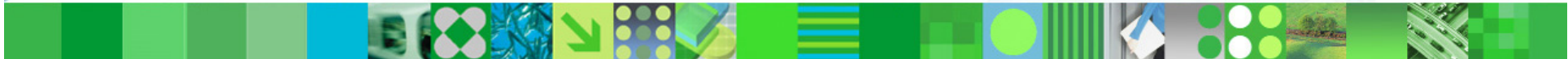




IBM Business Analytics on System z
*Delivering timely, accurate business information
quicker with less resources & expense.*

Cognos®
software



How do you answer the important questions?

Who? Where? When? How? Which? Why?

“...What is our risk exposure today ?”



“...Are we using our stimulus funding effectively?”



“...Which treatments are ineffective and should be eliminated to lower costs?”

“...Do we have product issues or fraudulent claims from service?”



“Our prices are lower than others. Is this sustainable given our costs, or a future threat?”



“...How & when should we adjust plans to reduce churn & expand share?”

Shifting Market Dynamics

Will your Infrastructure be able to Support the shift?

- Business Analytics: Strategic Asset/Mission Critical
 - Broader, more intense users
 - High availability & performance expectations
 - Access to more data
- Troubled economy
 - Do more with less – business & IT
 - Economies of scale/consolidation
- Corporate regulatory compliance driving security
- Environmental concerns



IBM: 2009 CIO survey results

CIOs select their ten most important visionary plan elements

- 3/4 of CIOs anticipate moving to a strongly centralized, shared infrastructure to improve economies of scale
- 83% say Business Intelligence & Analytics is their top focus area

Business Analytics

Full range of capabilities needed to inform the business

How are we doing?

Why are we on/off track?

What should we do next?



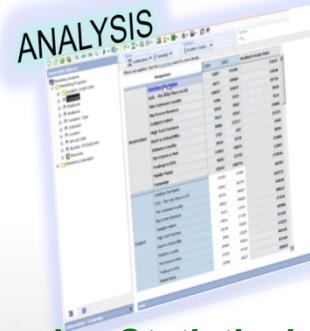
Real-time or historical; operational or strategic



Guided or self-service access and exploration...



Foresight using Statistical, and Predictive Analytics...



Executive



Business Manager



Casual Business User



Line Manager

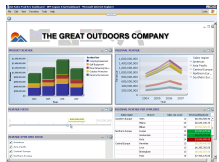


Business Analyst



Financial Analyst

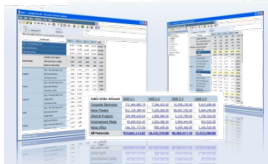
Business AnalyticsDemands are shifting!



