Operational Recovery in Healthcare Using Virtual Technologies

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April 12-15, 2010
Rosen Shingle
Creek Resort
Orlando, Florida

CareTech
SOLUTIONS

Overview/Background

CareTech Solutions is an Information Technology and Web Products & Services provider for US hospitals and health systems.

- Founded in 1998

- Located in Troy, MI

- Over 1,000 employees

CareTech delivers products and services to more than 120 healthcare organizations across the United States.

BEST ★ IN ★ KLAS
ACHIEVEMENT
AWARD
2009

Extensive IT Outsourcing
2008 & 2009 Best in KLAS
Award Winner

[IT] [WEB] [iDoc]

What CareTech Offers Healthcare

Infrastructure & Application Services

- Infrastructure Hosting
- Operational Recovery Services
- Desktop Services
- Network and System Management
- Application Management
- Security
- Capacity Planning, Release Upgrades, & System Backup
- Cabling/ Wireless Network
- Data management

Service Desk Services

- Level 1, 2, & 3 Problem Escalation Services
- Incident Management
- Proactive Infrastructure Monitoring
- Application Performance Monitoring
- End-User Experience Monitoring
- Service-Level Agreement Reporting

Total IT Services

Web Services

- Inter, Intra and Extranet Design & Development
- Content Management System
- Turnkey Modules; i.e. - Online bill payment, Interactive Registration, & Online Prescription Refill
- Web Hosting

Document Management Services

- Web-based Document Imaging System
- Secured Document Storage
- Indexing to Manage, Retrieve & Distributes Digital Documents
- HIM Consulting

2008 & 2009 Best in KLAS Award for Extensive IT Outsourcing

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Overall Perfomance Scores

Rank	Extensive IT Outsourcing Firm	Performance Score (out of 100)
1	CareTech Solutions	90.3
2	Dell Perot Systems	74.3
	Extensive IT Outsourcing Average	66.6
3	Siemens	66.5
4	Eclipsys	54.9
5	ACS	47.1

BEST IN KLAS
ACHIEVEMENT AWARD
2009

2008 & 2009 Best in KLAS Extensive IT Outsourcing

KLAS helps healthcare providers make informed technology decisions by reporting accurate, honest and impartial vendor performance. Like J.D. Power, KLAS rates products and services based on customer satisfaction - specifically for healthcare. CareTech Solutions is the 2008 and 2009 Best in KLAS award recipient in the IT Outsourcing (Extensive) segment, as ranked by healthcare executives and professionals in the Top 20 Best in KLAS Awards report.
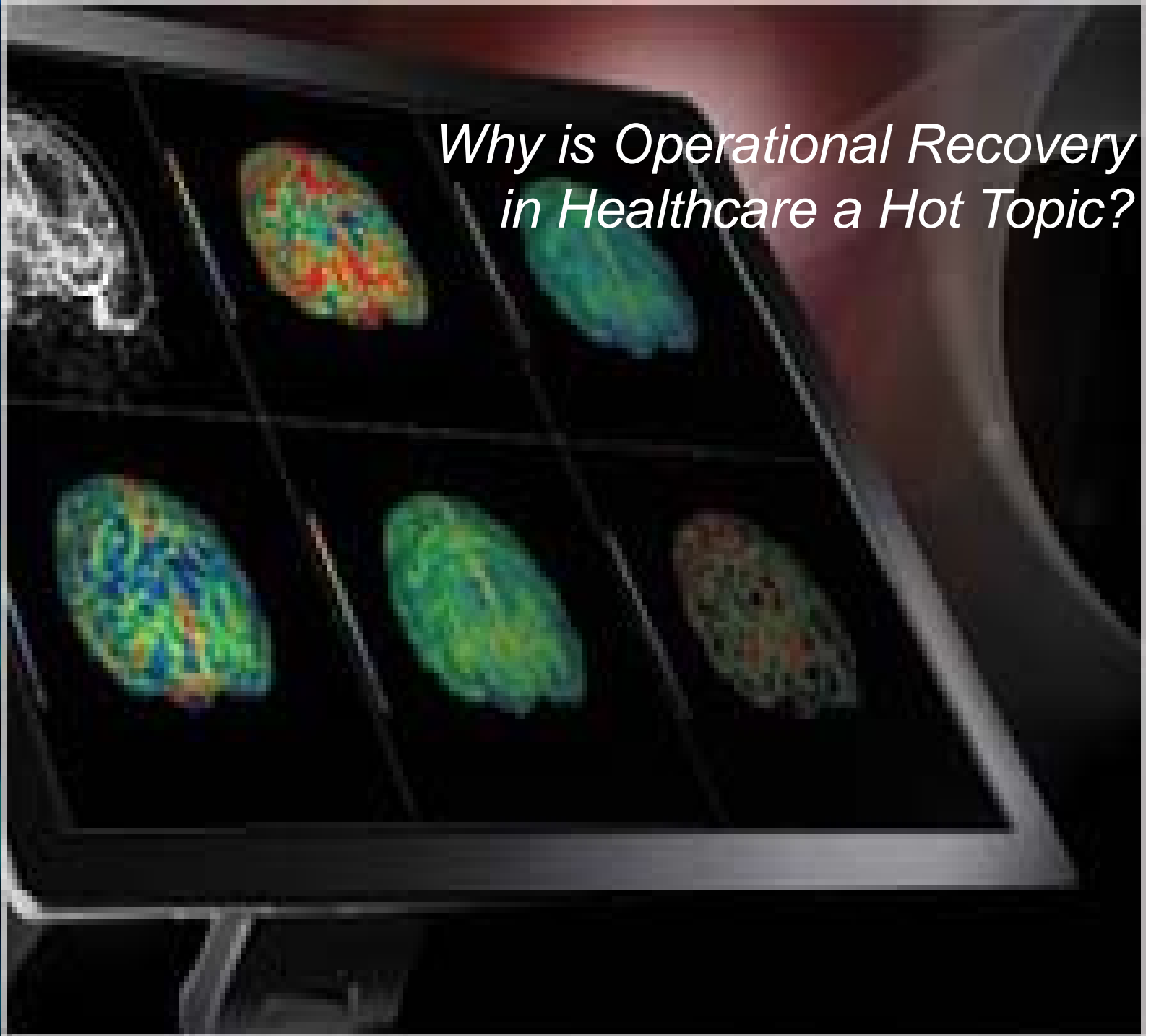
Why is Operational Recovery in Healthcare a Hot Topic?

