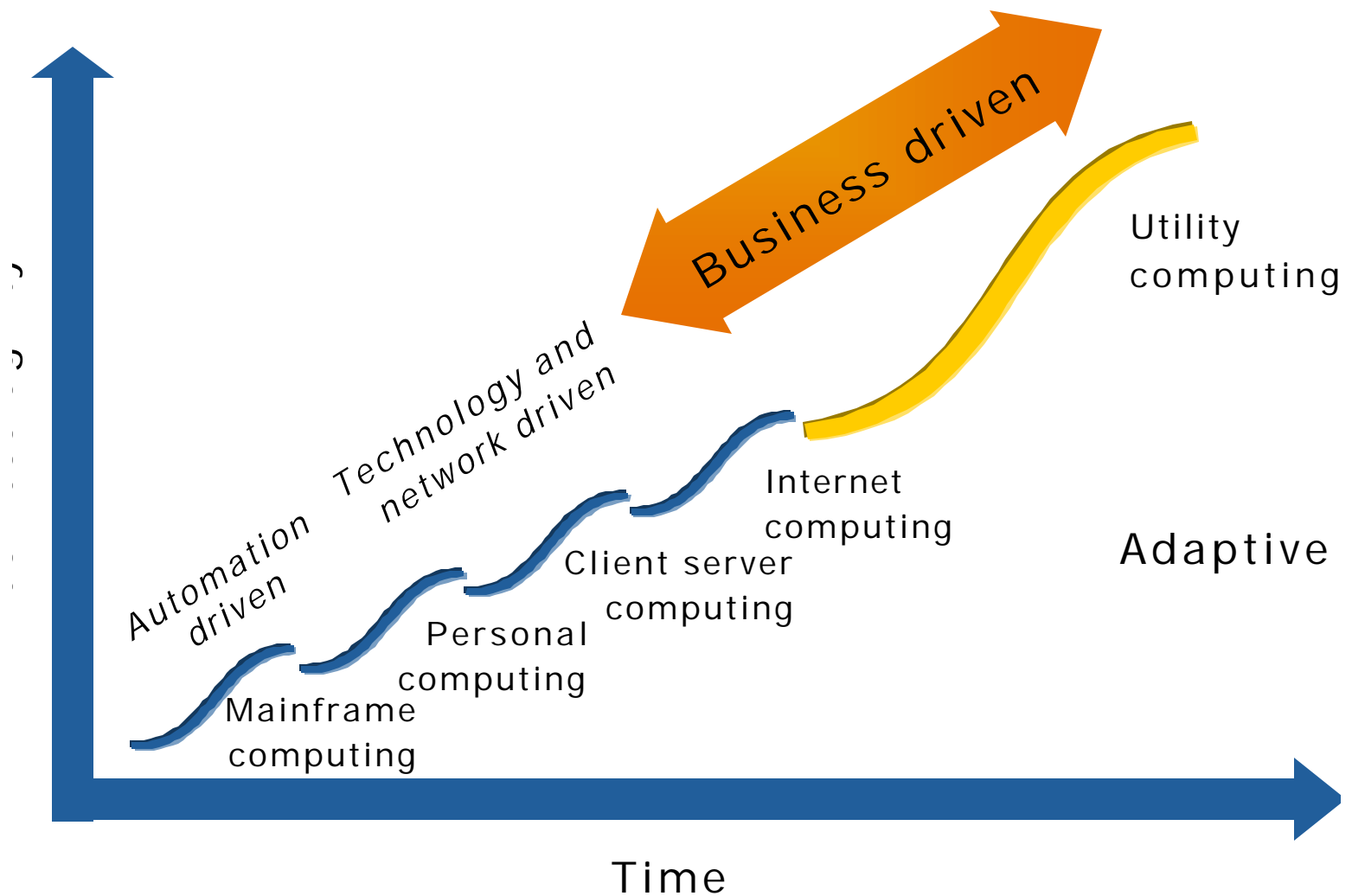# Enabling Business Agility through Virtualization