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

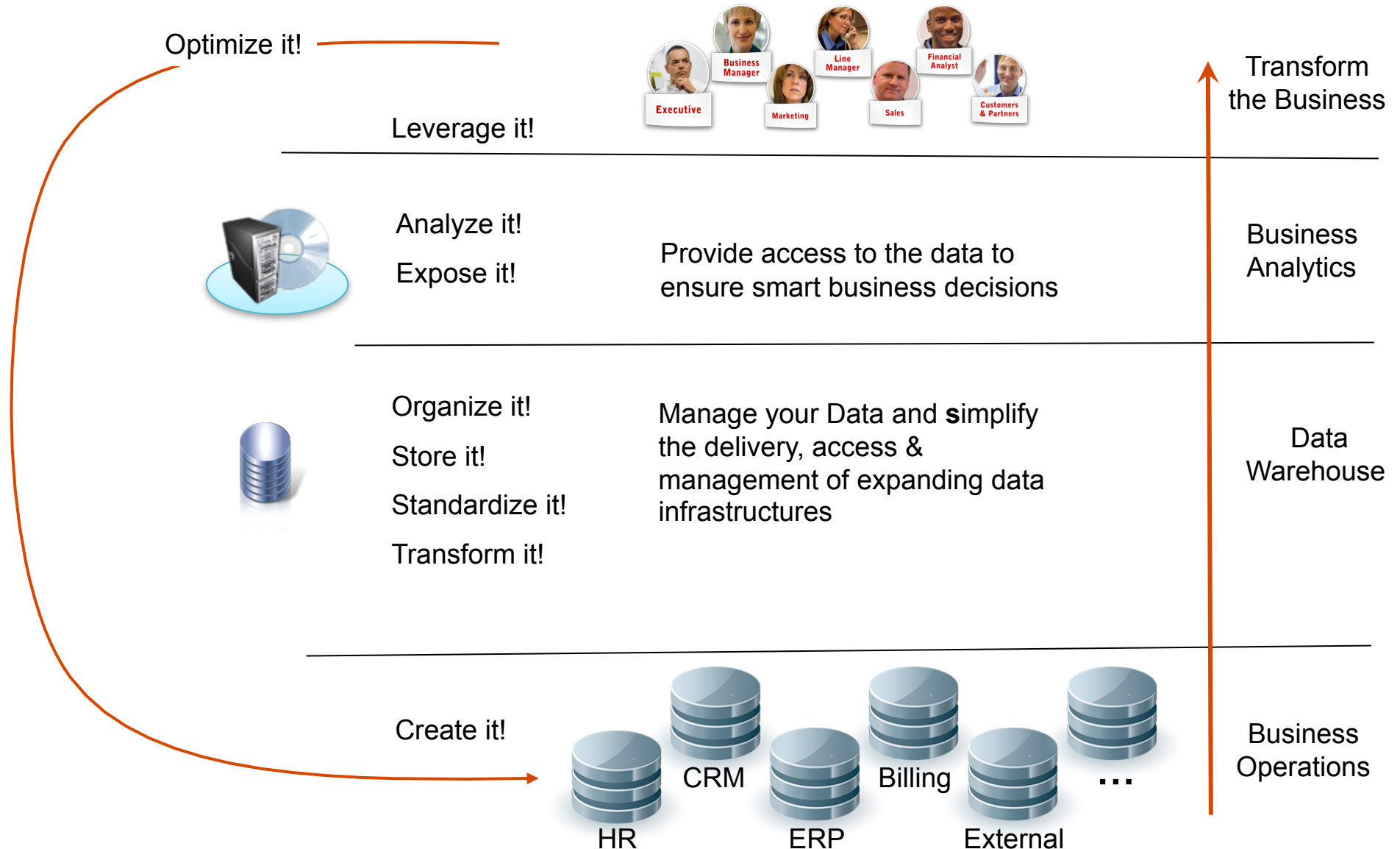


Security Providers & Firewalls



Platforms & Databases

The Journey to Smart Business Decisions

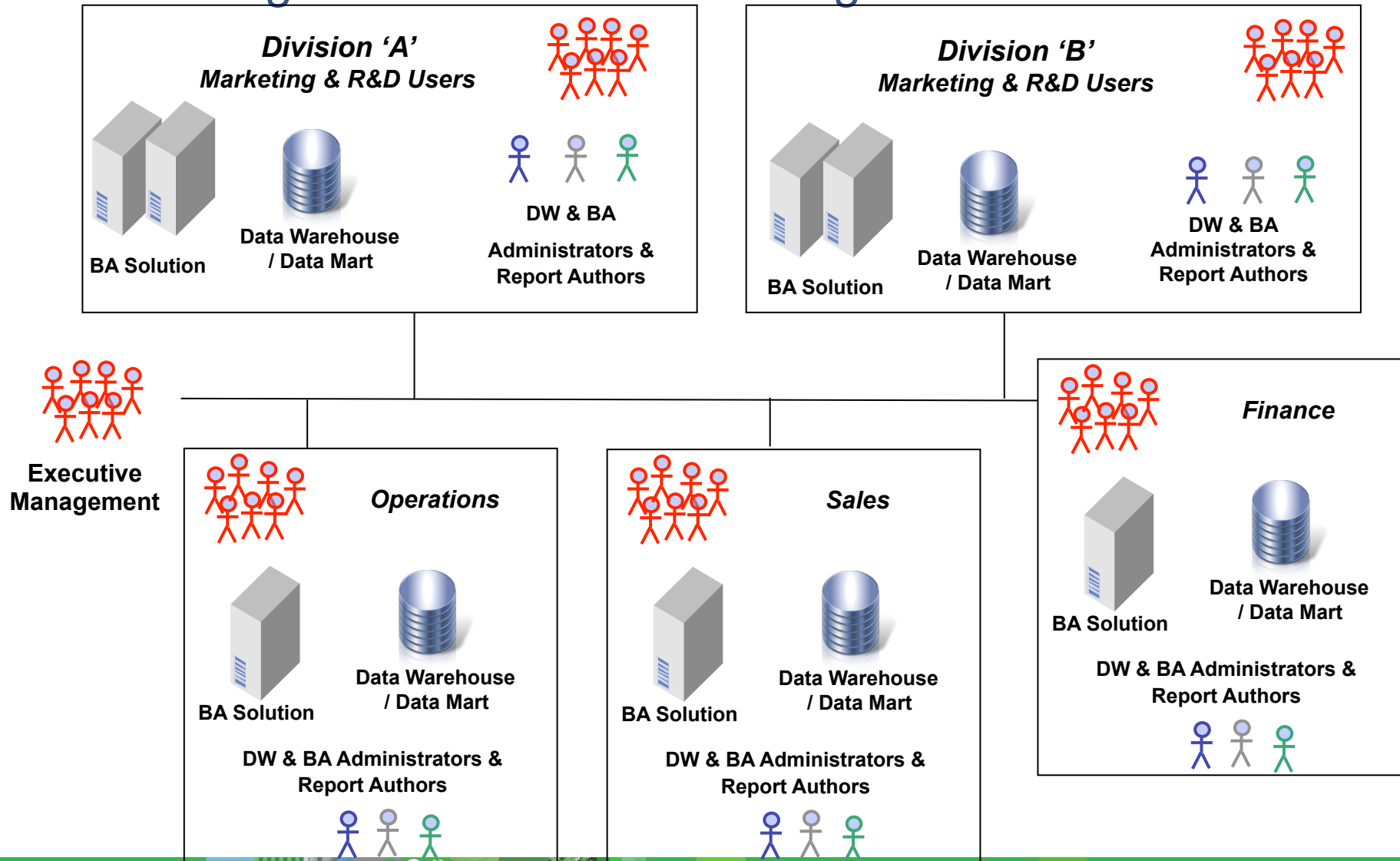


Challenges to deliver Enterprise Business Analytics

- *Growth in disparate / disconnected tools*
- *Infrastructure costs are getting out of control with multiple BI deployments*
- *Data quality is in question*
- *Business needs access to more data*
- *BA infrastructure can't scale to meet growing business needs*
- *Departmental compliance in question to meet corporate and regulatory requirements*
- *No visibility of user access to sensitive data and varying levels of security*
- *Disaster recover plans are too costly to implement for mission critical BA*



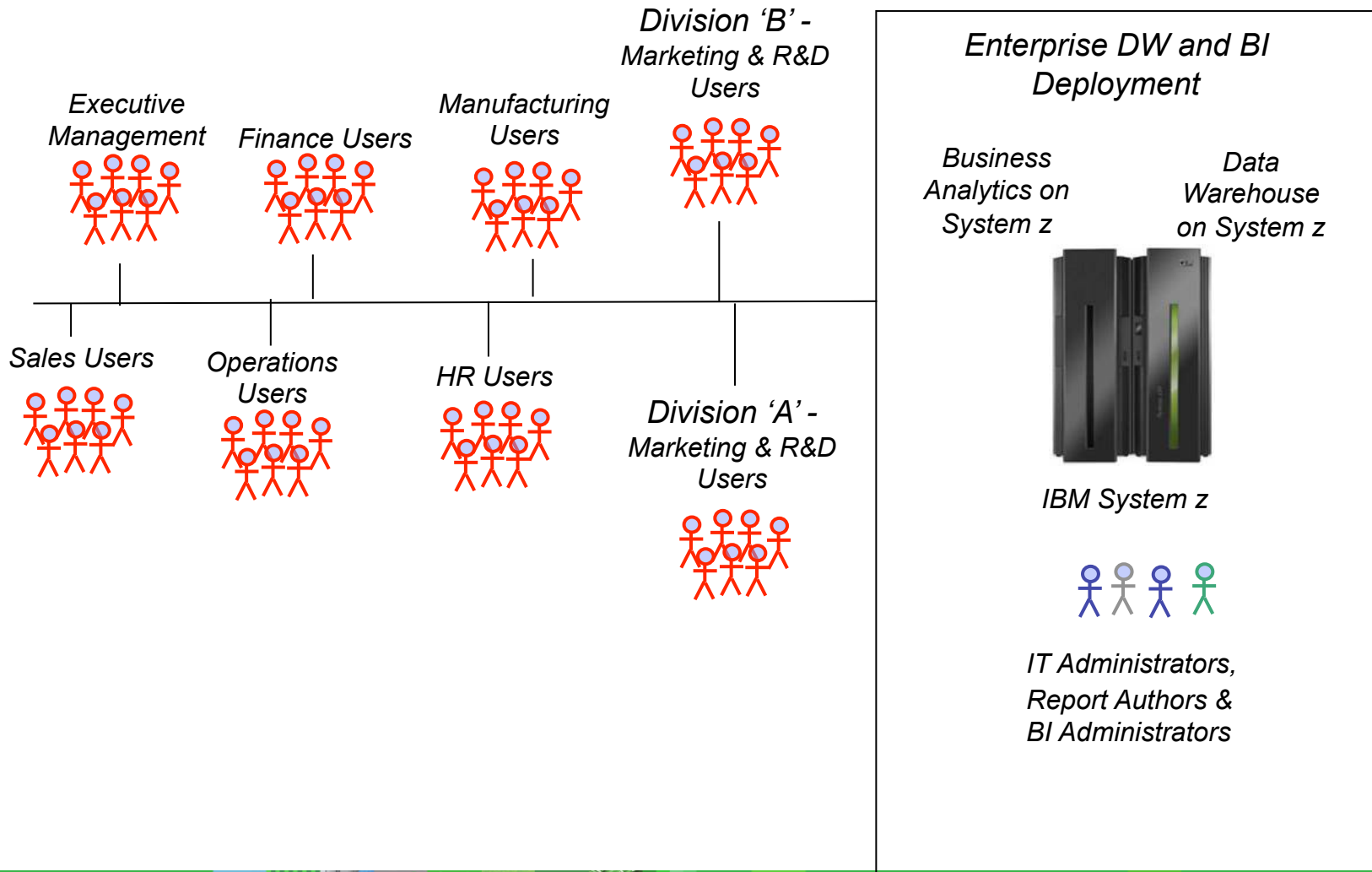
Today's Traditional Business Analytics Infrastructure ...Making it Difficult to Meet Shifting Demands



Things to Consider with Distributed Application Servers

- How do you scale? → → → Add more boxes
- How do you handle failover? → → → Add more boxes
- What about highly available? → → → Add more boxes
- How are requests prioritized? → → → Add more boxes for 'Gold' customers
- How do I handle peak loads? → → → Ensure enough boxes for max peak
- What about when I don't have peak loads? → → → Servers will sit idle

But what if YOU had Another Option? Data Warehousing & Business Analytics on System z



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 Cognos 8 BI TCO Study x86 Distributed vs System z

The Study:

- **Sizes:**
 - Various IBM Cognos 8 BI Named User deployment sizes (100, 1,000, 10,000, 20,000, 50,000)
- **Scenarios:**
 - All scenarios are based on net new H/W & S/W
 - The TCO of a standard deployment based on Cognos 8 BI best practices
 - Build on that deployment with the ability to provide high availability
 - Continue to build that model to account for the need to upgrade hardware every 3 to 5 years.
 - Finally look at the impact of building an infrastructure that meets the needs of today but can grow into the future
 - All acquisition, management and maintenance costs for a Cognos 8 BI infrastructure over 5 years were included

Key Results:

- Average savings over 5 years of choosing System z: 36%
 - Average savings in CPUs: 87%
 - Average savings in servers: 96%
- Total cost of acquisition:
 - Is less expensive for 100/1000 users
 - Nominally more expensive for 10,000 – 50,000 users
- Regardless of the size administrative and facilities costs are always less
- The savings from the System Administration costs for 10,000 to 50,000 user is equal to the TCO over 5 years for Cognos 8 BI for Linux on System z
- % of total costs over 5 years holds steady regardless size and does not offer the any volume discounts with x86
- With high availability it is approximately 50% less expensive with System z
- System z makes it faster and more cost effective to meet the growing demand of the business.
- Existing System z customers only stand to further reduce there TCO.

