



***The New Enterprise  
Data Center:  
Supporting Business  
Innovation***

Optimizing IT



# Multiple forces are driving a transformation of the data center



*Accelerated pace of business  
model changes supported by  
technology innovations*

*Operational issues have IT  
at a break point*

# Operational issues have IT at a break point



## ***Costs & Service Delivery***

Rising operational costs of systems and networking

Explosion in volume of data and information

Difficulty in deploying new applications and services



## ***Business Resiliency & Security***

Security of your assets and your clients' information

Landslide of compliance requirements and government mandates

Systems and applications need to be available

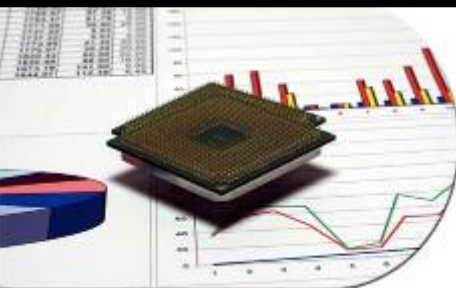


## ***Energy Efficiency***

Rising energy costs and rising energy demand

Power and thermal issues inhibit operations

Environmental compliance and social responsibility



## ***Changing application models***

Unpredictable workload characteristics

Manage fast growth of "smart" objects and data volumes

Need maximum flexibility for real time interaction

# Today's overarching realities – 21<sup>st</sup> Century Drivers of Change

**International Exporting**



**Proliferation of Devices**



**Business-to-business**



20<sup>th</sup>  
Century

21<sup>st</sup>  
Century

**The Globally Integrated Enterprise**



**Real-time Information Explosion**



**Business-to-consumer**



# Business innovation continues to accelerate –

*Convergence of available technologies and a demanding marketplace*



## Branch Banking

Back-office automation and secure data processing



## ATM

Secure online transaction processing



## e-business

Connect existing IT infrastructure with the Web



## Cloud

An open, standards-based, dynamic infrastructure

1960s

1970s

1990s

2010

## IBM's Global CEO Study: *Rapid, accelerating change has become a constant view – Implications for the CIO*



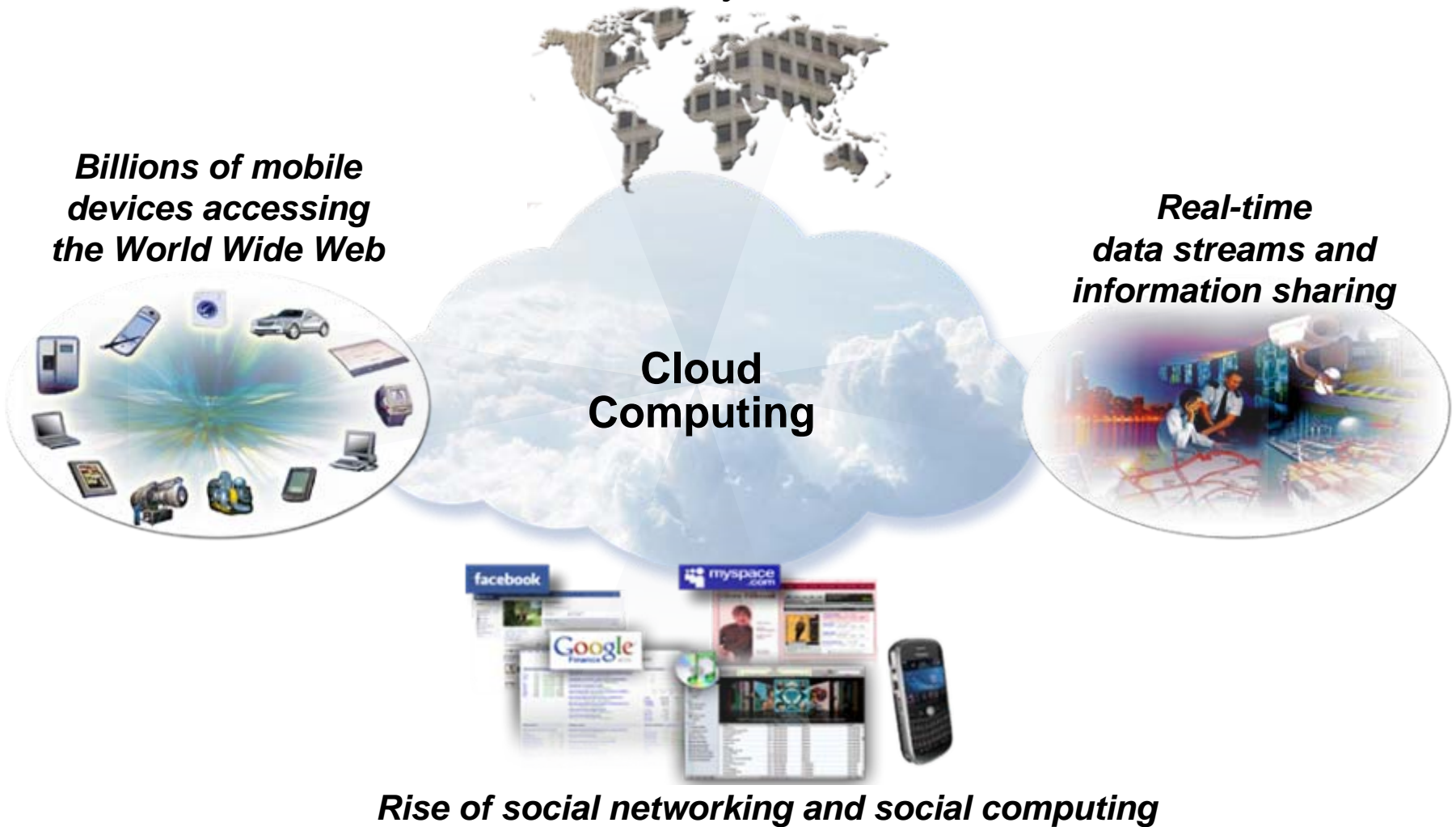
### ***The data center must change in support of the new enterprise***