Operational Recovery Can Help Healthcare Address Major Concerns

- Patient Safety is at the forefront of critical issues

- The American Reinvestment and Recovery Act (ARRA), HITECH Act, compels healthcare organizations to implement new technologies

- Regulatory pressures are being felt in healthcare

- The financial impact of downtime can be crippling

Technology in healthcare is the foundation of clinical workflow. Without a solid foundation, the workflow is not sustainable and will compromise patient care.

Healthcare Technology is Not Exempt from Disaster
The Usual Suspects:

Man-Made Disaster

- Process Flaws
- Accidental and/or Unintentional
- Malicious Intent
- Upstream Facility Flaws

Hardware/Software Disasters

- Hardware Failure
- Software Flaws/Corruption
- Utilities Outage
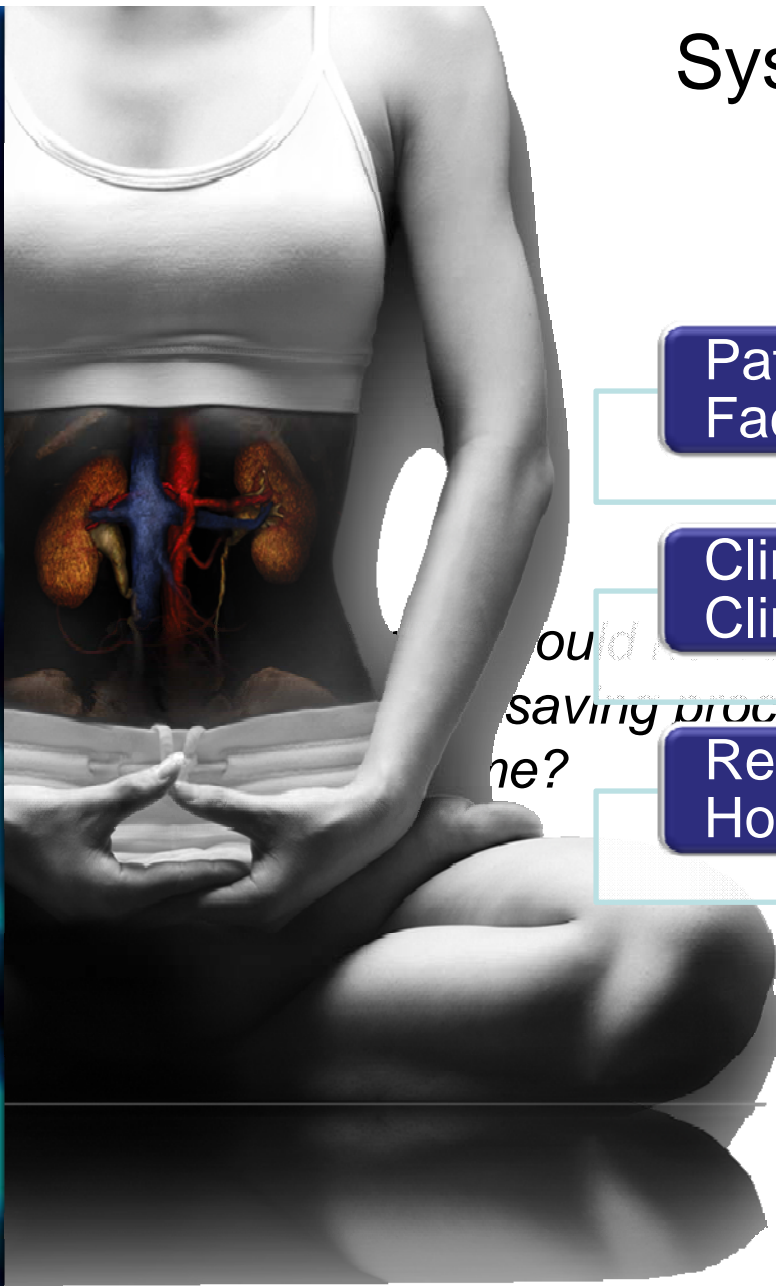
Natural Disasters

- Hurricane
- Earthquake
- Flood

Systems Must Be Reliable

Patient Safety – the <u>Most</u> Critical Factor

Clinician/Employee Confidence in Clinical Technology

ould ...
...saving procedure - due to system or
...he?

Reputation of the Hospital/Healthcare Organization

Regulatory Pressures

In 2009, the ARRA's HITECH act included billions of dollars in Medicare and Medicaid incentive payments to providers and hospitals for the "Meaningful Use" of certified health IT products.

|	
Hospitals must achieve "Meaningful Use" criteria of Electronic Health Records (EHR) to qualify for incentive payments or eventually risk being penalized for not meeting the criteria.	**Sec. 495.338 (j)** HIT implementation advance planning document (IAPD) must contain a statement illustrating certain requirements including system failure and Disaster Recovery procedures.*

The Joint Commission, formerly the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), is a private sector US-based not-for-profit organization.

A majority of state governments recognize Joint Commission accreditation as a condition of licensure and the receipt of Medicaid reimbursement.	Under **Standard IM.2.30 (IM.01.01.03**)** hospitals must ensure that continuity of information is maintained.**
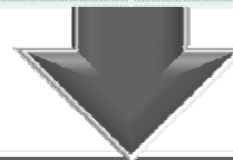
Health Insurance Portability and Accountability Act (HIPAA) was enacted by US Congress in 1996.

