

# BC60: Enterprise Resilience: Beyond the Data Center

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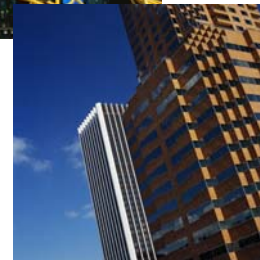


# Abstract

Resilience is often portrayed as an IT issue. While data center and network availability are essential parts of a robust infrastructure, that infrastructure also includes personnel, processes and facilities that must be available around the clock. Moreover, the unbroken availability of resources must be surrounded by a supportive environment, including governance structures, risk management and compliance. The overall resilience of an organization must be measured and evaluated so that it can be continuously improved over time. This presentation will define a "to-be state" for a resilient enterprise and present a roadmap for how to achieve one, highlighting the interdependency of infrastructure, environment and management.

# Scope and Definition

- We are concerned with *resilience*, not *recoverability*
  - Recoverability means that if systems fail, they can be returned to productive use
  - Resilience implies that systems will be designed in such a way that they will not fail except in the most extreme circumstances
- The term “systems” encompasses people, processes and technologies as well as the business and societal infrastructure in which they exist



# Scope and Definition

- Resilience is not an absolute concept
- Allowances can be made for *some* downtime and data loss, within the boundaries of business need
- It can be assumed that:
  - Resilience is part of business as usual (BAU)
  - Companies already have some form of recoverability



# Scope and Definition

- We are considering the enterprise as a whole
  - While individual systems can sustain lengthy outages, the enterprise cannot
  - Systems are so interdependent that it is difficult – if not impossible – to anticipate their interactions in a crisis
- Resilience has a cost
  - It is impossible to be against resilience, but easy to oppose the cost
  - The issue, then, is cost versus benefit
- Bad reasons for resilience
  - It's cool
  - The technology exists
  - Everybody else is doing it
  - It will grow my personal empire

# The Meaning of Resilience

## What It Means to Be “Resilient”

- Develops an agile, adaptable business and technological operating environment
- Able to deliver consistent, reliable service 24 hours a day, 365 days a year, across the entire organization, all around the globe
- Prepares for unforeseen shocks to the business to protect the firm’s assets, safeguard customer and employee privacy, and reduce all types of operational risks



## Issues Addressed

- Increasing business uncertainty and marketplace volatility
- Business recovery from natural disasters, terrorism, etc.
- Risk management across product and business portfolios
- Support for complex globalization and business expansion
- Increasing customer and employee concern over privacy and security issues

# The Rationale for Resilience

- ▶ The underlying drivers for resilience must be derived from the strategic needs of the business
- ▶ They need to be aligned with the global strategic imperatives of all businesses plus the specific direction of individual companies

## Global strategic drivers

- Shareholder value
  - Preservation
  - Enhancement
- Brand protection
- Operational efficiency

## Company-specific strategic drivers

- How does the company make money?
  - Products, services or both
- Where is the company in its marketplace?
  - Dominant, growing, receding
- What legal and regulatory pressures does it face?

# Resilience in Context



# Resilience and Business Continuity Management

- The BCM function has existed with a specific mandate:
  - To analyze the needs of the organization for recoverability
  - To develop plans for recovery after disruptive events
  - To test and maintain the plans
- Moving towards a resilient enterprise does not negate BCM but it does broaden the context

# The Role of Business Continuity Management

**Analysis, Planning,  
Testing & Maintenance**



**Business Continuity Planning as it has been performed for years**

# The Infrastructure of Resilience

There is an infrastructure of people, facilities, processes and technology that must fit within the organizational structure and must be resilient themselves

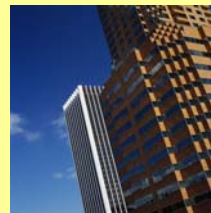
**Analysis, Planning,  
Testing & Maintenance**



