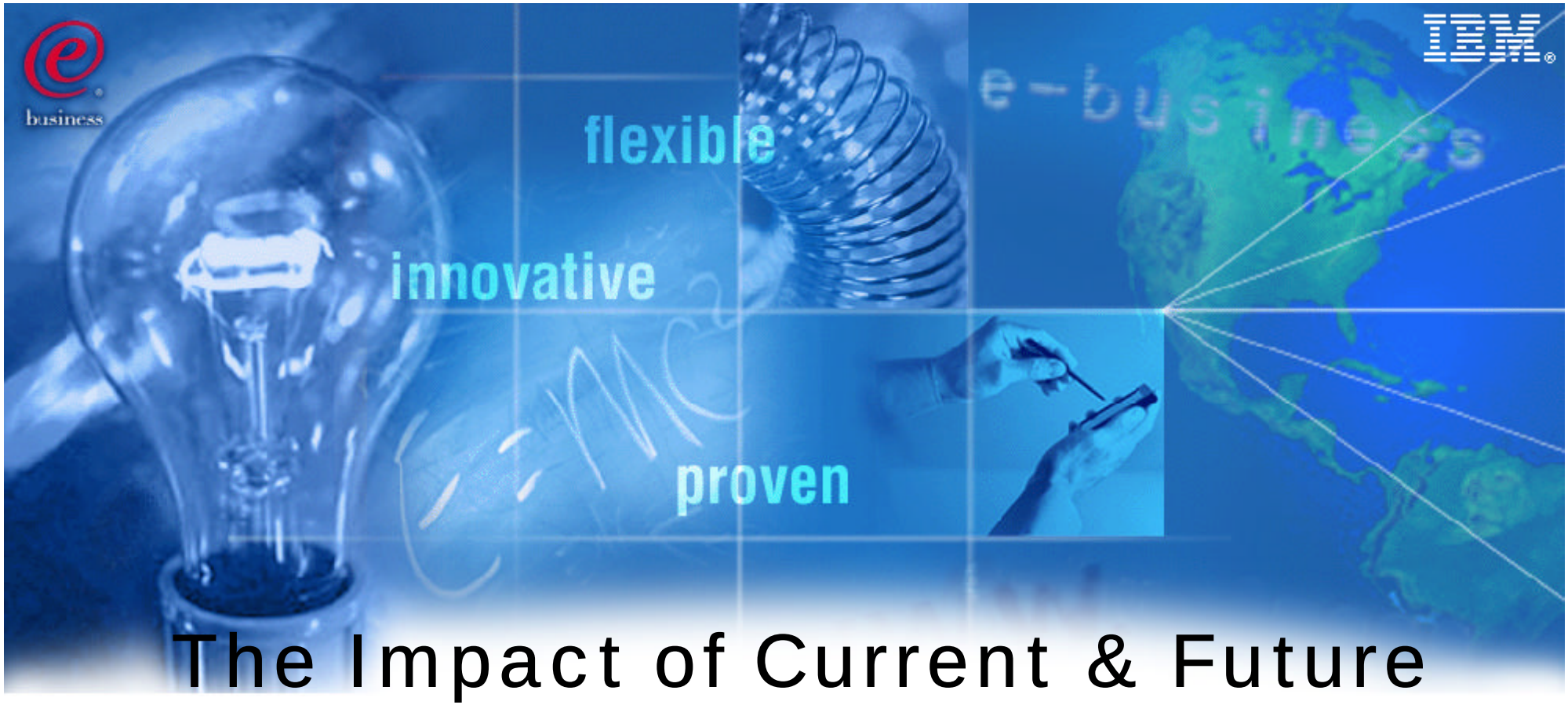


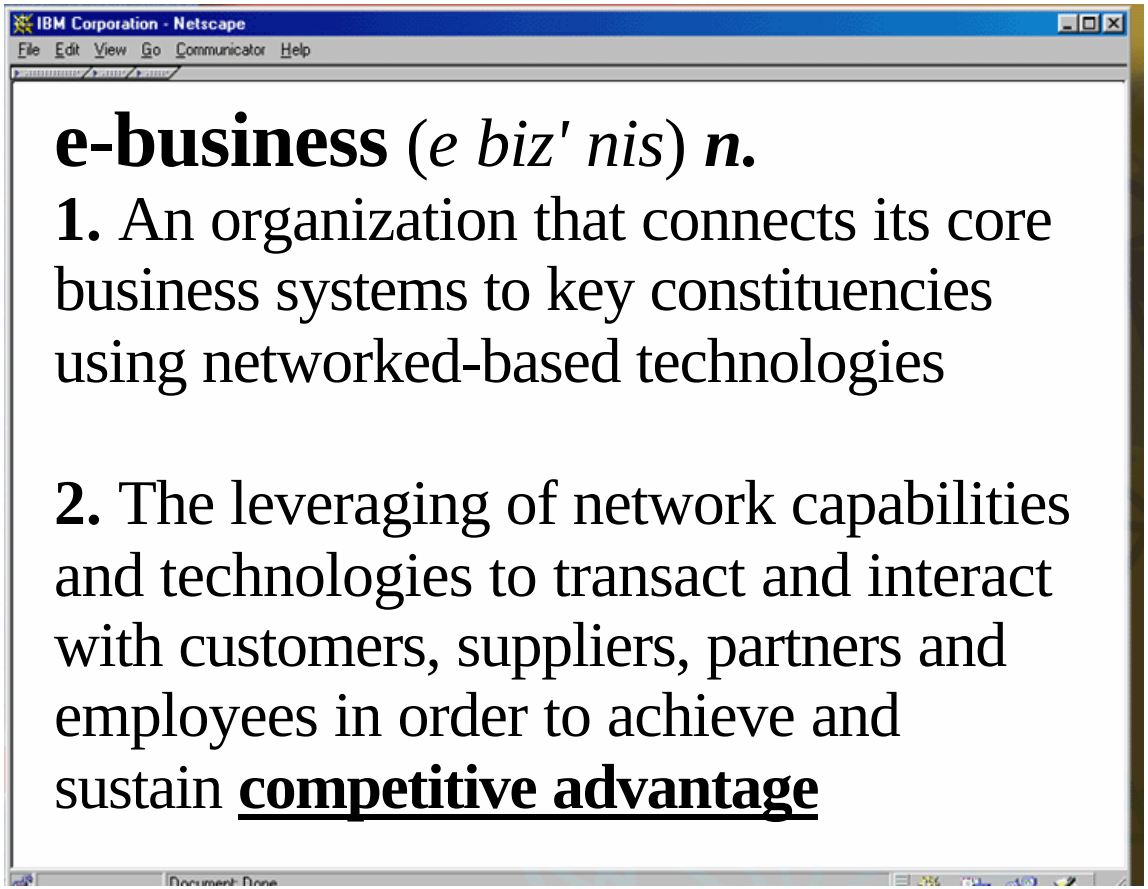
The Impact of Current & Future Technology on e-business