Provisions address the security and privacy of health data and encourages widespread use of electronic data interchange within the US health system.	HIPAA has mandated a **Contingency Plan** with 5 implementation specifications including required data back-up plans and Disaster Recovery Plans.***

Estimated Financial Costs of Down Time in Healthcare

500 Bed Hospital
- 1 minute = $264
- 1 hour = $15,840
- 1% unavailability annually = $1.4M

1,400 Bed IDN
- 1 minute = $1,000
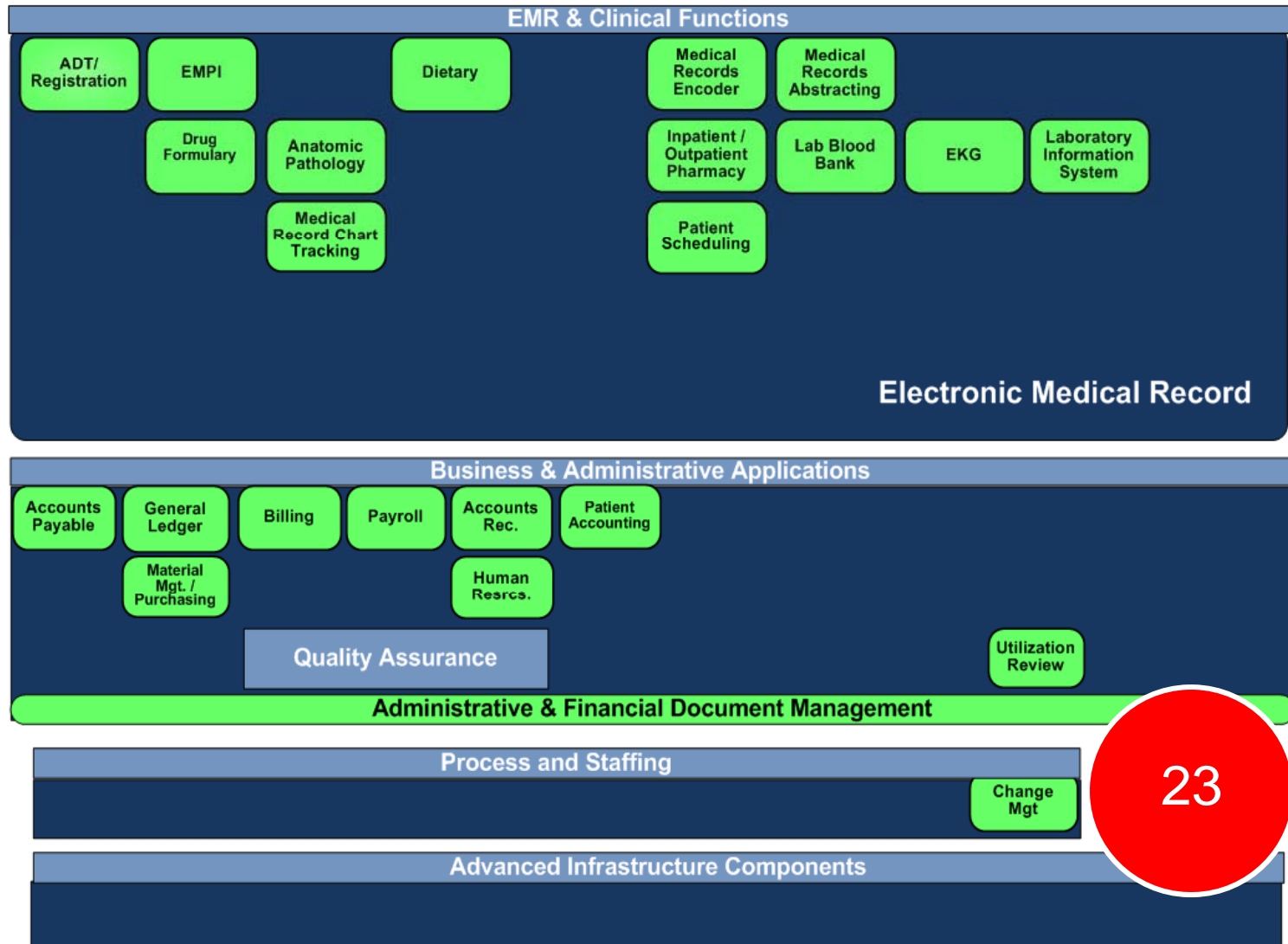- 1 hour = $60,000
- 1% unavailability annually = $10M

* Anderson, M., *The Toll of Downtime: A Study Calculates the Time and Money Lost When Automated Systems Go Down*, Healthcare Informatics, April 2002

Rear View Mirror: Technology Landscape in the 1980's

The 1990's Put Healthcare Technology on the Map

EMR & Clinical Functions

ADT/ Registration | EMPI | Order Entry | Dietary | Medical Records Abstracting | Transcription

Radiology Information System | Drug Formulary | Anatomic Pathology | Dictation | OB Fetal Monitoring | Inpatient / Outpatient Pharmacy | Lab Blood Bank | EKG | Laboratory Information System

Results Reporting | Medical Record Chart Tracking | Clinical Refererences | Patient Scheduling | Mammography

Electronic Medical Record

Business & Administrative Applications

Accounts Payable | General Ledger | Billing | Payroll | Accounts Rec. | Patient Accounting | Budget | Email

Material Mgt. / Purchasing | Human Resrcs.

Web Site | Quality Assurance | Risk Mgt | Physician Credentialing | Utilization Review

Administrative & Financial Document Management

Process and Staffing

IS Strategic Plan | IS Standards | Change Mgt

Advanced Infrastructure Components

High Speed Network | Desktop Device Refresh

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2000-2004

Healthcare Experiences a Technology Explosion: 2000 - Present

EMR & Clinical Functions

| ADT/ Registration | EMPI | Order Entry | Dietary | | | Medical Records Abstracting | | Cardiology Cath Lab | Transcription |

| Radiology Information System | Drug Formulary | Anatomic Pathology | Dictation | OB Fetal Monitoring | Inpatient / Outpatient Pharmacy | Lab Blood Bank | EKG | Laboratory Information System | Cardiology Information System |

Results Reporting | Medical Record Chart Tracking | Clinical Refererences | Patient Scheduling | Mammography