- ***Provide a flexible, resilient, highly scalable IT infrastructure***
- ***Enable collaboration and help turn information into business insight***
- ***Facilitate global integration with a shared service model***
- ***Support evolving business models and rapid integration of acquisitions and mergers***
- ***Support for broad company-wide 'green' initiatives***



# Harnessing evolving technologies can help businesses embrace change

## *Globalization and Globally Available Resources*



# Smart, new approaches to business and IT innovation

*Leveraging the best of traditional and new approaches*

## Industrial Strength, Universal Connectivity

Content      Browsers      Standards

Transactions      Systems Mgmt

Web Servers      Availability

Security      Java

**Traditional IT**



**Cloud Computing**



*Efficient, dynamic and responsive*



*Fragmented, inefficient islands of computing*

## Massive Scalability, Rich Diversity

Business Services

Autonomic Management

Sensors

Devices

Real-time Info

Consumer Services

Massive Compute Capacity

Scale-out data center designs



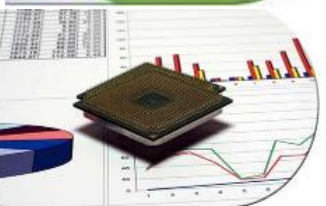
# The New Enterprise Data Center: An evolutionary new model for efficient IT delivery. . .



- ***New levels of economics***  
*delivered by simplified IT*
- ***Rapid deployment of services***  
*with improved manageability*
- ***Tight alignment with the business***  
*to support innovation*

# The New Enterprise Data Center

*Addressing the operational inhibitors . . .*



- ***Provision new resources in minutes***
- ***Triple asset utilization***
- ***Shrink physical disk storage up to 50%***
- ***On track for \$15M, 3 yr savings***
- ***System outages down 58%***
- ***Reduce floor space by 80%***
- ***Power & cooling reduced by 60%***

***.....reallocating resources  
from operations to innovation***

# Business and IT are now aligned to allow real time interaction – and innovation.

- ***Accelerate innovation projects that can lead to new revenue***  
Make IT an enabler of, not a barrier to rapid innovation
- ***Provide an effective and creative service delivery model***  
Deliver services in a less costly and higher quality business model, while providing service access ubiquity
- ***Create a sustainable competitive differentiation***  
Rapidly deploy applications over the internet and leverage new technologies to deliver services when, where and how your clients want them-before your competitors do.
- ***Lower IT barriers to launch new business services***  
Build and integrate modular services –in record time- by leveraging “rentable” IT services capabilities, pay only for what you use.