For the next generation of e-business

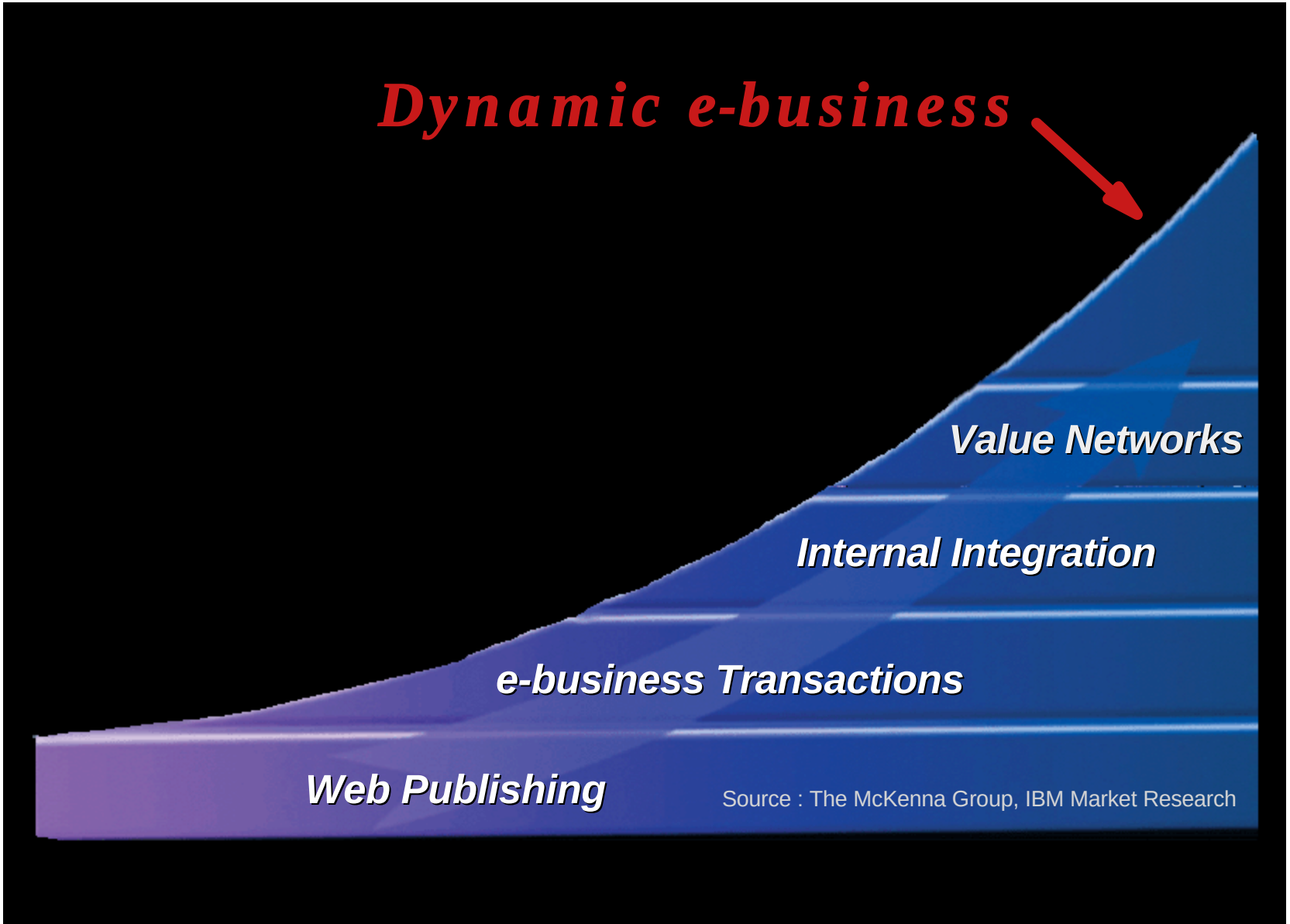
November 8, 2001

Don O'Toole
Scott Cosby
IBM Corporation

The world of e-business



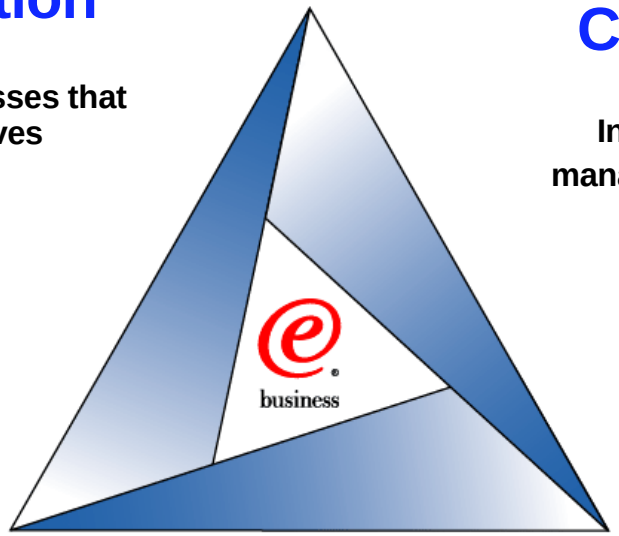
The nimble e-business



Shaping the Future - Dynamic e-business

Business Process Transformation

Businesses and processes that integrate themselves



Autonomic Computing