Cognos 8 BI for Linux on System z

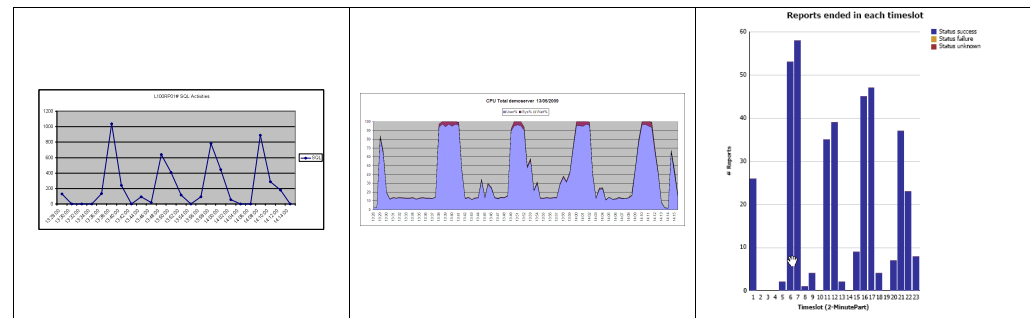
....Performance Testing

- **Customer provided the need:**
 - Processes operational and financial data for 10.000 other companies and exchanges info with 250 B2B partners.
 - Faced with performance & stability issues and could not expand it's BI any further.
- **IBM Provided the Test Infrastructure:**
 - Cognos 8 BI v3 and Websphere set-up on a zLinux and a DB2 instance on z/OS.
- **Numius Provided the Expertise:**
 - Ported existing application from the distributed to System z:
 - Cognos 8 BI
 - Oracle on HP-UX to DB2 on z/OS
 - MS-SQL on Wintel to DB2 on zLinux)
 - MS-IIS on Wintel to WebSphere on zLinux).
- **Cognos Provided the Flexibility:**
 - Cognos 8 BI - open to Operating Systems and Database Systems, no redevelopment was required

The Results

Cognos 8 BI for Linux on System z

- By adhering to our best practises could support more users and deliver faster performance.
- There was no change in functionality at the Cognos 8 BI level, so no impact whatsoever for the end-user.
- Not one report timed out, not one user was rejected. Even when the system slowed down, it remained stable.
- No redesign was needed to achieve his objective of reaching out to a large community.



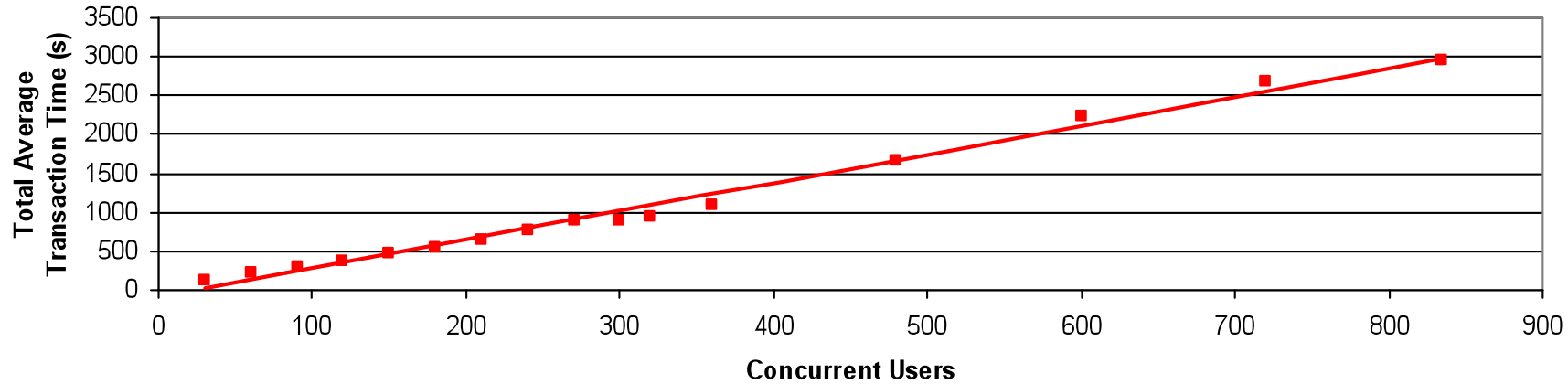
Proven that Cognos 8 BI for Linux for System z can: Scale Across the Enterprise



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



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

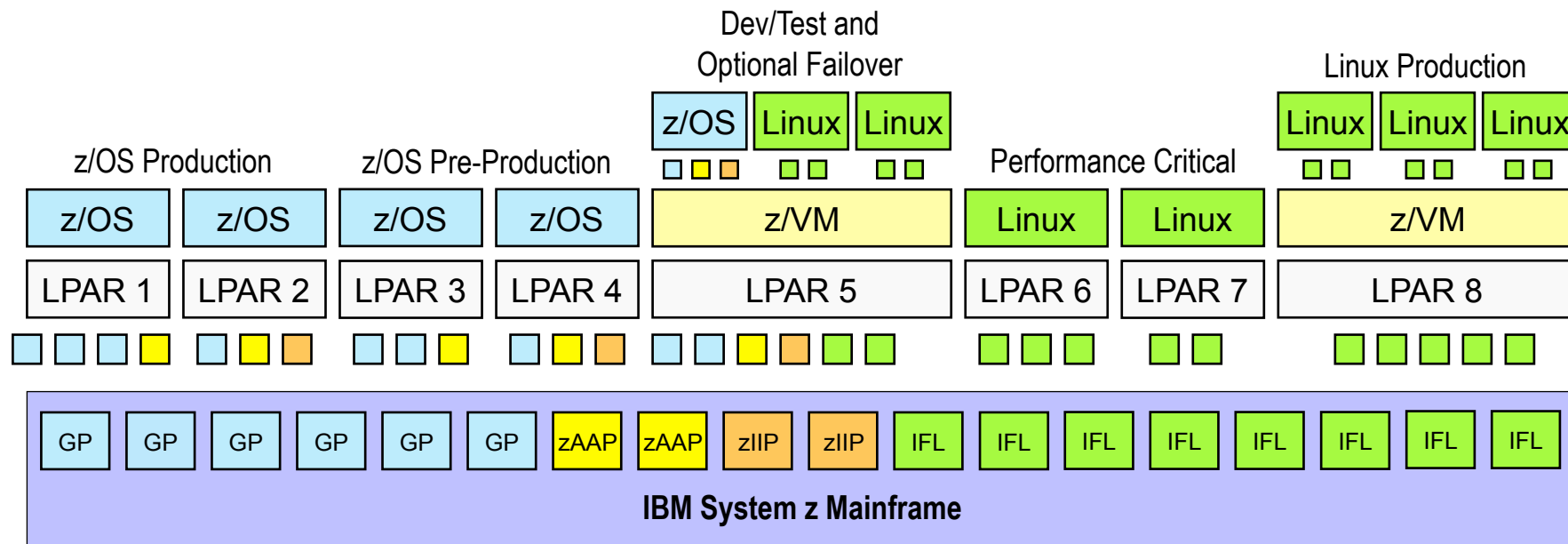
50TB Summary – adding demonstrable proof

- **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
 - Collected detailed performance measurement data

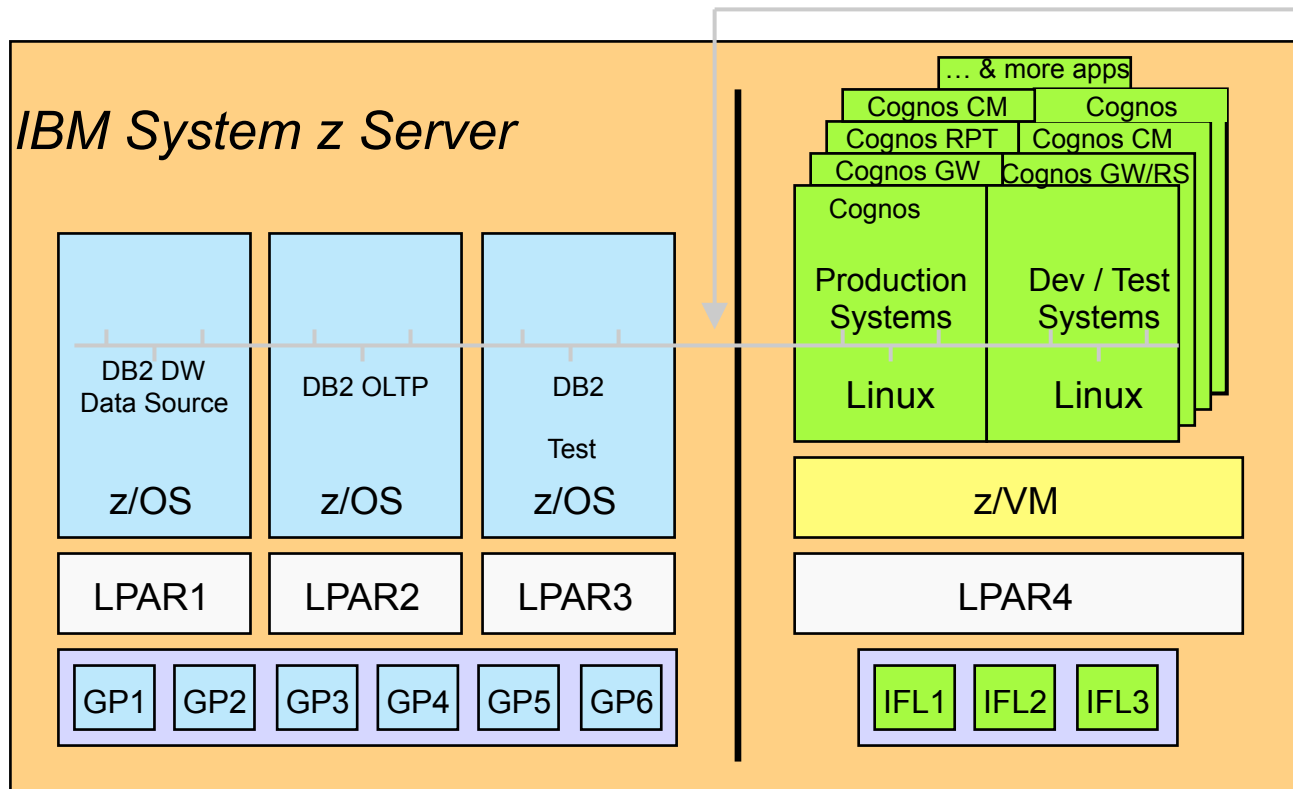
... and there is a 10TB study!!