# The New Enterprise Data Center – Stages of adoption

***Simplified***



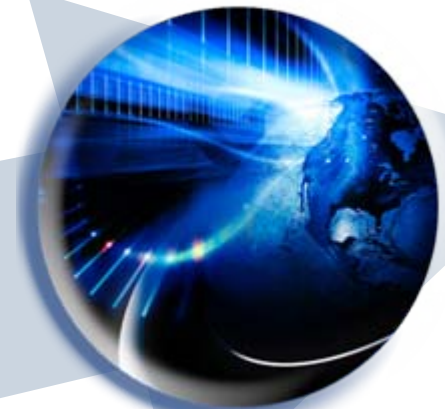
***Drives IT efficiency***

***Shared***



***Rapid deployment of new infrastructure and services***

***Dynamic***



***Highly responsive and business goal driven***

# Enabling the New Enterprise Data Center – *A holistic, integrated approach*

***Information  
Infrastructure***



***Highly Virtualized  
Resources***

***Business Resiliency  
and Security***

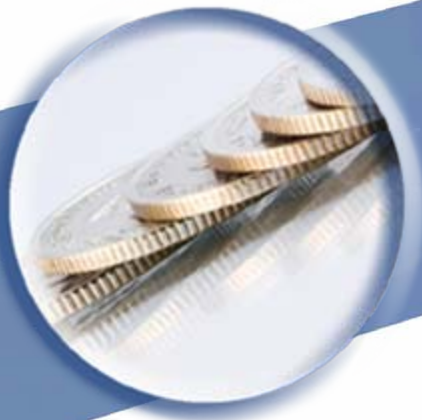
***Efficient, Green and  
Optimized Infrastructure  
and Facilities***

***Business-Driven  
Service Management***

## *Simplified* – Drives IT efficiency

- Physical consolidation and optimization
- Virtualization of individual systems
- Systems, network and energy management

***Simplified***



## New Enterprise Data Center – *Virtualization enables IT simplification and quick ROI*

**On track to save more than \$15M over 3 years**

- ✓ *including 50% Web infrastructure cost and 80% floor space reductions*



**Increased utilization from 40% to over 85%**

- ✓ *across IBM and EMC storage infrastructure*



**A 75% reduction in IT management overhead**

- ✓ *A new System z for consolidation of x86 systems*



**\$40M est. cost reduction**

- ✓ *For consolidation and virtualization of Unix servers and storage reducing complexity, energy and labor*



## *Shared* – Rapid deployment of new infrastructure and services

- Highly virtualized resource pools
- Integrated IT service management
- Green by design

***Shared***

*Simplified*





## New Enterprise Data Center – *Creating a shared environment for improved information access and management*



**Creating a shared, tiered storage environment for researchers to protect the value of all the data and provide access for everyone**



***“The ease of management that virtualisation gives us made our lives a lot easier . . .”***

Gavin Malarky, Senior Infrastructure Analyst

## *Dynamic* – Highly responsive and business goal driven

- Virtualization of IT services
- Real time integration of transactions, information and analytics
- Business-driven service management
- Service oriented delivery of IT

*Shared*

*Simplified*

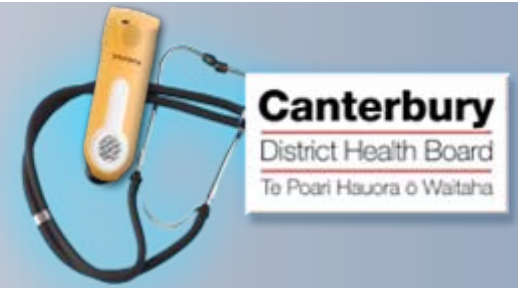
***Dynamic***



# New Enterprise Data Center – *Supporting a dynamic business model*

## Improving the speed and quality of healthcare

- ✓ *Instant contact among personnel, prescription confirmations, communication of test results – drives up staff efficiency by 22 percent*



## Real-Time Tracking of Temperature-Sensitive Shipments

- ✓ *Meeting increased expectations for highly-specialized, global service delivery and expands the range of temperature-controlled logistics services*



## Collaborative Innovation with Cloud Computing

- ✓ *Sogeti - Foster innovation internally, across 14 countries and transform the company mindset to one of innovation*
- ✓ *Government of Vietnam - facilitating real-time collaboration between major universities and research institutions*



# IBM's own transformation experience

## IBM IT Transformation

- ✓ *IBM's IT transformation continues: our own IT investments over the past 5 years have delivered a cumulative benefit yield of \$4.1B*

	<u>1997</u>	<u>Today</u>
CIOs	128	1
Host data centers	155	7
Web hosting centers	80	5
Network	31	1
Applications	15,000	4,700

## Data Center Efficiencies Achieved

- ✓ *Consolidation of infrastructure, applications*
- ✓ *Enterprise architecture optimization*
- ✓ *Global resource deployment*



## Cloud-enabled on demand IT delivery solution

- ✓ *Self-service for 3,000 IBM researchers across 8 countries*
- ✓ *Real time integration of information and business services*