Nick van der Zweep

Hewlett-Packard

Director

Utility Computing

new model of computing

Business driven

Utility computing

Technology and network driven

Automation driven

Mainframe computing

Personal computing

Client server computing

Internet computing

Adaptive

Time

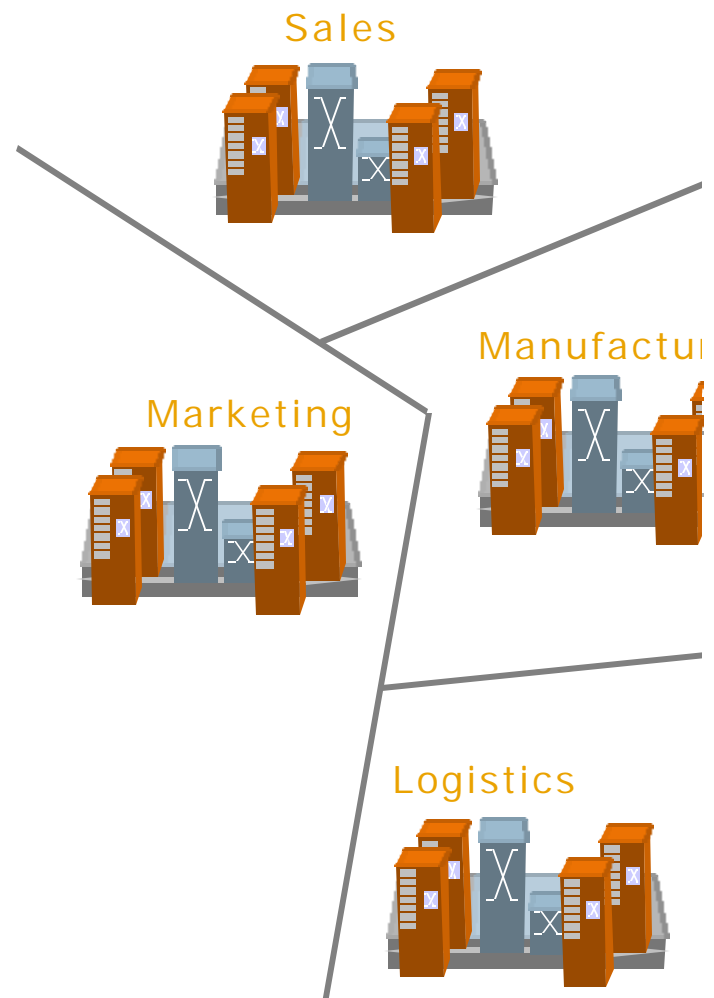# aditional" IT infrastructure
plexity, costly, change is not easy

features *vs.* IT economics

plications tied to platform

plications own platforms

dicated, application-specific
velopment, test, production,
d disaster recovery
vironments

ch environment sized for
pected peak load, little or no
ource sharing

Sales

Manufactu

Marketing

Logistics

ualization –
ing complexity out

Today's
data center

Ideal
computing

Internet

Internet

Virtual
resource
pool

ualization –
ving IT economics

dress four key points

ower costs

mprove service levels

Manage risk

Enhance agility

Ideal computing

Internet

Virtual resource pool

adaptive infrastructure creates iness agility

Immediate knowledge, intelligent action

Business strategy and processes

Applications

HP Adaptive Infrastructure

alyzes mand for ources

Adjus supply resour
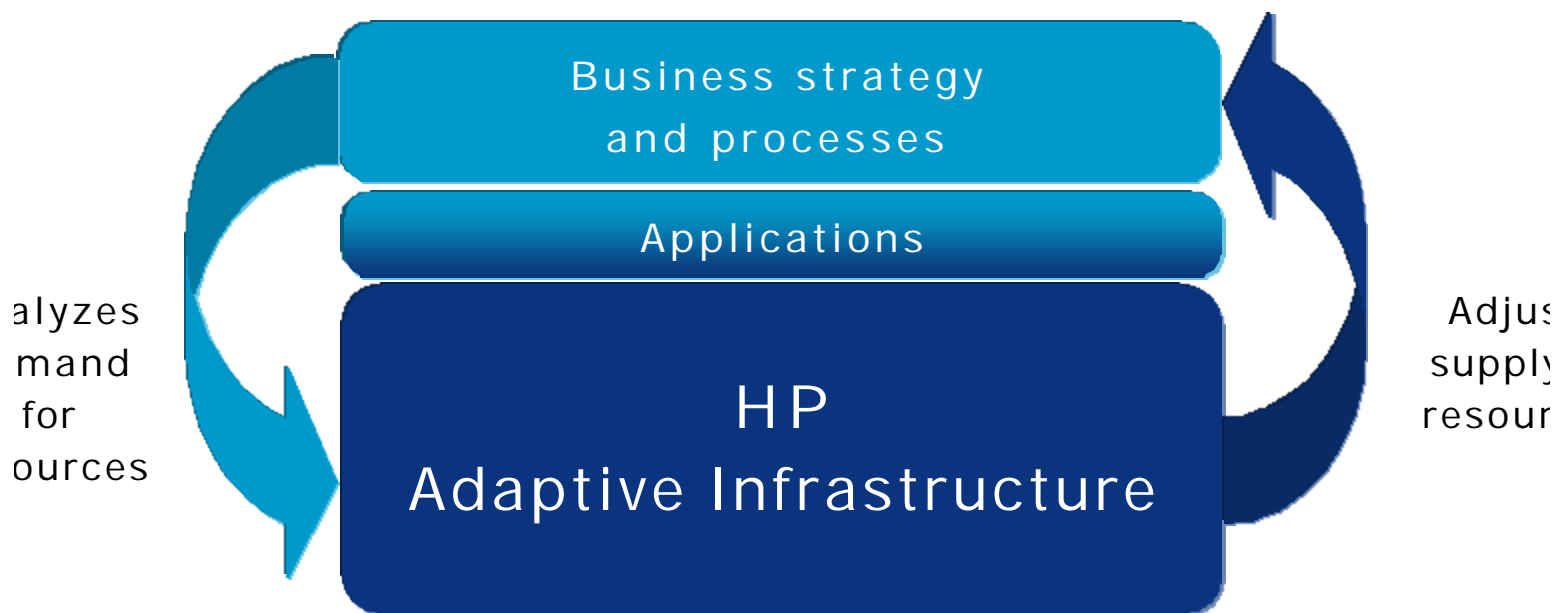
Keeps pace with change, evolves with the business, allows enterprises to anticipate and responds to opportunities and demands

lity and IT economics

"IS Organizations must be able to support business change despite constrained budgets as recovery begins…"