The Power and Flexibility of System z Virtualization

- Over 40 years of continuous innovation in virtualization technologies
- Architecture designed and optimized for resource **over commitment**
- Multiple images concurrently share all physical CPU and I/O resources
- Resources delivered **as needed, automatically**, based on business-oriented goals
- New OS images can be started without affecting ongoing work
- Hardware assists used to accelerate virtualization operations (e.g., SIE)



Cognos 8 BI for Linux on System z Sample Configuration



“Inside the box”
virtual networking or
physical networking

...a potential
source of cost
savings given z/
VM’s ability
to over-commit
CPU capacity

Virtually duplicated servers for
load balancing/failover/high
availability without additional
hardware on the floor

Success Story – Why Leverage Cognos 8 BI for Linux on System z

Objective: Using System z to standardize on a single BI solution

Requirements:

- Demand for BI has really taken off
 - New regulatory reporting requirements
 - Every new system, every new solution, every new application is having a business intelligence component
- Multiple Cognos 8 BI deployments - 6+
- Wanted an enterprise BI standardized solution, but
 - Needed higher capacity – grow from approx 400 to 1000 users
 - Do more with less - less researchers, less software, less hardware, same staff
 - Had available IFL's on System z

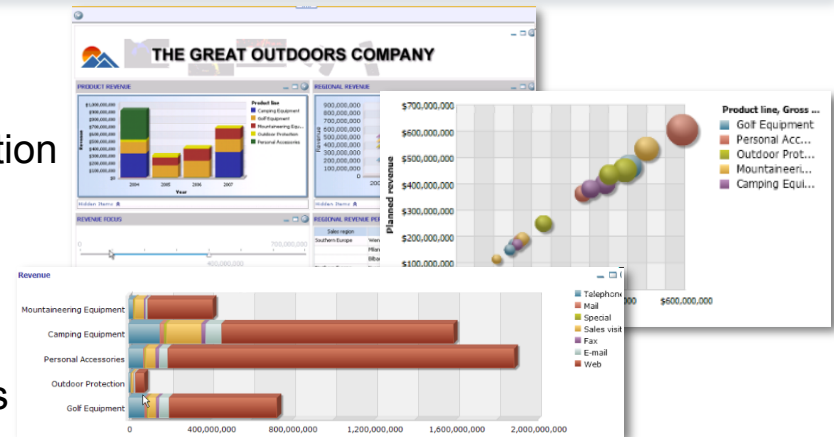
Results:

- 11 days to move from distributed to System z deployment model for Cognos 8 BI
 - Quickly and easily meet new requirements
- Consolidate multiple BI deployments on to a single platform
- Single point for BI administration
- Consolidate multiple disparate data sources
- Ensure 99.999% availability
- Offer a complete disaster recovery plan
- Additional green savings

Measure and Monitor to See “How” You’re Doing

Dashboards

- Provide at-a-glance, high impact views of complex information
- Help quick focus on issues that need attention and action
- Combine information across disparate sources
- Benefit from range of highly visual personalized, managed, or self-assembled dashboards
- Gain personalized views of operations with continuous monitoring



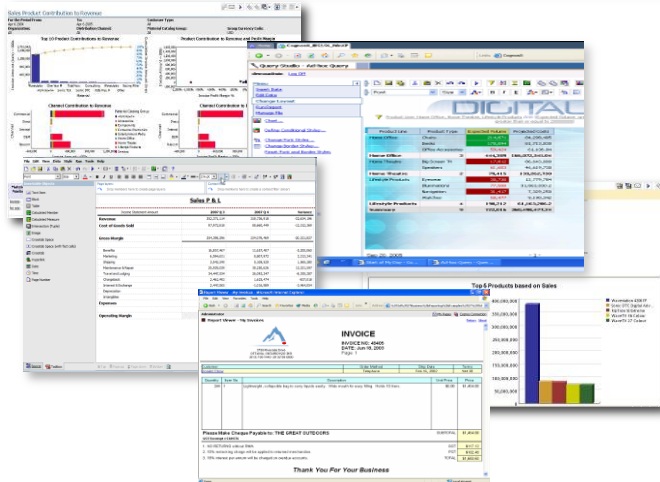
Monitor Business Operations



- Continuously monitor and alert when exceptions occur to take immediate action
- Detect events, anomalies and trends in data streams flowing through transactional and messaging systems
- Aggregate data streams across multiple transactional systems and data sources
- Enable self-service with user-defined dashboards, operational KPIs, and alerts
- Address full operational decision cycle from detection to action

Start to Understand the “Why” Behind Business Performance

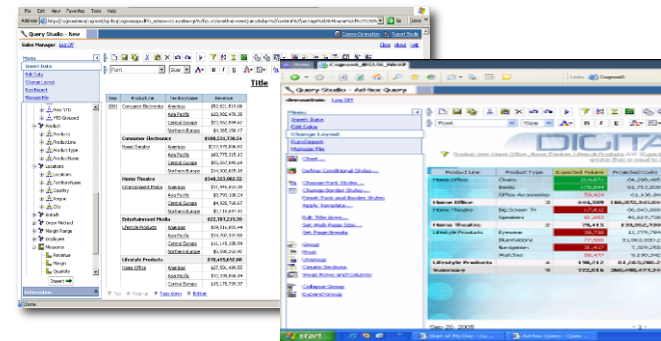
Reporting



- Address full breadth of report needs (personalized, transactional, management, statutory, production...)
- Deliver consistent information across all types of output
- Personalize and target to each department/individual without having to re-author
- Re-use queries, analyses, express author reports in business and collaborate on design with IT
- Easy access to data lineage, definitions of terms, and annotations

Ad-hoc Query

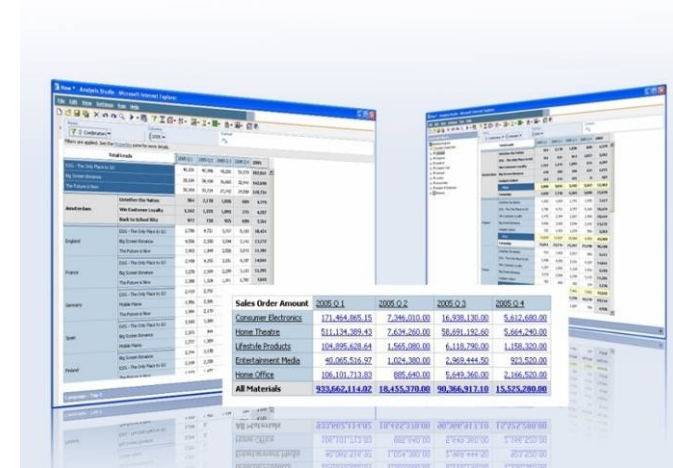
- Intuitive, self-service reporting
- Access to all data; drag and drop query creation
- Easy sorting and filtering
- Corporate templates for consistency
- Share ad-hoc or promote for professional distribution