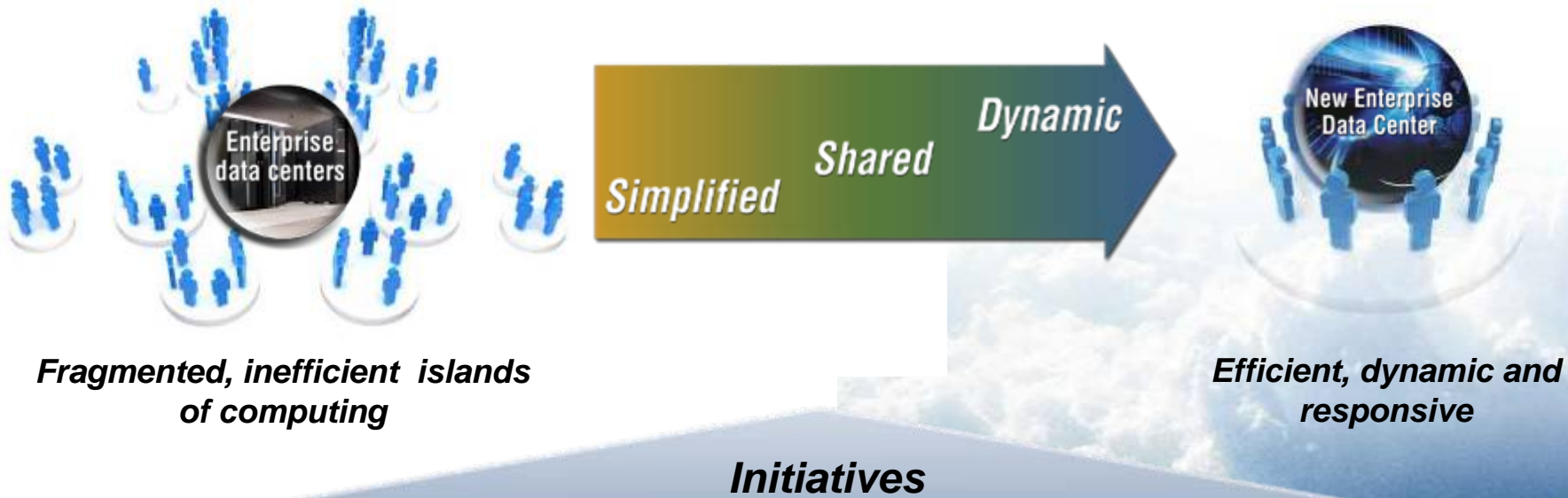
## The New Enterprise Data Center

- ✓ *Project Big Green: 2X existing capacity, no increase in consumption or impact by 2010*
- ✓ *Highly virtualized and pooled resources, compelling results*
- ✓ *TCO savings significant; service quality improvements*