– Gartner Group*

"Every change in the business creates a change in the IT infrastructure. With the right infrastructure … anything is possible"
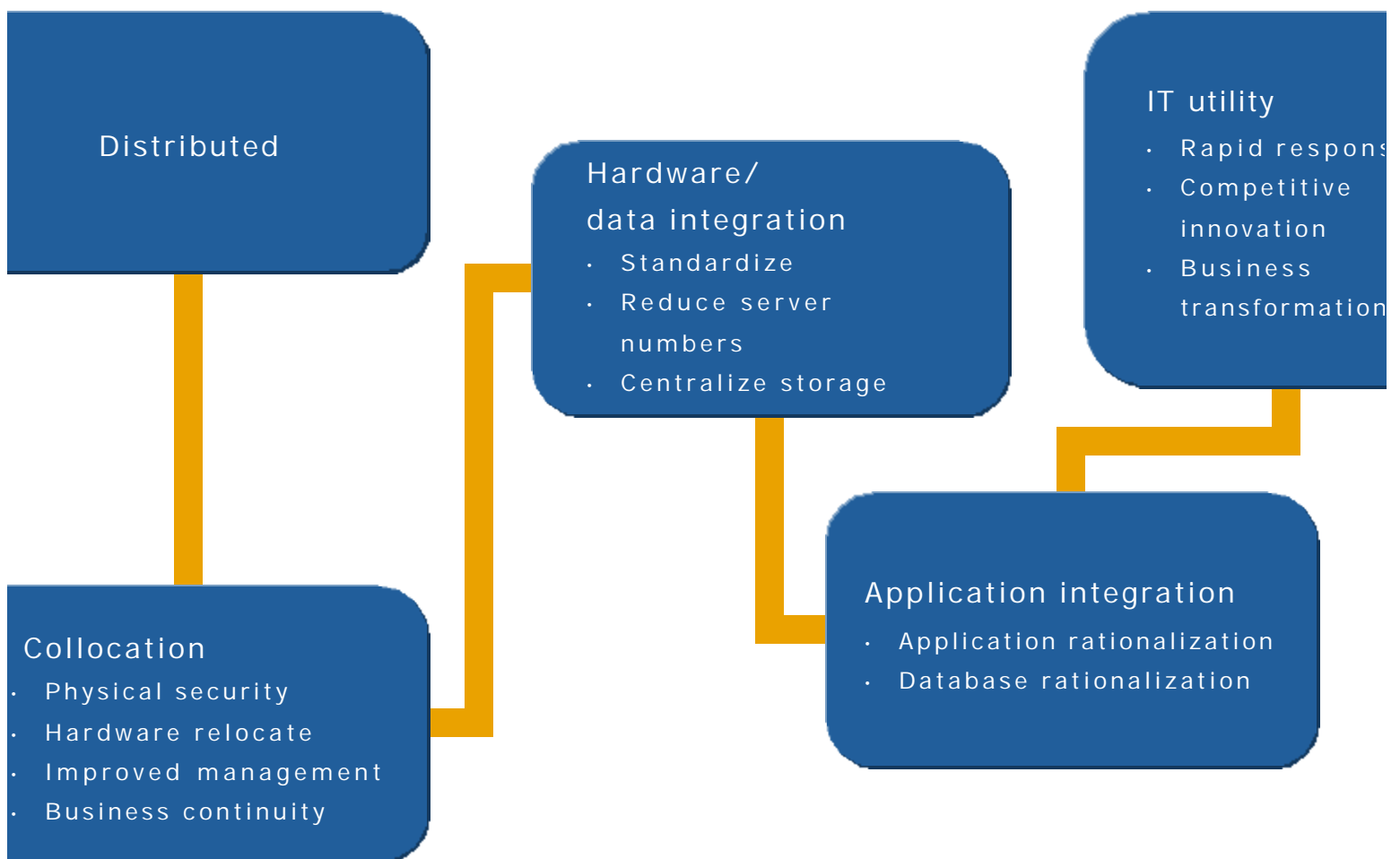
– Bob Napier, CIO of Hewlett-Pa

"It used to be that the efficiency of transactions was all that mattered. Now, the capability to change quickly is more precious than money — it's more important than having the lowest transaction cost."