Operating Room

Medication Dispensing

Physician Portal | Rehab Services

Electronic Medical Record

Business & Administrative Applications

General Ledger | Billing | Payroll | Accounts Rec. | Patient Accounting

Patient Tracking | Material Mgt. / Purchasing | Nurse Scheduling

Web Site | Quality Assurance | Risk Mgt | Case Mgt | Utilization Review

Administrative & Financial Document Management

Process and Staffing

Nursing Champion | IS Strategic Plan | Change Mgt

Advanced Infrastructure Components

High Speed Network | Digital Voice Network

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2000-2004 | **2005-2007**

EMR & Clinical Functions

| ADT/ Registration | EMPI | Order Entry | Dietary | Electronic Signature | Medical Records Encoder | Medical Records Abstracting | | Cardiology Cath Lab | Transcription |

| Radiology Information System | Drug Formulary | Anatomic Pathology | Dictation | OB Fetal Monitoring | Inpatient / Outpatient Pharmacy | Lab Blood Bank | EKG | Laboratory Information System |

| Nursing Document. | Results Reporting | Medical Record Chart Tracking | Clinical Refereences | Sleep Center | Patient Scheduling | Mammography | Nurse Paging |

| Operating Room | Home Health / Hospice | Emergency Room | | | | Medication Dispensing |

| Physician Portal | Clinical Document Management | Rehab Services | Long Term Care Clinical | **Electronic Medical Record** |

Business & Administrative Applications

| Accounts Payable | General Ledger | Billing | Payroll | Accounts Rec. | Patient Accounting | Time & Attendance | Email |

| Patient Tracking | Material Mgt. / Purchasing | | Human Resrcs. | | Nurse Scheduling | Electronic forms |

| Web Site | Quality Assurance | Risk Mgt | Case Mgt | Utilization Review |

Administrative & Financial Document Management

Process and Staffing

| Nursing Champion | IS Strategic Plan | Change Mgt |

Advanced Infrastructure Components

| High Speed Network | Network Mgt Tools | Digital Voice Network |

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2000-2004	2005-2007	2008-2010

EMR & Clinical Functions

ADT/ Registration	EMPI	Order Entry	Dietary	Electronic Signature	Medical Records Encoder	Medical Records Abstracting	Radiology PACS	Cardiology Cath Lab	Transcription
Radiology Information System	Drug Formulary	Anatomic Pathology	Dictation	OB Fetal Monitoring	Inpatient / Outpatient Pharmacy	Lab Blood Bank	EKG	Laboratory Information System	Cardiology Information System
Nursing Document.	Results Reporting	Medical Record Chart Tracking	Clinical Refererences	Sleep Center	Patient Scheduling	Mammography	Cardiology PACS	Nurse Paging	eMAR
Operating Room	Home Health / Hospice	Emergency Room	Clinical Documentation / Charting	Alerts & Reminders	Discharge Planning	Decision Support			Medication Dispensing
Physician Portal	Clinical Document Management	Rehab Services	Long Term Care Clinical						

Electronic Medical Record

Business & Administrative Applications

Accounts Payable	General Ledger	Billing	Payroll	Accounts Rec.	Patient Accounting	Time & Attendance	Budget	Employee Education	Email	Help Desk Tracking	Executive Information Dashboard
Patient Tracking	Material Mgt. / Purchasing		Electronic Remit.	Human Resrcs.	Occupational Medicine	Contract Mgt.	Nurse Scheduling	Security	Insurance Eligibility	Electronic forms	Data Warehouse
Web Site		Quality Assurance			Risk Mgt	Physician Credentialing	Employee Health	Case Mgt	Utilization Review	Infection Control	Social Work

Administrative & Financial Document Management

Process and Staffing

Physician Champion	Nursing Champion	Education Department	IS Portfolio Planning	IS Strategic Plan	Process Analysis	Business Process Re-Engineering	IS Standards	Change Mgt

Advanced Infrastructure Components

Single Sign On	Wireless Network Access	High Speed Network	Desktop Device Refresh		Point of Care Devices	Voice Recognition	Network Mgt Tools	Digital Voice Network	Disaster Recovery

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Ever Increasing Systems Implementations

Area	1980s – 1990s	Current
Applications	20-30 Applications	Up to 1,000 Applications
Access Devices	Terminals	PCs, Hand-Held Devices, Thin Clients, Smart Phones
Technology	Mainframe	Bar Coding, RFID, Medical Device Interfaces, Servers, Virtualization
Networks	LAN, Terminal Servers	Wireless Networks, 100mbps/ Gbps , WAN
End Users	20-30% end user access	95-100% end user access
System Availability	8 hours M-F	24 x 7 access needed
Education	Limited	Training Department, Real Time
Key Applications	Billing, Registration	EMR, Revenue Cycle, ERP, QA, EHR
Internet	None	Intranet, Internet, Self-Service, Portals
Application Functions	Billing, Registration, Lab	Registration, Billing, HR, Decision Support, Results Reporting, Charting, Order Entry, Ad-Hoc Reporting, Lab, Pharmacy, PACS, RIS, Med Dispensing, QA
I.S. Workflow	Ad-hoc, manual	Business process re-engineering, Project Management methodology
Disaster Recovery	Backup and restore by I.T.	Downtime procedures, redundant servers, off-site processing, high availability

2000-2004

Healthcare Experiences an IT Explosion

Operational Recovery: Healthcare 2000 - 2004

High bandwidth communication required to support replication and delivery	Data restoration was handled at the time of failure	Discrete platforms for each customer