Infrastructure that manages and runs itself

Expertise

Any time, any where, access to know-how to deliver the competitive advantage

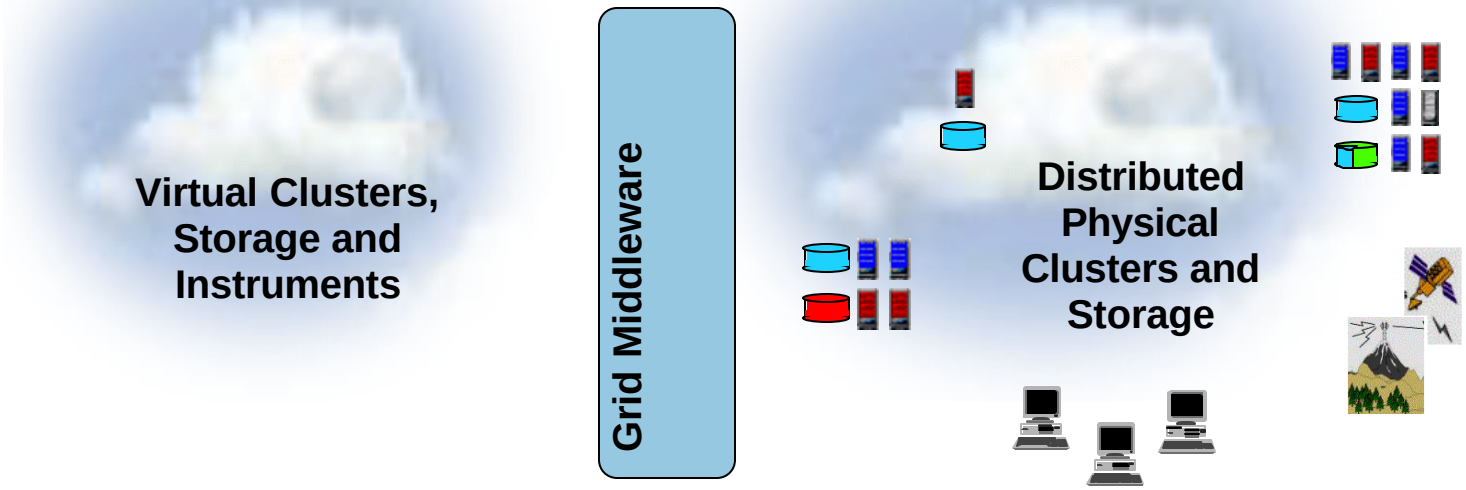
Autonomic Computing

Exploding Infrastructure - 10 times every 10 years

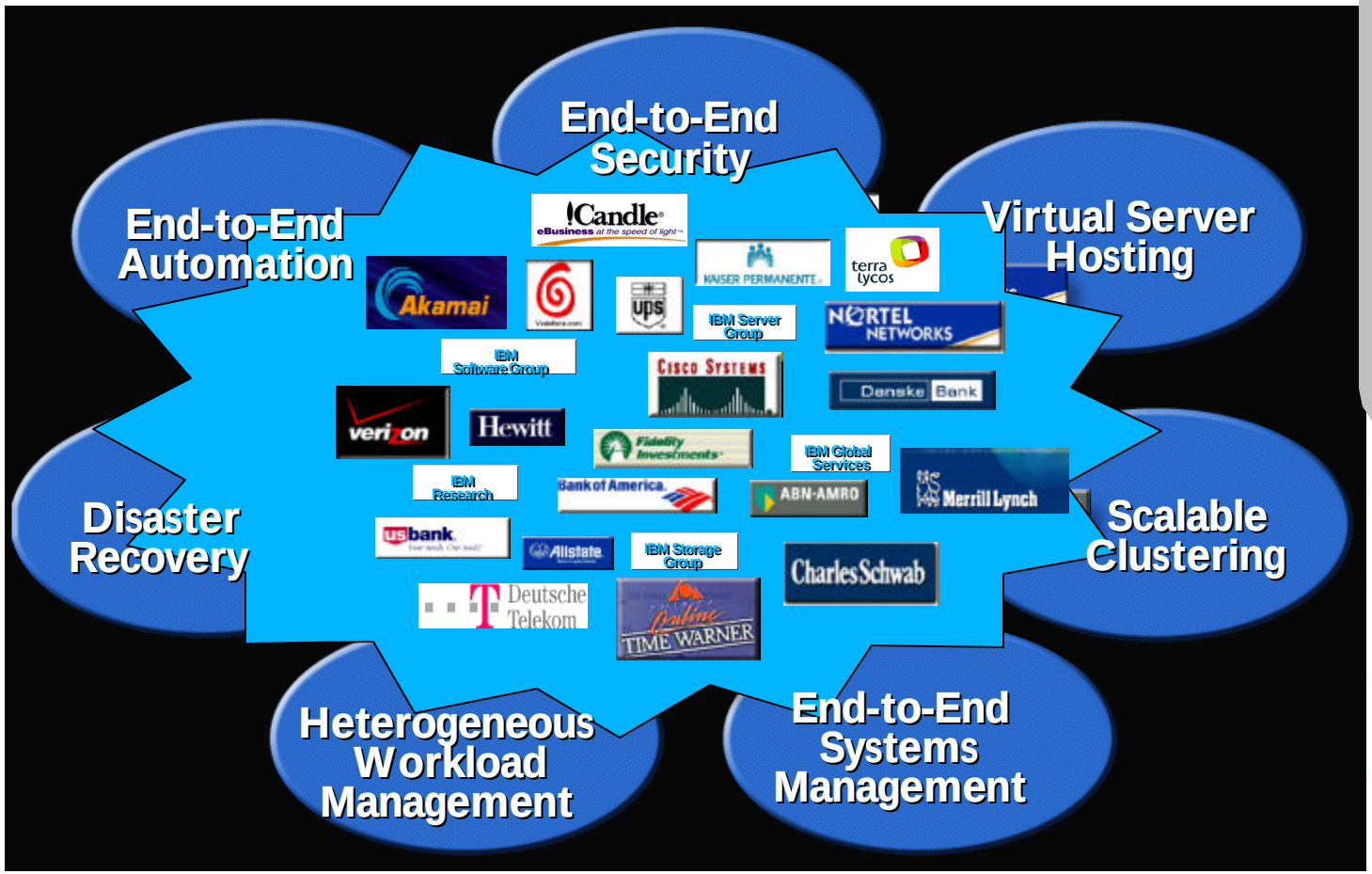
The Grid

- Grid computing drives standards and software, enabling *resource sharing* and collaboration over the Internet.
- Grids link servers, clients and storage across the Internet, forming dynamically allocated virtual server and storage pools.
- Today's Grid software is focused on physical hardware allocation for high performance computing and collaboration, but will evolve to support an e-utility environment for most workload types.
- Sensors and instruments will be incorporated into grid computing environments.