Dig Deeper into “Why” and Investigate Possible Better Outcomes

Analysis

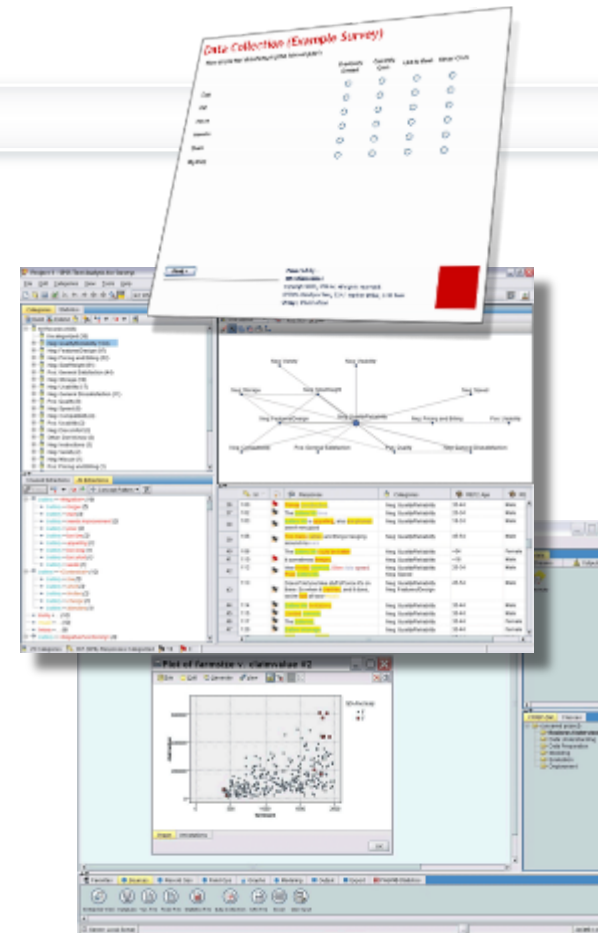
- Compare and contrast to reveal symptoms and causes behind trends
- Gain same analysis experience on Web or in Excel interfaces
- Perform personal exploration across multiple dimensions of information
- Move from summary level to detail effortlessly



Inform Decisions with Statistics and Predictors of “What Might Happen”

Advanced Analytics

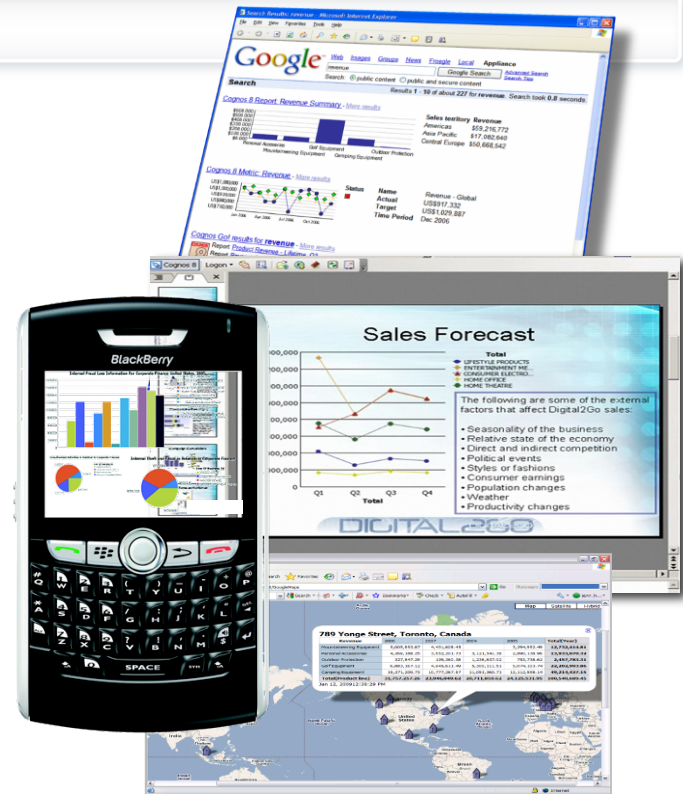
- **Predict future events and proactively act upon that insight**
- **Use data collection to capture customer attitudes and opinions**
- **Apply text and data mining to uncover previously undiscovered patterns**
- **Apply advanced statistical analysis to raise confidence in conclusions**
- **Deliver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



Gain Flexible Access Wherever and Whenever Needed

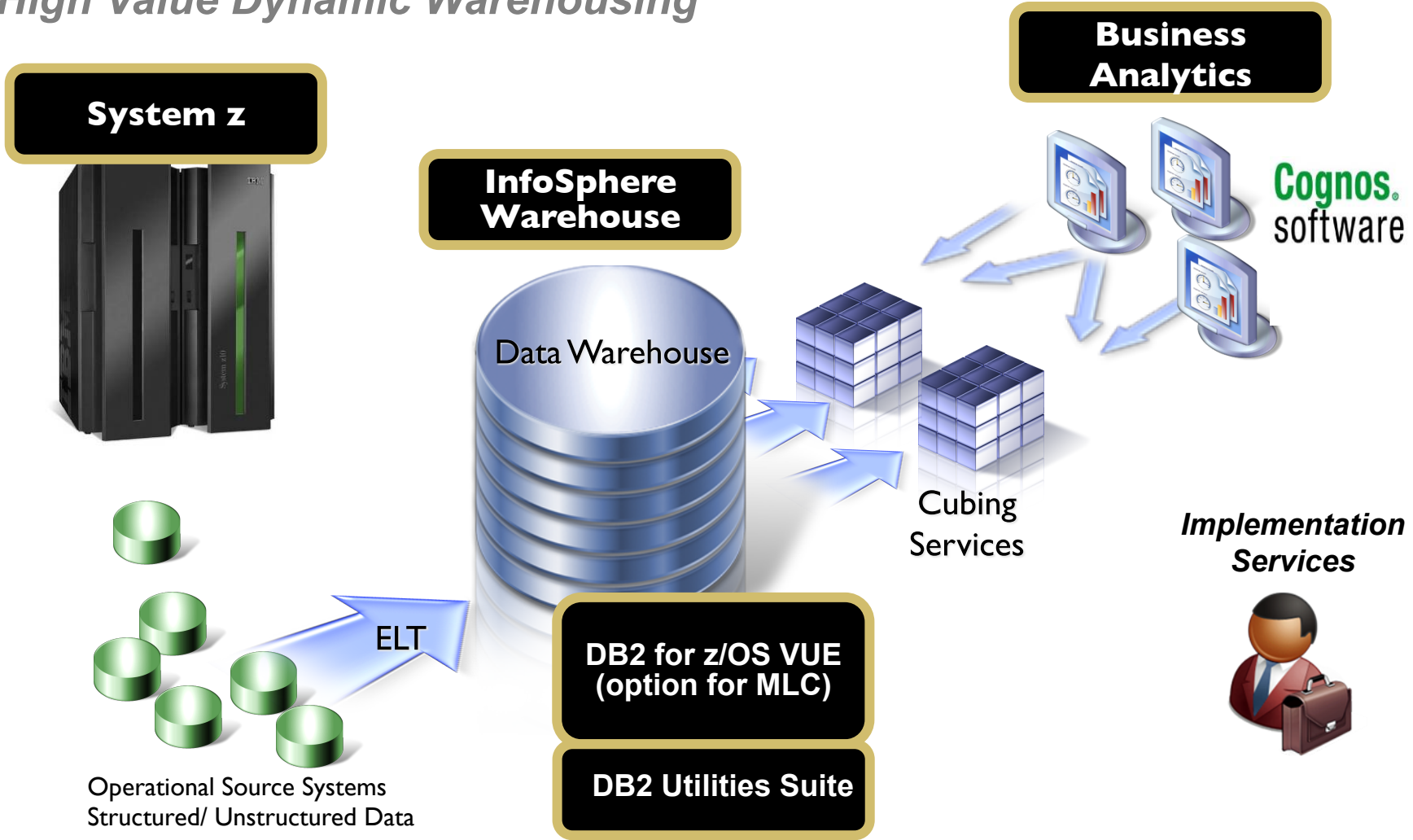
BI Anywhere

- Receive in any format (PDF, HTML, Excel, XML...)
- Deliver in any language with robust Unicode support
- Access refreshable BI content in any location that best serves the individual (Excel, PowerPoint, Word, Enterprise Search, Portal)
- Search to find instant answers, related content and to author based on search terms
- Browse BI content on mobile devices including BlackBerry, Windows Mobile and Symbian devices
- Automate personal alerts, email bursting, scheduled report production
- Mashup within applications and in processes