- Jodie Ray, CIO of Texas Instru

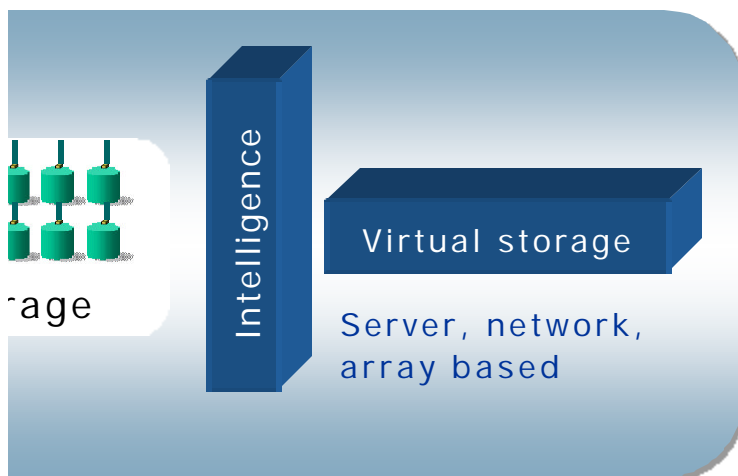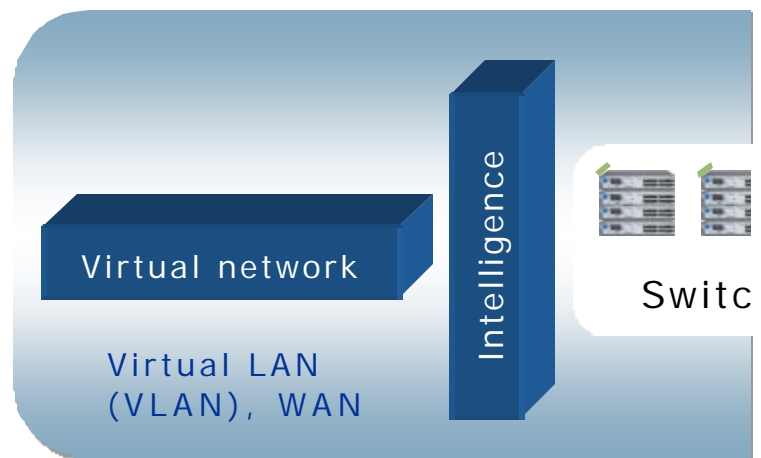"CIO 'Must Do' Resolutions for 2003" by John Mahoney & Mark Raskino, December 24, 2002

dying for the IT utility:
IT consolidation journey

Distributed

**Hardware/
data integration**
- Standardize
- Reduce server
  numbers
- Centralize storage

IT utility
- Rapid respons
- Competitive
  innovation
- Business
  transformation

Collocation
- Physical security
- Hardware relocate
- Improved management
- Business continuity

Application integration
- Application rationalization
- Database rationalization

ualization throughout the datacenter
s on services, share resources, pay for use

vers

Intelligence

Virtual server

Vertical and
horizontal scaling

Virtual network

Intelligence

Switc

Virtual LAN
(VLAN), WAN

rage

Intelligence

Virtual storage

Server, network,
array based

Virtual Apps

Intelligence

Applica

Web services
database clusters
GRID
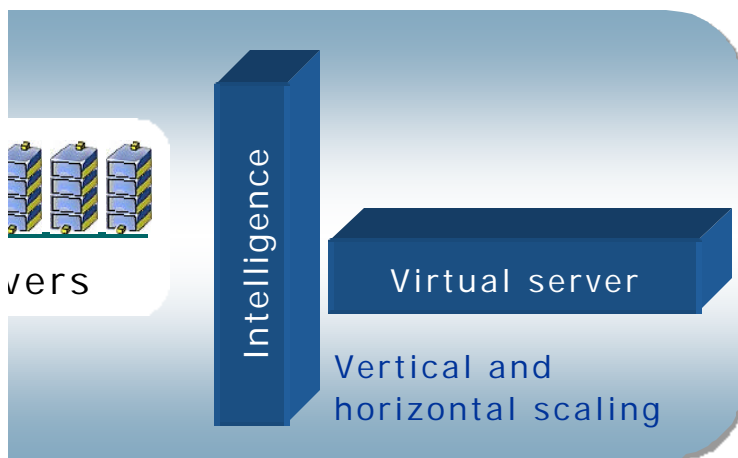
ualization –
vering business agility

hipped over 15,000 Blade servers

hipped over 50,000 Rapid
eployment Pack licenses

old over 6,000 vPar licenses

hipped over 8,000 storage
rtualization products

ver 65,000 Workload
lanagement and 70,000
erviceguard licenses

ver 90% of Superdome servers
hip with HP Serviceguard and
/orkload Management

rocurve and Cisco VLAN
apabilities

EA, Oracle, GRID

Ideal computing

Internet

Virtual resource pool

Virtual Server Environment (VSE)
amic resource sizing for servers

Virtual Server Environment

- Policy based intelligence

- Service level driven

- Based on application needs

- Pay based on usage

- Better RoIT through optimized resource usage
- Increased business agility through the capability to allocate resources on the fly
- Highest Quality of Service through continuous real time assessment, advise, and action

Storage Virtualization solutions

Server-based

- rtualize capacity
  ross heterogeneous
  ays, scaling to the
  ays' capacity
- nefits single server/
  gle cluster
  vironments
- elligence resides on
  e host

Network-based

- Benefits heterogeneous environments
- Virtualize capacity from any array, for any host on the network
- Intelligence resides in the network
- Prerequisite of the storage utility