**Processes**



**Technology**



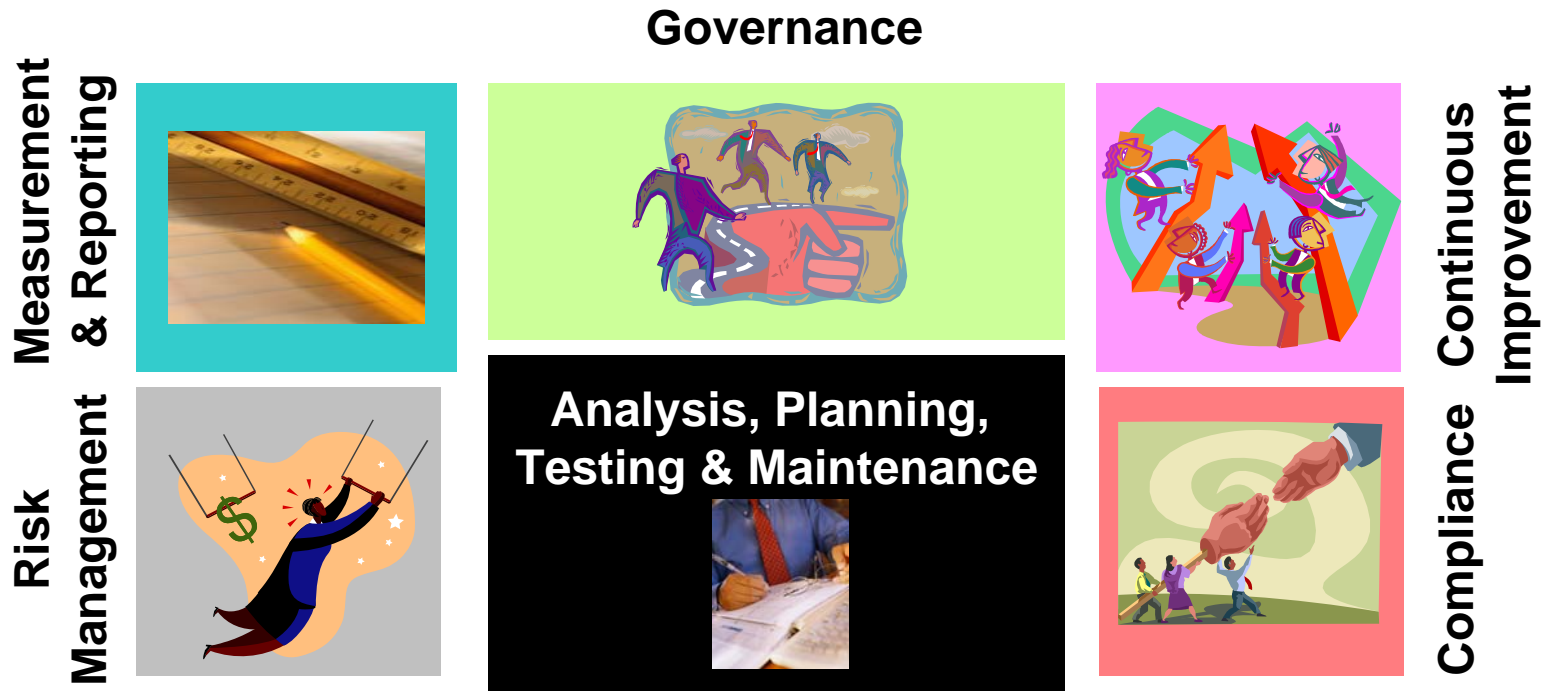
**Facilities**



**People**

**Infrastructure of Resilience**

# The Superstructure of Resilience



Similarly, there is a whole organizational structure that fits around the transformation and maintenance of a business model, one that makes resilience part of business as usual (BAU)