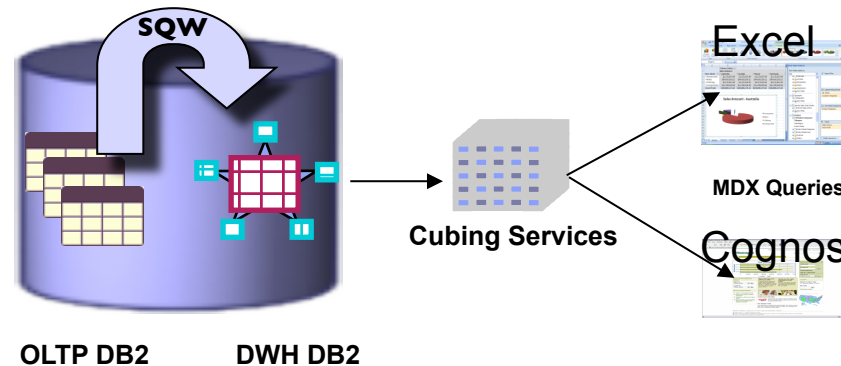
Smart Analytics System 9600

High Value Dynamic Warehousing

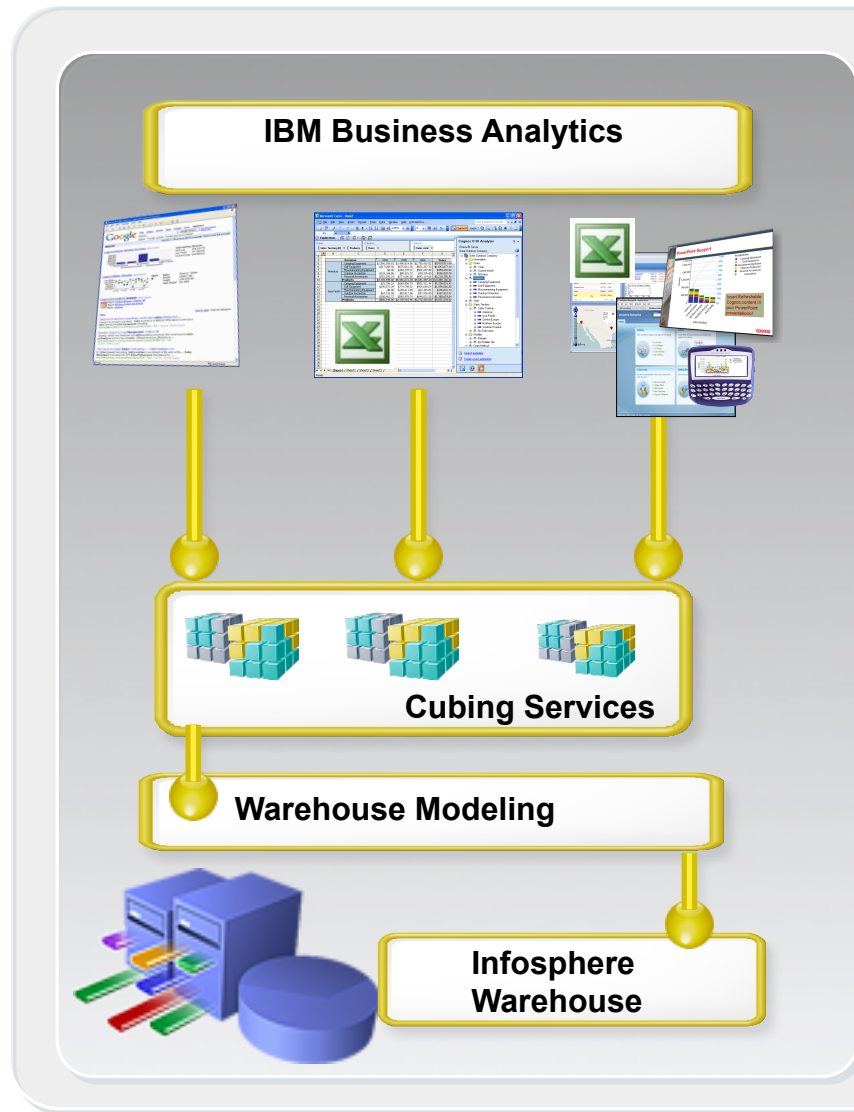


InfoSphere Warehouse on System z

- Provides a highly scalable, resilient, lower cost way to design, populate and optimize a DB2 for z/OS Data Warehouse
- 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 Service



IBM InfoSphere Warehouse Cubing Services



Primary OLAP Use:
Large enterprise IT deployments

Operational Planning, Financial analytics, business reporting

- Ideal for:**
- Very large data sets with very large dimensions
 - Enterprise rollouts requiring near real time data

- Because of its unique:**
- Scalable, low latency OLAP
 - Standard, Open APIs
 - Integrated IT tooling

For IT departments

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

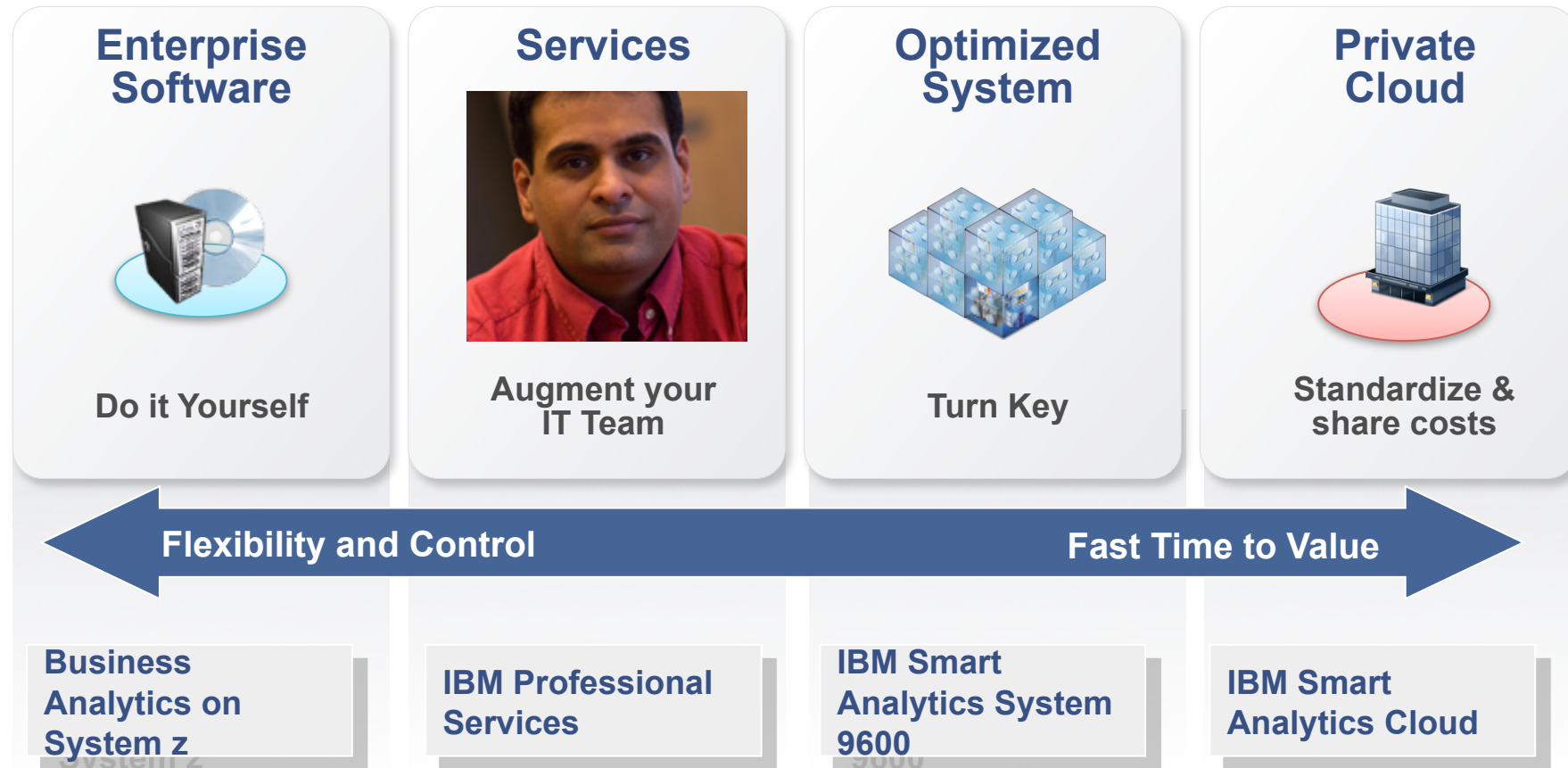


How is it different

- ✓ 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

Flexible Deployment Options



The Smart Analytics Cloud solution offering

Creates ...