Array-based

- Virtualize capacity i single array, scaling the array's capacity
- Benefits heterogeneous hosts/single array environments
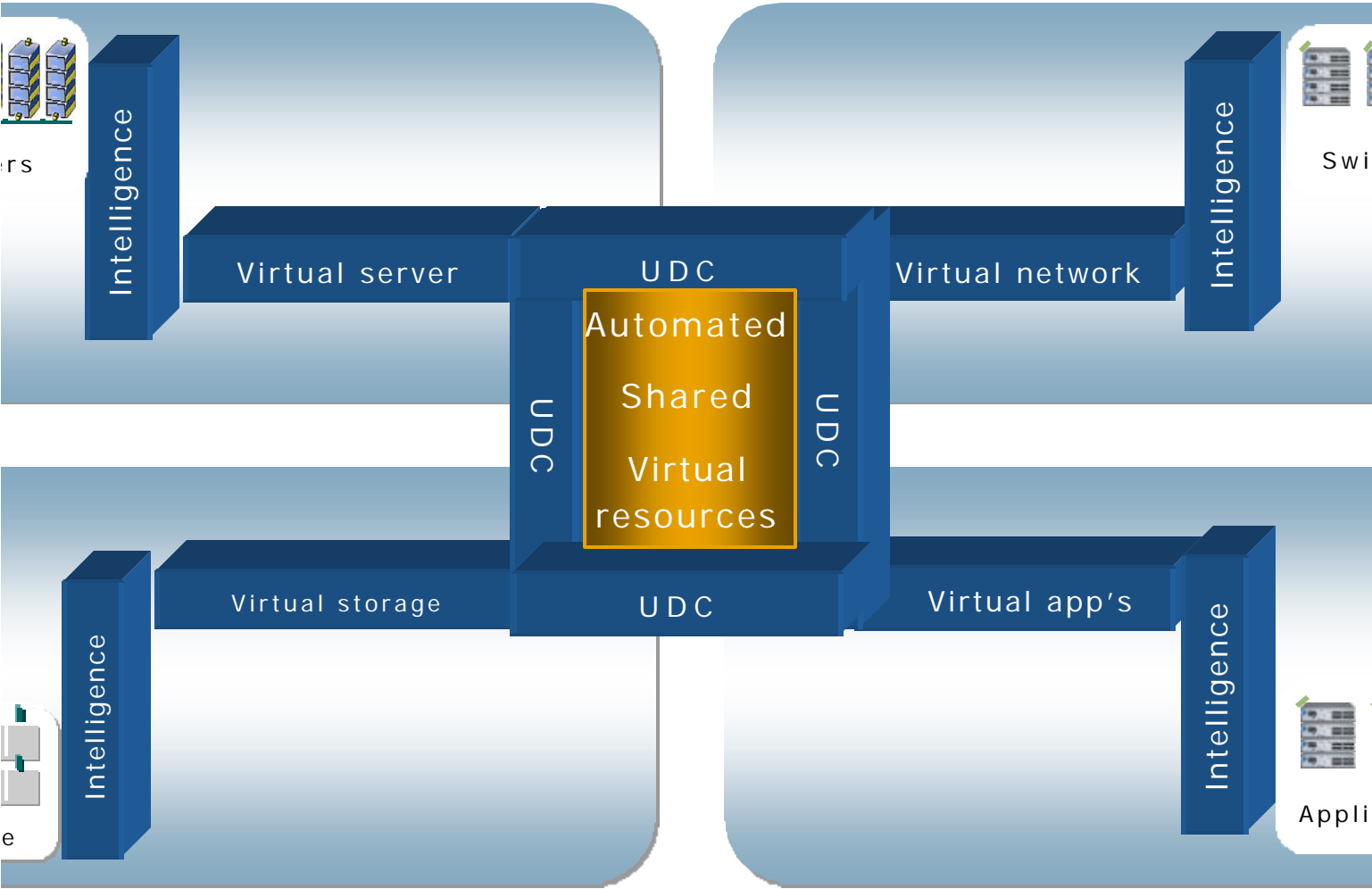- Intelligence resides the array controller
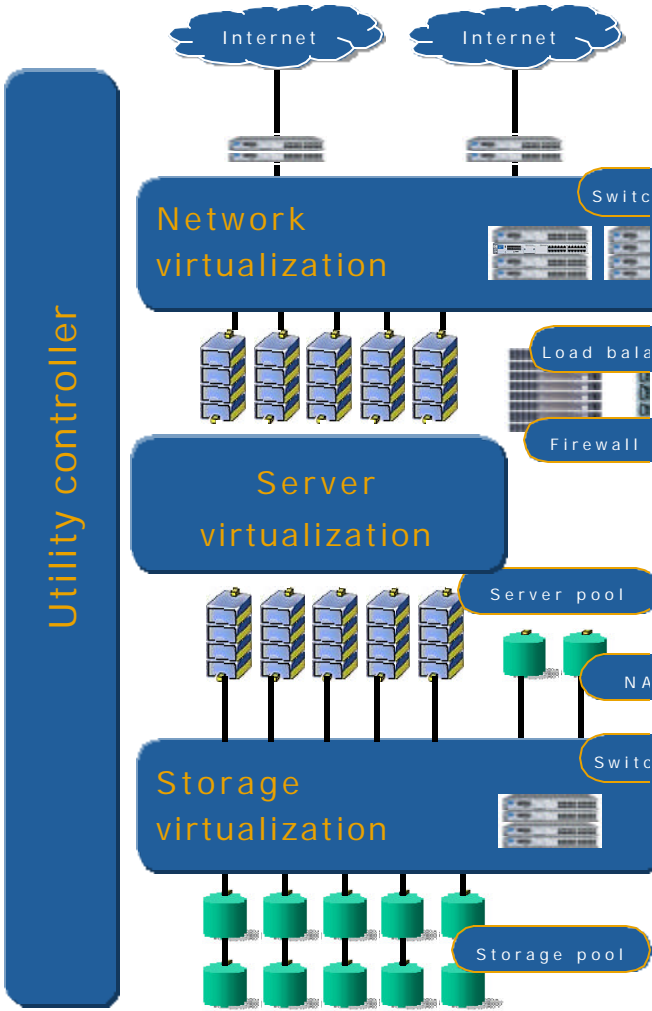
Server-based   Networked-based   Array-based