2000-2004	**2005-2007**
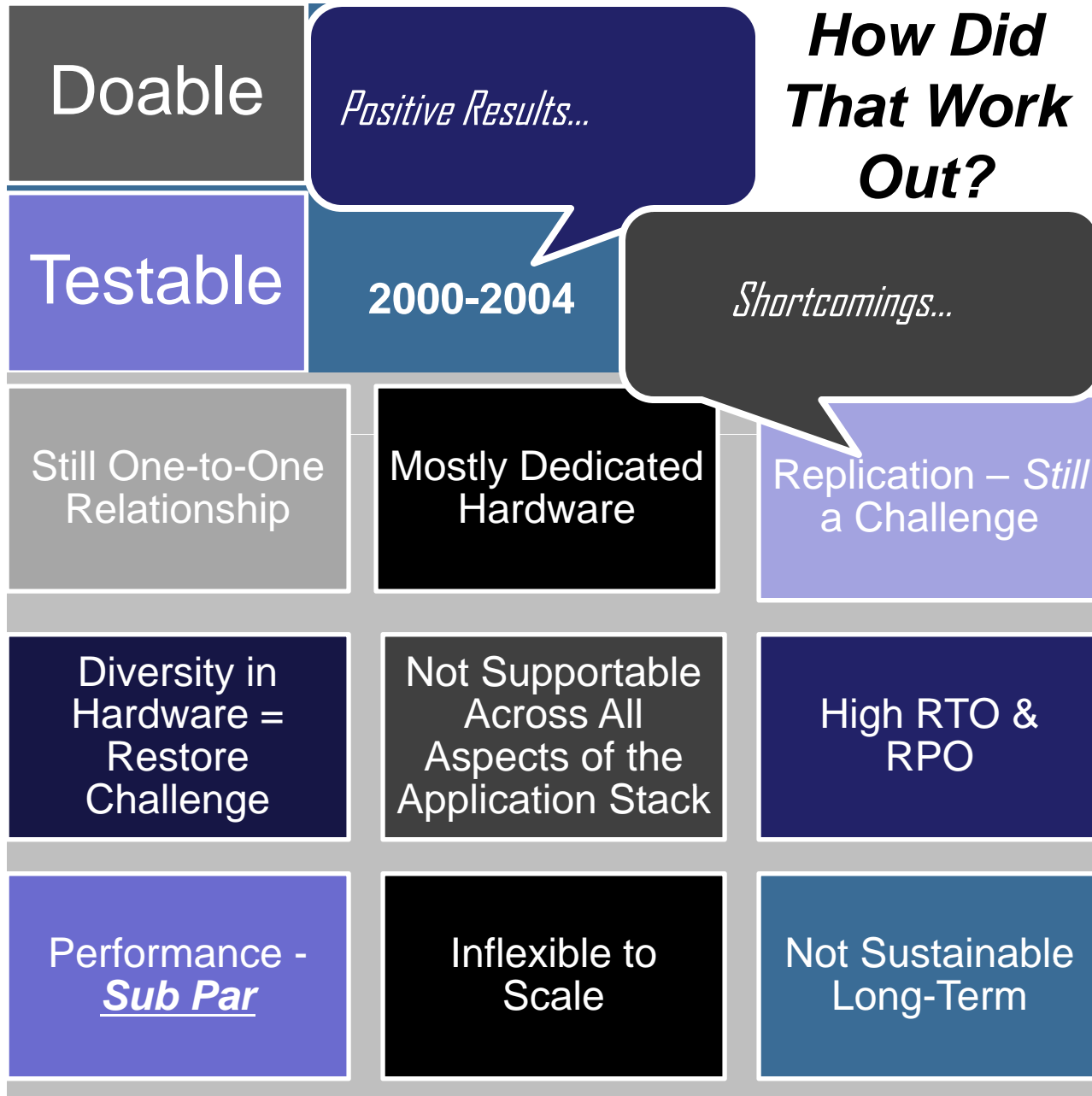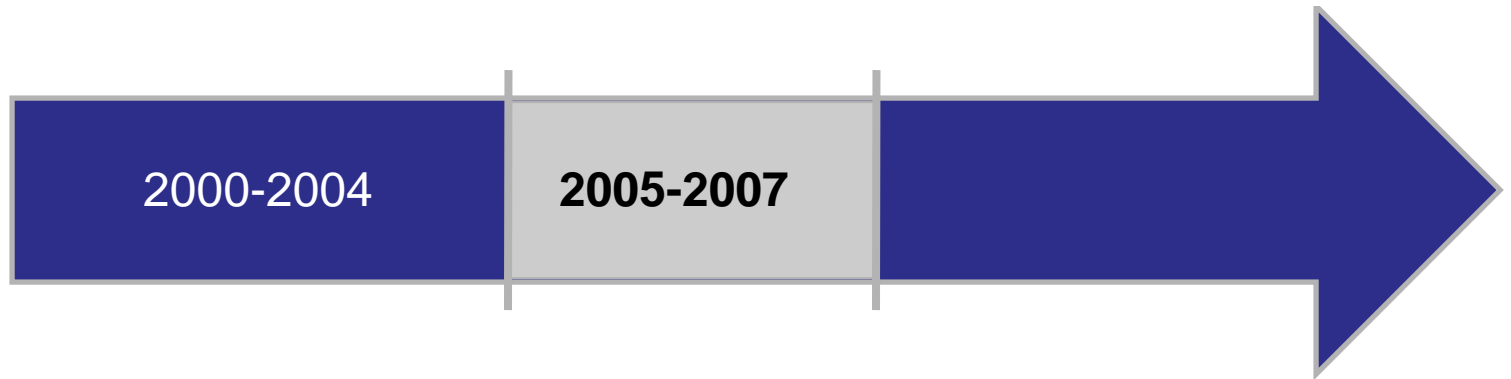
Operational Recovery: Healthcare 2005-2007

WAN-based Replication	Delta change replication for data sets
Thin client delivery	Storage level replication	Virtualization becoming accepted for product platforms