AUTONOMIC



Advanced e-business Council



IBM response is driven by our customers

IBM and Autonomic Computing

Delivering the underlying technology required to create systems that can be self-managing

AUTONOMIC

Self-configuring
- Distributed Server Management
- Integrated xSeries Server
- Workload Balancing/Job Prioritization
- Dynamic installation/configuration
- Dynamic extensible system
- Self/Auto configuration
- Auto discovery and update
- ...

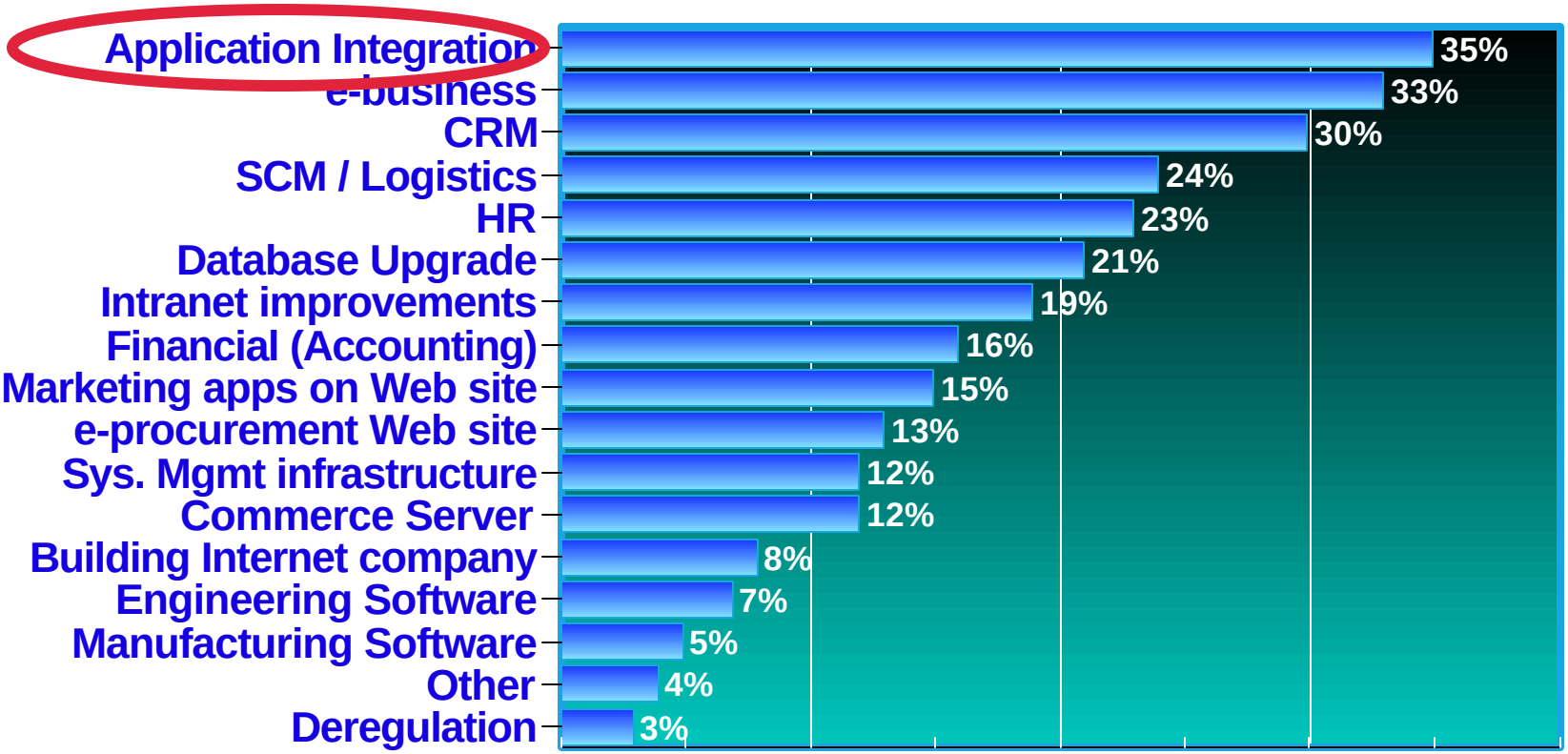
Self-healing
- Scalable Cluster Management
- Memory Scrubbing
- ECC L1 D cache
- Dynamic CPU/Memory deallocation
- Hot swap storage
- Predictive Failure Analysis (PFA)
- Lightpath Diagnostic
- ....