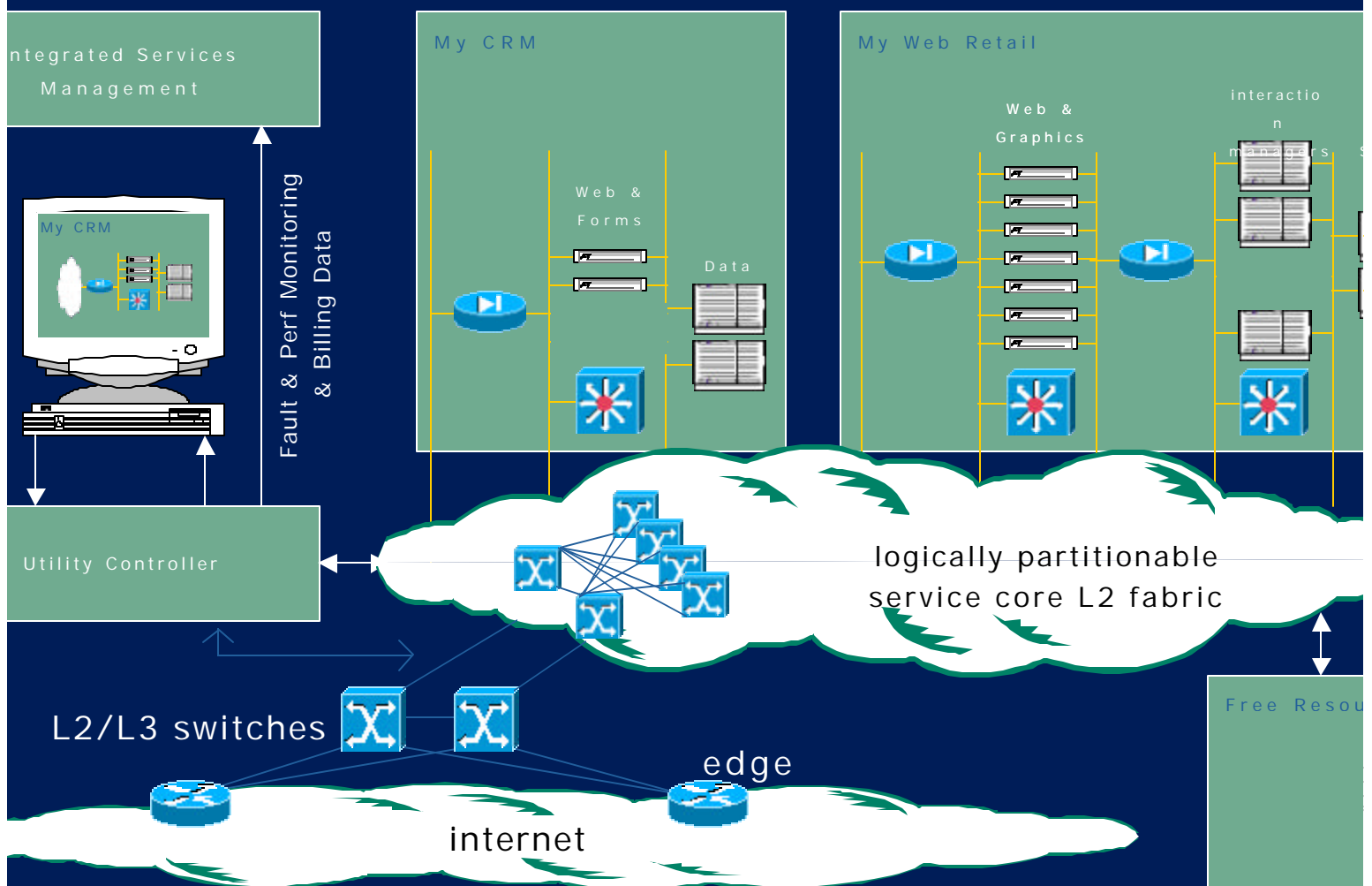# ualization leadership

ging the economics of IT utility together

Intelligence

Virtual server

UDC

UDC

Automated

Shared

Virtual

resources

UDC

Virtual network

Intelligence

Swi

rs

Intelligence

Virtual storage

UDC

Virtual app's

Intelligence

e

Appli

Utility Data Center – ultimate Adaptive Infrastructure

tility Data Center is a complete
on for virtualizing data center
nments, transforming the
mics of your operation

ll resources are wired once to
upport their virtual, flexible
llocation and reallocation

ew applications and systems can
e activated within minutes

erver, storage and network
tilization approaches 100%

esources are 'virtualized' and
ptimize themselves to meet your
ervice level objectives

dministrative and operational
verhead is minimized and
pportunities for error reduced