# Resilience in Context

## Governance

Measurement  
& Reporting



Continuous  
Improvement

Risk  
Management



Compliance

Processes Technology Facilities People

## Infrastructure of Resilience

# The Infrastructure of Resilience



# Information Technology Resilience

- Enterprise resilience is more than IT resilience, but technology is certainly included
- The business case for IT resilience
  - The increased volatility of business (i.e., e-commerce) has raised the stakes of downtime and data loss
  - The advent of ERP systems (e.g., SAP, Oracle) has significantly lengthened recovery times while simultaneously eliminating the opportunities for workarounds



# Data Center Resilience

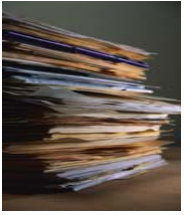
	Advantages	Disadvantages
Commercial vendor (hot site)	<ul style="list-style-type: none"><li>• Relatively low cost</li></ul>	<ul style="list-style-type: none"><li>• Length of recovery</li><li>• Possible unavailability</li></ul>
Resources acquired at the time of a disruption	<ul style="list-style-type: none"><li>• Lowest cost</li></ul>	<ul style="list-style-type: none"><li>• Least likely to succeed</li></ul>
Quick ship	<ul style="list-style-type: none"><li>• Low cost</li></ul>	<ul style="list-style-type: none"><li>• Unlikely to succeed</li></ul>
Active / active	<ul style="list-style-type: none"><li>• Eliminates downtime and data loss</li></ul>	<ul style="list-style-type: none"><li>• Most costly</li><li>• Capacity issues</li></ul>
Active / passive	<ul style="list-style-type: none"><li>• Limits downtime and data loss</li></ul>	<ul style="list-style-type: none"><li>• Very costly</li></ul>
Outsourcing with a service level agreement (SLA)	<ul style="list-style-type: none"><li>• Somebody else's problem</li></ul>	<ul style="list-style-type: none"><li>• Still your problem</li></ul>
Stockpile equipment	<ul style="list-style-type: none"><li>• Equipment availability</li></ul>	<ul style="list-style-type: none"><li>• Equipment incompatibility</li></ul>





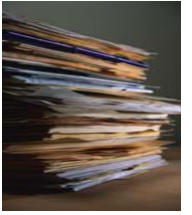
# Data Storage Resilience

	Advantages	Disadvantages
Synchronous Mirroring	<ul style="list-style-type: none"><li>• Most expensive</li></ul>	<ul style="list-style-type: none"><li>• No data loss</li></ul>
Asynchronous Replication	<ul style="list-style-type: none"><li>• Expensive</li></ul>	<ul style="list-style-type: none"><li>• Limited, selectable data loss</li></ul>
Stand-by Data Base	<ul style="list-style-type: none"><li>• Expensive</li></ul>	<ul style="list-style-type: none"><li>• Adds time to recovery</li></ul>
Remote Journaling	<ul style="list-style-type: none"><li>• Relatively inexpensive</li></ul>	<ul style="list-style-type: none"><li>• Recovery, not resilience</li></ul>
Electronic Vaulting	<ul style="list-style-type: none"><li>• Relatively inexpensive</li></ul>	<ul style="list-style-type: none"><li>• Recovery, not resilience</li></ul>
Tape Back-up	<ul style="list-style-type: none"><li>• Least expensive</li></ul>	<ul style="list-style-type: none"><li>• Greatest data loss</li></ul>



# Process Resilience

- If a process is performed by one group of people in a particular location, are there other people in other locations who can perform the same process?
- Is the process such that it *can* be performed by different groups in different locations.



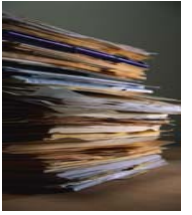
# Different Types of Processes

- Leading processes for resilience

- Accounting
- Human Resources
- Risk Management
- Auditing
- Legal
- Claims
- Billing
- Research - finance
- Inventory

- Problematic processes for resilience

- Printing
- Trading
- Patient care
- Sales
- Plant operations
- Supply chain
- Education
- Research - scientific
- Security



# Differentiating Processes

- Leading processes for resilience
  - Back office
  - Widely available skills
- Problematic processes for resilience
  - Customer facing
  - Need for specialized equipment and skills
  - Access to local markets and locations
  - Need to work in groups