That delivers ...

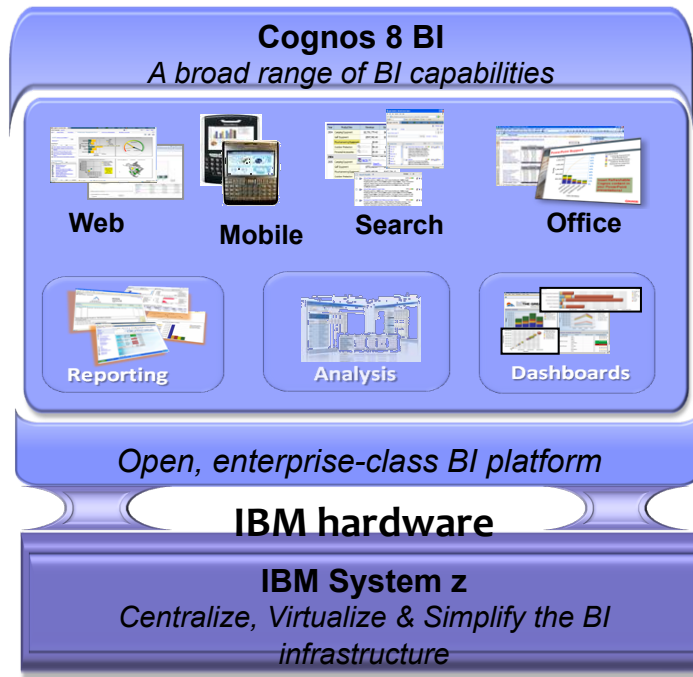
Smart Analytics Cloud

A private cloud within the enterprise

A solution for delivering business intelligence to the entire organization

The solution components ...

IBM software



IBM Services

- **Phase 1:** Create awareness of, a strategy for and a governance foundation for BI across the organization
- **Phase 2:** Preparation for the Smart Analytics Cloud
- **Phase 3:** Install the base cloud, integrate into the corporate enterprise and test the cloud use cases
- **Phase 4:** Educate the enterprise for on-going success with the Smart Analytics Cloud



Smart Analytics Cloud

Includes:

Base offering

Cloud optimization configuration

- *Boarding application*

Business Intelligence configurations

- *Cognos 8BI w/middleware*
 - *Includes supporting MW*

Solution Edition for Enterprise Linux

Full systems (built on sizing)

- *System z10*

Incremental capacity:

- *IFLs*
- *16GB memory per IFL*

3-5 yrs HW Maintenance

Virtual platform:

- *z/VM 5.4 (base & all features)*

▪ *Linux*

Connectivity

- *3 4-port FICON*
- *2 4-port OSA*

Customization packages

Monitoring components

- *ITCAM for WebSphere*
- *ITCAM for Applications*
- *OMEGAMON XE for z/VM*

Metering and accounting components

- *IBM Tivoli Usage & Accounting Manager (ITUAM) for System z*

Security components

- *IBM Tivoli Directory Server*

Business Analytics and Data Warehousing on System z

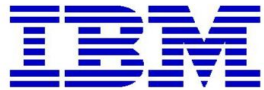
The industry's only end to end solution, on a single platform that is capable of scaling to meet the breath of business users needs for complete and accurate business information faster and better with less resources and expense.



- **Provides an infrastructure for**
 - Centralizing of data
 - Standardization of service delivery
 - Corporate compliance
 - Metering, billing, chargeback and standardized on-boarding
- **Provides effective & efficient utilization of existing resources**
 - Hardware & Software,
 - Human Resources
- **Improves response time & agility to support the business**
 - Reduce the time and speed associated with deploying BA
 - Rapid Provisioning
 - Simplified and faster access to the data on System z
- **Confidently meets the growing demands of the business**
 - Scalability, Reliability, Availability and Security

Introducing IBM's *Blue Insight*

In the spotlight



*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

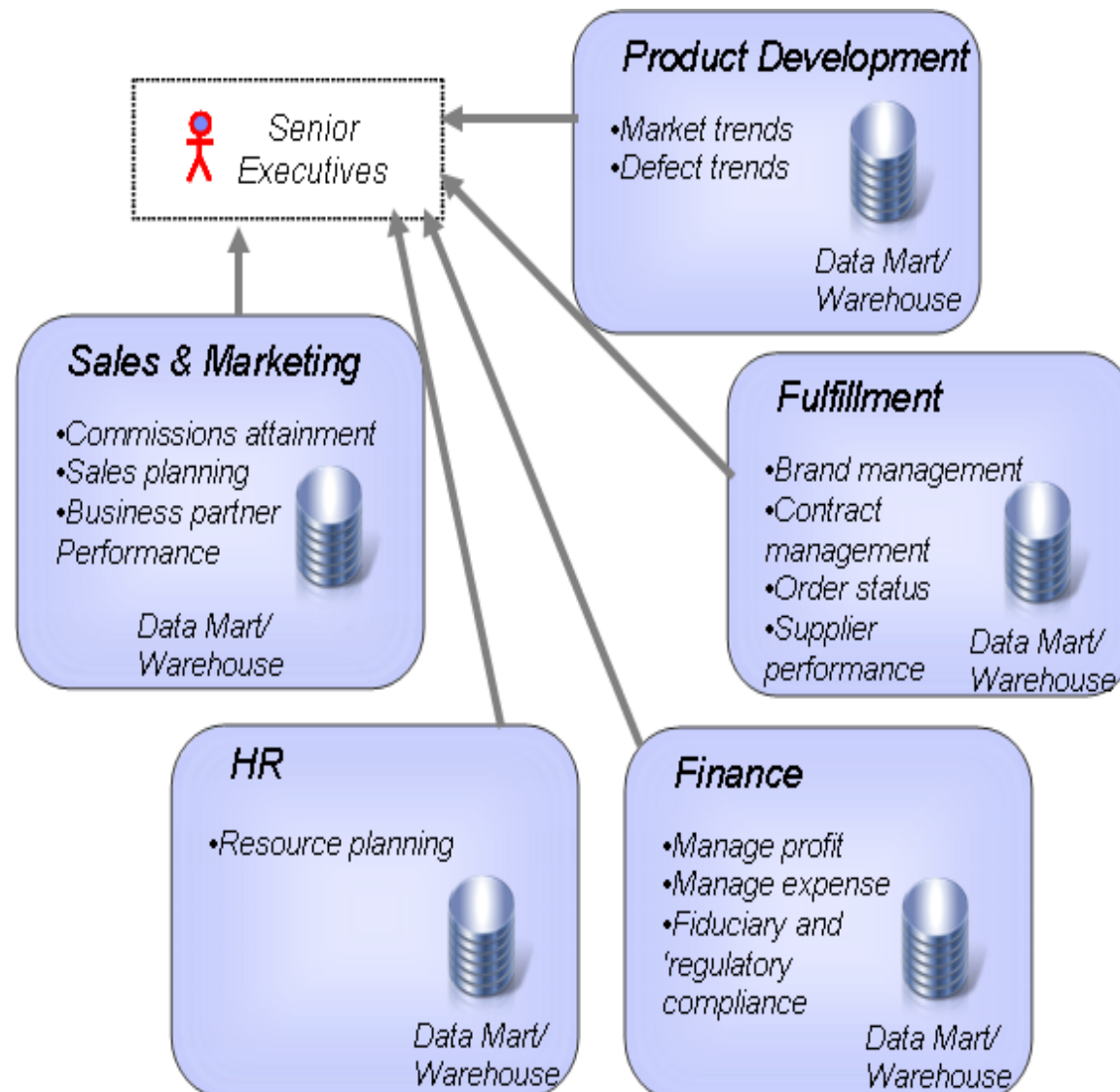
Customer results:

- 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>

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



IBM Business Issues

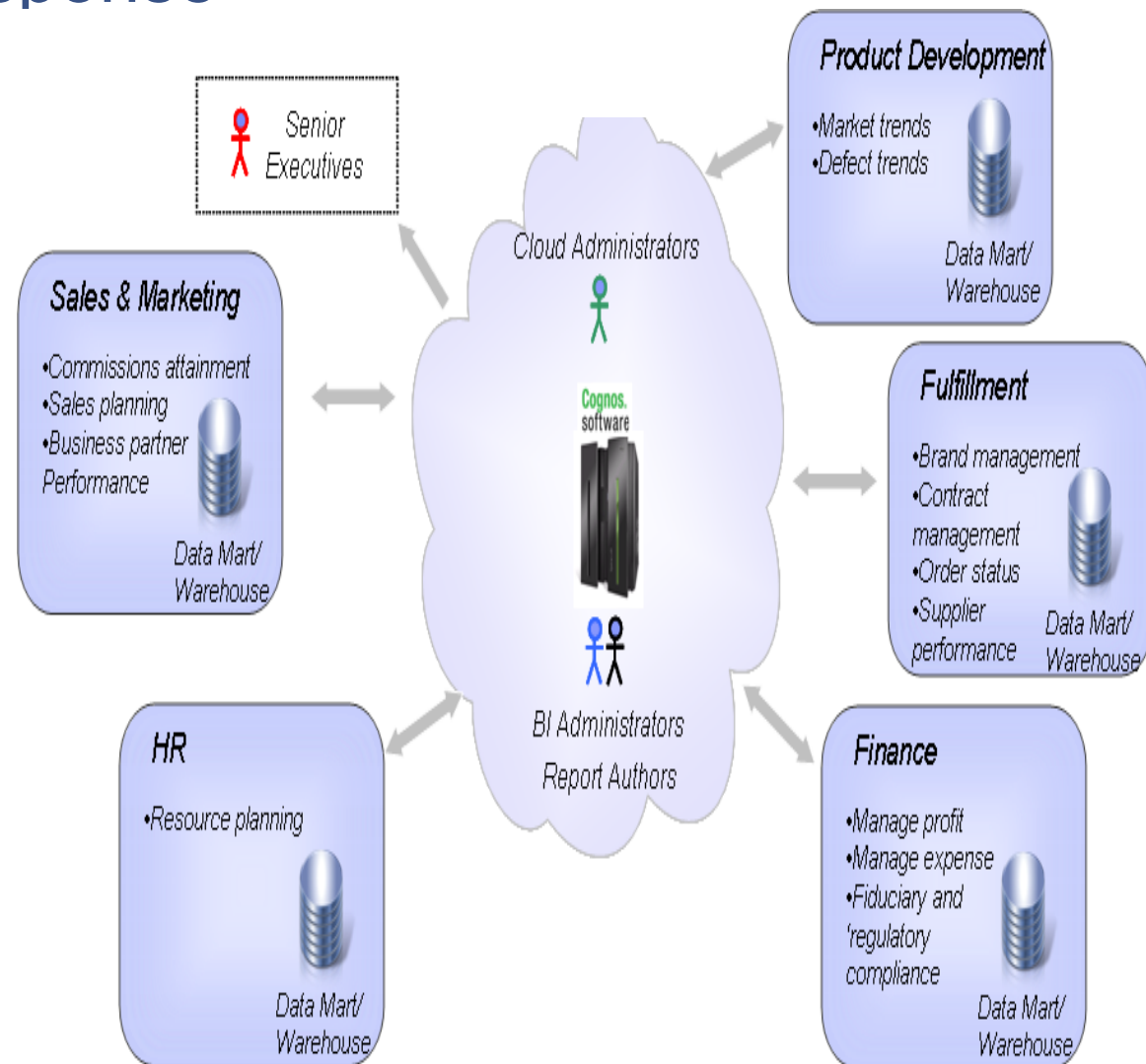
- Need to move at “business speed”
 - Adopters need to be able to react to changing business needs in real time
- Predisposition to maintaining control and autonomy over business metric delivery solutions
 - Reluctance to relegate responsibility for unit level BI KPIs and solutions that deliver status
 - 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



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 first 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 predictive 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...



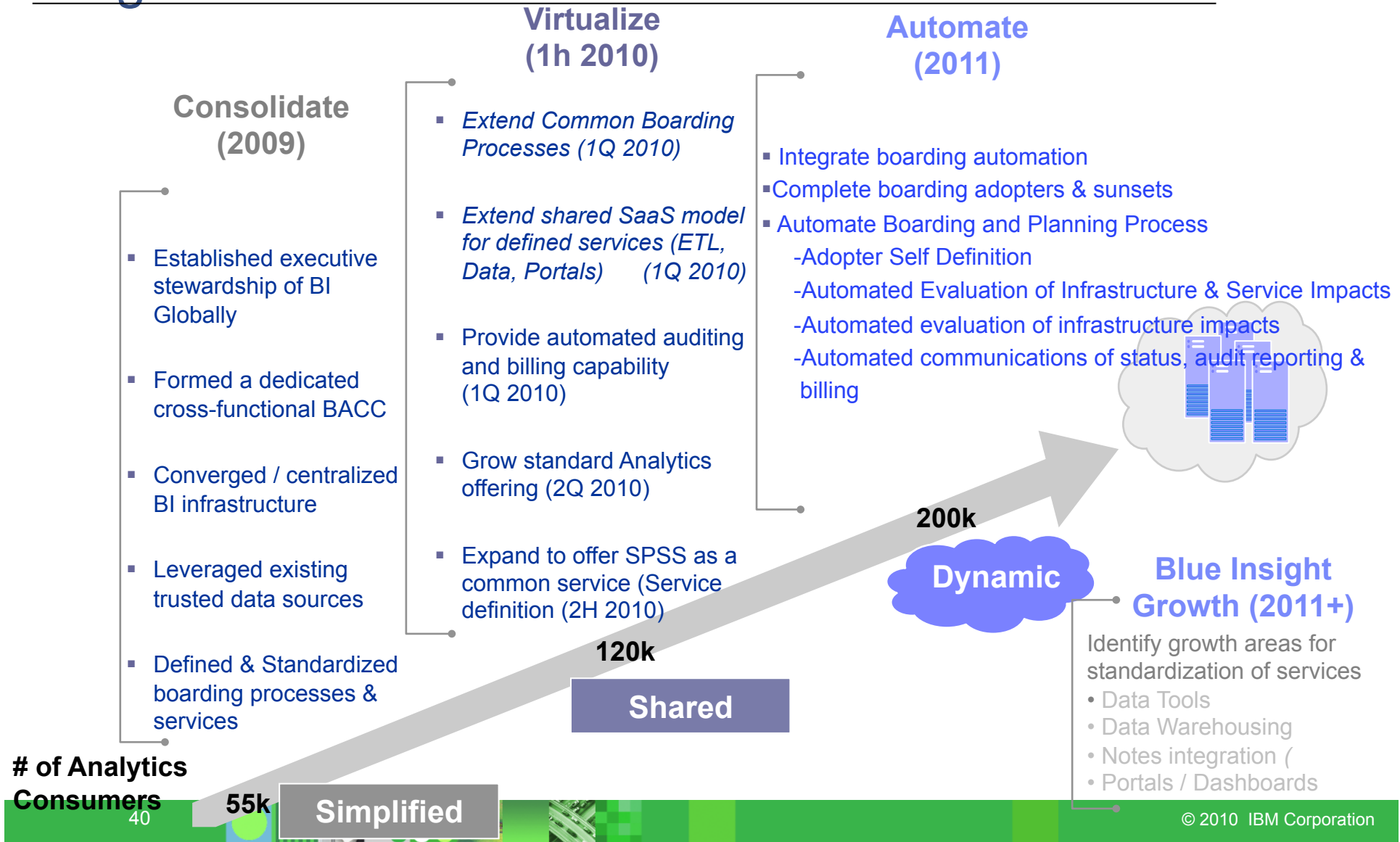
• **Business case categorization**

- Infrastructure
- Operations
- Skill efficiency



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

IBMs Transformation and Deployment Plans for Blue Insight



IBM WW Blue Insight Scope

Service delivery scope is business domain agnostic...

- **Who is using *Blue Insight***
 - Adopters cover all Geographies and business process areas
 - 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 120K users (currently 113K users have boarded)
 - 2011 projection is 200K users (expected to hit steady state)

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**

If we had to do it all over again....

- **Would we start with BI ?**
- **Would we try to incorporate a data standardization delivery service ?**
- **Would we spend more time identifying usage patterns up front ?**
- **Would we include predictive analytics in the initial offering ?**



Typical Utilization for Servers

Windows: 5-10% Unix: 10-20% **System z: 85-100%**

System z can help **reduce** your floor space up to **75%-85%** in the data center



Thank You



System z can lower your total cost of ownership, requiring **as little as 30%** of the power of a distributed server farm running equivalent workloads

The cost of storage is typically **three times more** in distributed environments

