services and single point of premium support*

✓ **Delivering results in days instead of months**

Cognos BI & System z
Simplifying the management and maintenance of your enterprise BI

- Customers have told us they want the following from their BI and DW infrastructure:

  - *Fewer BI tools in house – BI standardization*

  - *Server consolidation* - Significant savings in the hardware, software, operating and people costs associated with the management and maintenance of your enterprise BI infrastructure.

  - *Rapid deployment at a low cost*

  - *Full range of BI capabilities* including real-time monitoring, reporting, analysis & dash boards tightly integrated with the Data warehouse

  - Better, more rapid deployment - associated with a new BI application and/or increasing capacity.

  - *Maximum scalability, reliability, availability and security*

  - *Simplified and faster access to the transactional data* located on System z – Operational BI scenarios
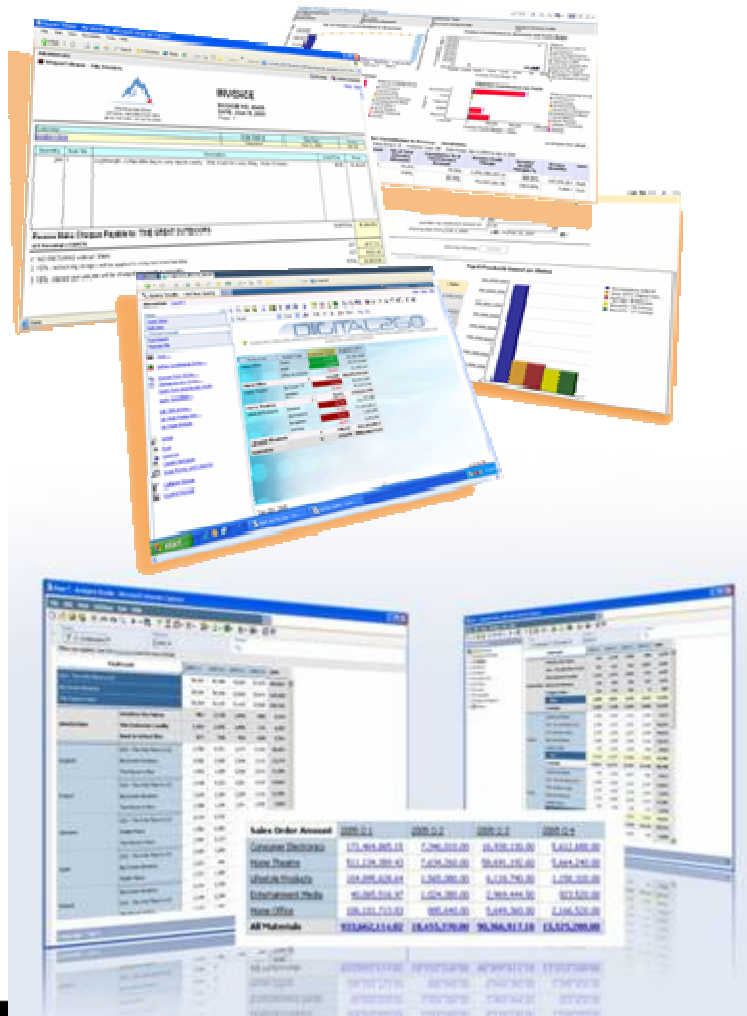
The Core Value Proposition

- Customers tell us they are interested in Cognos on System z because they…

    - Are "z-centric"
    - Have most of their data there
    - Desire to provide a lower cost, single platform solution for DW and/or BI
    - Position BI as mission critical
    - Are looking at new BI operations such as real-time and/or Operational BI
    - Require assured 24x7 operation (System z is known for its 99.999% availability)
    - Want to consolidate distributed servers or see a need to
    - Want to standardize on one or fewer BI tools
    - Have Linux processors on System z and wish to make them more useful (IFLs)
    - Have stringent data security rules
    - Want an alternative to IBI and SAS
    - Wish to cut costs such as software, hardware, staff support, power

Cognos architecture fits IBM's BI SOA Model

**Casual Users** **Customers & Partners**

Executives **Business Managers**

Financial Analysts **Professional Authors**

Common Business Model

Data Analyst **Data Modeler**

Administrator

System Architect **Developer**

IT Tools
- Admin
- Upgrade
- Model

Services API
- Content
- Security
- Metadata

Shared Set of Purpose-Built Services

| Presentation Service | Scheduling Service | Event Service | Security Service |

Cognos 8 Bus – Dispatcher SOAP, XML

SPSS **AN IBM COMPANY**

| Query Service | Movement Service | Streaming Service | Calculation Service |

System Content
Metadata, Events
Search Index, Audit
Logs, System Metrics

Optimized OLAP
64-bit in-Memory
High Performance
Streaming Cache

Business Content
- Shared Dimensions
- Personal Datasets
- Attachments, Annotations
- Initiatives, Metrics
- Plan & Report Saved Objects

Open Data Access

Application & Web Servers

Security Providers & Firewalls

Data Integration & Data Quality Tools

Platforms & Databases

Message Sources

Relational Sources

Application Sources

OLAP Sources

Modern and Legacy Sources

IBM® Enterprise Advance

Advancing Business Intelligence

IBM

Reporting & OLAP

- **Enterprise Reporting**
  - Supports multiple report types: Production, Managed, Ad-hoc, Financial, etc
  - Is adaptable to any data source
  - Operates from a single metadata layer
  - Can be personalized and targeted
  - Can be distributed via email, portal, MS-Office, search application and mobile device

- **Analysis**
  - Enables the guided exploration of information that pertains to all dimensions of your business
  - Performs complex analysis and scenario modeling easily and quickly
  - Gets to the "why" behind an event or action to improve business performance.
  - Moves from summary level to detail levels of information effortlessly

Dashboards
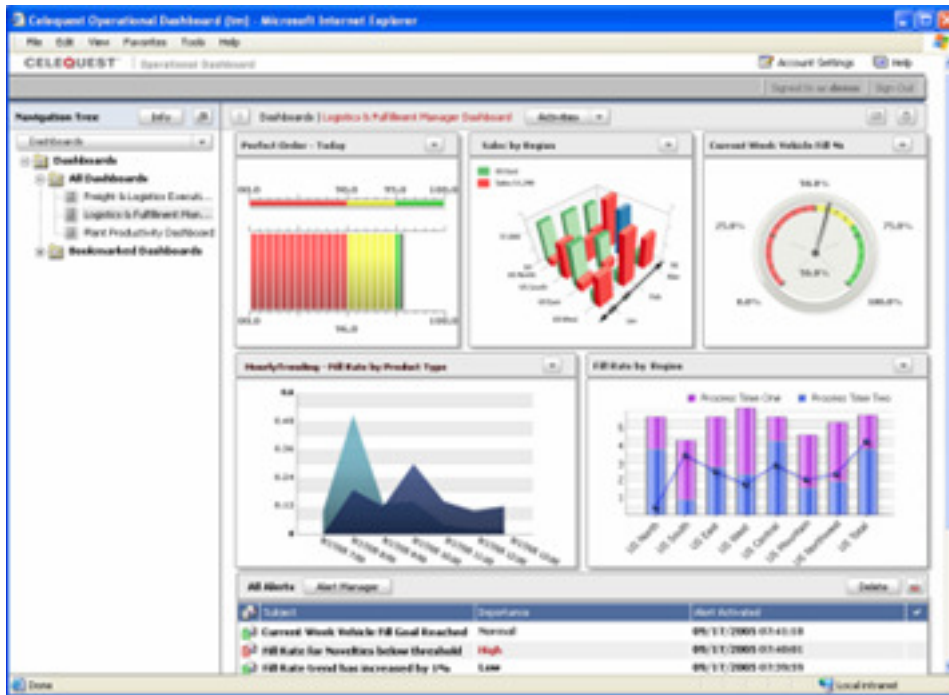
- **Dashboards**
  - Translate complex information into high-impact presentations
  - Allow you to spot changes
  - Are highly intuitive
  - Align decision makers

Self Service – User Centric Studios

Compound reports

Icon/graphic

DB2

Highlights/Linkages

Oracle
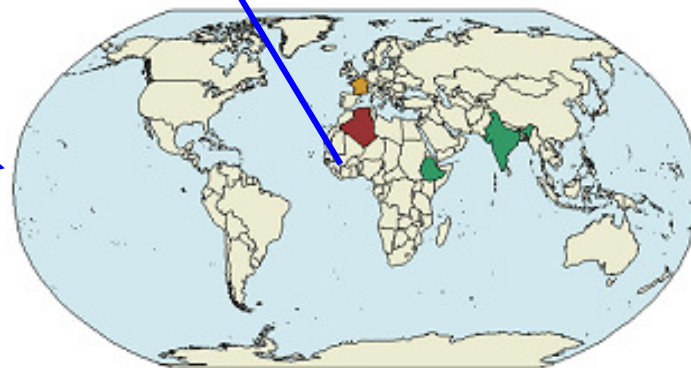
Multi-dimensional analysis – OLAP