# The New Enterprise Data Center

*An evolutionary new model for efficient IT service delivery*



**Consolidation and Virtualization**

**Energy Efficiency**

**Business Resilience and Security**

**Service Management**

**Information Infrastructure**

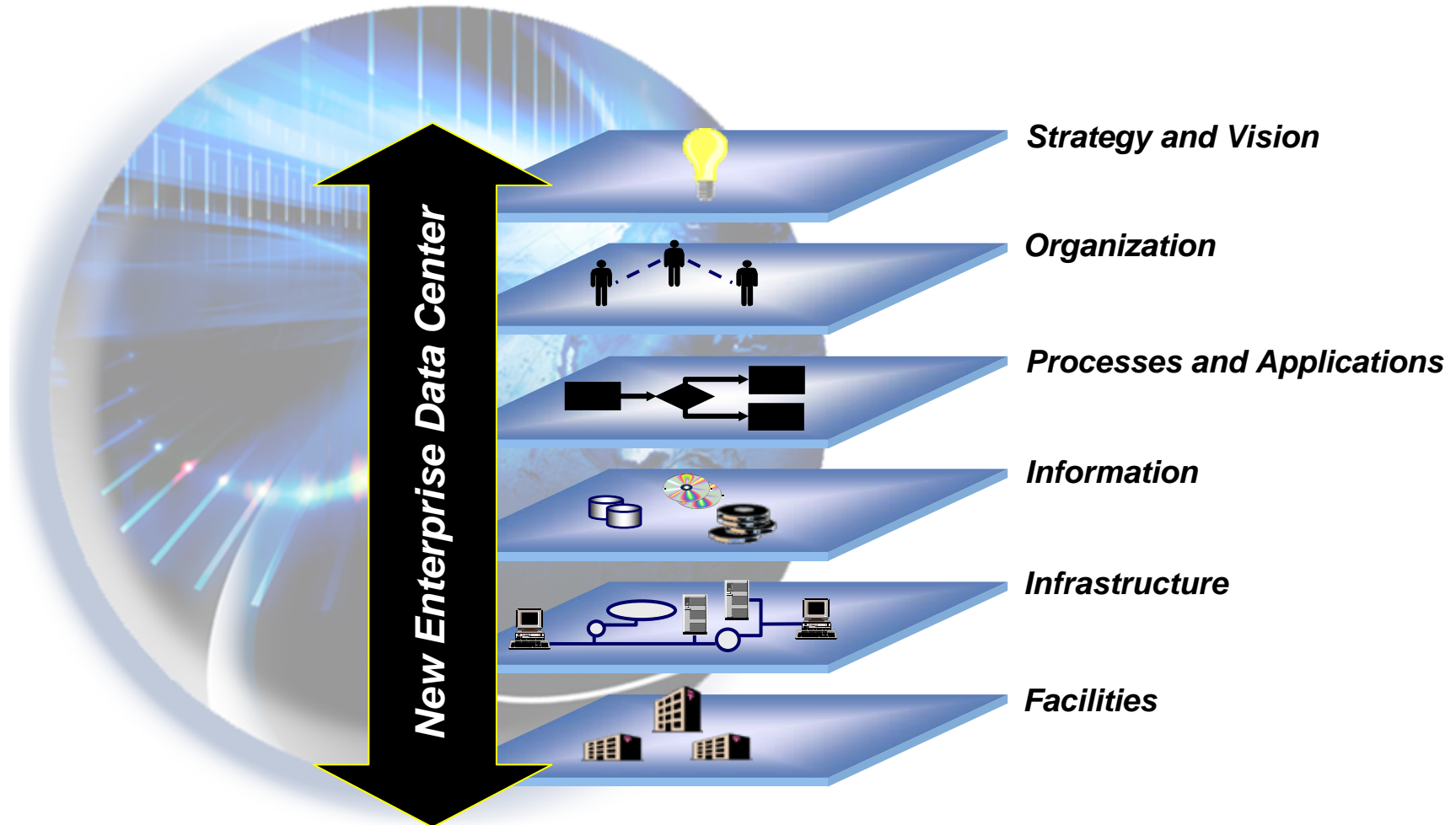
# Getting Started – Addressing Your Needs



- **Infrastructure Health Checks and Readiness Assessments across individual IT initiatives**
  - **Optimization and Rationalization Services**
    - **Strategy & Planning**
    - **Management Workshops**

## *Data Center Transformation Strategy & Innovation Workshops*

# This transformation spans across the organization – **integrating information, applications and infrastructure**



*IT Optimization is one of the processes by which clients can achieve a “New Enterprise Data Center”, creating a highly efficient and dynamic infrastructure to derive maximum business value from the IT investment.*



*From a business perspective, it allows clients to . . .*

- ▶ *Better manage cost and risk;*
- ▶ *Support business innovation;*
- ▶ *Comply with current regulations and best practices;*
- ▶ *Satisfy customer expectations;*
- ▶ *Meet service levels; and remain competitive.*



*From a technology point of view, it allows clients to . . .*

- ▶ *Anticipate and manage change;*
- ▶ *Reduce architectural complexity;*
- ▶ *Adopt, integrate, standardize and automate IT processes;*
- ▶ *Increase the value of revenue-generating services.*



*Overall, it can reduce the cost and complexity of IT service delivery and enable innovation by . . .*

- ▶ *Managing and fully utilizing assets to improve efficiency;*
- ▶ *Creating a dynamic and responsive IT environment;*
- ▶ *Optimizing energy efficiency.*