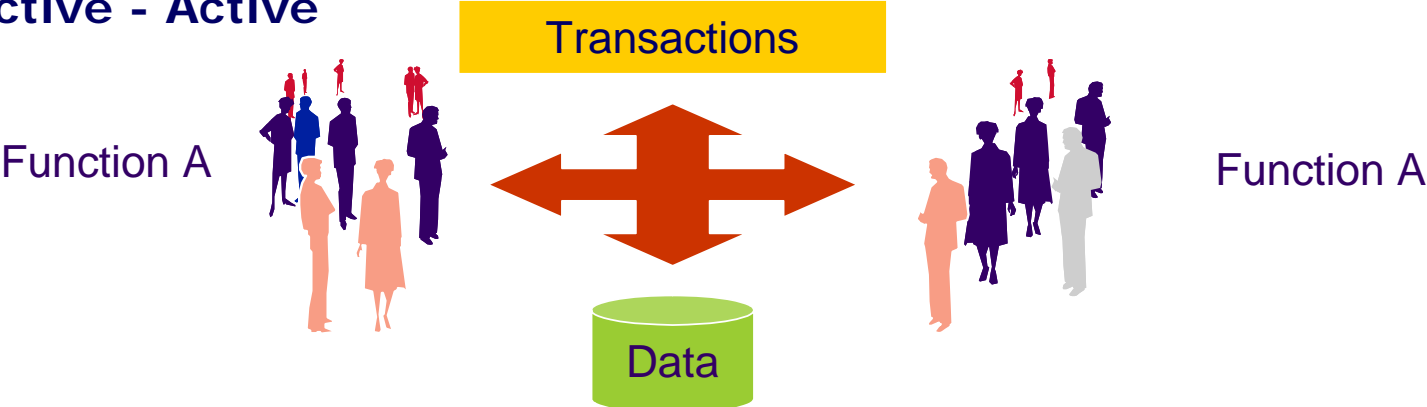
# People Resilience

- Active-active vs. mirrored staff
- Talent pool
- Trading off labor arbitrage for desirable locations
  - Lifestyle
  - Cost of living
  - Transportation
- Managing backlog