Cognos Viewer - Regional Performance

Regional Performance

R_REGIONKEY: 1
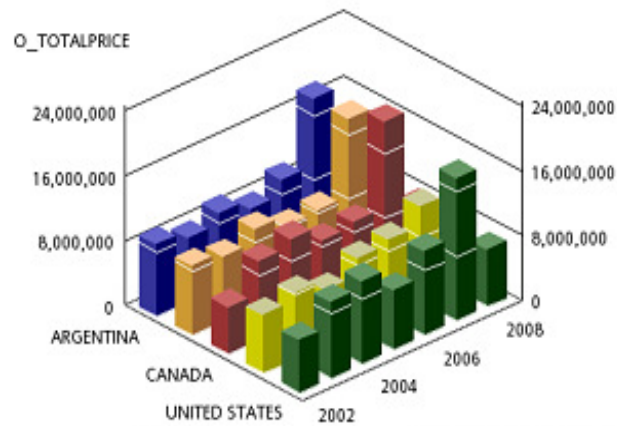
O_TOTALPRICE	2002	2003	2004	2005	2006	2007	2008
ARGENTINA	8,903,234.52	7,865,636.13	9,261,800.28	7,974,006	9,829,223.82	18,085,415.46	9,253,722.44
BRAZIL	8,641,797.5	7,988,007.71	9,611,839.88	8,165,500.15	8,464,643.68	17,982,437.04	9,911,745.28
CANADA	5,853,351.63	9,718,616.01	10,763,358.4	8,763,704.71	9,276,182.17	19,912,845.16	7,621,027.42
PERU	7,187,485	8,151,364.97	6,698,209.7	8,907,036.06	9,406,884.87	11,771,766.12	8,362,814.64
UNITED STATES	6,453,242.64	9,369,248.47	10,245,887.71	7,351,463.72	10,351,386.81	17,645,357.82	7,032,636.14

Inform Decisions with Statistics and Predictors of "What Might Happen"

Advanced Analytics

- Predict future events and proactively act upon that insight
- Use data collection to capture customer attitudes and opinions
- Apply text and data mining to uncover previously undiscovered patterns
- Apply advanced statistical analysis to raise confidence in conclusions
- Deliver KPPs and other predictive results with other BI content to enrich existing reporting and analysis
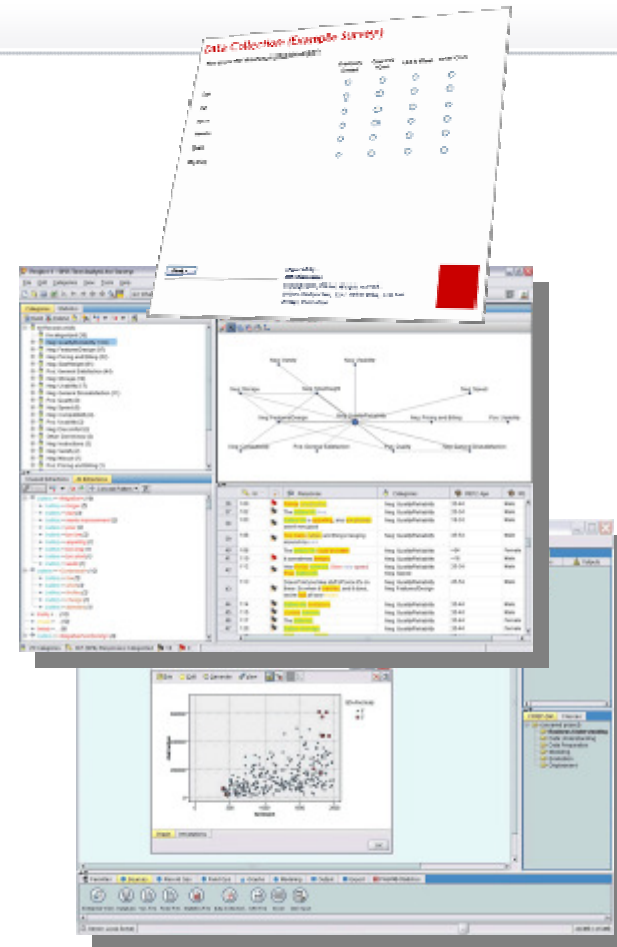
The Four Styles of Analysis

Broad Usage
(Consumers)

Focused Usage
(Specialist)

| Analytical Reporting
Drill | Trending
Slice and Dice | Scenario Modeling
What-if | Predictive Modeling
What might be |
|---|---|---|---|
| • Top down view
• Drillable reports
• Sort top & bottom
• Analyze then query | • Personal exploration
• Compare & contrast
• Rotate and nest
• Work disconnected | • Model scenarios
• Reorganize, reshape
• Compare scenarios
• Save versions | • Uncover patterns
• Apply algorithms
• Mine data and text
• Predict outcomes |
| • Market shifts
• Product ranking | • Sales trend analysis
• Market analysis | • Financial analysis
• Profitability analysis | • Fraud prevention
• Churn analysis |

IBM Cognos 8 BI Reporting

IBM Cognos 8 BI Analysis

IBM Cognos 8 BI Café

IBM Cognos TM1

IBM DB2 or SPSS

IBM® Enterprise Advance
Advancing Business Intelligence

IBM

Challenges in Frontline Operations

- Sub optimal utilization of front line agents and customer service reps
    - largest line item expense, call center, field service, customer service
    - results in angry, frustrated, churning customers
- Sub optimal resource utilization
    - energy, electricity, water waste, etc
    - supply chain – production, logistics, dispatch inefficiencies
    - online ad space/time for Google Key Word Search
    - Inefficiencies result in higher costs for consumers/businesses & lost opportunities for incremental revenue
- Managing increasing decision complexity with *__increasing speed and decreased time to act__*
    - More variables, more information to distill
    - Longer decision cycle equates to lost opportunities, less revenue
- Goals: Maximizing the customer renewals & retention while minimizing cost to serve and maintaining high customer satisfaction

IBM® Enterprise Advance
Advancing Business Intelligence

Cognos Now! Solution Investment Areas

Banking

- Transaction Processing
- CD Purchase Monitoring
- Program Trader Desktop

Utilities

- Grid Transmission Monitoring
- Dispatch/Field Service Utilization
- Smart Meter Monitoring

Telecommunications

- Churn Management
- Call Center Operations
- Agent Utilization
- SLA Monitoring

Green Sigma

- Monitoring emissions rate near real time or sub-hourly for carbon, electric, gas, water for facilities, plants, office buildings, etc.
- Carbon intelligence
- Electricity/Gas/H20 consumption

Insurance

- Online Sales Agent Utilization

Manufacturing

- Quality Management
- Delivery Monitoring
- Fulfillment / Logistics

IBM Cognos Now! – Real Time Monitoring

For critical, intra-day monitoring of operational KPIs and metrics
- Aggregated across multiple transactional systems and data sources
- No BPM system required

Closed loop business optimization
- Complete loop from monitor to alerting to corrective action
- Identify, customize operational KPIs and metrics
- Understand and perform root cause analysis
- Drive rapid, effective decision-making and action

Autonomy for line of business user
- Self service model
- User-defined thresholds, alerts
- Graphical watch points
- Customization by end users

Cost effective, low risk and rapid deployment
- No roles based pricing, unlimited user pricing in Americas
- Prepackaged hardware, software or VM appliance
- ***We are exploring the connectivity between Cognos Now! And CICS CBE***
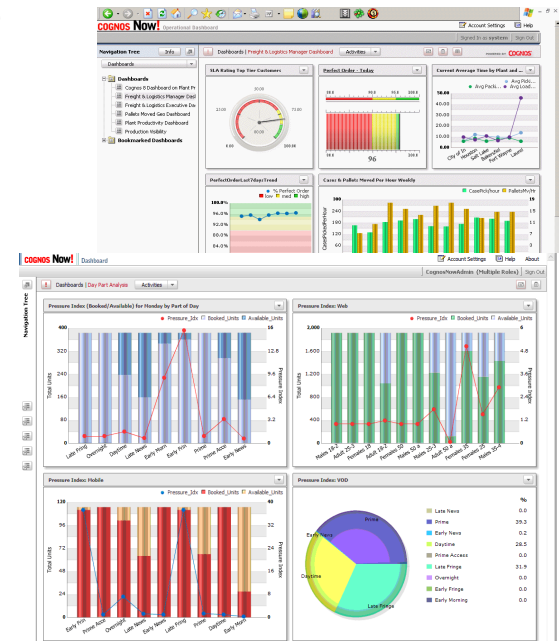
CICS and Event Processing Overview

Development & Deployment Tools

Existing
Business
Logic

**Code
NOT
changed**

Captured

Events

CICS Event Processing

**Event Capture
Filtering
Enrichment
Formatting
Routing**

Extensible

Secured
Monitored
etc.