2000-2004	2005-2007	2008-2010
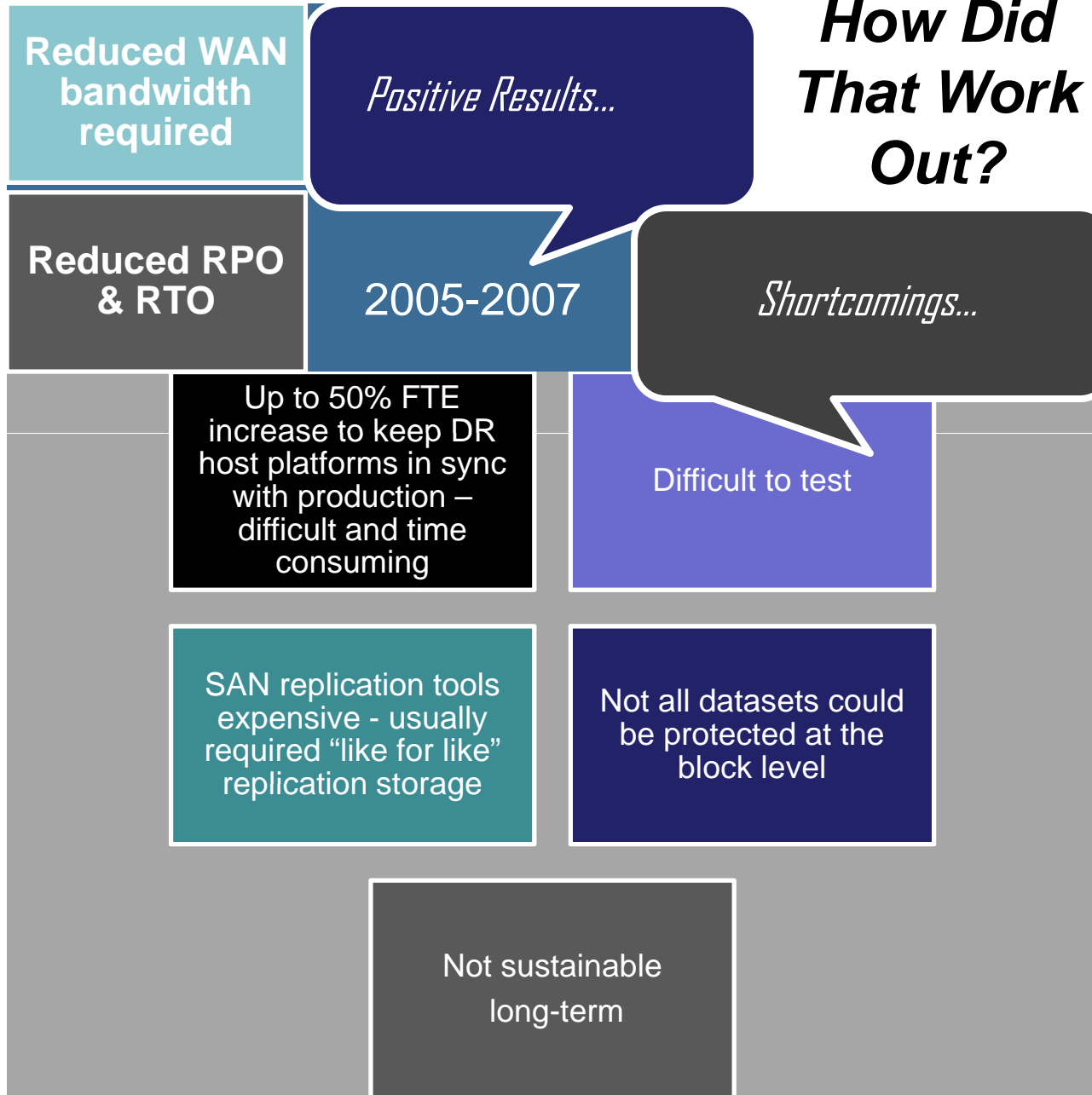
Operational Recovery: Healthcare 2008-Present

Fully leveraged DR platform	Scalable on-demand	Thin Client delivery	Quick replication (snapshot) for testing/pre-declaration testing

Lower Cost

Flexible Testing Options

Parallel Recovery Efforts

Scalable to user demands

That Works!

Positive Results...

Shortcomings...

Long-Term Use of DR Solution

Why are virtual technologies essential to Operational Recovery in healthcare?

Because of the increased reliance on systems & the growing need for uptime.