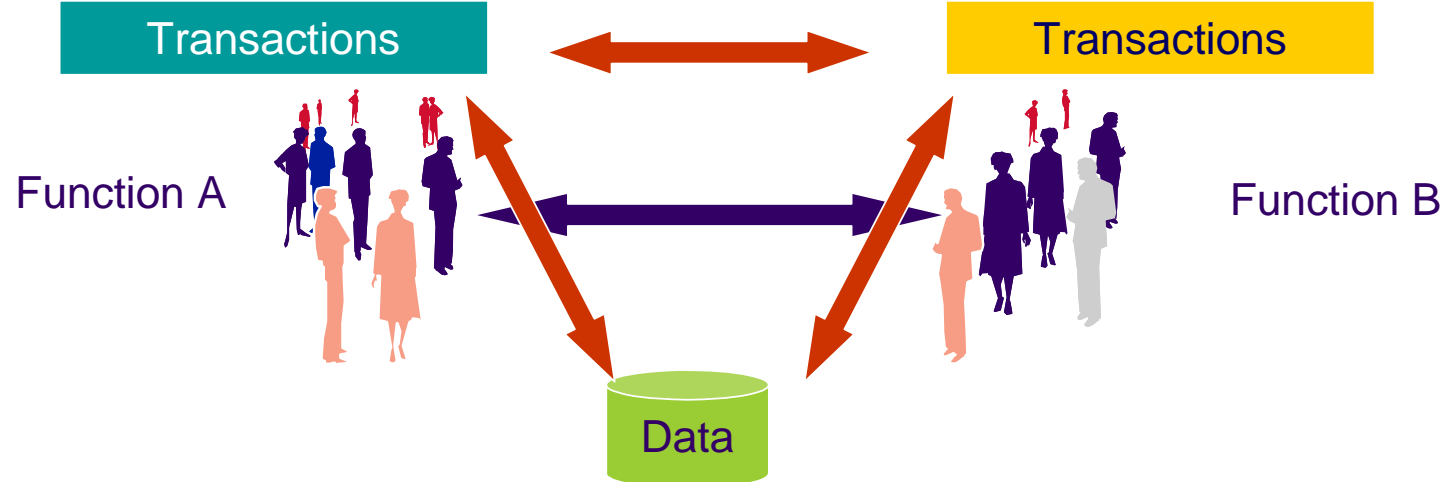


# Alternative People Resilience Strategies

## Active - Active



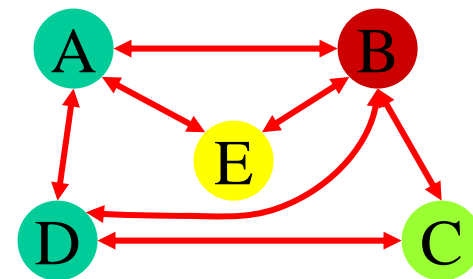
## Mirror Staffs





# Facilities Resilience

- All facilities are subject to disruption
- Facilities resilience is different than having an alternate site
  - Fully equipped and connected
  - In general, occupied in normal times
  - Far enough apart to avoid the same disruption
  - Multiple internal backups



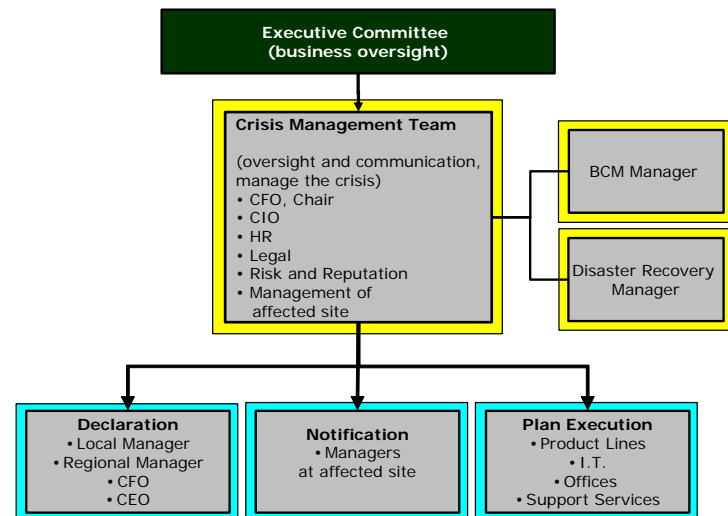
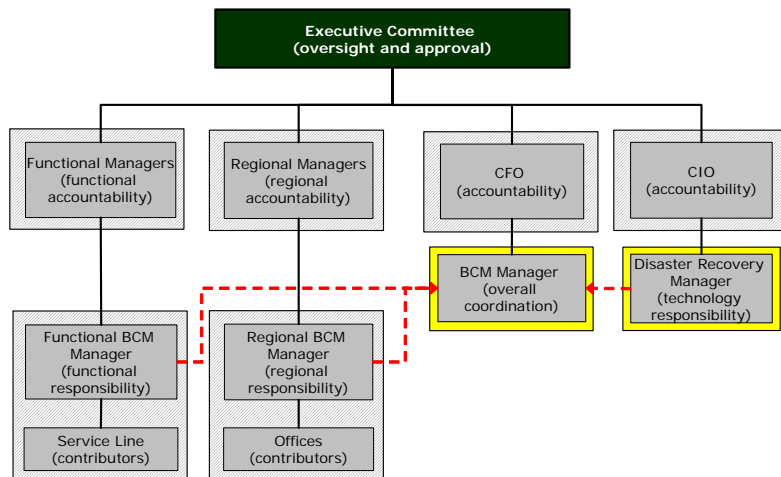
# The Superstructure of Resilience