Events

CICS Transaction Server for z/OS

**Cognos.
software**

**WebSphere
Business
Events**

**WebSphere
Business
Monitor**

**Other
Event
Consumers**
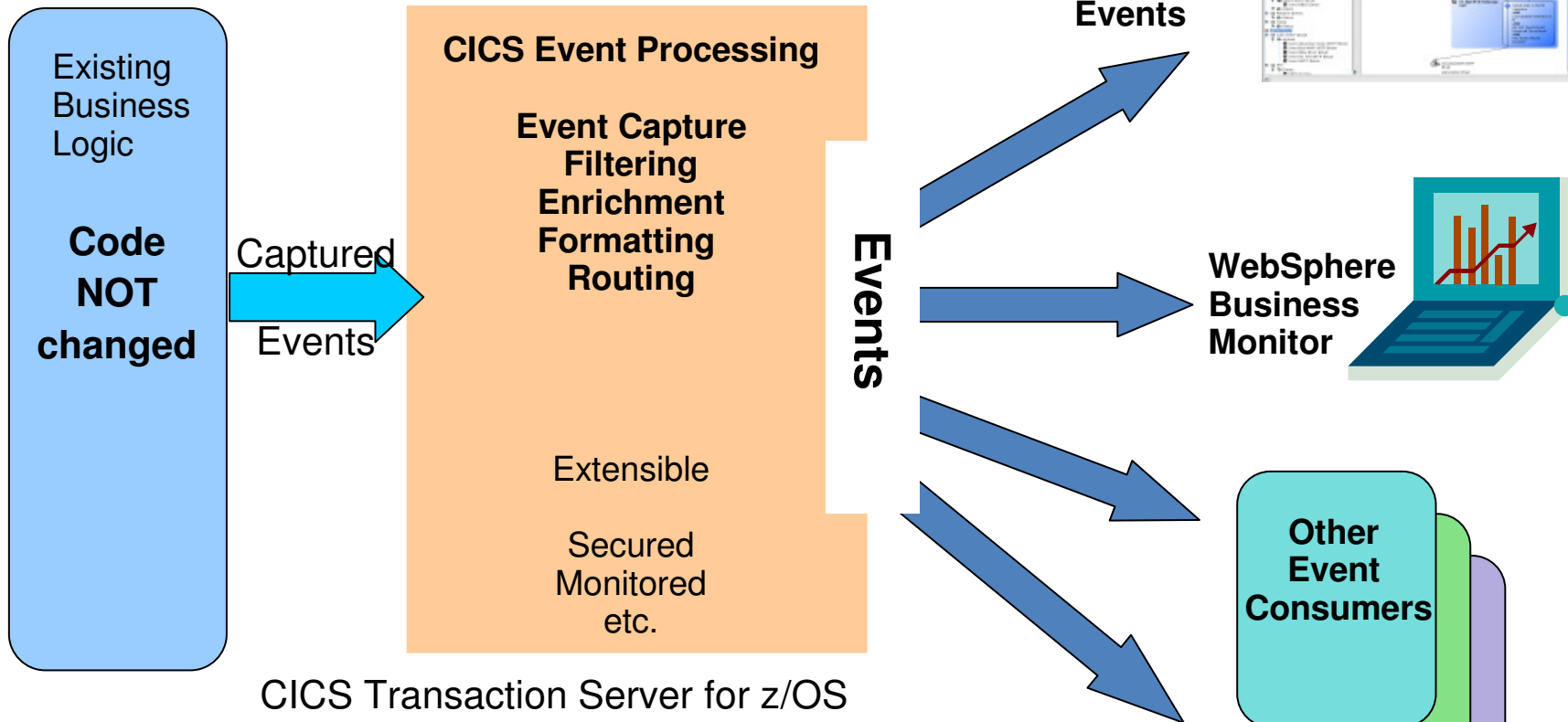
IMS Integration with Cognos

Topology
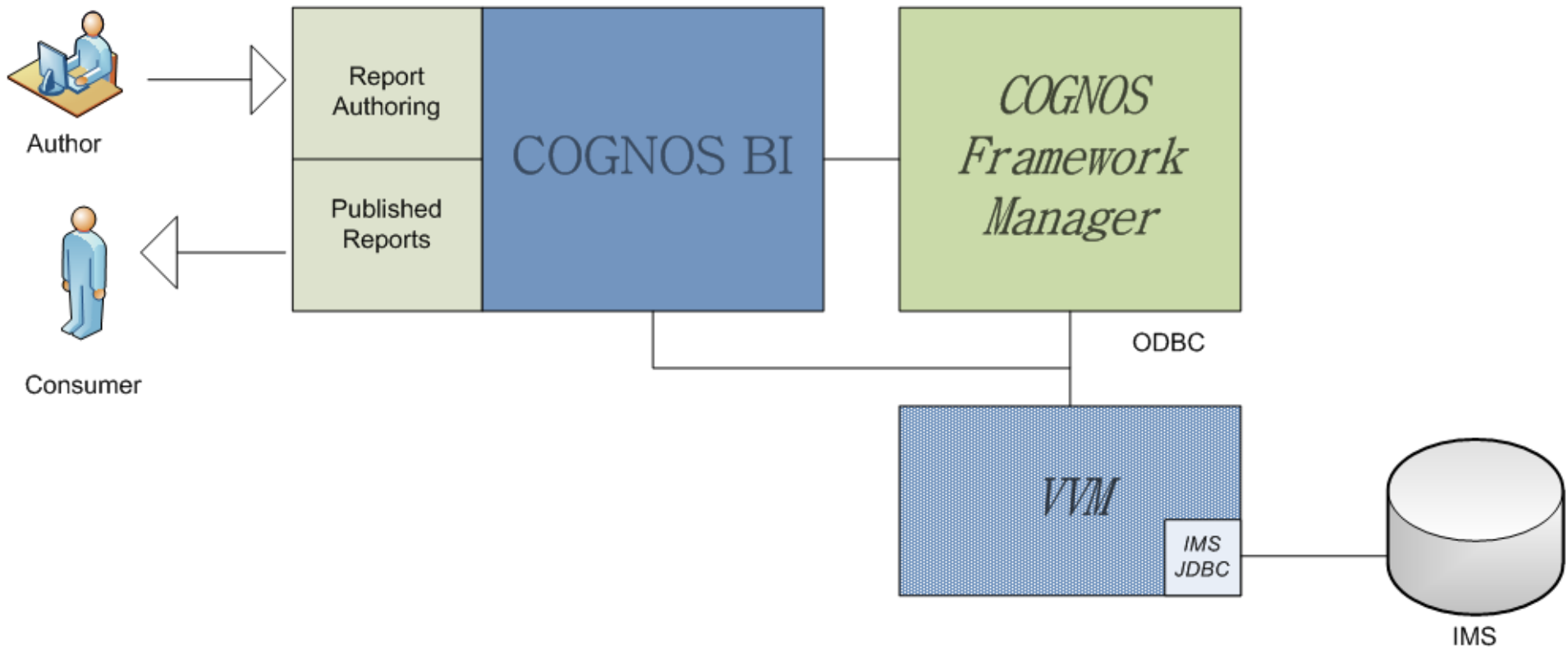
IBM FMS – currently running 47,000 users of Cognos 8 on System z - proof of Success with User Requirements

Yes we are now drinking our own Kool-Aid!!