Self-optimizing
- Dynamic Workload Management
- Scalable Cluster Management
- Monitoring, reporting
- Management Central monitoring
- Policy-based workload management
- LPAR
- Workload Manager
- ...

Self-protecting
- LDAP
- Kerberos
- SSL
- VPN
- Digital Certificates
- Hardware Encryption
- GSKIT
- ...

Customers' Strategic Software Projects

Top strategic software platform project over the next year



Source: Morgan Stanley CIO Survey, May 2001
Note: Multiple responses permitted

Why Web services?

- **Not everyone will use the same**
  - **Operating system**
  - **Hardware or delivery device**
  - **Programming language**
  - **Distributed object system**
  - **Database or other application**
- **We want to move from monolithic, custom-coded apps to choreographed, scripted components.**
- **We need to move from tightly coupled systems to loosely coupled ones.**
- **We need a well-understood programming model for connecting businesses via the Internet.**

How Can Web Services Be Used?

- ***Between a business and end-users***
  - Deliver a better user experience
  - Integrate diverse content
  - Reduce the cost of content delivery
- ***Within a business***
  - Accelerate and reduce the cost of integration
  - Save on infrastructure deployment and management costs
  - Reduce skill requirements
  - Improve reuse
- ***Between businesses***
  - Providing service to your customers
  - Accessing services from your partners and suppliers
  - Standards and common infrastructure reduce the barriers
  - Simplicity accelerates deployment
  - Dynamism opens new business opportunities

Web Services: A Simple View

- **"Web services" is how**
  - **businesses describe functionality (services) they want to externalize**
  - **businesses publish that information**
  - **businesses discover services**
  - **businesses connect to and invoke services with appropriate security, reliability, and privacy**
- **XML defines a platform-independent way of representing data**
  - **enables integration at the data level**
- **Web services defines a platform-independent way of exchanging data**
  - **enables integration at the process level**
- **This is moving very quickly because, basically, business demands it.**

Analyst Opinions

"By 2005, the aggressive use of Web services will drive a 30 percent increase in the efficiency of IT development projects."

- Darryl Plummer, Gartner @ Gartner research presented at Gartner Symposium ITxpo 2001.

Why Web Services Will Succeed

Other distributed technologies failed on the Internet because they strongly coupled the endpoints and therefore could not become pervasive:

- ✗ **Unix RPC - requires binary-compatible Unix implementations at each endpoint**
- ✗ **CORBA - requires compatible ORBs**
- ✗ **RMI - requires Java at each endpoint**
- ✗ **DCOM - requires Windows at each endpoint**

- ✓ **SOAP is the platform-neutral choice**
  - ➡ **simply an XML wire format**
  - ➡ **places no restrictions on the endpoint implementation technology choices**

Some Reality Checks

- **Web services is part of the evolution of e-business, and is thus not a revolution.**
- **Web services are not just about B2B.**
  - **The web services model can be used behind the firewall, that is, not just business-to-business.**
- **This is about integration, not how we build the systems behind the web services interfaces (Java, EJBs, COM, CORBA, etc.)**
- **We are not really starting from an empty slate: there is much pre-existing art.**