# Key optimization focus areas that are driving plans on the way to the New Enterprise Data Center



***Reduced cost  
structure aligned  
with business value***



***Energy efficient and  
environmentally  
responsible green  
data center***

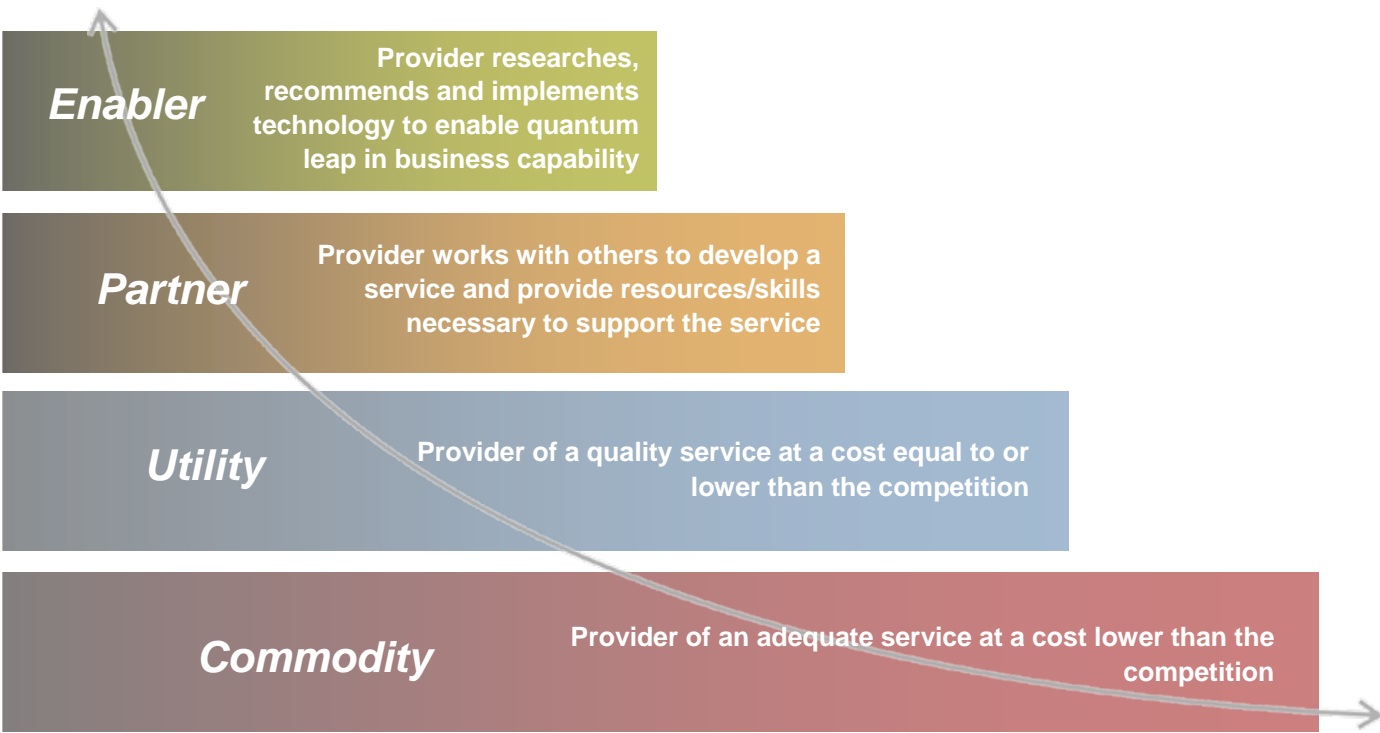


***Responsive, reliable,  
secure and resilient in  
meeting service  
commitments***

# .... with the role IT has with the business

*High*

## **Provider Relationship Model**



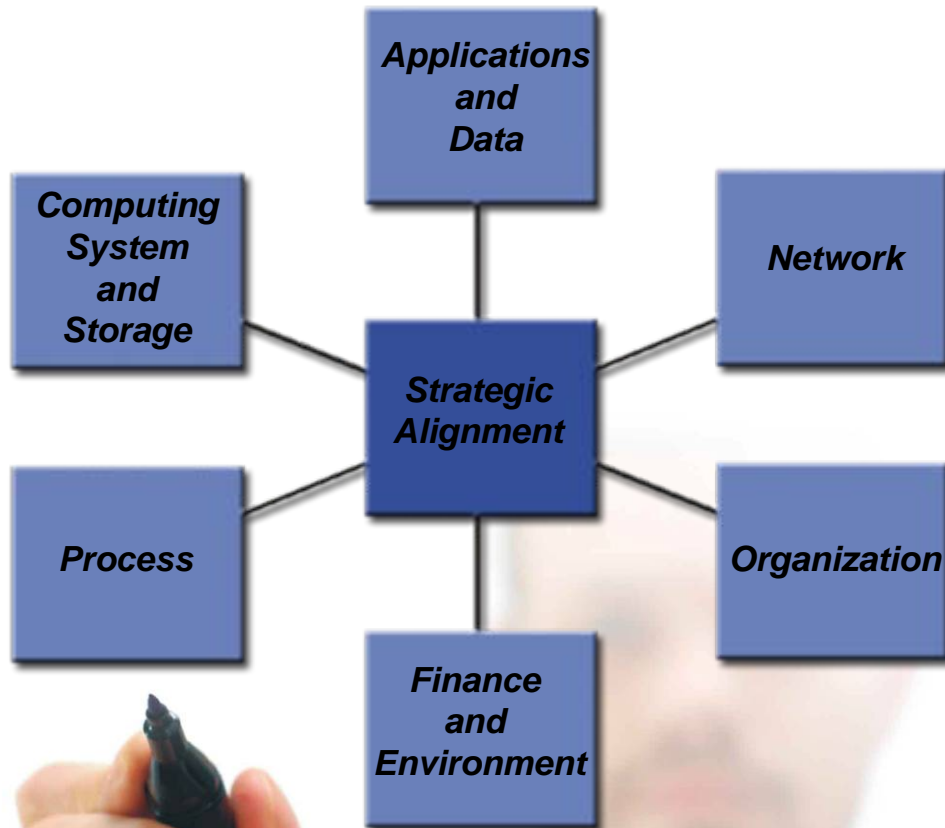
**Benefit**  
as IT Value Driver



**Cost**  
as IT Value Driver

*High*

# Practical advice when embarking on an IT Optimization journey



## **Clearly define optimization goals**

- ▶ *If you don't know where you're going, any road will do*

## **Broadly examine the current environment for opportunities**

- ▶ *Optimization opportunities exist in all domains*

## **Adopt a reference architecture**

- ▶ *When building a new house, best to have a good set of plans*

## **Identify domain specific projects**

- ▶ *Define an actionable set of activities*
- ▶ *Don't underestimate organization*

## **Establish an optimization program**

- ▶ *Coordinate the projects for maximum effect*
- ▶ *When traveling in new territory, a good map comes in handy*

# Client requirements that Consolidation and Virtualization can address



## Physical Consolidation

*Reduce costs & complexity*

- Eliminate server, storage and network sprawl helping to reduce operating costs and increase asset utilization.
- Consolidate data centers to help improve availability, scalability, recoverability and agility, while minimizing risks.



## System Virtualization

*Dynamically adapt*

- Help enable rapid infrastructure provisioning of your server of choice from x86 to Unix to the powerful mainframe.
- Unify your storage into a single reservoir of capacity and insulate host applications from physical storage changes.
- Virtualize your server, storage, network and client resources for more dynamic deployment.



## Application Infrastructure Virtualization

*Improve service delivery*

- Help increase application availability and improve application performance.
- Dynamically deliver resources where needed most.
- Lower administration costs and better manage WebSphere, Apache, BEA, JBoss, and PHP application servers.



## Management

*Control and monitor*

- Provide seamless integration of management capabilities across all of your virtual and physical resources in the data center.
- Simplify and coordinate management of IBM z/VM®, IBM PowerVM™, Microsoft®, VMware and Xen environments.