Replaced previous system in 5 months

– Exorbitant ISV charges erased

– On-demand reporting model

– WW deployment with substantial cost savings

Simplified User Experience

– Single, unified web portal for all their FMS reporting needs supporting multiple browsers

– Reduced number of reports (from 14 to 4) providing the same level of information

– Data populated on existing reports dramatically decreased due to drill down capabilities

– Significant improvement in reporting performance and response time

– Users now quickly and easily define what information they view and how they access it

Increased User Adoption

– Accommodated a larger user population as a result of System z strengths and capabilities

– Ran approx. 350,000 reports in the 1st 5 months, validating fast and broad user adoption

Delivered Increased analysis value to the Business

– New information for Territory Analysis - assist managers in analyzing a seller's territory coverage before achievement and commission payments are available

IBM® Enterprise Advance
Advancing Business Intelligence

IBM

Introducing IBM's *Blue Insight*

In the spotlight

IBM

*Our commitment to informed decision making led us to consider private cloud delivery of Cognos via System z, which is the enabling foundation that makes possible **+$20M savings over 5 years**.*

-IBM CIO Office

Blue Insight enables IBM to deliver business intelligence (BI) with greater efficiency across the enterprise

- Establishes a corporate strategy for service delivery of BI
- Reduces the time and cost to deliver BI to new divisions and departments
- Maintains current departmental business processes, corporate security and compliance
- Maximizes departmental budgets by subscribing to standard services
- Private cloud solution implementation offers economies of scale and flexibility
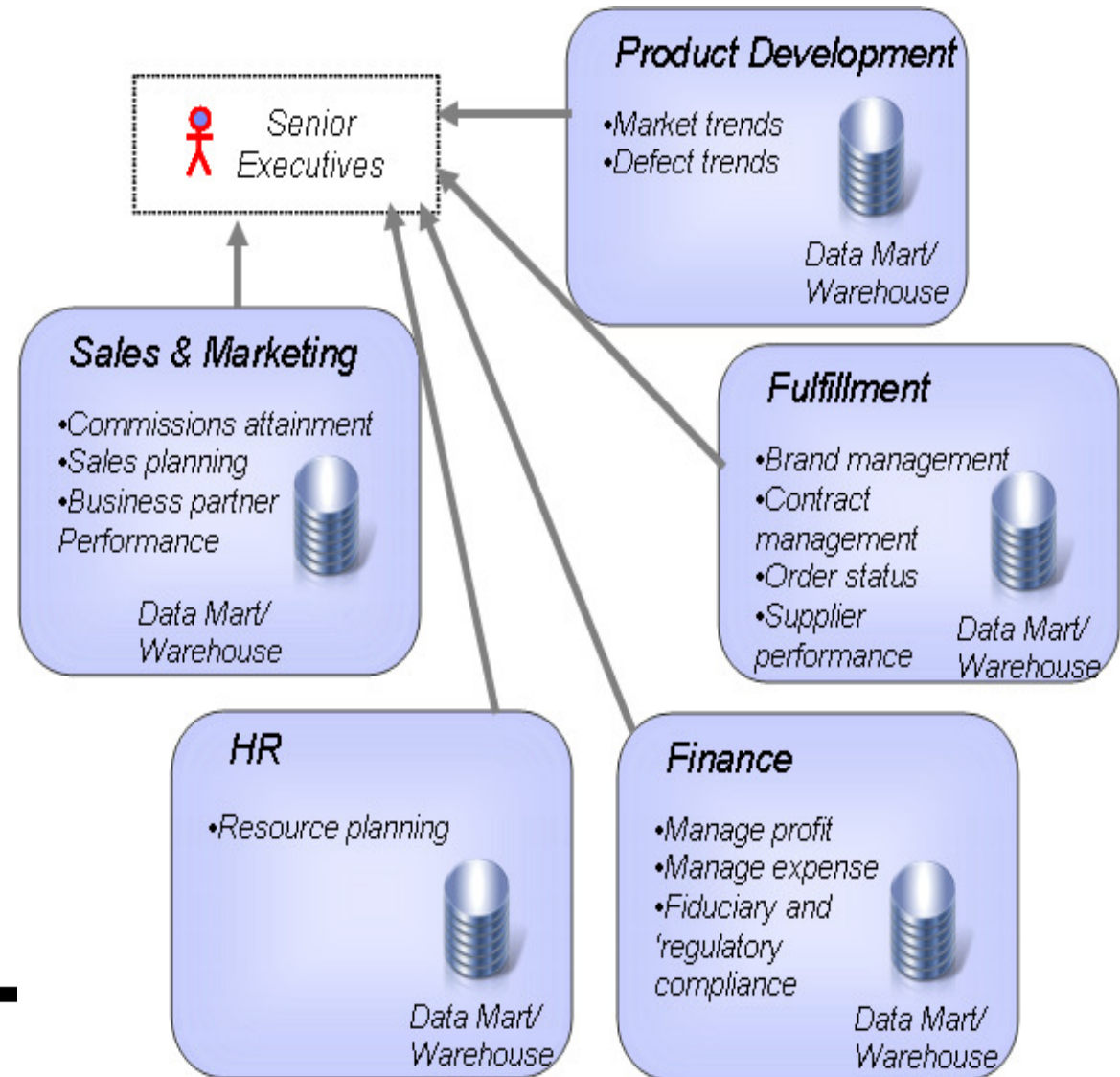
Customer results:

- Consolidating +20 multi-product, departmental BI deployments to Cognos 8 BI on System z
- Deploying a private cloud to support +200,000 named users across our global workforce
- Realizing value from +60 data sources across IBM

Learn more: http://www.ibm.com/systems/z/solutions/cloud/smart.html

IBM® Enterprise Advance
Advancing Business Intelligence

IBM

Evaluation of IBMs Historic BI Environment

- Segmented investments in BI tooling and infrastructure
  - Budget distribution based on operational process, relegated BI investments selection to affordability
- Silo'd metric development
  - Redundant and possibly competing
- Lack of tooling standardization
  - Multiple 3rd party vendors
  - Inflexible BI staffing
- Limited visibility to the total cost of business intelligence costs for the enterprise
  - Top down budget distribution
- Organizational reluctance to a centralized service
  - "Been there before" reaction
  - Fear of loss of autonomy to react to local business drivers

Senior Executives

Product Development
- Market trends
- Defect trends

Data Mart/ Warehouse

Sales & Marketing
- Commissions attainment
- Sales planning
- Business partner Performance

Data Mart/ Warehouse

Fulfillment
- Brand management
- Contract management
- Order status
- Supplier performance

Data Mart/ Warehouse

HR
- Resource planning

Data Mart/ Warehouse

Finance
- Manage profit
- Manage expense
- Fiduciary and 'regulatory compliance

Data Mart/ Warehouse

IBM Business Issues

- Need to move at "business speed"
  - Adopters need to be able to react to changing business needs in real time
- Predisposition to maintaining control and autonomy over business metric delivery solutions
  - Reluctance to relegate responsibility for unit level BI KPIs and solutions that deliver status
  - Need to tailor information to specific consumer needs
- Investment decisions are made based on budget
- Business distracted with operational support for tooling, reducing focus on business problems

IBM IT Issues

- **Lack of BI/Analytics strategy**
  - Drove independent evaluation and investment decisions in BI tooling
  - No common SW and HW standards
- **Fractured BI skill pools**
  - Different BI tooling did not lend itself to workforce flexibility
- **High infrastructure costs**
  - Decentralized Infrastructure and SW costs increased initiative costs
  - Reduced the number of initiatives that could be funded
  - Server utilization was poor
- **Long deployment times**
  - Each deployment required HW acquisition and SW installation
- **Inability to share content between distributed BI deployments**
  - Drove duplication of efforts
  - Conflicting content
  - Questions regarding trusted metrics and data source usage

IBMs Strategic Response

- Deliver centralized defined BI services
  - Leverage our "Greener planet" strategy and investments
  - Common Boarding process, infrastructure and operations
- Align solution pattern with adopter usage pattern
  - Share all available, elastic and reliable BI infrastructure
    - zSeries, WAS, DB2 and Cognos 8 BI
  - Standardizes tooling strategy
  - Enables flexibility of BI delivery skills
- Delivery pattern allows adopters to maintain solution autonomy
  - Focus is delivery of a defined service