# Governance of Resilience



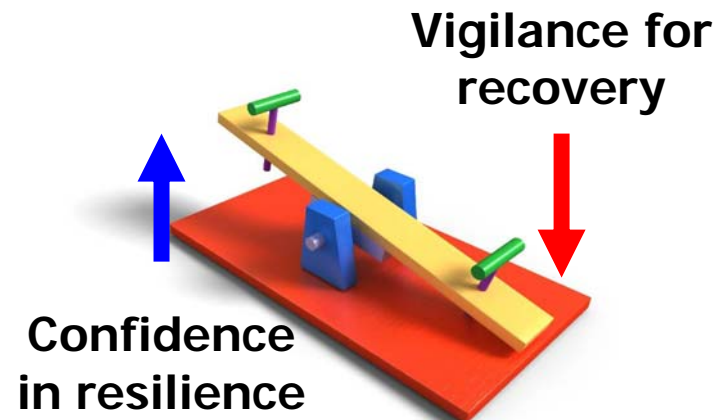
- Recovery model
  - Organizational structures for pre- and post event management
  - Permanent functions for Business Continuity Management and Disaster Recovery Planning



# Governance of Resilience



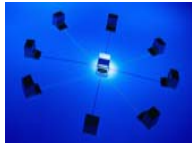
- Resilience model
  - Potentially three organizational structures
    - Design
    - Implementation
    - Continuous improvement
  - Plus the same post-event management as for recovery



# Governance of Resilience



## Executive Steering Committee



D



I, C



C



D, C



D, C

I, C

C

D, I, C



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D = Design I = Implementation C = Continuous Improvement



# Managing the Risk of Resilience

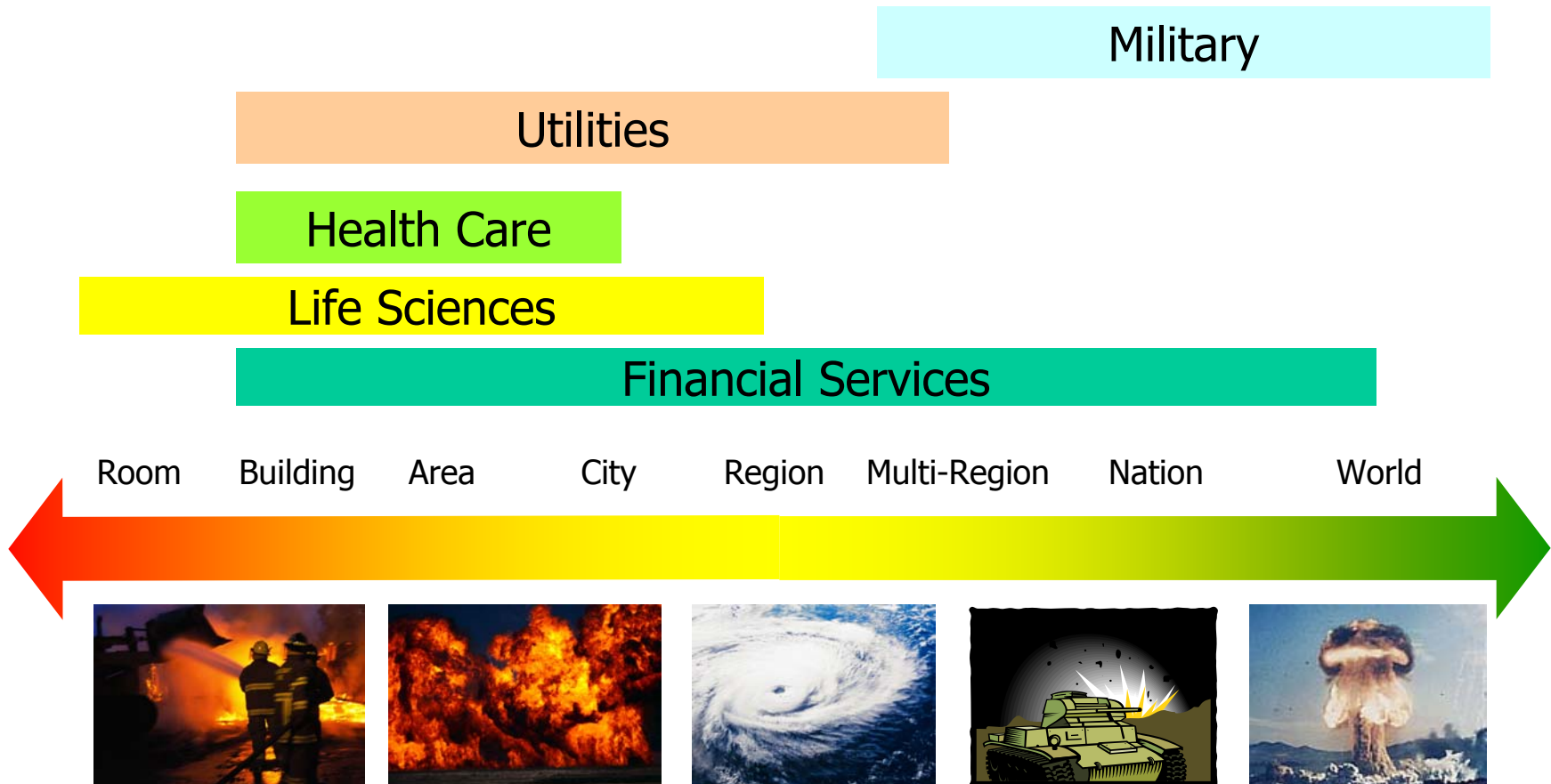
- What risk? It's resilient, isn't it?
- Resilience has a cost and it is necessary to balance resilience with
  - Investment
  - Complexity
  - Inefficiency and waste
  - Incompatibility
- How many baskets to put your eggs in?