Vendors Make it Sound Simple – But *Not This Simple!*
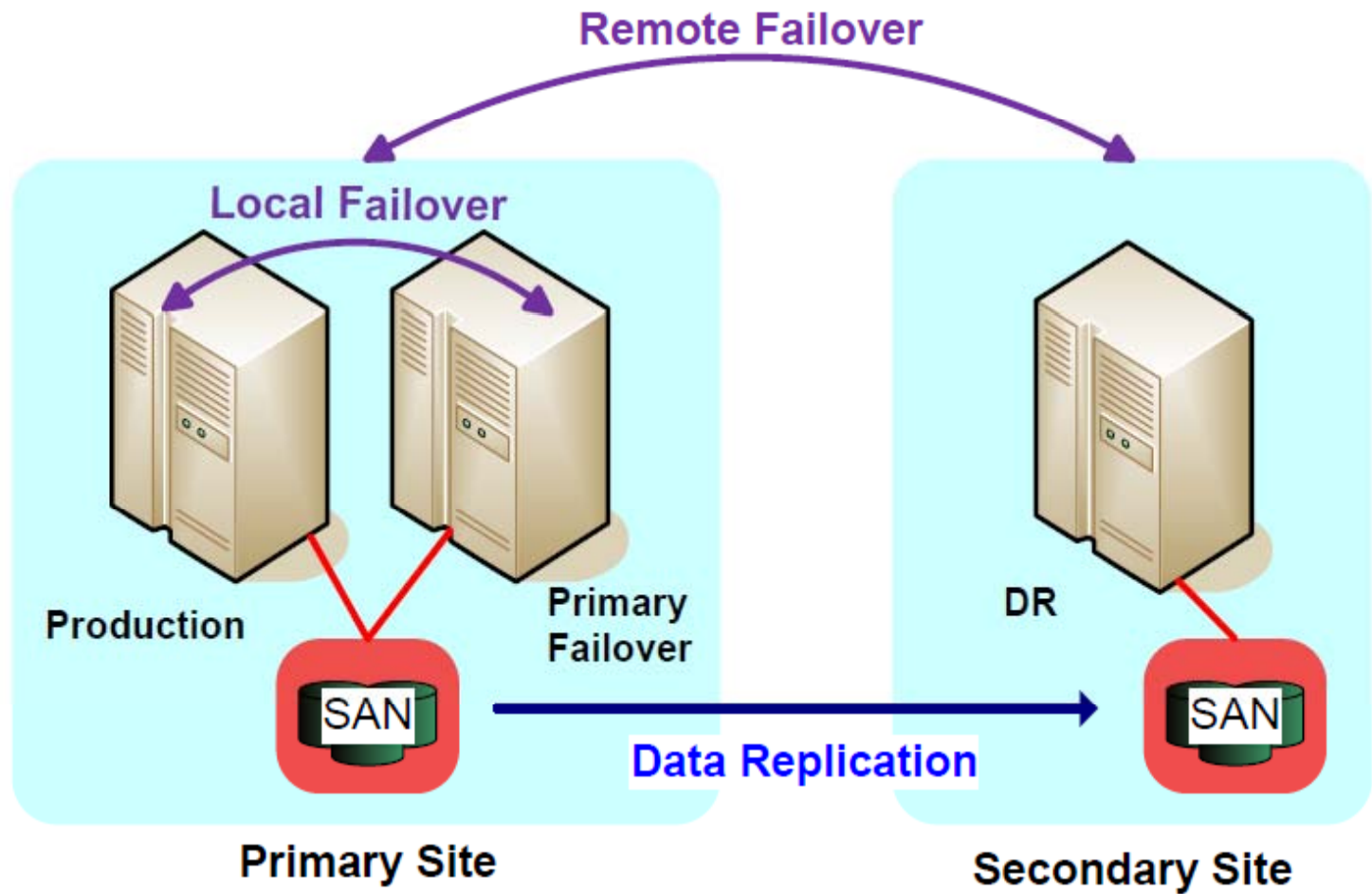
It Looks More Like This...
For Each Critical Application
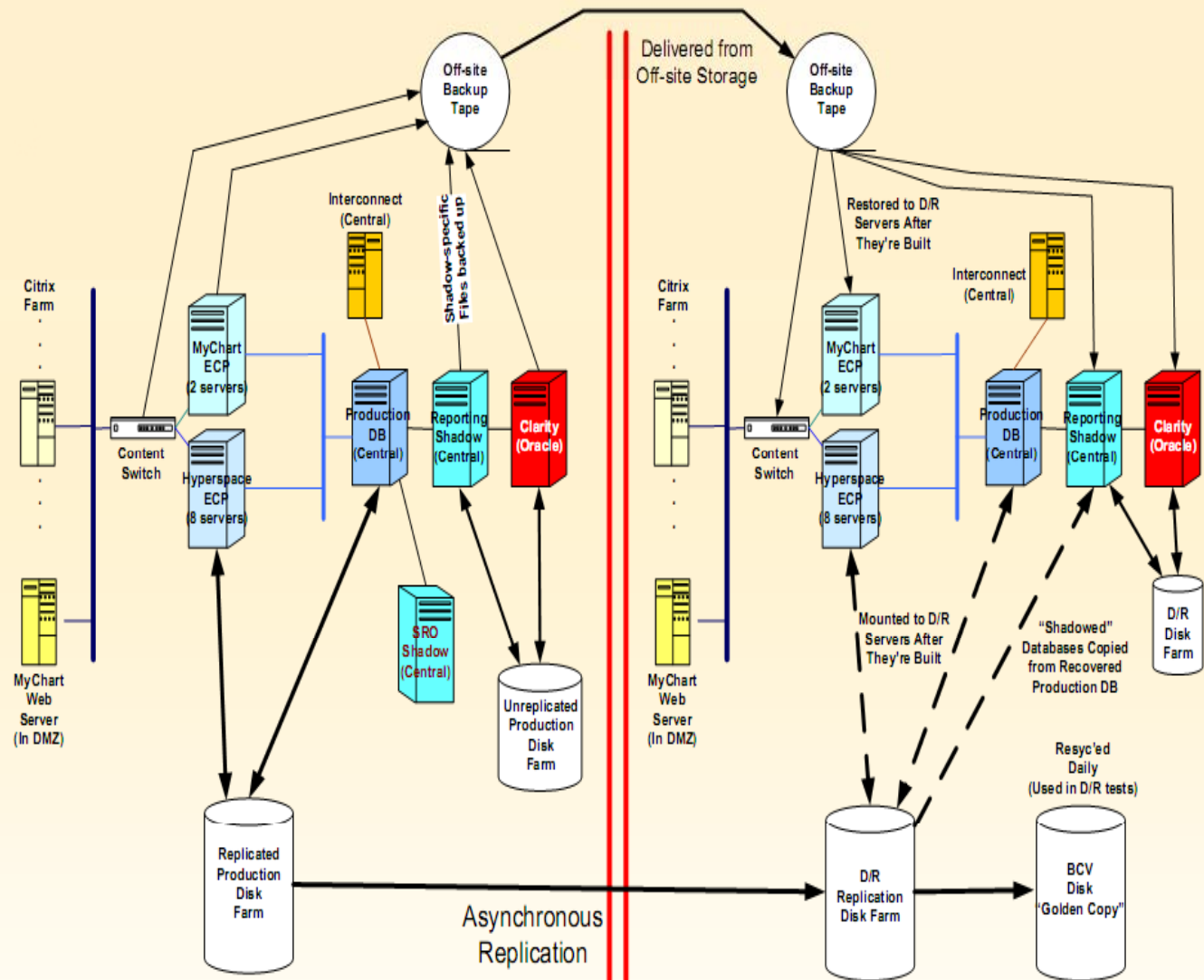
* Epic SRT 2009