IBM® Enterprise Advance
Advancing Business Intelligence

IBM
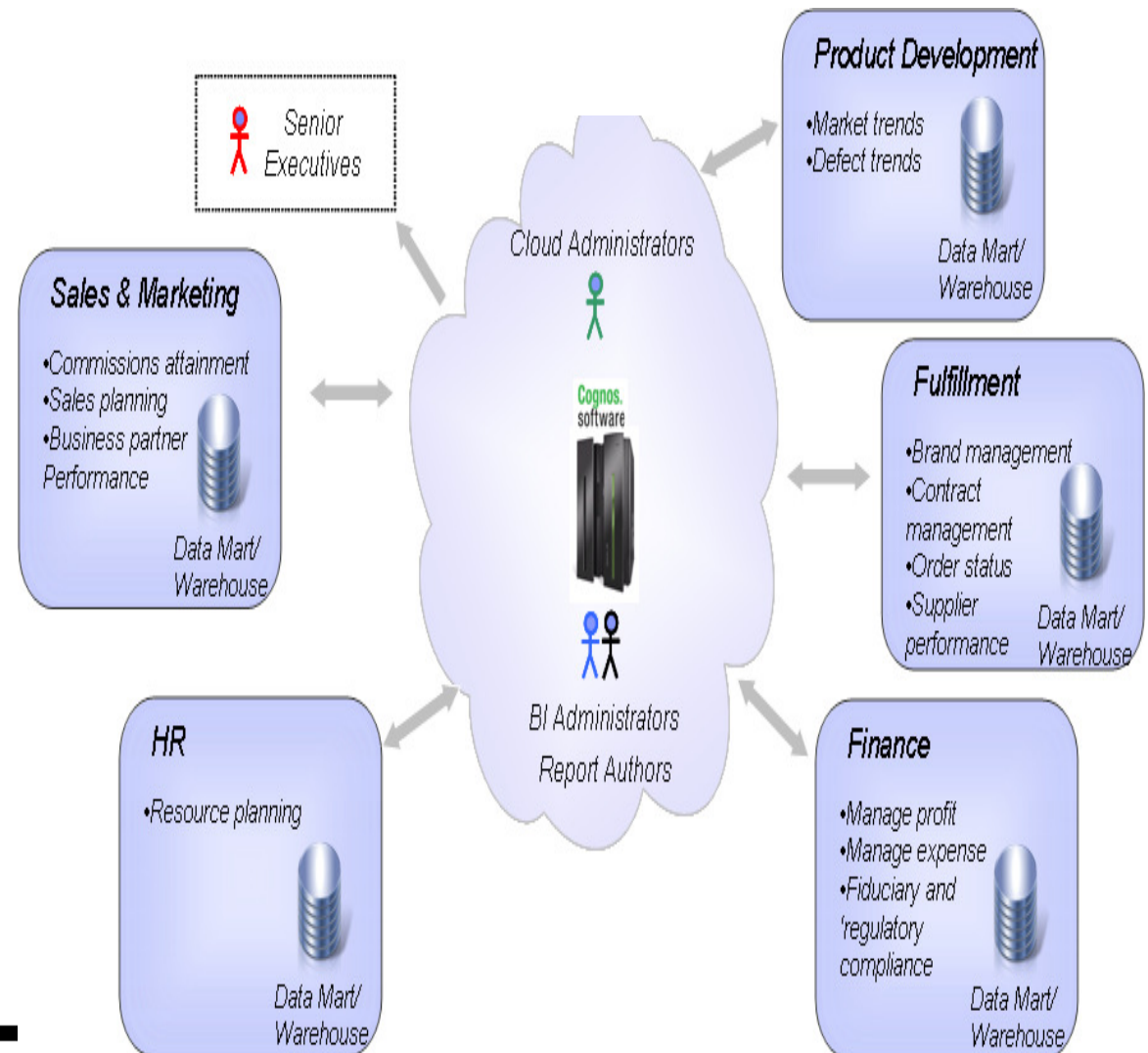
What Exactly is *Blue Insight?*

Transformational technology delivery matched with process and solution delivery model changes

- **Common BI "appliance like" service for delivering Business Intelligence to IBM**
  - Common extensible infrastructure (HW & SW)
  - Common operational support
  - Common management of Cognos 8 BI *licensing* and Level 3 *support*

- **Common service definition and boarding process**
  - Defined BI tooling service scope (Reports, Adhoc, cubing, pervasive, etc)
  - Defined standard security and LDAP management
  - Common operational processes

- **Business intelligence experts to assist adopters**
  - BICC - (Business Intelligence Center of Competence)
  - Consultants available to assist in solution definition and consumption of service

- **Blue Insight is NOT an enterprise data strategy or a portal strategy**
  - Assumes data consumed by reports is a trusted part of the enterprise data strategy
  - Initial scope of Blue Insight was to use the standard Cognos portal delivery

Why System Z for Blue Insight

- System Z allowed us to **start** with our **final** architecture

  – Our initial implementation was "right sized" for our fist year projected adoption
  – Blue Insights implementation has grown ~ 20% in 2010 to accommodate adopters
    - Result was simply adding resources (IFLs, Memory) with no architectural changes

- Operations simplification

  – Growing adopter base does not produce new "moving parts"
  – Supports broader centralization strategies of data warehousing, business intelligence and predicative analytics on a single platform

- Time to value
  – Small to large implementations of BI do not go through a lengthy capital cycle
    - Months of ROI justification and deployment
  – "Always on" service is not limited to initial adoption but provides predictable service for lifecycle content changes

Initial Business case : > $25M Savings over 5 years...
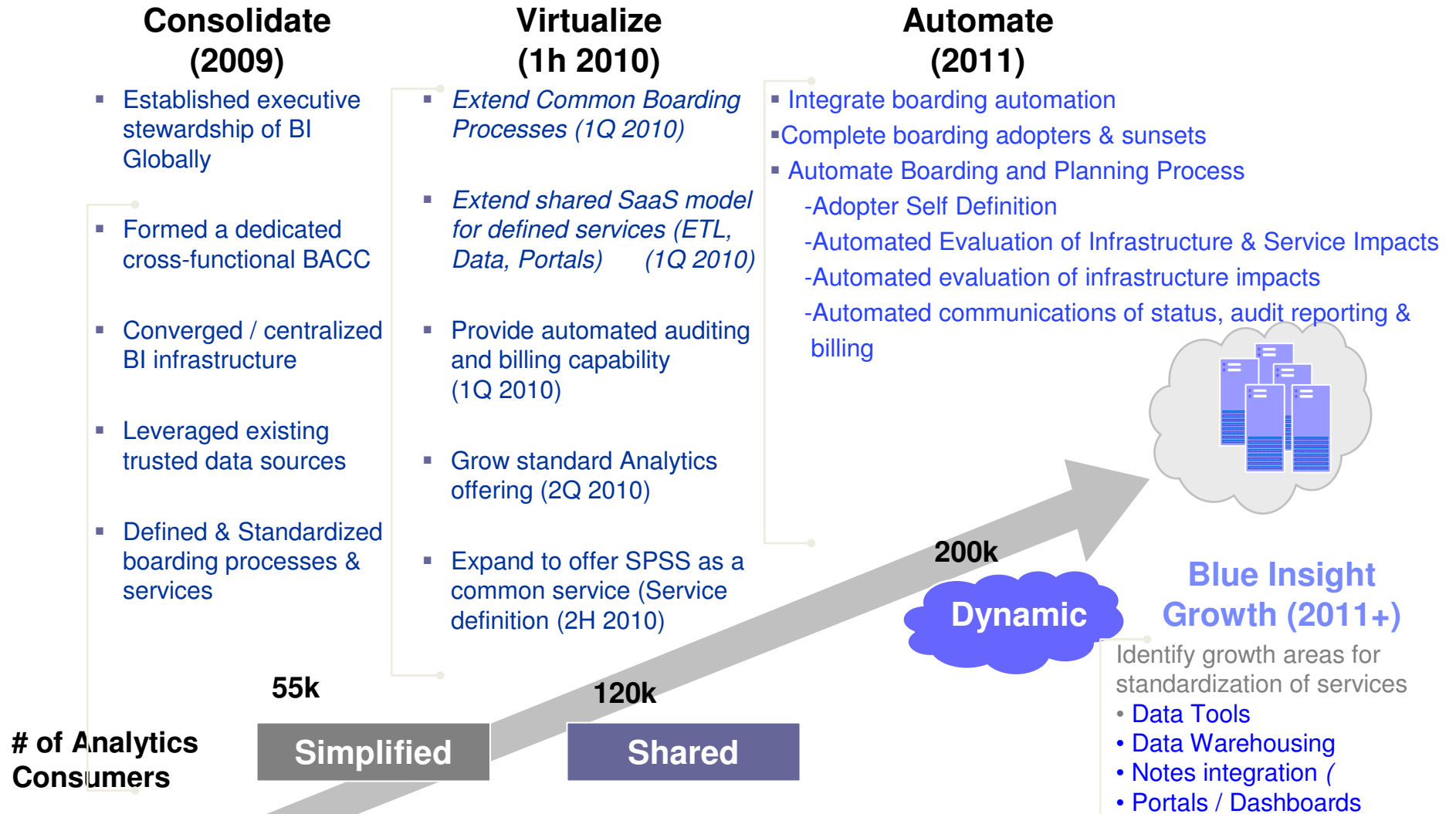
- Business case categorization