# Resilience and Compliance



- Many industries have an explicit requirement for resilience (or close to it)
  - Financial services
  - Life sciences
  - Health care
  - Utilities
  - Military
- How resilient does an organization need to be to be compliant?

# Scope of Resilience Requirements



# Monitoring & Reporting on Resilience



- Resilience can't be tested; it's BAU
- Resilience is always being tested; it's BAU
- Either way, it is necessary to understand how well the provisions for resilience are working
  - Learning from failures
  - Generalizing on successes
  - Growing the base of resilience
- Reporting on quality more than on capability
  - All the components of the infrastructure and the superstructure

# The Continuous Improvement of Resilience



- Resilience doesn't happen all at once
- It is a process of transformation, from backup to recovery to the ability to continue operations uninterrupted, regardless of events
- At the very least, management must consider
  - Program management
  - Facilities
  - Technology
  - Operations



# Resilience Transformation



- **Program Management**

- Business / IT Alignment
- Financial Analysis
- Sourcing
- Communications
- Risk Management

- **Facilities Transformation**

- Site Selection
- Tax Planning
- Facility Design
- Facility Construction
- Facility Relocation

- **Technical Transformation**

- Applications
- Data
- Storage
- Servers
- Network
- IT Security
- Testing
- Performance Management

- **Operational Transformation**

- Service Support & Delivery
- Service Desk
- Organization & Workforce
- Change Leadership
- Training



# What About the Business Continuity Management Function?

- If BCM is all about writing, testing and maintaining plans, it will become irrelevant
  - The less risk of downtime there is, the less need there for recoverability
- Business Continuity Management should be taking the lead in building resilience
  - Line and staff management must take the lead
  - Driving the risk management process
  - Assuring compliance with laws and regulations

# Resilience Transformation

- $\Delta X \Delta P \geq \hbar/2$
- Or in other words, you can't know where you are and where you're going at the same time
  - Heisenberg Uncertainty Principle
- So, don't worry about how resilient your organization is...
- **Focus on getting there!**

# For Further Information

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**Deloitte.**

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