Utility controller

Internet   Internet

Switc

Network
virtualization

Load bala

Firewall

Server
virtualization

Server pool

N A

Switc

Storage
virtualization

Storage pool

utility data center in action

Integrated Services Management

My CRM

Fault & Perf Monitoring & Billing Data

Utility Controller

My CRM

Web & Forms

Data

My Web Retail

Web & Graphics

interaction managers

logically partitionable service core L2 fabric

Free Resou

L2/L3 switches

edge

internet

onsolidation and optimization combined with save customers 40% on average of _overall IT_ get

IT cost saving averages (in %)

5

25
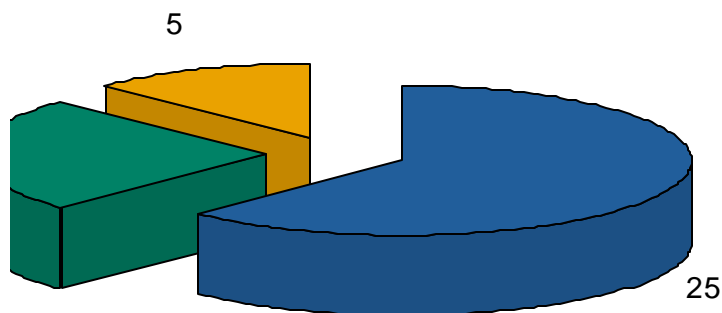
| Pure IT consolidation/optimization |
| UDC induced IT consolidation/optimization |
| Pure UDC related |

d $'s modeled only in the context
T budget :

soft $'s

business benefits modeled

time to market savings
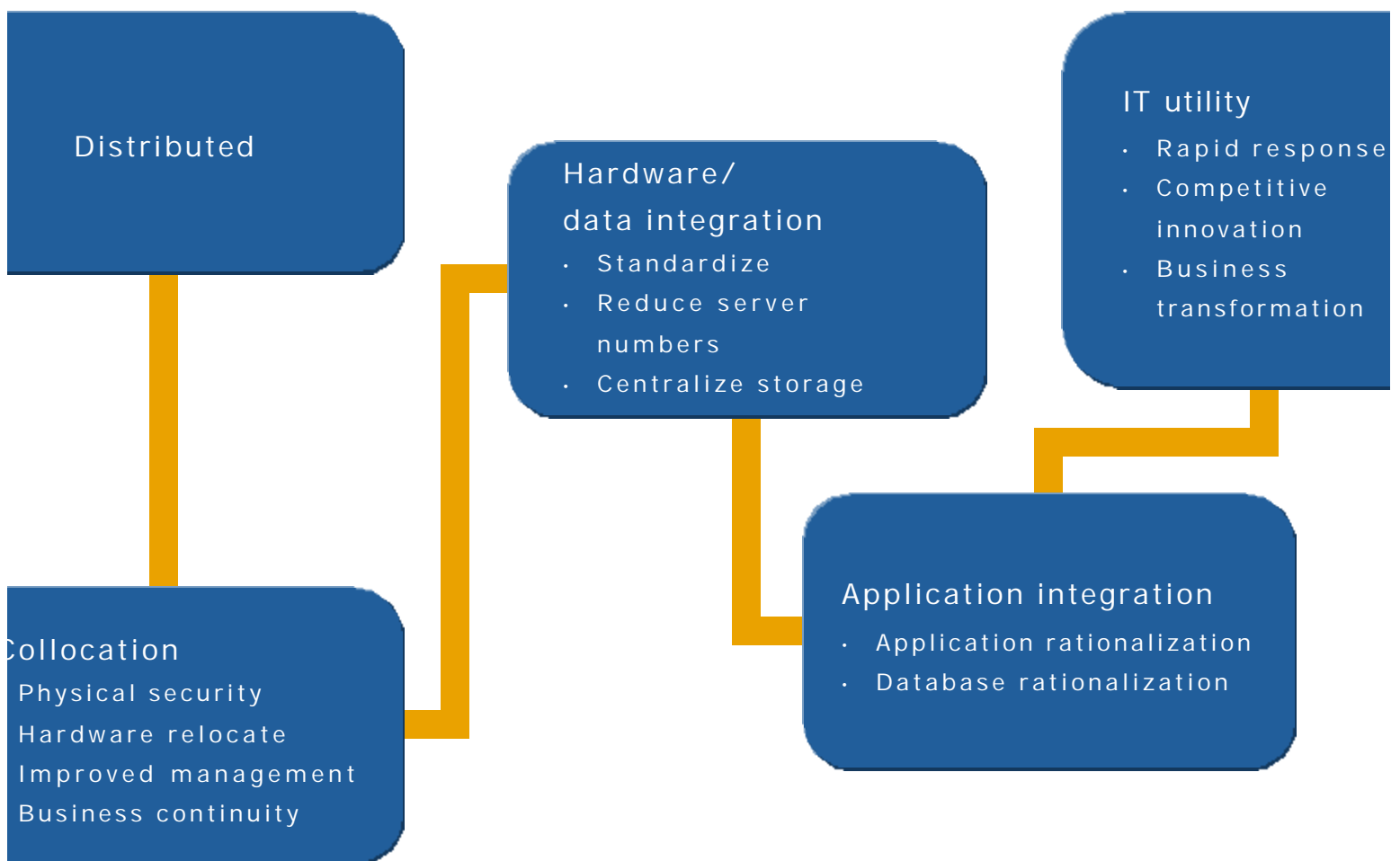
lity improvement savings