  - Infrastructure
  - Operations
  - Skill efficiency

VIRTUALIZATION + **STANDARDIZATION** + **AUTOMATION**

VIRTUALIZATION	STANDARDIZATION	AUTOMATION
Z10 Infrastructure	Common service definition	Web 2.0 Boarding application
Shared peripheral infrastructure	Common security	Automated choreography & administration
Shared middleware	Common promotion process	Predictive planning
Shared Cognos V8	Common operations process	Automated provisioning
60% •HW Consolidations •SW Costs •3rd Party vendor savings	35% •Operations efficiency •Development efficiency •Improved time to value	5% •Adopter administration * - Future focus

Reduced Cost

Increased Flexibility

IBM's Transformation and Deployment Plans for Blue Insight

Consolidate (2009)

- Established executive stewardship of BI Globally

- Formed a dedicated cross-functional BACC

- Converged / centralized BI infrastructure

- Leveraged existing trusted data sources

- Defined & Standardized boarding processes & services

Virtualize (1h 2010)

- *Extend Common Boarding Processes (1Q 2010)*

- *Extend shared SaaS model for defined services (ETL, Data, Portals)   (1Q 2010)*

- Provide automated auditing and billing capability (1Q 2010)

- Grow standard Analytics offering (2Q 2010)

- Expand to offer SPSS as a common service (Service definition (2H 2010)

Automate (2011)

- Integrate boarding automation
- Complete boarding adopters & sunsets
- Automate Boarding and Planning Process
  - Adopter Self Definition
  - Automated Evaluation of Infrastructure & Service Impacts
  - Automated evaluation of infrastructure impacts
  - Automated communications of status, audit reporting & billing

Blue Insight Growth (2011+)

Identify growth areas for standardization of services
- Data Tools
- Data Warehousing
- Notes integration (
- Portals / Dashboards

Dynamic

200k

120k

55k

Simplified

Shared

# of Analytics Consumers

IBM® Enterprise Advance
Advancing Business Intelligence

IBM

IBM WW Blue Insight Scope

Service delivery scope is business domain agnostic…

- Who is using *Blue Insight*
    - Adopters cover <u>all Geographies and business process areas</u>
    - User groups range from 50 K to < 50 users
        - Sales Commissions
        - Sales Management
        - Sales Operations
        - Supply chain – Fulfillment, Procurement
        - Finance – Expense, revenue
        - Brand/Unit reporting
        - Channel reporting – Direct, Business Partner, Web
- How many users does *Blue Insight* support
    - 2009 – 72K users (exceeded 2009 objective of 55k)
    - 2010 projection is 130K users (currently 131K users have boarded – exceeded expectation)
    - 2011 projection is 200K users (expected to hit steady state)

IBM® Enterprise Advance
Advancing Business Intelligence

IBM

Summary of Lessons Learned To Date

- Executive sponsor with political collateral is critical to establish the strategy
- Socialization of key stakeholders is critical and should start early
- Make it clear that common service <> take away key personnel and solution autonomy
- Define your service and insure your IT team sticks to that scope, don't slip into solution delivery
- Make is clear to adopters what the process is to board
- Make is clear to adopters the level of service that is available
- Focus on operational excellence
- Cost reduction is achievable
- Reduced time to value is achievable
- Pattern of BI service delivery is repeatable for other common services
- New business usage patterns will emerge requiring extension of standard services
- Bill back methodology needs to be transparent and as simple to plan for as possible

Smart Analytics Cloud

A private cloud optimized for analytic services in large enterprises

	Defined as …	To create…	That delivers …
Smart Analytics Cloud	IBM Smart Business - services with industry leading hardware & software	A private cloud computing solution for business intelligence (BI) & analytics	A services solution for delivering business intelligence to the entire organization

IBM software

Cognos 8 BI
A broad range of BI capabilities

Web   Mobile   Search   Office

Reporting   Analysis   Dashboards

Open, enterprise-class BI platform

IBM hardware

IBM System z
Centralize, Virtualize & Simplify the BI infrastructure

IBM Services

- Create awareness of BI and understand the needs for a BI strategy across the organization

- Complete a readiness assessment to define the scope and priorities for the solution

- Deploy Cognos 8 BI for Linux on System z as a private cloud

- Provide the skills for the on going management & expansion of their BI private cloud deployment
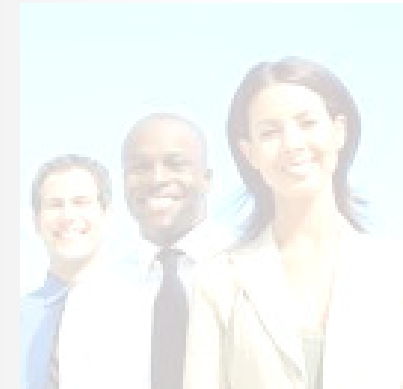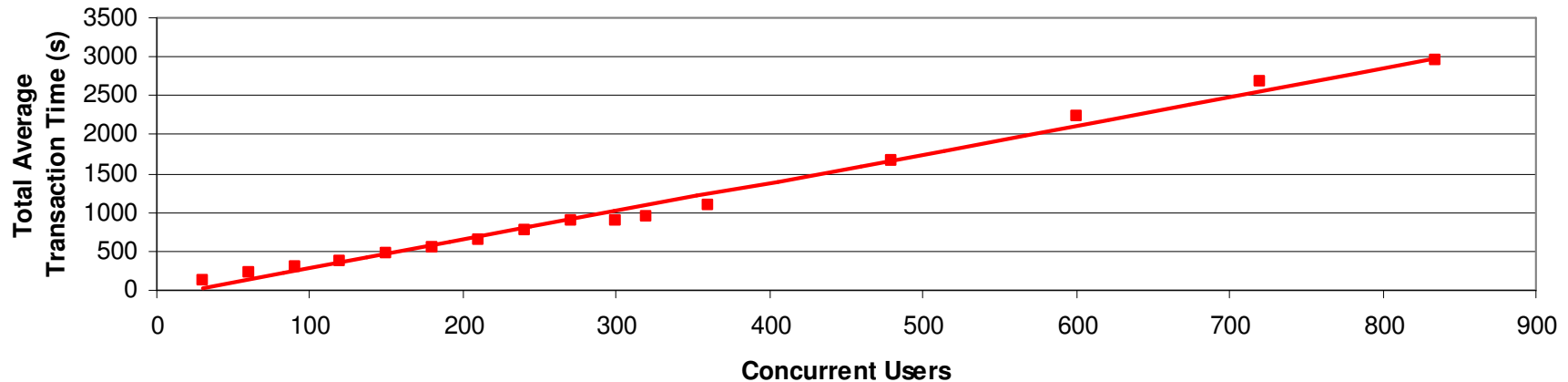
Proven that Cognos 8 BI for Linux for System z can:
Scale Across the Enterprise

IBM System z

*Testing demonstrated IBM Cognos 8 BI for Linux on System z **scales linearly** to large user groups.*

Linear Scalability
IBM Cognos 8 BI for Linux on System z

"**Cognos, ...makes it easy for companies to deploy BI and PM** to a broader user population, while **minimizing the resulting workload for IT** departments."

- Nucleus Research, Cognos Takes on the Rest of the Enterprise, November, 2007

IBM® Enterprise Advance
Advancing Business Intelligence

▪Testing was conducted on up to **90,000 named users**

IBM®

Numius Case Study

- **Numius tested an existing customer's distributed Cognos environment on System z**

  - The application was successfully and without loss of functionality ported to the System z platform. This required no redevelopment.

  - The client's application would not require a redesign to accomodate its growth in data volumes or in terms of users.

  - Reports that are not practically useable at client's site now become relevant again. Reports that did not run at client's site now are runable.

  - Client would be able to serve many multiples of current number of users with the very simple architecture from this PoC.

  - Client could scale out to more complex architecture without increased hardware complexity.

  - ***Throughput (not clock speed) 400x that of distributed***

  - Much of the improvment was a result of the processing synergy between Cognos 8 BI on System z and DB2 for zOS

50TB Summary – Operational BI validation

- System z and Cognos BI can respond to operational BI requirements
  - Successfully ran **400 active users** simulating call center agents accessing a prompted operational BI report
  - Average **1.75 seconds** response time for query and report creation per user over a 15 min run (steady state), at **56% Linux CPU** utilization
  - DB2 for z/OS provides **very efficient access** to operational BI data
- Cognos configuration options for Linux on System z
  - Multiple 31Bit WebSphere Application Servers on a single system
  - Varied resources assigned to Linux on System z and Cognos
- Load testing techniques using Rational Performance Tester
  - Strategic IBM tool for performance/load tests also recommended for customer tests
- Collateral
  - Best practices and results in Redbook: 50TB Redbook SG24-7674 http://www.redbooks.ibm.com/
  - Collected detailed performance measurement data

- All performance related data used in this section were done with Cognos 8.4 accessing a 10 TB z/OS DB2 data source and are further described in

Introduction to IBM® Cognos® 8 BI for Linux® on System z®

Deploying and Scaling IBM Cognos 8 BI for Linux on System z

Authors & Contributors:

Dean Browne
Mei Hing (Ann) Jackson
Ollie Jones
Tim Lighter
Mark McFadden
Frank Neumann
Andy Perkins
Mark Pilon
David Rossi
Jonathan Sloan
Jeffry Sullivan

December 2008

http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101437

IBM® Enterprise Advance
Advancing Business Intelligence

Cost Savings

Your IT Cost may vary:

- Up to 80% Saving in IT Cost
- Up to 96% Less Hardware
- – 760 x86 Processor Cores vs 26 IFLs
- Potential for dramatic reductions in software expense for processor based licenses
- Potential reductions in power and cooling
- – **Up to 93% Savings in KWatts and Energy Costs in this scenario**
- Up to 46% Less Space
- Up to 89% People savings
- Increased processor utilization
- Industry leading Security

Energize your IT savings with z10 EC.