# Client requirements that Energy Efficiency can address



## IT Efficiency

### *Reduce energy costs*

- Understand existing facilities
- Plan for upgrade/growth
- Resolve IT operational problems and constraints
- Increase IT utilization and efficiency
- Improve flexibility and resilience
- Address thermal issues to reduce energy costs and measure success against business goals.



## Optimize Business Processes

### *Streamline processing*

- Start and stop applications on demand to dynamically deliver resources where they are needed most
- Reduce data growth and optimize data retention strategies
- Automate processes and improve time-to-execute resulting in energy savings.
- Quickly provision new applications



## People Collaboration

### *Change Behavior*

- Reduce real-estate and office costs by supporting work-at-home employees with no loss of productivity
- Reduce travel for meetings and commuting
- Improve email access, response and file sizes through database compression improvement
- Gain benefits of classroom training without travel, paper and physical infrastructure



## Environmental Leadership

### *Establish Green Agenda*

- Comply with emerging stricter controls over energy consumption, greenhouse gases, and disposal of hazardous substances
- Align IT with corporate sustainability initiatives to drive brand value
- Respond to stakeholder pressure and leverage green credentials to respond to customer's demands for corporate sustainability
- Retain employees through CSR policies that match corporate actions

# Client requirements that Business Resiliency and Security can address



*Reliable. Recoverable. Resilient.*



## Disaster Recovery

*Recover Quickly*

- Minimize the impact of unforeseen events, including security breaches— from the minor to the catastrophic – with the goal of responding more effectively and minimizing the costs and time associated with outages.



## High Availability or Fault Tolerance

*Critical Systems Availability*

- Implement the right level of availability and security to meet increasing 24/7 internal or regulated recovery and uptime demands.



## Enterprise Availability Management

*Manage and Monitor*

- Increase resiliency and security through availability management at the component, business system, and enterprise levels.
- Monitor to reduce outages.
- Simplify management and reduce overhead.



## Business Continuity

*Minimize Disruption*

- Maintain business operations and services in the face of a any disruptive event and comply with industry and government regulations through business continuity planning.