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FLEXIBLE

SCALABLE

AFFORDABLE

Virtualized Operational Recovery
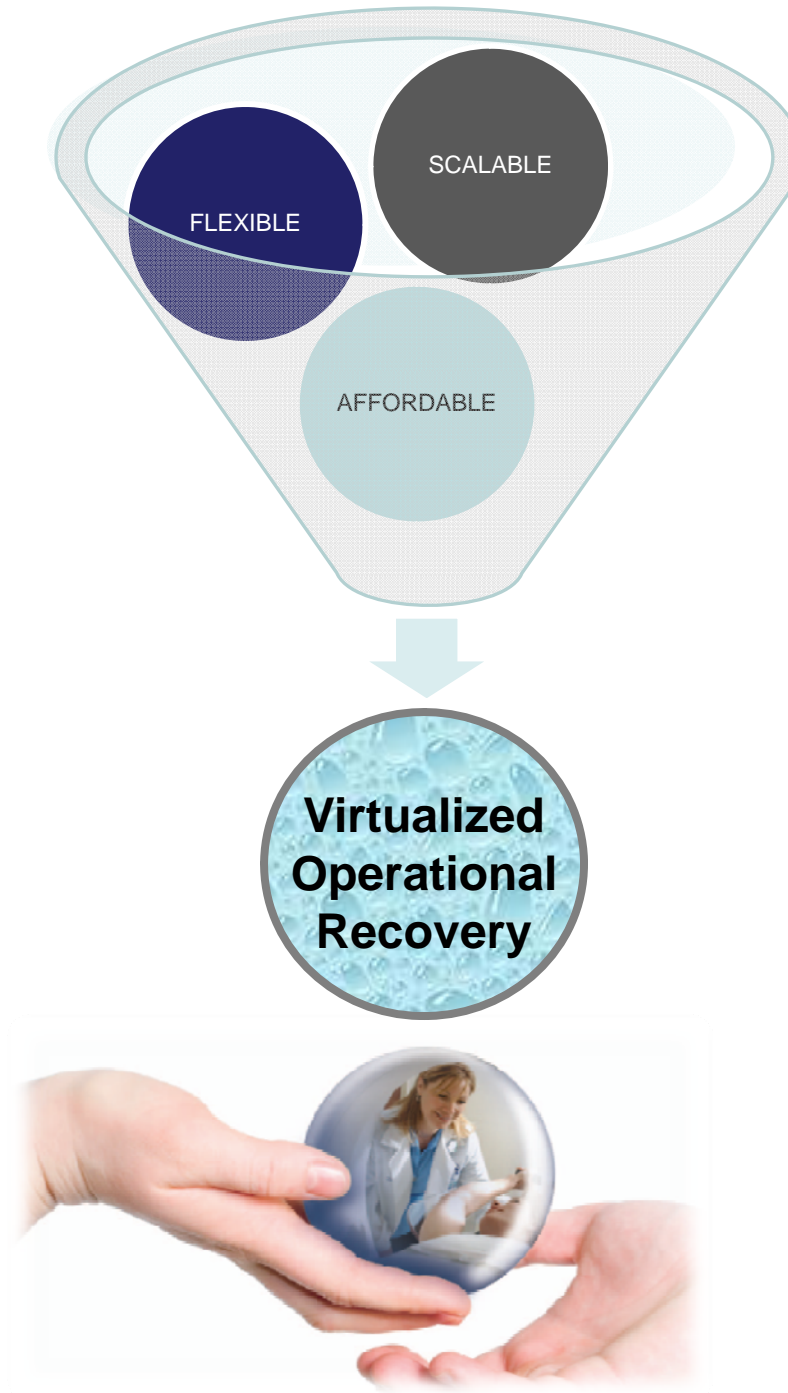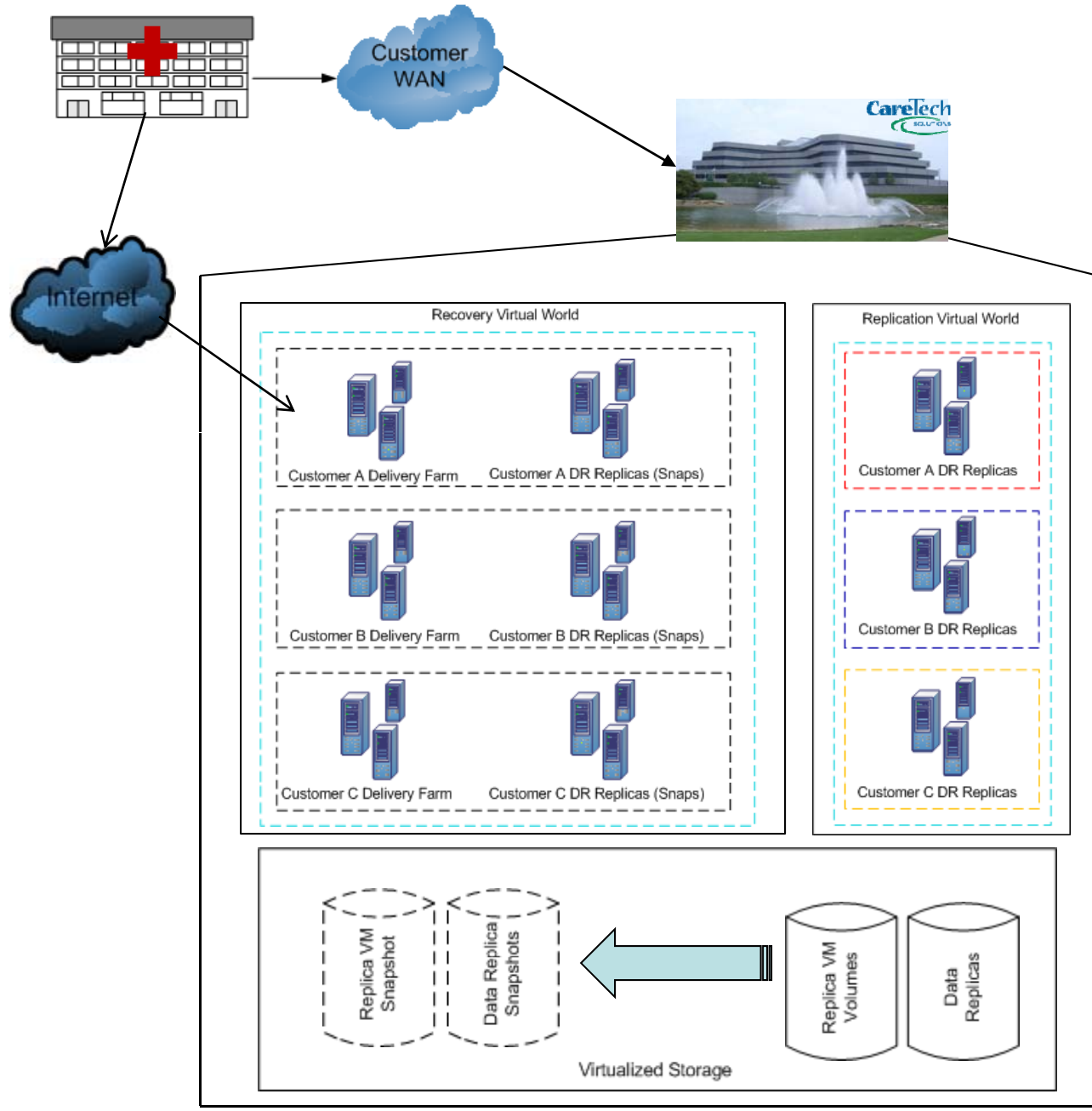
Broad Range of Hardware Platforms	• Our solution allows us to deliver services without consideration of what the source platforms are
System Interdependencies Create Many Recovery Complexities	• Flexibility in our recovery architecture allows us to recover one or more systems as necessary to accommodate customer requirements
Challenging Testing Requirements	• Storage / VM snapshots allow us to recover systems for testing or validation without disruption of the replication process
Physical Limitations	• Limitations removed both from storage location & type because storage is managed in a single virtual pool, generating a single storage image
Distributed Data Locations	• Virtual Tape Libraries • WAN acceleration • De-duplication

What's Next?

Any Questions?

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