Consolidating 760 Linux servers z/VM Virtualization versus x86
Oracle DB Workload
3-Year Total IT Cost

$56 M Savings versus x86 without Virtualization

Legend:
- Space
- Power
- People Cost
- Software Maint
- Software
- Maint
- Hardware

5.1 X	2.0 X	1.0 X
760 x86 CPs	248 x86 CPs	26 z10 EC IFLs
x86 w/o Virtualization	x86 Virtualization	z/VM Linux on System z10 EC
Sun X2100 Single Core servers	Dell Power Edge Quad Core servers	

80% Savings
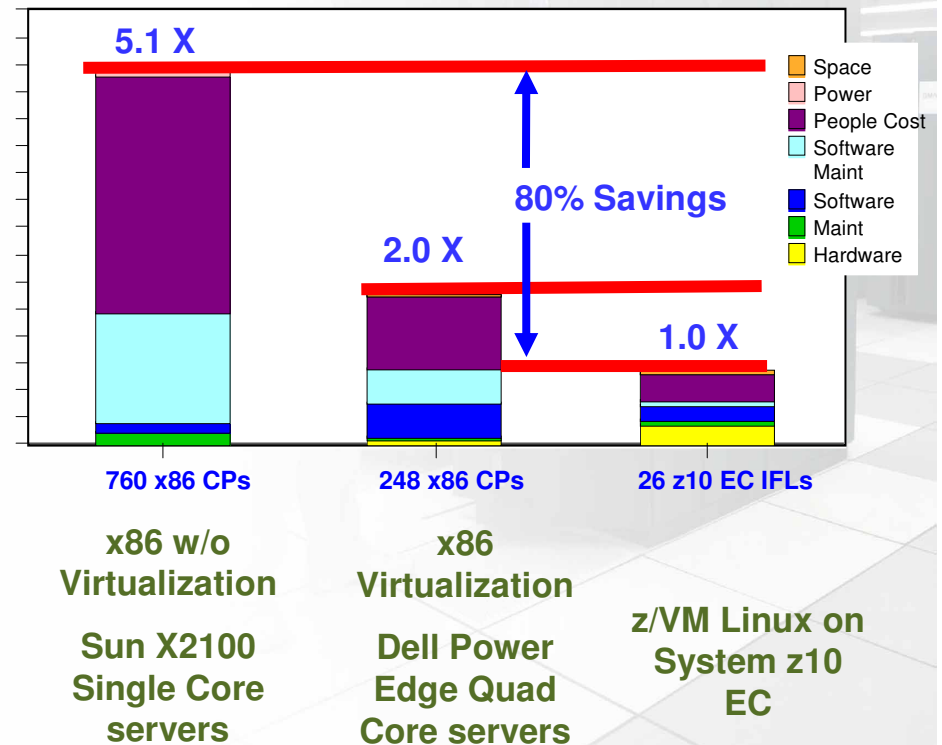
Virtualization Concepts
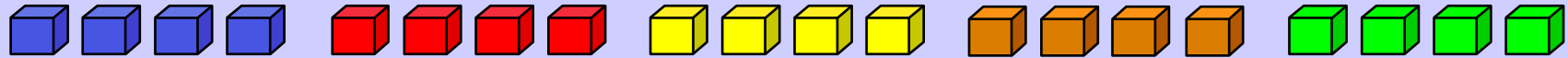
Virtual Resources
- Proxies for real resources: same interfaces/functions, different attributes.
- May be part of a physical resource or multiple physical resources.
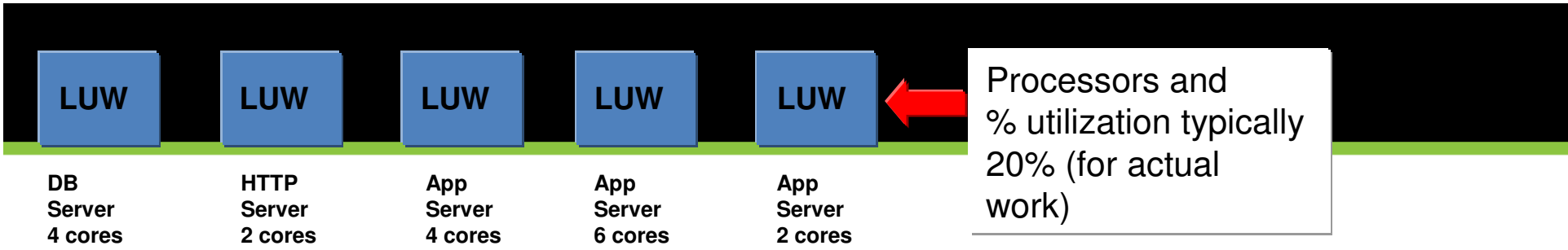
Virtualization
- Creates virtual resources and "maps" them to real resources.
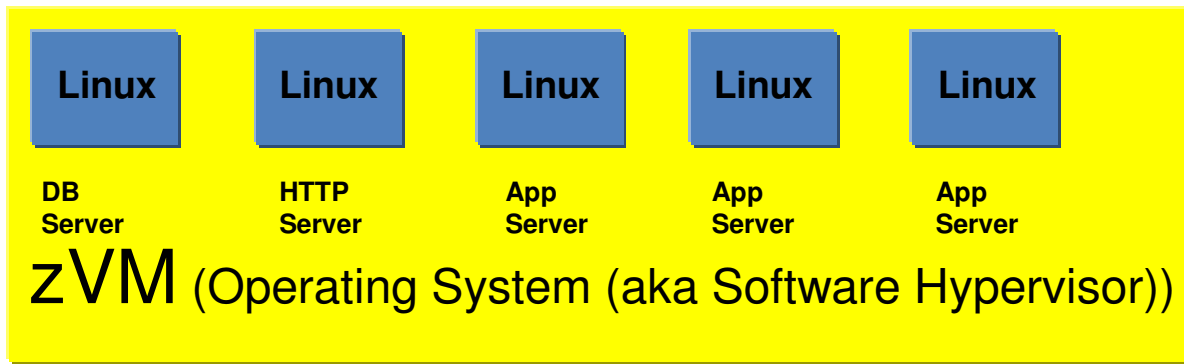- Primarily accomplished with software and/or firmware.

Resources
- Components with architected interfaces/functions.
- May be centralized or distributed. Usually physical.
- Examples: memory, disk drives, networks, servers.
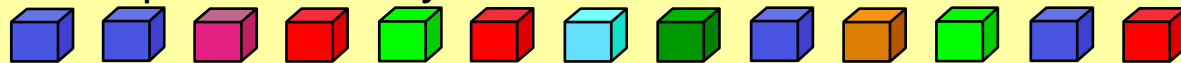
- **Separates presentation of resources to users from actual resources**

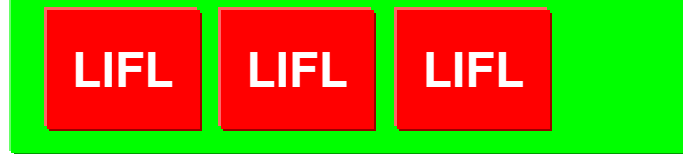- **Aggregates pools of resources for allocation to users as virtual resources**
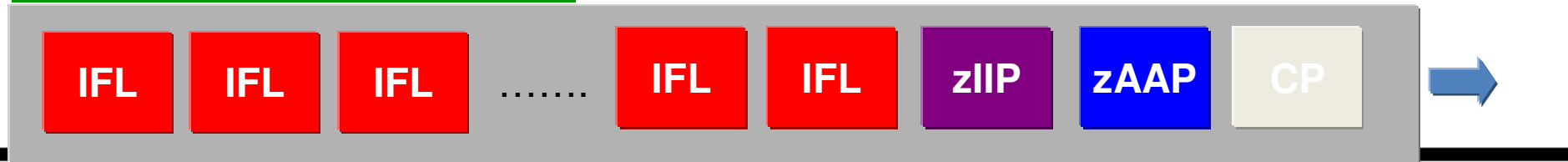
IBM Cognos 8 BI within a z/VM environment