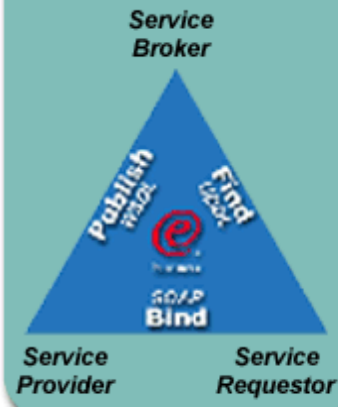
IBM Software Infrastructure Blueprint

Principles

Standards Base

Open interfaces

Open programming model



Practices

IBM Patterns for e business

High Volume Web Sites

Best Practices

Web Business Components

Products

WebSphere

Lotus

Tivoli

DB2

e server

Partners

Flexible - Innovative - Proven

Linux and IBM

IBM has delivered all critical elements of its Framework for e-business on Linux

Tivoli®

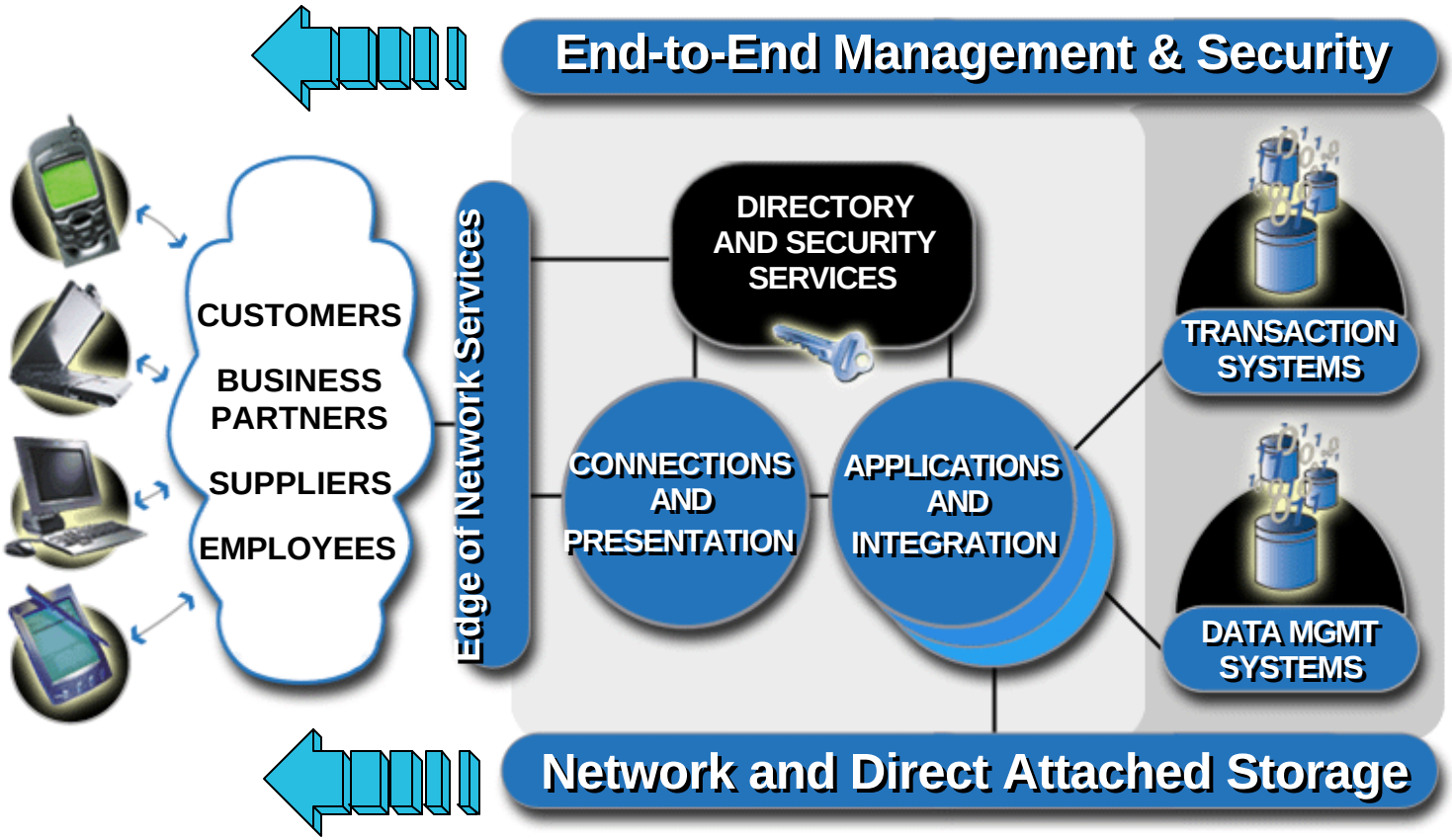
DB2®

Lotus®

WebSphere®

- Extensive implementation of all 4 brands
- More than 1,000 developers
- All IBM servers support Linux
- 20,000 copies of our Linux development kit
- Linux Development Centers for ISV development and porting
- Open Source Development Lab