# Client requirements that Service Management can address



## Visibility

*Respond faster and make better decisions*

*Delivers improved visibility into the performance and availability of services that span heterogeneous and virtual environments*



## Control

*Manage risk, compliance and shared costs*

*Security management across shared infrastructures and applications. Monitor shared resource usage and cost in a virtualized environment*



## Automation

*Lower costs and build agility*

*Leverage automation to address operational complexity associated with managing virtual resources*

**IBM provides visibility, control and automation across infrastructure and services to support all phases of the [New Enterprise Data Center](#)**

# IBM Information Infrastructure for storage resource management

- **Client value**
  - Prioritize and align critical storage usage to company's direct business priorities
  - Reallocate underutilized and orphaned assets to high-value areas of the business
  - Respond more quickly to changing business requirements
- **Reasons to Buy**
  - Solution powered by IBM Novus™ Storage Enterprise Resource Planner (SERP)
  - Leverages proven storage analytics to improve visibility across the global storage and backup infrastructure for improved service level delivery
  - Now integrated with IBM TotalStorage Productivity Center

**“SERP has put control of tiered storage directly in the hands of IT's customer, the Lines-of-Business”, VP and Sr. Architect, Global Financial Services Firm**



***Information Retention***



***Information Availability***

**NovusCG**

Additional information: <http://www.ibm.com/services/storageopt>

NovusCG acquisition announced October 2007



# IBM Information Infrastructure for storage resource management

- **Client value**
  - Flexible platform strategy can reduce costs and improve storage utilization
  - Improve performance, yield, and availability of storage and data
- **Reasons to Buy**
  - Solution powered by IBM Novus™ Management Complexity Factor (MCF)
  - Reduce complexity of storage infrastructure, data management environment, processes
  - Improved analysis tools help hold the line on storage and data management cost

*Identify up to 15% trapped client storage assets for reclamation\**



**Information Retention**



**Information Availability**

NovusCG acquisition announced October 2007



Additional information: <http://www.ibm.com/services/storageopt>

\* Cost benefits at clients vary based on differences in size of data centers, growth rates,

# IBM Information Infrastructure for storage resource management

## Client value

- Improve resource performance, consistency and yield
- Reduce the impact of resource turnover
- Optimize the storage environment and management with best-practice based processes and procedures standardized across the organization

## Reasons to Buy

- Solution powered by IBM Novus™ Enterprise Standardization Program (ESP)
- Provides intellectual property, tools, and skills to help clients implement standardized processes rapidly, with less risk

*Control accelerating operating expense and reduce impact of resource churn*



*Information Retention*



*Information Availability*

NovusCG acquisition announced October 2007

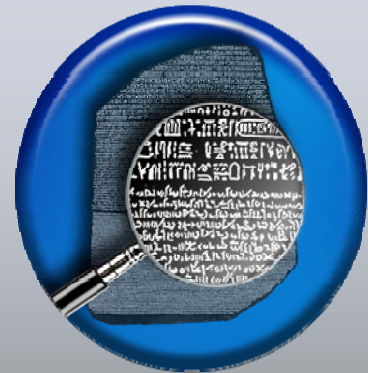


Additional information: <http://www.ibm.com/services/storageopt>

# IBM Information Infrastructure for non-disruptive data migration

- Client value
  - Improve service level delivery
  - Reduces risk, cost, complexity and planning effort required data migration
  - Simplify data migration after storage technology refresh
  
- Reason to Buy
  - Non-disruptive data migration
  - Heterogeneous support across Windows, UNIX and z/OS storage environments
  - Secure, block and file-level data migration

*Since 1996, IBM performed over 1500 data migration engagements using Softek, an average of 3 projects per week for 10 years.*



***Information Retention***



***Information Availability***

Softek acquisition announced April 2007



Additional information: <http://www.ibm.com/services/datamobility>

# IBM Information Infrastructure for Efficient Information Availability

## ■ Client value

- Improves IT system availability and information access
- Provides access to highly specialized skills
- Reduces operational costs

## ■ Reasons to Buy

- Pre-integrated set of services to support server, storage, network and middleware
- Modular approach – buy what you need
- Highly scalable to grow with your business
- Support for leading high availability & backup products

**Typically reduces  
monitoring & management  
related costs by 20%+**



***Information Availability***

<http://www-935.ibm.com/services/us/index.wss/offering/its/a1028595>

# IBM Worldwide Client Centers

*Skilled professionals applying IBM and partner technologies to solve real customer problems*

- Worldwide support centers for thought leadership and expertise
- Decades of experience harnessing new technologies for mainstream business



IBM Worldwide Client Centers	IBM Cloud Computing Centers
●	<span style="color: green;">★</span> Active <span style="color: yellow;">★</span> Planned

*WW Executive Briefing Centers*

*WW Design Centers*

## Moving forward

- **Understand the changing business priorities** – and how new technologies are enabling business model innovation
- **Understand where you are today** – and move quickly to capitalize on new technology-enabled innovation or risk commoditization
- **Identify and tackle core IT issues** that are inhibiting your ability to move forward
- **Layout a holistic transformation roadmap**