"Distributed" Deployment with Over-commit

Content Manager

Cognos
WAS

Linux 1

Content Store

DB2

Linux 2

HTTP Server

HTTP Server

Cognos Gateway

WAS

Linux 3

Report Server 1

Cognos RS
WAS

Linux 4

Report Server 2

Cognos RS
WAS

Linux 5

| vCP | vCP | | vCP | | vCP | vCP | vCP | vCP | | vCP | vCP |

z/VM   vCP

IBM System z Mainframe

| GP | GP | GP | GP | GP | GP | zAAP | zAAP | zIIP | zIIP | IFL | IFL | IFL | IFL | IFL | IFL | IFL | IFL |
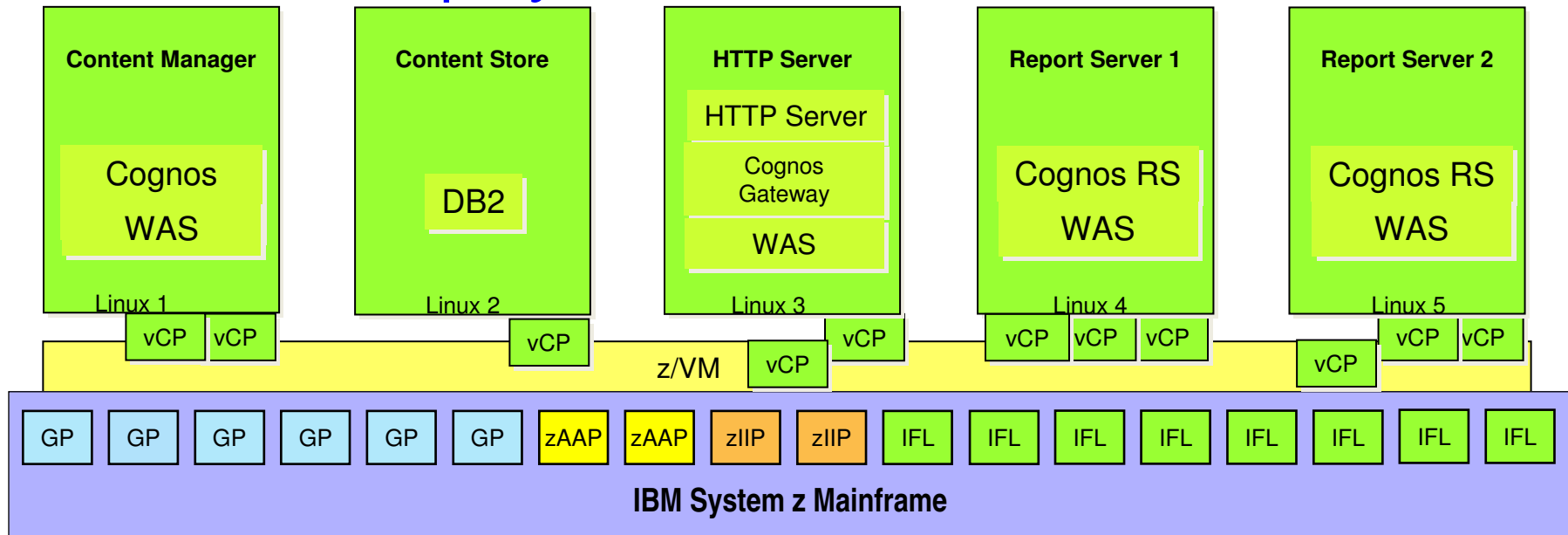
- ▪ Total allocation of real GPs/IFLs to z/VM remains the same
- ▪ Number of virtual Cognos instances – similar to other platforms' physical servers or partitions
- ▪ Individual Cognos components distributed on individual Linux "guest" servers
- ▪ Number of virtual CPs /Cognos instance increased on high CPU instances to enable use of excess capacity from low CPU instances
- ▪ Number of virtual CPs/Cognos instance should be less than or equal to number of GPs/IFLs assigned to z/VM LPAR
- ▪ Over-commit ratio (sum of virtual resource type/real resource type assigned to z/VM LPAR) varies from 1.5/1 to 20/1 or more – highly dependent upon how active the guest server is
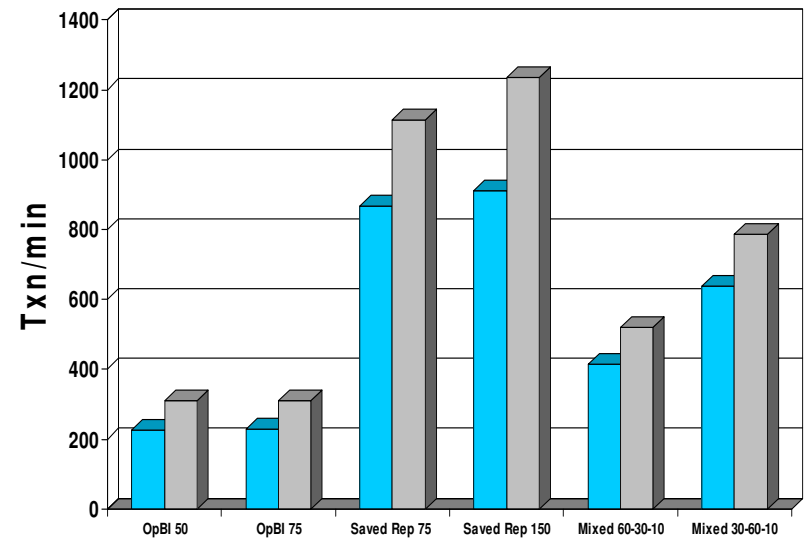
Multiple Linux systems
– virtualization with CPU over-allocation

Avg. txn duration (lower is better)
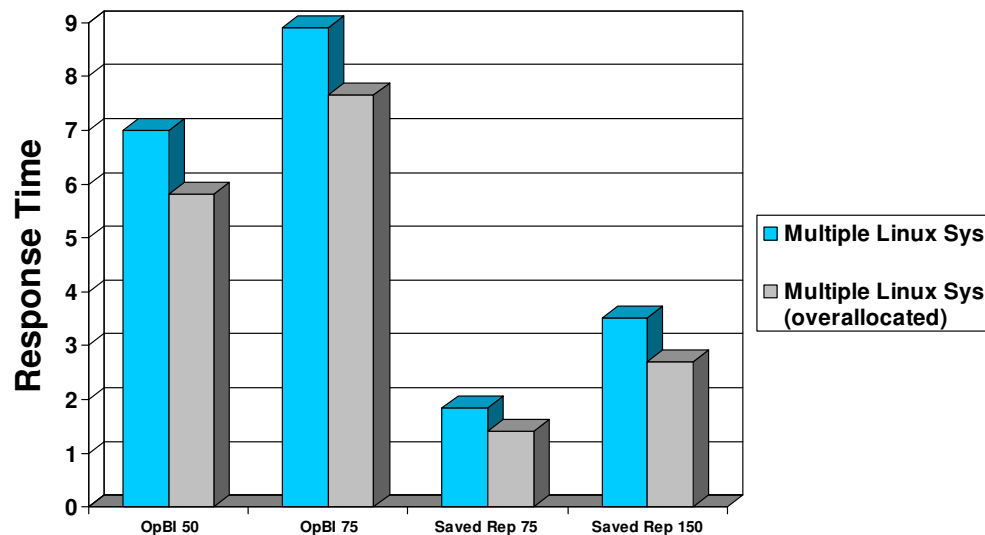
Throughput (txn/min) (higher is better)

Legend:
- **Multiple Linux Sys**
- **Multiple Linux Sys (overallocated)**

- With additional virtual CPU capacity available to the Report Server and HTTP Server, response times were lowered, and more transactions could be processed.

Summary

- IBM has heard you and responded
    - Information Server
    - InfoSphere Warehouse
    - Cognos 8 BI for Linux on System z
    - Cognos Now! for Linux on System z
    - Smart Analytics Optimizer
    - Smart Analytics Cloud
    - ISAS 9600
    - SPSS (future)
- We have invested billions in new technologies and building a new information-led infrastructure
- BI has evolved from a static, report-centric environment to a more real-time and embedded analytics model
- DW has evolved to a more global, federated, real-time environment
- We are using our own technology to change our business
- You can use it to change yours