e-business Open Standards



Presentation
- HTML
- WML
- VoiceXML

Transport
- TCP/IP
- HTTP/HTTPS
- WAP/ i-Mode
- JMS
- syncML

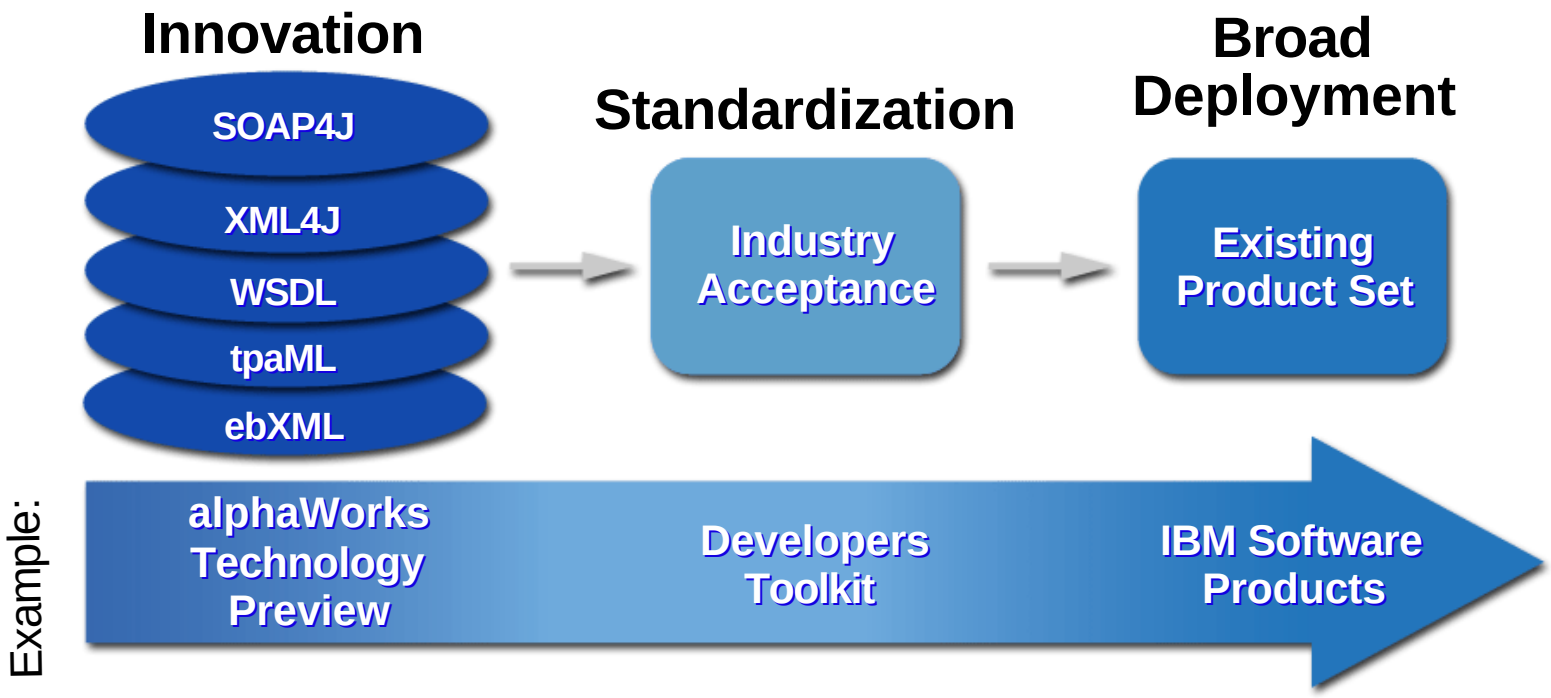
Security
- SSL
- LDAP
- PKI

Application
- J2EE
- JSP
- EJB
- WSFL

Integration
- XML
- SOAP
- UDDI
- WSDL

IBM Standards Leadership

From leading technology to leading products



- Develop leading infrastructure technologies
- Enhance IBM software infrastructure products
- Contribute to open source organizations

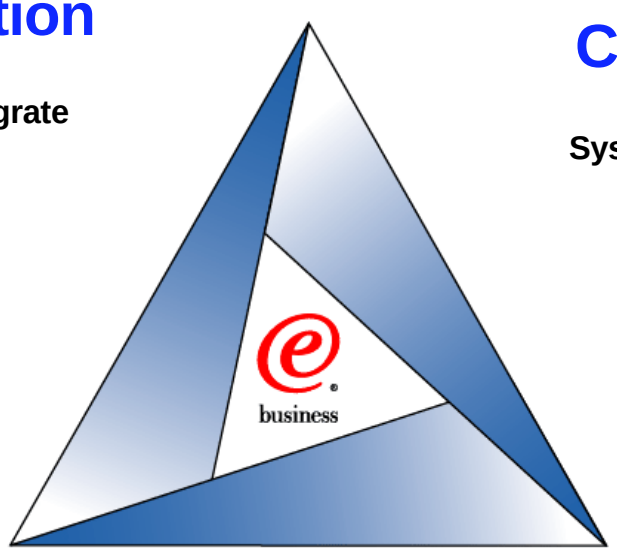
Shaping the Future - Dynamic e-business

Business Process Transformation

Processes that integrate themselves

Autonomic Computing

Systems that manage themselves



Expertise

Any time, any where, access to know-how to deliver the competitive advantage

Delivering Business Agility