- Pure IT consolidation/optimization
  – application rationalization
  – application stacking/instance reduction
  – printer
  – server
  – data center

- UDC induced IT consolidation/optimization
  (UDC as an _IT consolidation catalyst)_
  – storage
  – backup
  – management
  – security
  – network

- Pure UDC related
  – effective IT planning
  – less HW needed for same workload
  – power, floor space savings
  – less installation costs
  – metering billing related
  – less upgrade costs

economic advantages of
a center virtualization

isioning & erational onomies	Asset utilization economies	Upgrade & migration economies	Meterin econom
ducing sts	Improved asset utilization	Reducing costs	More accu charge-ba and billing
loyment % – 80%	higher server and storage utilization 5% – 40%	upgrading & migration 20% – 40%	usage met 5% – 3(
adaptive –100%	capacity planning 5% –10%		
curity 6 – 30%			

dying for the IT utility:
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Distributed

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IT utility
- Rapid response
- Competitive innovation
- Business transformation

Collocation
- Physical security
- Hardware relocate
- Improved management
- Business continuity

Application integration
- Application rationalization
- Database rationalization

economics:
dware/data Integration

ntinental Airlines ®

tion:

ed to manage
ofitability in a highly
veraged business

st, availability, floor
ace issues

lance business unit
erations vs. need for
in route profitability

Solution:

- Provide common infrastructure, independer business unit operations
- Combine six applications into one server wi flexible "hard" partitions
- Integrate data into 10 terabyte storage area network
- Common high availability platform

Results:

- "Shift from fixing performance to developing new applications"
- "$2.8 million one-time savings, $1.2 million annual savings"
- "Roi > 100%"
- Poised for growth, application integration, a future Linux/Itanium deployment

economics

DELPHI
ng Tomorrow's Technology

ation:

tiple SAP instances

tiple data centers in
tiple countries

ategic focus on
grated operations

of date
astructure

Solution
Stage 1:
- Collocation
- Eastern and Western European sites

Stage 2:
- Hardware/Data consolidation
- 25 HP/UX and 35 ProLiant Servers
- 80 Terabytes of HP Storage
- OpenView
- HP Enterprise disaster recovery solution
- Application integration
- SAP.com and related applications
- IT Utility
- HP Managed Services

IT economics:
- Substantial cost savings
- Improved service levels
- Flexible, integrated, secure operations

stomer success

l server environment

Nesbitt Burns®

ation:

eeded to absolutely
educe cost and
omplexity

eeded to maintain
ompetitive edge

eeded to accommodate
apid workload growth
ith little to no notice

Solution:

- Consolidation of 17 servers to 4 pay per
  Superdomes with partitions

- HPS' consulting and critical systems sup

- HP OpenView for network management
  systems management solutions

Results:

- Solution has sufficient reserve capacity t
  accommodate volatility spikes and is onl
  for when used

- Saving $3.3 million over three years due
  simpler, adaptive environment

- 50-100% improvement in applications
  performance

stomer success

utility data center

"By using the UDC
(Utility Data Center)
we have met all of our internal
challenges and it gave us the
ability to sell excess capacity to
our external customers."

Kevin Dann, European Computer
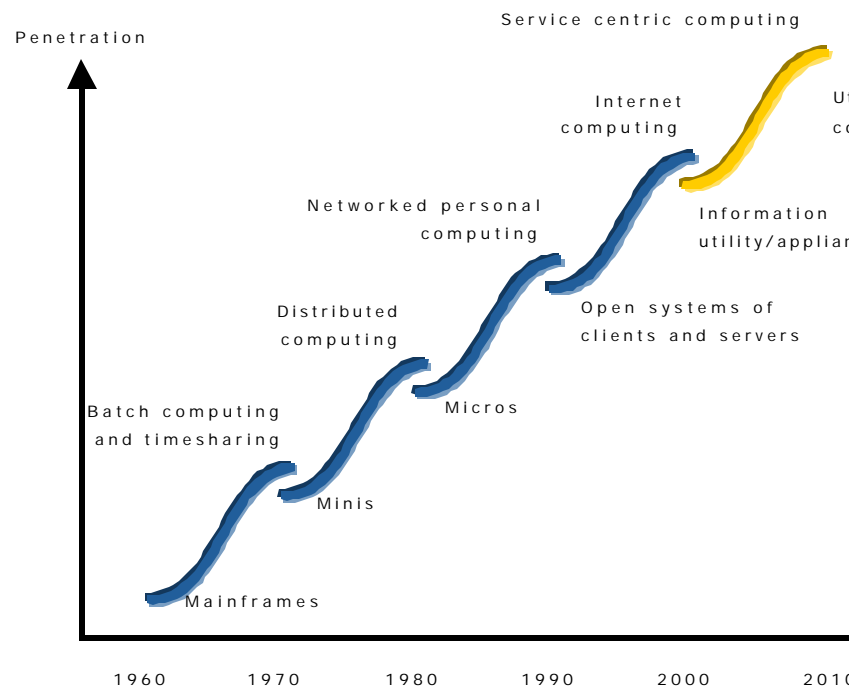Systems Manager
MSX International, October 2002

the move to utility computing?

wer your costs

oven execution

abling technologies

cus on your services